

ESA study




“Test Methods, Requirements, and Guidelines for Evaluation of Radiation Sensitivity of Analog to Digital Converters (ADC), Digital to Analog Converters (DAC) and Vertical Power MOSFETs”

TOTAL IONIZING DOSE TEST REPORT

Part Type : ADC128S102
Package : SOIC-16
Description : Radiation Hardened 12-Bit A/D Converter 8-channel
Manufacturer : National Semiconductor
Date Code: 1317A

ESTEC Contract N° 4000105495/12/NL/SFe dated February 27th, 2012

ESTEC Technical Responsible: Christian Poivey

Hirex reference:	HRX/TID/1196	Issue: 02	Date:	August 11 th , 2014
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	ADC128S102	National Semiconductor	Issue:	02

CHANGE RECORD

ISSUE	DATE	PAGE	DESCRIPTION OF CHANGES
01	June 12th, 2014	All	Original Issue
02	August 11 th , 2014	9	Linearity computations updated

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**TOTAL DOSE RADIATION TEST REPORT
on National Semiconductor
ADC128S102
Radiation Hardened 12-Bit A/D Converter 8-channel**

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1 Introduction

In the scope of the ESA study: "Test Methods, Requirements, and Guidelines for Evaluation of Radiation Sensitivity of Analog to Digital Converters (ADC), Digital to Analog Converters (DAC) and Vertical Power MOSFETs", a total dose radiation evaluation test of the National Semiconductor ADC128S102, Radiation Hardened 12-Bit A/D Converter 8-channel has been performed with an accumulated dose of about 102 krad(Si) at a dose rate of 310 rad(Si)/hour, in response to ESTEC purchase order reference 4000105495/12/NL/SFe.

The purpose of this test was to evaluate total dose withstanding of this component, to investigate its suitability for being used in space applications. This test was conducted on samples provided by ESTEC. Test has been performed in accordance with Hirex Engineering proposal reference HRX/PRO/3624 Issue 01 dated 10/12/2012.

A complete set of electrical measurements together with graphical representation of measured parameters with respect to total dose received, are provided for all samples.

2 Applicable and Reference Documents

2.1 Applicable Documents

- Hirex Engineering proposal: HRX/PRO/3624 Issue 01 dated 10/12/2012
- Reference email "Approbation irradiation test plan for ADC128S102" dated 02/11/2014.
- Hirex Engineering irradiation test plan for ADC128S102: HRX/SPE/0279 Issue 01 dated 09/13/2013.
- Hirex Engineering Detail Design Document for ADC128S102: HRX/DDD/1838 Issue 01
- Hirex Engineering Test Conditions for ADC128S102: HRX/TC/1418 Issue 01
- ESCC Basic Specification No. 22900 issue 04.

2.2 Reference Documents

- National Semiconductor ADC128S102 datasheet: 300181 dated January 13th, 2011.
- Specification document: SMD 5962-07227 rev A dated 09/03/2011

3 Device architecture / functional diagram / technology

The ADC128S102 device is a SAR converter using a charge redistribution DAC, following multiplexer block, input structure is based on switched capacitor.

Technology is CMOS with an epi layer of about 5 microns and dead layer of about 6 microns thickness and 4 metal layers.

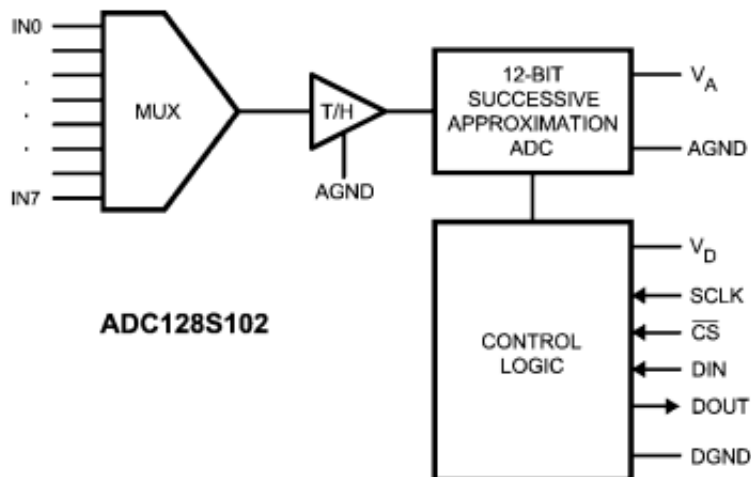


Figure 1: ADC128S102 Block Diagram

Identification of the main blocks of the device is shown on Figure 2.

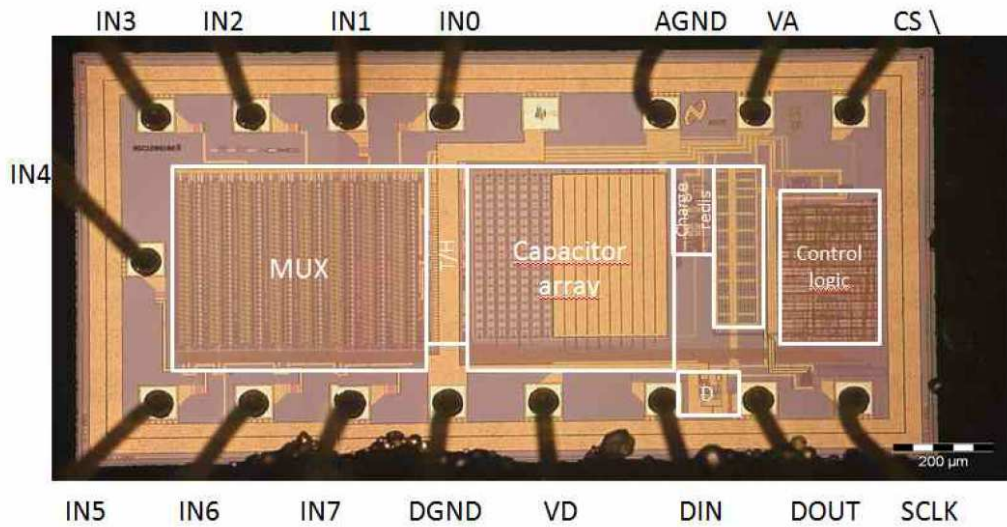


Figure 2: ADC128S102 Die Floorplan

4 Test Samples

11 samples of the ADC128S102 device were tested (5 ON + 5 OFF + 1 control sample).

Samples were allocated into the bias conditions during exposures and annealing as provided in the following table.

Serial Number(serialized by Hirex)	Allocation
1	Control
2	Biased ON
3	Biased ON
4	Biased ON
5	Biased ON
6	Biased ON
7	Biased OFF
8	Biased OFF
9	Biased OFF
10	Biased OFF
11	Biased OFF

Identification of the ADC128S102 is given below:

Part Type:	ADC128S102	Part Number:	ADC128S102WGMPR
Top Marking:	logo 1317A 8A ADC128S102WGMPR AS THA	Bottom Marking:	-
Date Code:	1317A		

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Complete traceability of the tested samples is provided on the following photos including die marking.



Photo 1 – Top Device Marking

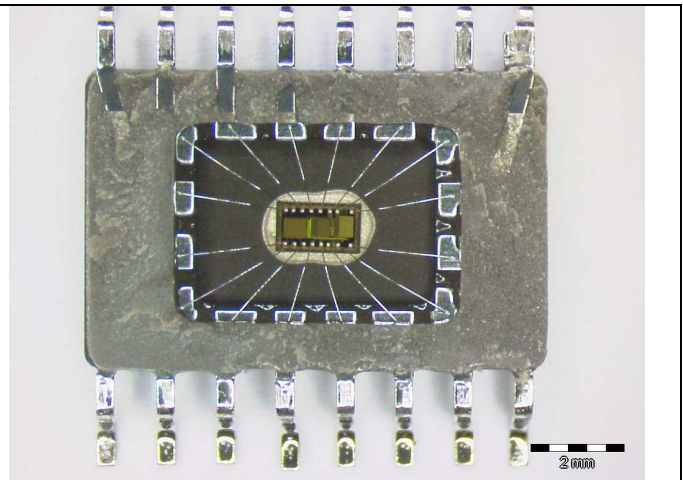


Photo 2 – Internal View

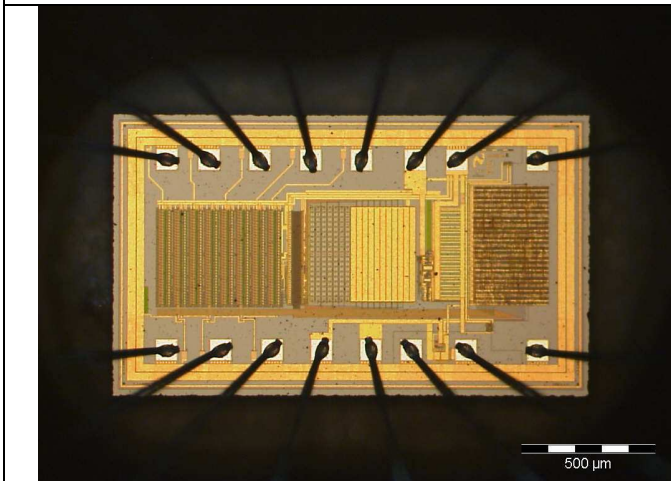


Photo 3 – Die View

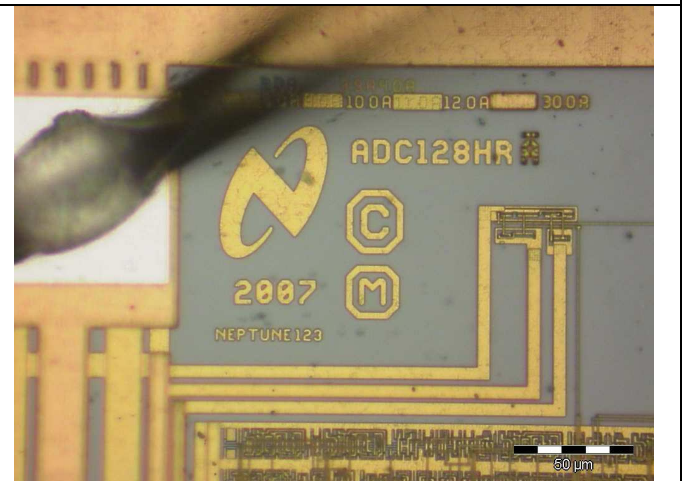


Photo 4 – Die marking

5 Experimental Conditions

5.1 Radiation Source Dose Rate and Annealing

The dose exposures were performed at UCL in Louvain (Belgium). In this irradiation facility, a Cobalt 60 source is used with the possibility to vary the dose rate by simply adjusting the distance to the source.

During the dose exposures, devices under test have been irradiated in an ambient temperature of 24°C ±6°C.

Prior to the test campaign the dose rate at board location is controlled using the Hirex calibrated dosimeter reference: Radcal Accu-Dose.

In addition, the dose received by the devices is verified by the measurement of one Alanine pellet dosimeter placed onto the bias board.

Resulting test conditions are provided below.

Irradiation Steps Requested	Pellet dosimetry data	Dose rate	Annealing steps	Temperature
0 krad(Si)	0 krad(Si)		-	Room
10 krad(Si)	9 krad(Si)	310 rad(Si)/h	-	Room
20 krad(Si)	20.7 krad(Si)	310 rad(Si)/h	-	Room
30 krad(Si)	27.9 krad(Si)	310 rad(Si)/h	-	Room
50 krad(Si)	49.5 krad(Si)	310 rad(Si)/h	-	Room
100 krad(Si)	102.6 krad(Si)	310 rad(Si)/h	-	Room
-	-	-	24h	Room
-	-	-	+144h	Room
-	-	-	168h	100°C

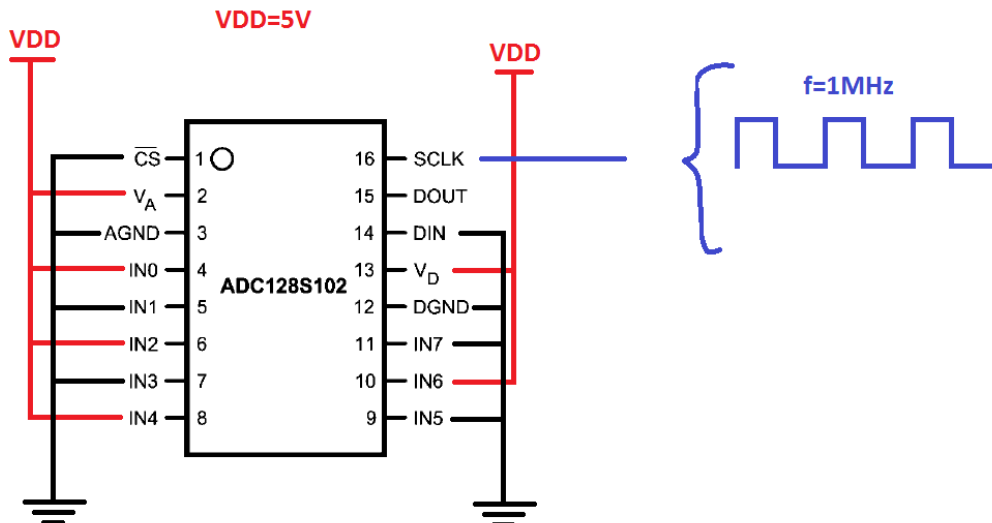
5.2 Bias during Dose Exposures and Measurements conditions

5.2.1 Bias conditions

During exposures test board allowed to bias 5 samples in accordance with the electrical circuit provided in Figure 3.

5 other samples were biased OFF with all pins connected to ground.

During annealing steps the same stress conditions were applied at room and 100°C temperatures.



Pin VA will be connected to 1uF & 100nF ceramic capacitors.

Pin VD will be connected to a 100nF ceramic capacitor.

Figure 3: Bias Conditions during Irradiation Exposures and Annealing

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5.2.2 Electrical Measurements

Electrical parameters test program principle for ADC128S102 is provided in Figure 4.

A test bench including one IMS tester, one Converters Tester and one HP4142A Tester were used to perform required measurements.

A dedicated test fixture was designed to ensure proper measurement conditions.

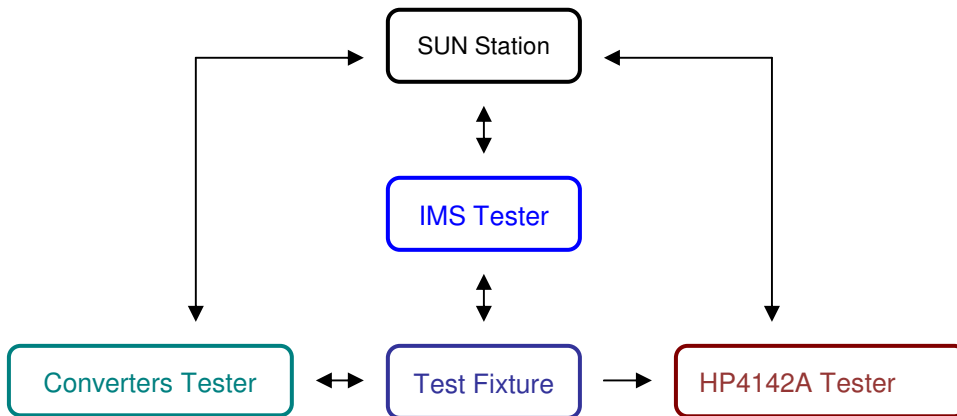


Figure 4: ADC128S102 test program principle

5.2.3 Linearity and Dynamic Test methods description

In this paragraph the test methods used to measure the converter parameters are presented. They have been applied on each channel of the component.

5.2.3.1 Linearity Test – Linear Ramp Histogram test method

A linear ramp histogram test method is used to perform linearity tests as depicted in Figure 5. The stimulus signal should be a very linear ramp waveform. It must swing slightly larger than the ADC input range, otherwise the linearity cannot be tested correctly. Its slope must be slow enough for the ADC under test to generate multiple times every code. Since histogram method is a kind of statistical method, each code had better to occur many times, for example at least 10 counts. An image of code occurrence by a ramp is shown in Figure 5. Since the input ramp overloads to the input range of the DUT, code 0 and the full-scale code ($2^n - 1$) occur extremely many times than the rest of the codes. Here n denotes the number of bits.

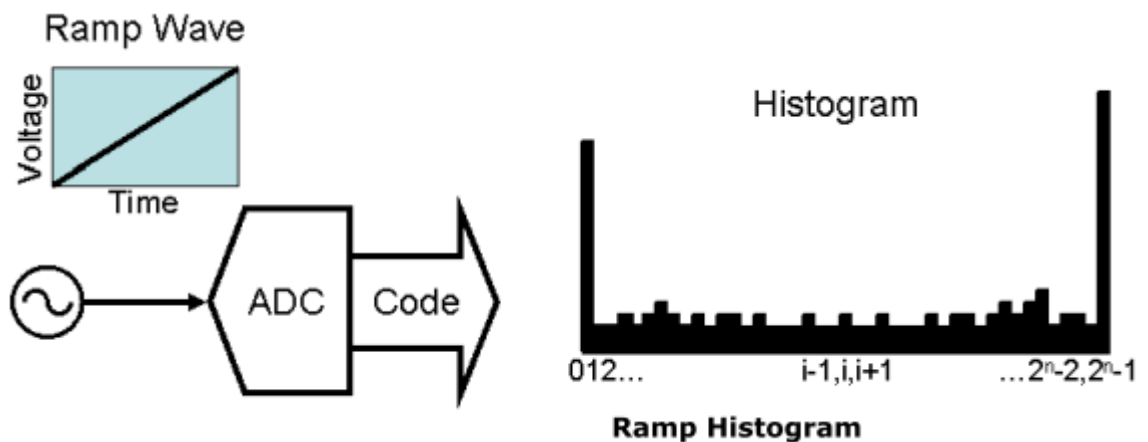


Figure 5: Linear Ramp Histogram test

A histogram by ramp signal looks as Figure 6

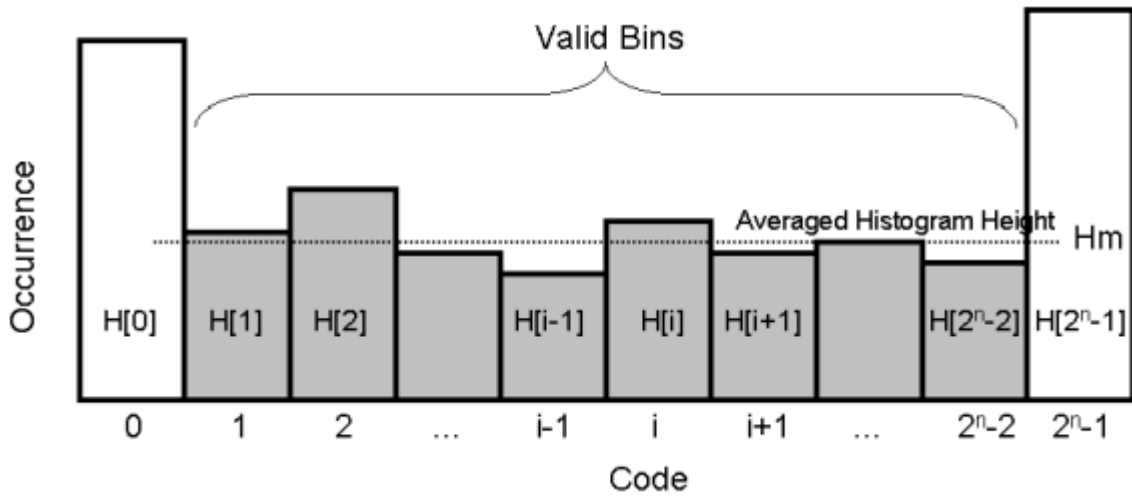


Figure 6: Ramp Histogram

The linearity is calculated as follows. Neglecting code 0 and code $(2^n - 1)$ counts, all the counts from code 1 through $(2^n - 2)$ are summed up. The average height (H_m) of the histogram from 1 through $(2^n - 2)$ is calculated as below.

$$H_m = \frac{\sum_{i=1}^{2^n-2} H[i]}{2^n - 2}$$

(1)

A bin height is proportional to its code size. The average bin height H_m corresponds to the ideal code size so that H_m is the reference of each bin. Differential linearity error $DLE[i]$ is described using Equation (1) as below.

$$DLE[i] = \frac{H[i] - H_m}{H_m} = \frac{H[i]}{H_m} - 1 \text{ [LSB]}$$

(2)
where $i=1,2,3, \dots, 2^n-2$, and $DLE[0]=DLE[2^n-1]=0$ perfunctory.

Integral linearity error $ILE[i]$ is defined as Equation (3) below.

$$ILE[i] = \sum_{k=1}^i DLE[k] \text{ [LSB]}$$

(3)

where $L_m 0 = L 0$, and $ILE[0]=ILE[2^n-1]=0$ perfunctory.

Equation (2) shows that $ILE[i]$ is derived as accumulation of $DLE[i]$. Equations (2) and (3) are the linearity equations by using a ramp stimulus.

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5.2.3.2 Dynamic Tests computation

For the dynamic parameter calculations the captured sinewave must be converted to the frequency domain, using the (fast) fourrier transform.

In some situations it is not possible to capture an integer number of sinewaves. This will lead to spectral leakage. In these situations signal windowing can be useful.

From the spectrum results the following parameters can be calculated:

$$SINAD = \frac{c}{n+d} \quad ENOB = \frac{SINAD - 1.8}{6.02} \quad SNR = \frac{c}{n} \quad THD = \frac{d}{c}$$

Where:

$$c = \sqrt{Re^2_{carrier} + Im^2_{carrier}} \quad d = \sqrt{\sum_{distortion} Re^2_{dist} + Im^2_{dist}}$$

$$n = \sqrt{\sum_{noise} Re^2_{noise} + Im^2_{noise}}$$

Where “c” stands for the amplitude of the carrier bin.

The signal “d” stands for the sum of all distorsion bins and “n” for the sum of all noise bins. The position of the carrier bin is equal to the number of periods of the carrier in the captured window.

5.2.3.2.1 Signal to Noise and Distorsion (SINAD) & Effective Number of Bits (ENOB)

SINAD stands for Signal to Noise and Distorsion. It is the ratio signal (or carrier) and all other spectrum bins. The Effective Number of Bits (ENOB) is calculated from the SINAD.

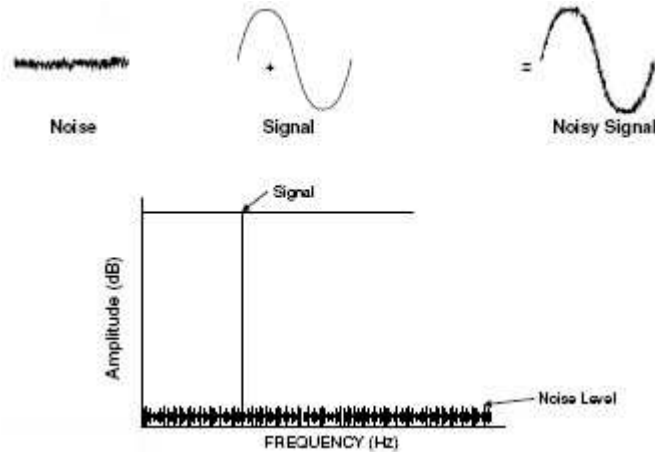
The theoretical maximum signal-to-noise-and-distorsion for a linear ADC with a full-scale sine-wave input derives from quantization noise (or resolution for a DAC) and is defined as $20 * \log(2^{(n-1)} * \sqrt{6})$, or about $6.02n + 1.76$ dB.

With a perfectly linear but noisy system SINAD and SNR are interchangeable.

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5.2.3.2.2 Signal to Noise ratio (SNR)

The Signal to Noise ratio or SNR stands for the ratio signal (or carrier) and all noise bins. Noise bins are all bins not being the carrier, a harmonic or DC.



SNR usually degrades as frequency increases because the accuracy of the comparator(s) within the ADC degrades at higher input slew rates. This loss of accuracy shows up as noise at the ADC output. In an A/D converter, noise comes from four main sources: (1) quantization noise, (2) noise generated by the converter itself, (3) application circuit noise and (4) jitter.

Quantization noise results from the quantization process, the process of assigning an output code to a range of input values.

The amplitude of the quantization noise decreases as resolution increases because the size of an LSB is smaller at higher resolutions, which reduces the maximum quantization error.

The theoretical maximum signal-to-noise ratio for a linear ADC with a full-scale sine-wave input derives from quantization noise (or resolution for a DAC) and is defined as $20 * \log(2^{(n-1)} * \sqrt{6})$, or about $6.02n + 1.76$ dB. With a perfectly linear but noisy system SINAD and SNR are interchangeable.

Application circuit noise is that noise seen by the converter as a result of the way the circuit is designed and laid out. SNR increases with increasing input amplitude until the input gets close to full scale. The SNR increases at the same rate as the input signal until the input signal approaches full scale. That is, increasing the input signal amplitude by 1 dB will cause a 1 dB increase in SNR.

This is because the step size becomes a smaller part of the total signal amplitude as the the signal amplitude increases. When the input amplitude starts approaching full scale, however, the rate of increase of SNR vs. input signal decreases. SNR performance decreases at higher frequencies because the effects of jitter get worse.

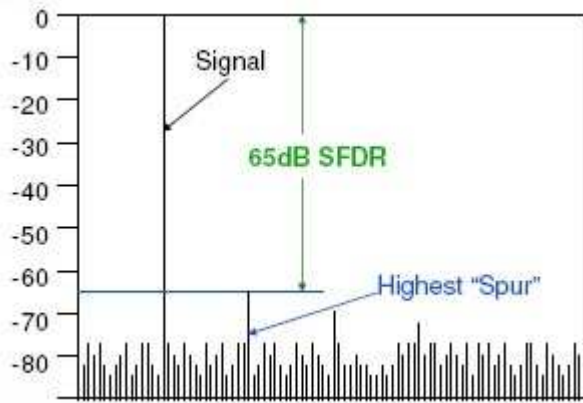
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5.2.3.2.3 Total Harmonic Distorsion (THD)

The Total Harmonic Distorsion or THD is the ratio distortion bins and signal (or carrier). Harmonics are multiples of the carrier.

5.2.3.2.4 Spurious free dynamic range (SFDR)

The spurious free dynamic range is the difference in dB between the signal and the any other signal (spurious) in the spectrum with the highest peak.



5.2.3.2.5 Peak Distorsion

The peak distorsion is the highest distorsion bin.

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Electrical parameters test conditions and limits used for performing this test are given in the following tables.

PARAMETERS	SYMBOLS	TEST CONDITIONS	MIN	MAX	UNITS
		f _{sclk} =16MHz, f _{sample} =1MSPS, V _A =V _D =3V			
Integral Non linearity	INL_3V+_INX	Note 1	-1	1.1	LSB
Integral Non linearity	INL_3V-_INX	Note 1	-1	1.1	LSB
Differential Non linearity	DNL_3V+_INX	Note 1	-0.7	0.9	LSB
Differential Non linearity	DNL-_3V_INX	Note 1	-0.7	0.9	LSB
Offset Error	Voff_3V_INX	Note 1	-2.3	2.3	LSB
Full Scale Error	FSE_3V_INX	Note 1	-2	2	LSB
Signal to noise ratio	SNR_3V_INX	f _{IN} =40.2kHz, -0.02dBFS Note 1	69		dB
Signal to noise + distortion	SINAD_3V_INX	f _{IN} =40.2kHz, -0.02dBFS Note 1	68		dB
Total Harmonic Distorsion	THD_3V_INX	f _{IN} =40.2kHz, -0.02dBFS Note 1		-74	dB
Peak Harmonic or spurious noise	SFDR_3V_INX	f _{IN} =40.2kHz, -0.02dBFS Note 1	75		dB
Effective Number of bit	ENOB_3V_INX	f _{IN} =40.2kHz, -0.02dBFS Note 1	11.1		bits
Input Leakage Current Low	IIL_3V	V _{in} =0V	-1.0E-6	1.0E-6	A
Input Leakage Current High	IIH_3V	V _{in} =3V	-1.0E-6	1.0E-6	A
Input Leakage Current Low	Ileak_INX_3V	V _{IN_X} = 3V Note 1	-1.0E-6	1.0E-6	A
Output Low Voltage	VOL_3V	I _{sink} =1mA		0.4	V
Output High Voltage	VOH_3V	I _{source} =200μA	2.5		V
Input Low /High Voltage	VIL/VIH_3V	GO NOGO Test, VIL=0.8V, VIH=2.1V			P/F
Ouptut Leakage Current Z	IOZL_3V		-10.0E-6	10.0E-6	A
Ouptut Leakage Current Z	IOZH_3V		-10.0E-6	10.0E-6	A
Total supply Current Normal	IA_ID_NORM_3V	f _{Sample} =1MSPS, f _{IN} =40kHz VIL=0V VIH=3V		1.5E-3	A
Total supply Current Shutdown	IA_ID_IDLE_3V	f _{SCLK} =0kSPS		30.0E-6	A
Power Consumption Normal	PC_NORM_3V	f _{Sample} =1MSPS, f _{IN} =40kHz		4.5E-3	W
Power Consumption Shutdown	PC_IDLE_3V	f _{SCLK} =0kSPS		90.0E-6	W

Note 1: these measurements are done on each channel: X suffix indicates channel number => INX with X= 0 to 7

Table 1: Electrical parameters measured with 3V power supply

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PARAMETERS	SYMBOLS	TEST CONDITIONS	MIN	MAX	UNITS
		fsc1k=16MHz, fsample=1MSPS, VA=VD=5V			
Integral Non linearity	INL+_5V_INX	Note 2	-1.25	1.4	LSB
Integral Non linearity	INL-_5V_INX	Note 2	-1.25	1.4	LSB
Differential Non linearity	DNL+_5V_INX	Note 2	-0.9	1.5	LSB
Differential Non linearity	DNL-_5V_INX	Note 2	-0.9	1.5	LSB
Offset Error	Voff_5V_INX	Note 2	-2.3	2.3	LSB
Full Scale Error	FSE_5V_INX	Note 2	-2	2	LSB
Signal to noise ratio	SNR_5V_INX	fIN=40.2kHz, -0.02dBFS Note 2	68.5		dB
Signal to noise + distorsion	SINAD_5V_INX	fIN=40.2kHz, -0.02dBFS Note 2	68		dB
Total Harmonic Distorsion	THD_5V_INX	fIN=40.2kHz, -0.02dBFS Note 2		-74	dB
Peak Harmonic or spurious noise	SFDR_5V_INX	fIN=40.2kHz, -0.02dBFS Note 2	75		dB
Effective Number of bit	ENOB_5V_INX	fIN=40.2kHz, -0.02dBFS Note 2	11.1		bits
Input Leakage Current Low	IIL_5V	Vin=0V	-1.0E-6	1.0E-6	A
Input Leakage Current High	IIH_5V	Vin=5V	-1.0E-6	1.0E-6	A
Input Leakage Current Low	Ileak_INX_5V	VIN_X= 5V Note 2	-1.0E-6	1.0E-6	A
Output Low Voltage	VOL_5V	Isink=1mA		0.4	V
Output High Voltage	VOH_5V	Isource=200µA	4.5		V
Input Low /High Voltage	VIL/VIH_5V	GO NOGO Test, VIL=0.8V, VIH=2.4V			P/F
Ouptut Leakage Current Z	IOZL_5V		-10.0E-6	10.0E-6	A
Ouptut Leakage Current Z	IOZH_5V		-10.0E-6	10.0E-6	A
Total Sypply Current Normal	IA_ID_NORM_5V	fSample=1MSPS, fIN=40kHz, VIL=0V VIH=3.3V		3.1E-3	A
Total supply Current Shutdown	IA_ID_IDLE_5V	fSCLK=0kSPS		100.0E-6	A
Power Consumption Normal	PC_NORM_5V	fSample=1MSPS, fIN=40kHz		15.5E-3	W
Power Consumption Shutdown	PC_IDLE_5V	fSCLK=0kSPS		500.0E-6	W

Note 2: these measurements are done on each channel: X suffix indicates channel number => INX with X= 0 to 7

Table 2: Electrical parameters measured with 5V power supply

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6 Conclusion

A Total Ionizing Dose evaluation test was carried out by Hirex Engineering under ESTEC contract on the National Semiconductor ADC128S102 Radiation Hardened 12-Bit A/D Converter 8-channel in SOIC-16 package.

10 samples plus one control sample were used during testing. They were exposed to radiation using a dose rate of 310 rad(Si)/hour at room temperature.

A summary of the failed parameters is provided in the following table. The behavior of each parameter is recorded for both biased ON and biased OFF samples.

Parameters not listed remained within specification limits all along testing.

Detail test results are presented in the following section.

It should be noted that failed parameters occurred on 2 biased ON samples (SN4 and SN5).

Parameters	Failure Level between :		Annealing Recovery [Note 1]					Comments
			NA	No	Partial	Complete	Rebound	
VA = VD = 3V								
DNL+ 3VIN0	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
DNL+ 3VIN3	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
DNL+ 3VIN5	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
DNL+ 3VIN6	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
DNL+ 3VIN7	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
IOZH 3V DOUT	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
IA ID IDLE 3V	ON samples	27.9 & 49.5 kRad(Si)			X			
	OFF samples	No Failure	X					
PC IDLE 3V	ON samples	27.9 & 49.5 kRad(Si)			X			
	OFF samples	No Failure	X					
VA = VD = 5V								
IOZH 5V DOUT	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
IA ID NORM 5V	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
IA ID IDLE 5V	ON samples	27.9 & 49.5 kRad(Si)				X		
	OFF samples	No Failure	X					
PC NORM 5V	ON samples	49.5 & 102.6 kRad(Si)				X		
	OFF samples	No Failure	X					
PC IDLE 5V	ON samples	27.9 & 49.5 kRad(Si)				X		
	OFF samples	No Failure	X					

[Note 1]: **NA** = Not applicable, **No**: means no sample has recovered, **Partial**: means at least one sample has recovered, **Complete**: means all samples have recovered, **Rebound**: means rebound has been observed on at least one sample.

Table 3 : Summary of parameters failure levels

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7 Test Results

Test results including tables and graphics are provided in this section for each measured parameter.

Failed values (if any) with respect to specified limits are highlighted in bold red font in the tables.

For each parameter a drift calculation table is provided that computes the drift between a given exposure step with respect to initial readings:

$$\Delta(\text{Parameter value}) = (\text{Parameter value}_{\text{POSTRAD}}) - (\text{Parameter value}_{\text{PRERAD}})$$

Parameter : Integral Non linearity : INL+_3VIN0

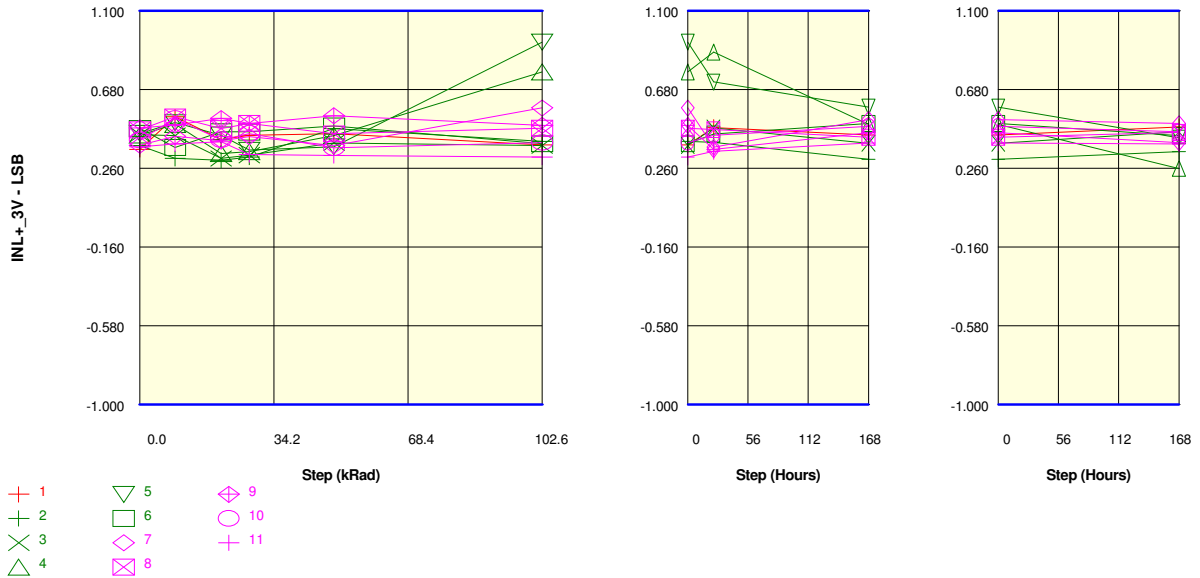
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.361	0.535	0.415	0.437	0.446	0.385	0.477	0.438	0.480
ON samples									
2	0.381	0.313	0.303	0.320	0.472	0.404	0.398	0.308	0.349
3	0.440	0.434	0.313	0.330	0.396	0.381	0.475	0.394	0.455
4	0.437	0.495	0.339	0.349	0.434	0.774	0.880	0.494	0.259
5	0.446	0.504	0.437	0.357	0.375	0.933	0.720	0.587	0.422
6	0.473	0.371	0.455	0.454	0.486	0.391	0.443	0.499	0.434
Statistics									
Min	0.381	0.313	0.303	0.320	0.375	0.381	0.398	0.308	0.259
Max	0.473	0.504	0.455	0.454	0.486	0.933	0.880	0.587	0.455
Average	0.435	0.423	0.369	0.362	0.433	0.577	0.583	0.456	0.384
Sigma	0.030	0.073	0.064	0.048	0.043	0.232	0.186	0.096	0.072

Drift Calculation

INL+_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-68.0E-03	-78.0E-03	-61.0E-03	91.0E-03	23.0E-03	17.0E-03	-73.0E-03	-32.0E-03
3	-	-6.0E-03	-127.0E-03	-110.0E-03	-44.0E-03	-59.0E-03	35.0E-03	-46.0E-03	15.0E-03
4	-	58.0E-03	-98.0E-03	-88.0E-03	-3.0E-03	337.0E-03	443.0E-03	57.0E-03	-178.0E-03
5	-	58.0E-03	-9.0E-03	-89.0E-03	-71.0E-03	487.0E-03	274.0E-03	141.0E-03	-24.0E-03
6	-	-102.0E-03	-18.0E-03	-19.0E-03	13.0E-03	-82.0E-03	-30.0E-03	26.0E-03	-39.0E-03
Average	-	-12.0E-03	-66.0E-03	-73.4E-03	-2.8E-03	141.2E-03	147.8E-03	21.0E-03	-51.6E-03
Sigma	-	64.9E-03	45.7E-03	31.3E-03	55.5E-03	228.8E-03	181.4E-03	76.2E-03	65.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

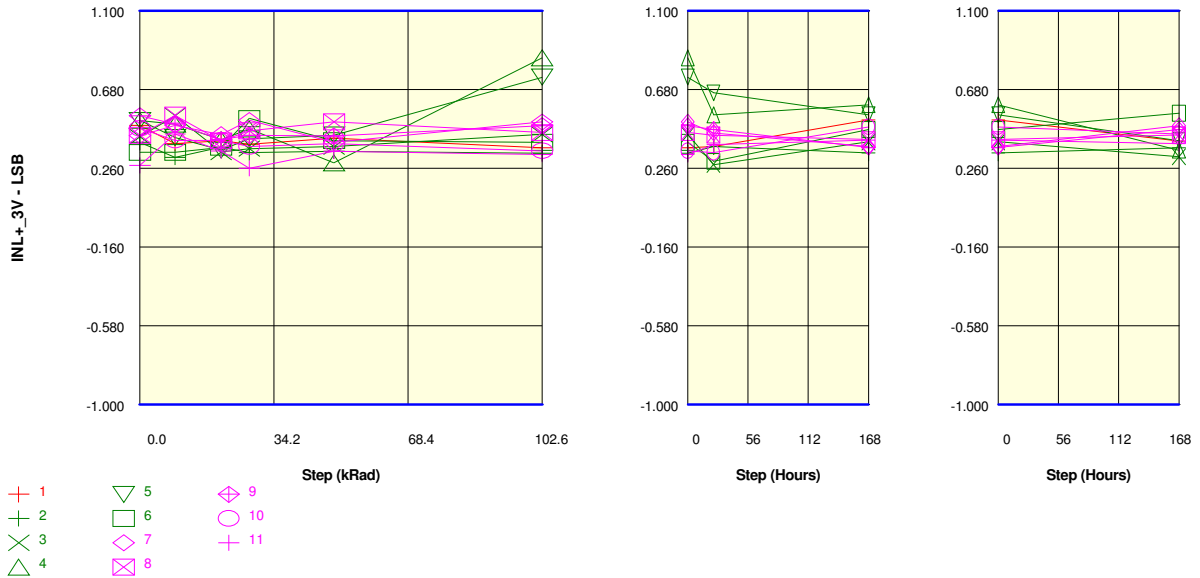
INL+ 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.361	0.535	0.415	0.437	0.446	0.385	0.477	0.438	0.480
OFF samples									
7	0.383	0.431	0.408	0.429	0.382	0.582	0.373	0.521	0.498
8	0.465	0.535	0.472	0.500	0.444	0.474	0.466	0.426	0.452
9	0.475	0.491	0.526	0.499	0.540	0.489	0.360	0.450	0.397
10	0.411	0.525	0.412	0.446	0.369	0.397	0.436	0.484	0.454
11	0.375	0.390	0.402	0.333	0.329	0.320	0.351	0.396	0.390
Statistics									
Min	0.375	0.390	0.402	0.333	0.329	0.320	0.351	0.396	0.390
Max	0.475	0.535	0.526	0.500	0.540	0.582	0.466	0.521	0.498
Average	0.422	0.474	0.444	0.441	0.413	0.452	0.397	0.455	0.438
Sigma	0.041	0.056	0.048	0.061	0.074	0.089	0.045	0.044	0.040

Drift Calculation

INL+ 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	48.0E-03	25.0E-03	46.0E-03	-1.0E-03	199.0E-03	-10.0E-03	138.0E-03	115.0E-03
8	-	70.0E-03	7.0E-03	35.0E-03	-21.0E-03	9.0E-03	1.0E-03	-39.0E-03	-13.0E-03
9	-	16.0E-03	51.0E-03	24.0E-03	65.0E-03	14.0E-03	-115.0E-03	-25.0E-03	-78.0E-03
10	-	114.0E-03	1.0E-03	35.0E-03	-42.0E-03	-14.0E-03	25.0E-03	73.0E-03	43.0E-03
11	-	15.0E-03	27.0E-03	-42.0E-03	-46.0E-03	-55.0E-03	-24.0E-03	21.0E-03	15.0E-03
Average	-	52.6E-03	22.2E-03	19.6E-03	-9.0E-03	30.6E-03	-24.6E-03	33.6E-03	16.4E-03
Sigma	-	37.0E-03	17.6E-03	31.6E-03	40.4E-03	87.7E-03	48.0E-03	65.3E-03	63.6E-03

Parameter : Integral Non linearity : INL+_3VIN1
 Test conditions : INX => X= 0 to 7

Unit : LSB
 Spec Limit Min : -1.000
 Spec Limit Max : 1.100
 Spec limits are represented in bold lines on the graphic.



Measurements

INL+ _3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.489	0.393	0.407	0.389	0.420	0.370	0.376	0.518	0.406
ON samples									
2	0.398	0.319	0.373	0.344	0.352	0.341	0.376	0.342	0.370
3	0.428	0.541	0.347	0.365	0.376	0.441	0.280	0.401	0.322
4	0.515	0.496	0.412	0.470	0.289	0.849	0.545	0.599	0.356
5	0.516	0.424	0.357	0.417	0.437	0.746	0.663	0.546	0.408
6	0.345	0.345	0.372	0.526	0.408	0.399	0.297	0.467	0.554
Statistics									
Min	0.345	0.319	0.347	0.344	0.289	0.341	0.280	0.342	0.322
Max	0.516	0.541	0.412	0.526	0.437	0.849	0.663	0.599	0.554
Average	0.440	0.425	0.372	0.424	0.372	0.555	0.432	0.471	0.402
Sigma	0.067	0.085	0.022	0.067	0.051	0.203	0.149	0.093	0.081

Drift Calculation

INL+ _3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-79.0E-03	-25.0E-03	-54.0E-03	-46.0E-03	-57.0E-03	-22.0E-03	-56.0E-03	-28.0E-03
3	-	113.0E-03	-81.0E-03	-63.0E-03	-52.0E-03	13.0E-03	-148.0E-03	-27.0E-03	-106.0E-03
4	-	-19.0E-03	-103.0E-03	-45.0E-03	-226.0E-03	334.0E-03	30.0E-03	84.0E-03	-159.0E-03
5	-	-92.0E-03	-159.0E-03	-99.0E-03	-79.0E-03	230.0E-03	147.0E-03	30.0E-03	-108.0E-03
6	-	0.0E+00	27.0E-03	181.0E-03	63.0E-03	54.0E-03	-48.0E-03	122.0E-03	209.0E-03
Average	-	-15.4E-03	-68.2E-03	-16.0E-03	-68.0E-03	114.8E-03	-8.2E-03	30.6E-03	-38.4E-03
Sigma	-	73.0E-03	64.1E-03	100.2E-03	92.7E-03	144.8E-03	96.8E-03	66.4E-03	130.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.489	0.393	0.407	0.389	0.420	0.370	0.376	0.518	0.406
OFF samples									
7	0.435	0.490	0.439	0.516	0.399	0.507	0.449	0.376	0.487
8	0.436	0.543	0.406	0.460	0.508	0.451	0.437	0.413	0.438
9	0.540	0.495	0.413	0.436	0.433	0.488	0.467	0.372	0.466
10	0.473	0.409	0.409	0.376	0.391	0.353	0.344	0.481	0.442
11	0.276	0.442	0.353	0.260	0.352	0.334	0.387	0.411	0.391
Statistics									
Min	0.276	0.409	0.353	0.260	0.352	0.334	0.344	0.372	0.391
Max	0.540	0.543	0.439	0.516	0.508	0.507	0.467	0.481	0.487
Average	0.432	0.476	0.404	0.410	0.417	0.427	0.417	0.411	0.445
Sigma	0.087	0.046	0.028	0.087	0.052	0.070	0.045	0.039	0.032

Drift Calculation

INL+_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	55.0E-03	4.0E-03	81.0E-03	-36.0E-03	72.0E-03	14.0E-03	-59.0E-03	52.0E-03
8	-	107.0E-03	-30.0E-03	24.0E-03	72.0E-03	15.0E-03	1.0E-03	-23.0E-03	2.0E-03
9	-	-45.0E-03	-127.0E-03	-104.0E-03	-107.0E-03	-52.0E-03	-73.0E-03	-168.0E-03	-74.0E-03
10	-	-64.0E-03	-64.0E-03	-97.0E-03	-82.0E-03	-120.0E-03	-129.0E-03	8.0E-03	-31.0E-03
11	-	166.0E-03	77.0E-03	-16.0E-03	76.0E-03	58.0E-03	111.0E-03	135.0E-03	115.0E-03
Average	-	43.8E-03	-28.0E-03	-22.4E-03	-15.4E-03	-5.4E-03	-15.2E-03	-21.4E-03	12.8E-03
Sigma	-	87.8E-03	68.0E-03	70.9E-03	76.5E-03	71.7E-03	81.6E-03	98.2E-03	65.7E-03

Parameter : Integral Non linearity : INL+_3VIN2

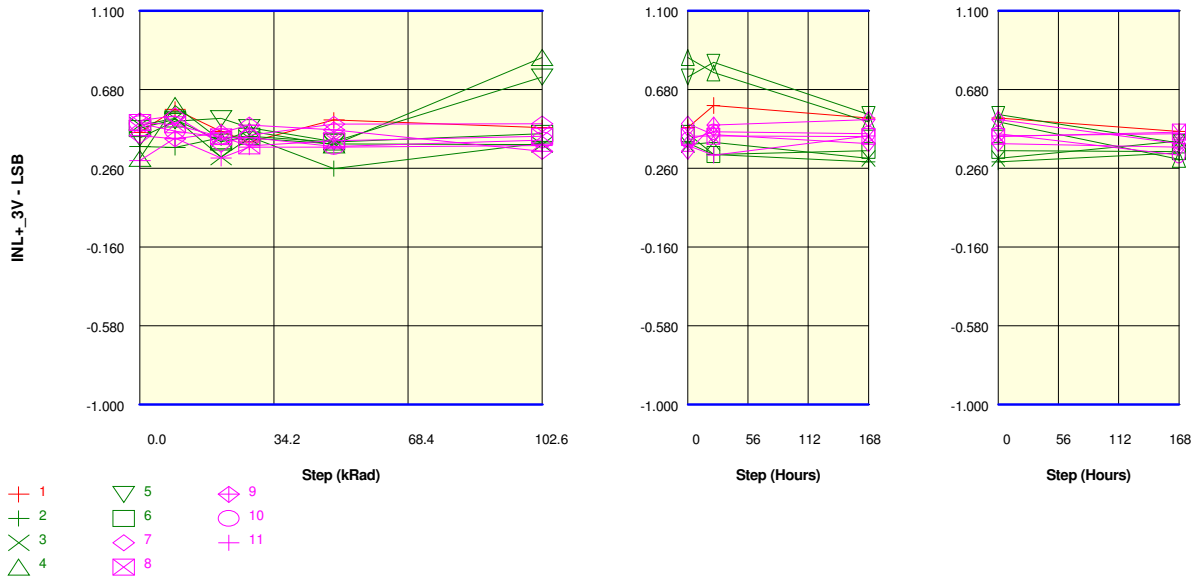
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.452	0.574	0.456	0.400	0.517	0.477	0.595	0.528	0.456
ON samples									
2	0.377	0.371	0.423	0.429	0.258	0.395	0.333	0.294	0.343
3	0.490	0.527	0.320	0.422	0.390	0.386	0.399	0.313	0.405
4	0.313	0.595	0.407	0.458	0.385	0.851	0.770	0.507	0.308
5	0.422	0.512	0.526	0.478	0.401	0.747	0.825	0.547	0.396
6	0.473	0.522	0.401	0.431	0.400	0.446	0.333	0.355	0.349
Statistics									
Min	0.313	0.371	0.320	0.422	0.258	0.386	0.333	0.294	0.308
Max	0.490	0.595	0.526	0.478	0.401	0.851	0.825	0.547	0.405
Average	0.415	0.505	0.415	0.444	0.367	0.565	0.532	0.403	0.360
Sigma	0.065	0.073	0.066	0.021	0.055	0.195	0.219	0.104	0.036

Drift Calculation

INL+_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-6.0E-03	46.0E-03	52.0E-03	-119.0E-03	18.0E-03	-44.0E-03	-83.0E-03	-34.0E-03
3	-	37.0E-03	-170.0E-03	-68.0E-03	-100.0E-03	-104.0E-03	-91.0E-03	-177.0E-03	-85.0E-03
4	-	282.0E-03	94.0E-03	145.0E-03	72.0E-03	538.0E-03	457.0E-03	194.0E-03	-5.0E-03
5	-	90.0E-03	104.0E-03	56.0E-03	-21.0E-03	325.0E-03	403.0E-03	125.0E-03	-26.0E-03
6	-	49.0E-03	-72.0E-03	-42.0E-03	-73.0E-03	-27.0E-03	-140.0E-03	-118.0E-03	-124.0E-03
Average	-	90.4E-03	400.0E-06	28.6E-03	-48.2E-03	150.0E-03	117.0E-03	-11.8E-03	-54.8E-03
Sigma	-	100.6E-03	105.7E-03	76.4E-03	68.6E-03	242.7E-03	257.9E-03	144.7E-03	43.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.452	0.574	0.456	0.400	0.517	0.477	0.595	0.528	0.456
OFF samples									
7	0.514	0.541	0.389	0.437	0.495	0.497	0.440	0.392	0.373
8	0.505	0.492	0.428	0.380	0.407	0.431	0.432	0.430	0.453
9	0.434	0.417	0.450	0.491	0.465	0.351	0.491	0.521	0.392
10	0.498	0.458	0.427	0.424	0.376	0.411	0.454	0.444	0.330
11	0.302	0.421	0.314	0.373	0.374	0.381	0.330	0.433	0.446
Statistics									
Min	0.302	0.417	0.314	0.373	0.374	0.351	0.330	0.392	0.330
Max	0.514	0.541	0.450	0.491	0.495	0.497	0.491	0.521	0.453
Average	0.451	0.466	0.402	0.421	0.423	0.414	0.429	0.444	0.399
Sigma	0.079	0.046	0.048	0.043	0.049	0.049	0.054	0.042	0.046

Drift Calculation

INL+_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	27.0E-03	-125.0E-03	-77.0E-03	-19.0E-03	-17.0E-03	-74.0E-03	-122.0E-03	-141.0E-03
8	-	-13.0E-03	-77.0E-03	-125.0E-03	-98.0E-03	-74.0E-03	-73.0E-03	-75.0E-03	-52.0E-03
9	-	-17.0E-03	16.0E-03	57.0E-03	31.0E-03	-83.0E-03	57.0E-03	87.0E-03	-42.0E-03
10	-	-40.0E-03	-71.0E-03	-74.0E-03	-122.0E-03	-87.0E-03	-44.0E-03	-54.0E-03	-168.0E-03
11	-	119.0E-03	12.0E-03	71.0E-03	72.0E-03	79.0E-03	28.0E-03	131.0E-03	144.0E-03
Average	-	15.2E-03	-49.0E-03	-29.6E-03	-27.2E-03	-36.4E-03	-21.2E-03	-6.6E-03	-51.8E-03
Sigma	-	56.2E-03	54.8E-03	78.7E-03	73.9E-03	63.0E-03	53.9E-03	97.9E-03	109.4E-03

Parameter : Integral Non linearity : INL+_3VIN3

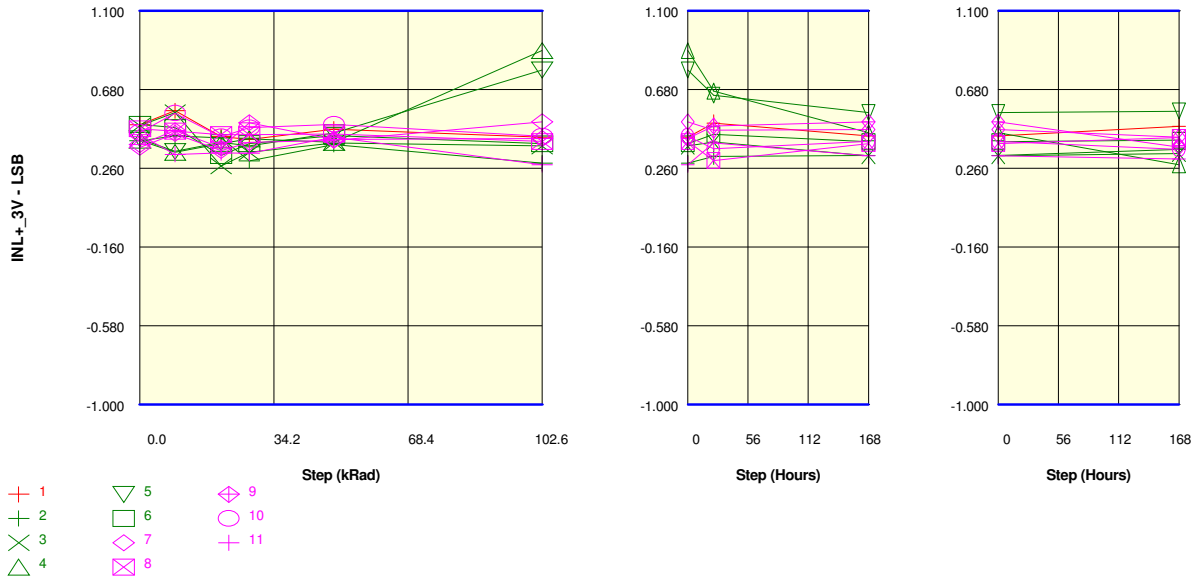
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL+ 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.493	0.567	0.429	0.414	0.469	0.427	0.502	0.432	0.484
ON samples									
2	0.407	0.432	0.422	0.300	0.387	0.288	0.323	0.328	0.360
3	0.488	0.558	0.272	0.345	0.396	0.379	0.400	0.327	0.338
4	0.409	0.345	0.393	0.417	0.398	0.888	0.672	0.450	0.279
5	0.418	0.350	0.398	0.379	0.449	0.784	0.650	0.558	0.565
6	0.494	0.477	0.328	0.392	0.434	0.391	0.441	0.402	0.410
Statistics									
Min	0.407	0.345	0.272	0.300	0.387	0.288	0.323	0.327	0.279
Max	0.494	0.558	0.422	0.417	0.449	0.888	0.672	0.558	0.565
Average	0.443	0.432	0.363	0.367	0.413	0.546	0.497	0.413	0.390
Sigma	0.039	0.080	0.055	0.041	0.024	0.242	0.139	0.086	0.097

Drift Calculation

INL+ 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	25.0E-03	15.0E-03	-107.0E-03	-20.0E-03	-119.0E-03	-84.0E-03	-79.0E-03	-47.0E-03
3	-	70.0E-03	-216.0E-03	-143.0E-03	-92.0E-03	-109.0E-03	-88.0E-03	-161.0E-03	-150.0E-03
4	-	-64.0E-03	-16.0E-03	8.0E-03	-11.0E-03	479.0E-03	263.0E-03	41.0E-03	-130.0E-03
5	-	-68.0E-03	-20.0E-03	-39.0E-03	31.0E-03	366.0E-03	232.0E-03	140.0E-03	147.0E-03
6	-	-17.0E-03	-166.0E-03	-102.0E-03	-60.0E-03	-103.0E-03	-53.0E-03	-92.0E-03	-84.0E-03
Average	-	-10.8E-03	-80.6E-03	-76.6E-03	-30.4E-03	102.8E-03	54.0E-03	-30.2E-03	-52.8E-03
Sigma	-	52.8E-03	92.3E-03	53.9E-03	42.2E-03	263.5E-03	158.8E-03	107.1E-03	106.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.493	0.567	0.429	0.414	0.469	0.427	0.502	0.432	0.484
OFF samples									
7	0.372	0.446	0.355	0.399	0.409	0.508	0.464	0.466	0.427
8	0.471	0.458	0.440	0.439	0.443	0.403	0.302	0.393	0.424
9	0.386	0.461	0.369	0.503	0.413	0.419	0.486	0.507	0.374
10	0.452	0.554	0.428	0.476	0.494	0.431	0.365	0.403	0.362
11	0.439	0.334	0.343	0.341	0.427	0.280	0.396	0.326	0.310
Statistics									
Min	0.372	0.334	0.343	0.341	0.409	0.280	0.302	0.326	0.310
Max	0.471	0.554	0.440	0.503	0.494	0.508	0.486	0.507	0.427
Average	0.424	0.451	0.387	0.432	0.437	0.408	0.403	0.419	0.379
Sigma	0.038	0.070	0.039	0.057	0.031	0.074	0.067	0.063	0.043

Drift Calculation

INL+_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	74.0E-03	-17.0E-03	27.0E-03	37.0E-03	136.0E-03	92.0E-03	94.0E-03	55.0E-03
8	-	-13.0E-03	-31.0E-03	-32.0E-03	-28.0E-03	-68.0E-03	-169.0E-03	-78.0E-03	-47.0E-03
9	-	75.0E-03	-17.0E-03	117.0E-03	27.0E-03	33.0E-03	100.0E-03	121.0E-03	-12.0E-03
10	-	102.0E-03	-24.0E-03	24.0E-03	42.0E-03	-21.0E-03	-87.0E-03	-49.0E-03	-90.0E-03
11	-	-105.0E-03	-96.0E-03	-98.0E-03	-12.0E-03	-159.0E-03	-43.0E-03	-113.0E-03	-129.0E-03
Average	-	26.6E-03	-37.0E-03	7.6E-03	13.2E-03	-15.8E-03	-21.4E-03	-5.0E-03	-44.6E-03
Sigma	-	76.4E-03	30.0E-03	71.2E-03	28.0E-03	98.7E-03	104.1E-03	94.5E-03	63.5E-03

Parameter : Integral Non linearity : INL+_3VIN4

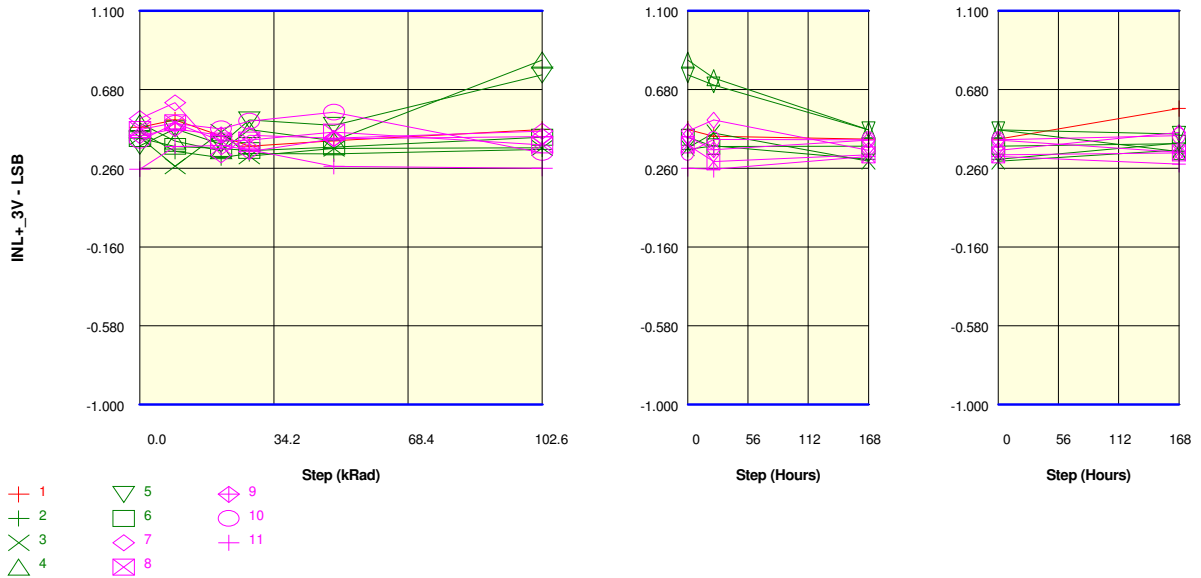
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.479	0.518	0.433	0.378	0.408	0.468	0.431	0.416	0.579
ON samples									
2	0.455	0.350	0.316	0.339	0.337	0.362	0.380	0.307	0.395
3	0.426	0.271	0.453	0.325	0.366	0.369	0.449	0.297	0.357
4	0.502	0.405	0.353	0.467	0.408	0.837	0.743	0.465	0.349
5	0.379	0.471	0.388	0.518	0.489	0.758	0.705	0.465	0.442
6	0.420	0.377	0.366	0.355	0.374	0.426	0.376	0.378	0.393
Statistics									
Min	0.379	0.271	0.316	0.325	0.337	0.362	0.376	0.297	0.349
Max	0.502	0.471	0.453	0.518	0.489	0.837	0.743	0.465	0.442
Average	0.436	0.375	0.375	0.401	0.395	0.550	0.531	0.382	0.387
Sigma	0.041	0.066	0.045	0.077	0.052	0.205	0.160	0.073	0.033

Drift Calculation

INL+_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-105.0E-03	-139.0E-03	-116.0E-03	-118.0E-03	-93.0E-03	-75.0E-03	-148.0E-03	-60.0E-03
3	-	-155.0E-03	27.0E-03	-101.0E-03	-60.0E-03	-57.0E-03	23.0E-03	-129.0E-03	-69.0E-03
4	-	-97.0E-03	-149.0E-03	-35.0E-03	-94.0E-03	335.0E-03	241.0E-03	-37.0E-03	-153.0E-03
5	-	92.0E-03	9.0E-03	139.0E-03	110.0E-03	379.0E-03	326.0E-03	86.0E-03	63.0E-03
6	-	-43.0E-03	-54.0E-03	-65.0E-03	-46.0E-03	6.0E-03	-44.0E-03	-42.0E-03	-27.0E-03
Average	-	-61.6E-03	-61.2E-03	-35.6E-03	-41.6E-03	114.0E-03	94.2E-03	-54.0E-03	-49.2E-03
Sigma	-	84.6E-03	72.8E-03	91.8E-03	79.9E-03	201.4E-03	160.0E-03	83.1E-03	69.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.479	0.518	0.433	0.378	0.408	0.468	0.431	0.416	0.579
OFF samples									
7	0.525	0.610	0.332	0.437	0.420	0.458	0.517	0.356	0.451
8	0.467	0.503	0.406	0.411	0.453	0.385	0.295	0.332	0.342
9	0.435	0.471	0.437	0.349	0.418	0.430	0.359	0.411	0.345
10	0.408	0.499	0.471	0.511	0.559	0.343	0.414	0.412	0.434
11	0.256	0.377	0.381	0.359	0.270	0.260	0.255	0.324	0.283
Statistics									
Min	0.256	0.377	0.332	0.349	0.270	0.260	0.255	0.324	0.283
Max	0.525	0.610	0.471	0.511	0.559	0.458	0.517	0.412	0.451
Average	0.418	0.492	0.405	0.413	0.424	0.375	0.368	0.367	0.371
Sigma	0.090	0.075	0.048	0.059	0.093	0.070	0.092	0.038	0.063

Drift Calculation

INL+_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	85.0E-03	-193.0E-03	-88.0E-03	-105.0E-03	-67.0E-03	-8.0E-03	-169.0E-03	-74.0E-03
8	-	36.0E-03	-61.0E-03	-56.0E-03	-14.0E-03	-82.0E-03	-172.0E-03	-135.0E-03	-125.0E-03
9	-	36.0E-03	2.0E-03	-86.0E-03	-17.0E-03	-5.0E-03	-76.0E-03	-24.0E-03	-90.0E-03
10	-	91.0E-03	63.0E-03	103.0E-03	151.0E-03	-65.0E-03	6.0E-03	4.0E-03	26.0E-03
11	-	121.0E-03	125.0E-03	103.0E-03	14.0E-03	4.0E-03	-1.0E-03	68.0E-03	27.0E-03
Average	-	73.8E-03	-12.8E-03	-4.8E-03	5.8E-03	-43.0E-03	-50.2E-03	-51.2E-03	-47.2E-03
Sigma	-	33.2E-03	109.3E-03	88.7E-03	82.9E-03	35.3E-03	67.6E-03	88.2E-03	62.4E-03

Parameter : Integral Non linearity : INL+_3VIN5

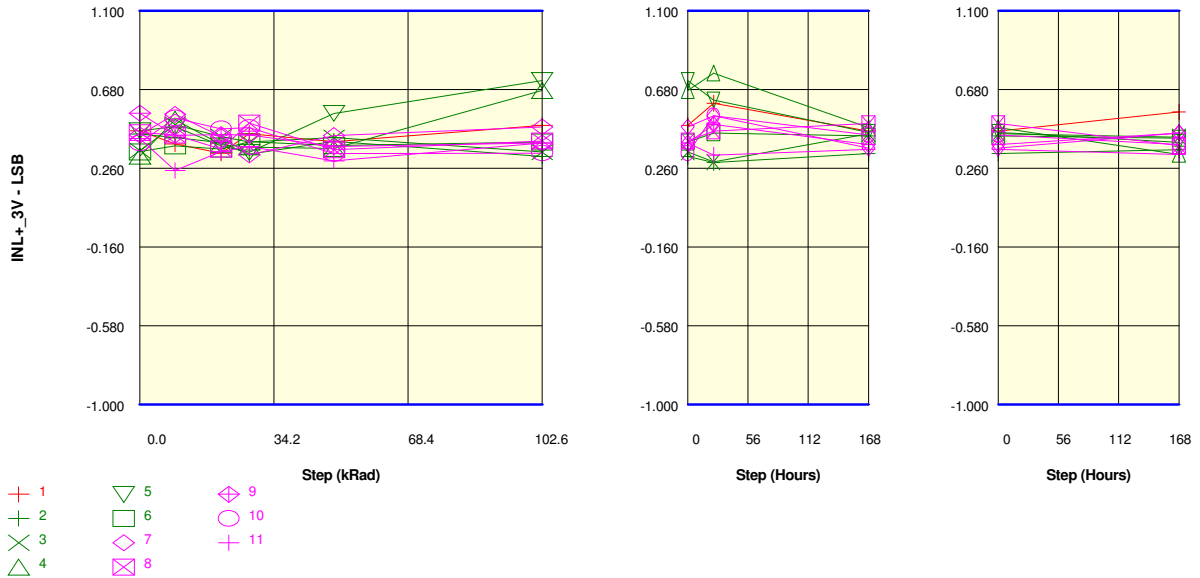
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.460	0.390	0.341	0.446	0.402	0.489	0.607	0.459	0.560
ON samples									
2	0.443	0.425	0.397	0.335	0.404	0.323	0.291	0.340	0.359
3	0.354	0.493	0.429	0.400	0.423	0.347	0.294	0.445	0.427
4	0.325	0.521	0.387	0.374	0.366	0.675	0.768	0.476	0.334
5	0.460	0.482	0.380	0.345	0.553	0.728	0.624	0.452	0.399
6	0.348	0.380	0.363	0.401	0.382	0.400	0.449	0.432	0.421
Statistics									
Min	0.325	0.380	0.363	0.335	0.366	0.323	0.291	0.340	0.334
Max	0.460	0.521	0.429	0.401	0.553	0.728	0.768	0.476	0.427
Average	0.386	0.460	0.391	0.371	0.426	0.495	0.485	0.429	0.388
Sigma	0.055	0.051	0.022	0.027	0.067	0.172	0.187	0.047	0.036

Drift Calculation

INL+_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-18.0E-03	-46.0E-03	-108.0E-03	-39.0E-03	-120.0E-03	-152.0E-03	-103.0E-03	-84.0E-03
3	-	139.0E-03	75.0E-03	46.0E-03	69.0E-03	-7.0E-03	-60.0E-03	91.0E-03	73.0E-03
4	-	196.0E-03	62.0E-03	49.0E-03	41.0E-03	350.0E-03	443.0E-03	151.0E-03	9.0E-03
5	-	22.0E-03	-80.0E-03	-115.0E-03	93.0E-03	268.0E-03	164.0E-03	-8.0E-03	-61.0E-03
6	-	32.0E-03	15.0E-03	53.0E-03	34.0E-03	52.0E-03	101.0E-03	84.0E-03	73.0E-03
Average	-	74.2E-03	5.2E-03	-15.0E-03	39.6E-03	108.6E-03	99.2E-03	43.0E-03	2.0E-03
Sigma	-	80.1E-03	60.1E-03	78.9E-03	44.6E-03	174.6E-03	205.4E-03	89.0E-03	65.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+ 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.460	0.390	0.341	0.446	0.402	0.489	0.607	0.459	0.560
OFF samples									
7	0.438	0.548	0.430	0.332	0.435	0.481	0.541	0.368	0.448
8	0.451	0.438	0.363	0.501	0.359	0.406	0.459	0.498	0.381
9	0.554	0.437	0.439	0.438	0.376	0.395	0.494	0.386	0.449
10	0.395	0.528	0.470	0.477	0.339	0.341	0.541	0.438	0.386
11	0.419	0.248	0.348	0.377	0.300	0.396	0.330	0.362	0.334
Statistics									
Min	0.395	0.248	0.348	0.332	0.300	0.341	0.330	0.362	0.334
Max	0.554	0.548	0.470	0.501	0.435	0.481	0.541	0.498	0.449
Average	0.451	0.440	0.410	0.425	0.362	0.404	0.473	0.410	0.400
Sigma	0.055	0.106	0.047	0.063	0.045	0.045	0.078	0.051	0.044

Drift Calculation

INL+ 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	110.0E-03	-8.0E-03	-106.0E-03	-3.0E-03	43.0E-03	103.0E-03	-70.0E-03	10.0E-03
8	-	-13.0E-03	-88.0E-03	50.0E-03	-92.0E-03	-45.0E-03	8.0E-03	47.0E-03	-70.0E-03
9	-	-117.0E-03	-115.0E-03	-116.0E-03	-178.0E-03	-159.0E-03	-60.0E-03	-168.0E-03	-105.0E-03
10	-	133.0E-03	75.0E-03	82.0E-03	-56.0E-03	-54.0E-03	146.0E-03	43.0E-03	-9.0E-03
11	-	-171.0E-03	-71.0E-03	-42.0E-03	-119.0E-03	-23.0E-03	-89.0E-03	-57.0E-03	-85.0E-03
Average	-	-11.6E-03	-41.4E-03	-26.4E-03	-89.6E-03	-47.6E-03	21.6E-03	-41.0E-03	-51.8E-03
Sigma	-	120.2E-03	68.0E-03	80.2E-03	58.8E-03	65.2E-03	90.7E-03	80.0E-03	44.5E-03

Parameter : Integral Non linearity : INL+_3VIN6

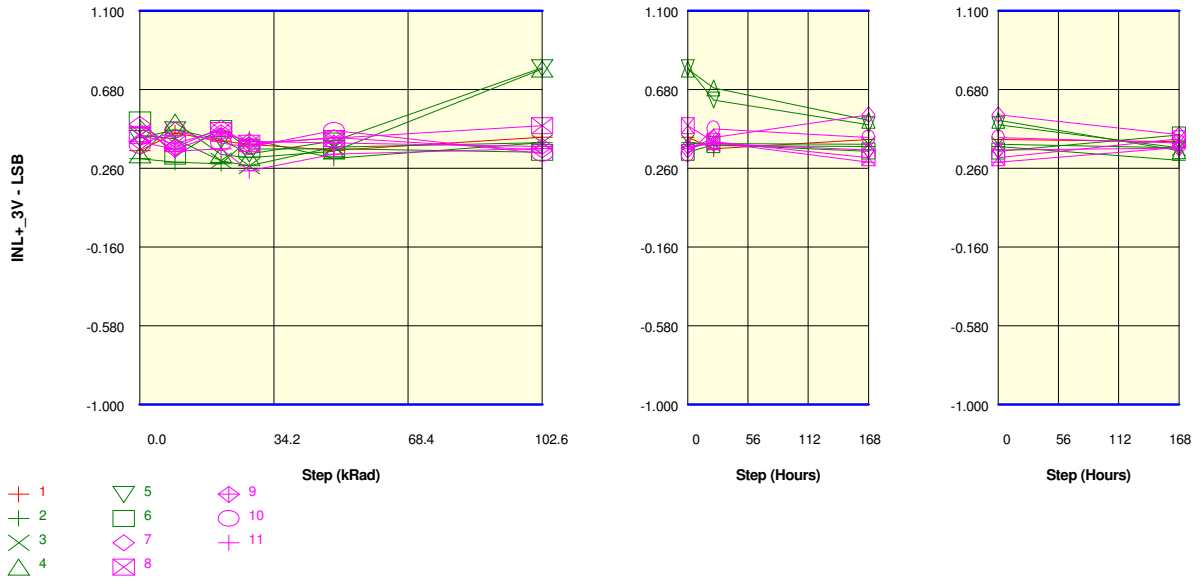
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL+ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.355	0.448	0.405	0.389	0.356	0.426	0.364	0.413	0.402
ON samples									
2	0.312	0.292	0.284	0.416	0.313	0.397	0.382	0.376	0.303
3	0.436	0.418	0.300	0.273	0.373	0.397	0.393	0.388	0.369
4	0.331	0.506	0.333	0.317	0.352	0.789	0.689	0.516	0.354
5	0.420	0.466	0.412	0.337	0.406	0.796	0.624	0.492	0.369
6	0.518	0.325	0.473	0.363	0.364	0.345	0.386	0.352	0.438
Statistics									
Min	0.312	0.292	0.284	0.273	0.313	0.345	0.382	0.352	0.303
Max	0.518	0.506	0.473	0.416	0.406	0.796	0.689	0.516	0.438
Average	0.403	0.401	0.360	0.341	0.362	0.545	0.495	0.425	0.367
Sigma	0.075	0.081	0.072	0.048	0.030	0.203	0.134	0.066	0.043

Drift Calculation

INL+ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-20.0E-03	-28.0E-03	104.0E-03	1.0E-03	85.0E-03	70.0E-03	64.0E-03	-9.0E-03
3	-	-18.0E-03	-136.0E-03	-163.0E-03	-63.0E-03	-39.0E-03	-43.0E-03	-48.0E-03	-67.0E-03
4	-	175.0E-03	2.0E-03	-14.0E-03	21.0E-03	458.0E-03	358.0E-03	185.0E-03	23.0E-03
5	-	46.0E-03	-8.0E-03	-83.0E-03	-14.0E-03	376.0E-03	204.0E-03	72.0E-03	-51.0E-03
6	-	-193.0E-03	-45.0E-03	-155.0E-03	-154.0E-03	-173.0E-03	-132.0E-03	-166.0E-03	-80.0E-03
Average	-	-2.0E-03	-43.0E-03	-62.2E-03	-41.8E-03	141.4E-03	91.4E-03	21.4E-03	-36.8E-03
Sigma	-	118.9E-03	49.3E-03	99.1E-03	62.6E-03	240.8E-03	174.5E-03	119.2E-03	38.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.355	0.448	0.405	0.389	0.356	0.426	0.364	0.413	0.402
OFF samples									
7	0.495	0.372	0.475	0.387	0.425	0.356	0.425	0.546	0.440
8	0.435	0.392	0.463	0.394	0.420	0.488	0.402	0.317	0.417
9	0.402	0.361	0.450	0.404	0.395	0.377	0.391	0.358	0.367
10	0.381	0.464	0.395	0.374	0.462	0.338	0.470	0.423	0.396
11	0.482	0.352	0.364	0.247	0.335	0.366	0.398	0.292	0.371
Statistics									
Min	0.381	0.352	0.364	0.247	0.335	0.338	0.391	0.292	0.367
Max	0.495	0.464	0.475	0.404	0.462	0.488	0.470	0.546	0.440
Average	0.439	0.388	0.429	0.361	0.407	0.385	0.417	0.387	0.398
Sigma	0.044	0.040	0.043	0.058	0.042	0.053	0.029	0.091	0.028

Drift Calculation

INL+_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-123.0E-03	-20.0E-03	-108.0E-03	-70.0E-03	-139.0E-03	-70.0E-03	51.0E-03	-55.0E-03
8	-	-43.0E-03	28.0E-03	-41.0E-03	-15.0E-03	53.0E-03	-33.0E-03	-118.0E-03	-18.0E-03
9	-	-41.0E-03	48.0E-03	2.0E-03	-7.0E-03	-25.0E-03	-11.0E-03	-44.0E-03	-35.0E-03
10	-	83.0E-03	14.0E-03	-7.0E-03	81.0E-03	-43.0E-03	89.0E-03	42.0E-03	15.0E-03
11	-	-130.0E-03	-118.0E-03	-235.0E-03	-147.0E-03	-116.0E-03	-84.0E-03	-190.0E-03	-111.0E-03
Average	-	-50.8E-03	-9.6E-03	-77.8E-03	-31.6E-03	-54.0E-03	-21.8E-03	-51.8E-03	-40.8E-03
Sigma	-	76.9E-03	58.6E-03	87.6E-03	75.3E-03	68.5E-03	61.2E-03	92.6E-03	41.9E-03

Parameter : Integral Non linearity : INL+_3VIN7

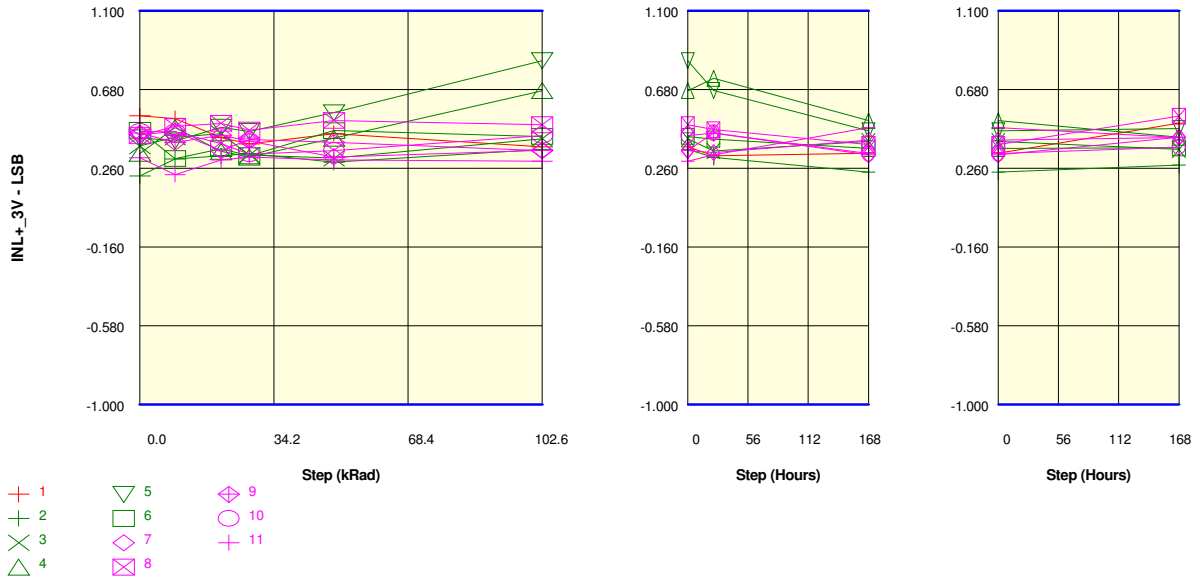
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.540	0.525	0.424	0.390	0.446	0.375	0.326	0.341	0.501
ON samples									
2	0.219	0.310	0.326	0.338	0.292	0.361	0.319	0.240	0.277
3	0.379	0.426	0.446	0.331	0.314	0.418	0.353	0.404	0.360
4	0.340	0.478	0.351	0.320	0.421	0.674	0.740	0.514	0.426
5	0.423	0.406	0.479	0.456	0.557	0.834	0.675	0.460	0.472
6	0.462	0.312	0.365	0.327	0.461	0.430	0.416	0.366	0.369
Statistics									
Min	0.219	0.310	0.326	0.320	0.292	0.361	0.319	0.240	0.277
Max	0.462	0.478	0.479	0.456	0.557	0.834	0.740	0.514	0.472
Average	0.365	0.386	0.393	0.354	0.409	0.543	0.501	0.397	0.381
Sigma	0.084	0.066	0.059	0.051	0.097	0.181	0.173	0.093	0.066

Drift Calculation

INL+_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	91.0E-03	107.0E-03	119.0E-03	73.0E-03	142.0E-03	100.0E-03	21.0E-03	58.0E-03
3	-	47.0E-03	67.0E-03	-48.0E-03	-65.0E-03	39.0E-03	-26.0E-03	25.0E-03	-19.0E-03
4	-	138.0E-03	11.0E-03	-20.0E-03	81.0E-03	334.0E-03	400.0E-03	174.0E-03	86.0E-03
5	-	-17.0E-03	56.0E-03	33.0E-03	134.0E-03	411.0E-03	252.0E-03	37.0E-03	49.0E-03
6	-	-150.0E-03	-97.0E-03	-135.0E-03	-1.0E-03	-32.0E-03	-46.0E-03	-96.0E-03	-93.0E-03
Average	-	21.8E-03	28.8E-03	-10.2E-03	44.4E-03	178.8E-03	136.0E-03	32.2E-03	16.2E-03
Sigma	-	99.9E-03	69.9E-03	84.4E-03	69.6E-03	169.3E-03	169.6E-03	85.7E-03	64.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.540	0.525	0.424	0.390	0.446	0.375	0.326	0.341	0.501
OFF samples									
7	0.439	0.456	0.354	0.415	0.398	0.354	0.344	0.411	0.424
8	0.434	0.484	0.500	0.464	0.515	0.492	0.466	0.386	0.538
9	0.448	0.398	0.436	0.406	0.321	0.356	0.448	0.332	0.427
10	0.457	0.454	0.393	0.335	0.355	0.435	0.449	0.339	0.373
11	0.316	0.227	0.305	0.321	0.304	0.299	0.332	0.476	0.424
Statistics									
Min	0.316	0.227	0.305	0.321	0.304	0.299	0.332	0.332	0.373
Max	0.457	0.484	0.500	0.464	0.515	0.492	0.466	0.476	0.538
Average	0.419	0.404	0.398	0.388	0.379	0.387	0.408	0.389	0.437
Sigma	0.052	0.093	0.067	0.053	0.075	0.068	0.057	0.053	0.054

Drift Calculation

INL+ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	17.0E-03	-85.0E-03	-24.0E-03	-41.0E-03	-85.0E-03	-95.0E-03	-28.0E-03	-15.0E-03
8	-	50.0E-03	66.0E-03	30.0E-03	81.0E-03	58.0E-03	32.0E-03	-48.0E-03	104.0E-03
9	-	-50.0E-03	-12.0E-03	-42.0E-03	-127.0E-03	-92.0E-03	0.0E+00	-116.0E-03	-21.0E-03
10	-	-3.0E-03	-64.0E-03	-122.0E-03	-102.0E-03	-22.0E-03	-8.0E-03	-118.0E-03	-84.0E-03
11	-	-89.0E-03	-11.0E-03	5.0E-03	-12.0E-03	-17.0E-03	16.0E-03	160.0E-03	108.0E-03
Average	-	-15.0E-03	-21.2E-03	-30.6E-03	-40.2E-03	-31.6E-03	-11.0E-03	-30.0E-03	18.4E-03
Sigma	-	49.2E-03	52.3E-03	51.9E-03	73.3E-03	54.5E-03	44.2E-03	101.6E-03	75.5E-03

Parameter : Integral Non linearity : INL_3VIN0

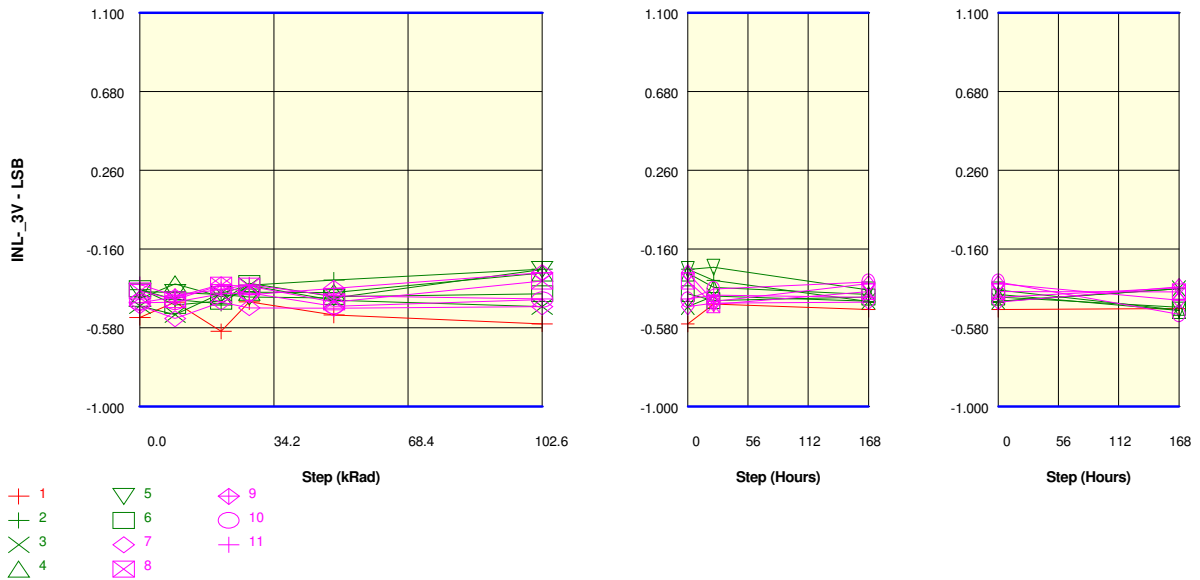
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.525	-0.443	-0.599	-0.441	-0.512	-0.559	-0.453	-0.482	-0.476
ON samples									
2	-0.377	-0.429	-0.451	-0.353	-0.325	-0.268	-0.326	-0.440	-0.372
3	-0.463	-0.510	-0.395	-0.354	-0.432	-0.467	-0.410	-0.438	-0.371
4	-0.423	-0.345	-0.415	-0.390	-0.391	-0.288	-0.365	-0.402	-0.487
5	-0.387	-0.392	-0.402	-0.416	-0.420	-0.269	-0.257	-0.378	-0.485
6	-0.371	-0.459	-0.437	-0.343	-0.413	-0.398	-0.434	-0.416	-0.470
Statistics									
Min	-0.463	-0.510	-0.451	-0.416	-0.432	-0.467	-0.434	-0.440	-0.487
Max	-0.371	-0.345	-0.395	-0.343	-0.325	-0.268	-0.257	-0.378	-0.371
Average	-0.404	-0.427	-0.420	-0.371	-0.396	-0.338	-0.358	-0.415	-0.437
Sigma	0.034	0.056	0.021	0.028	0.038	0.081	0.063	0.023	0.054

Drift Calculation

INL_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-52.0E-03	-74.0E-03	24.0E-03	52.0E-03	109.0E-03	51.0E-03	-63.0E-03	5.0E-03
3	-	-47.0E-03	68.0E-03	109.0E-03	31.0E-03	-4.0E-03	53.0E-03	25.0E-03	92.0E-03
4	-	78.0E-03	8.0E-03	33.0E-03	32.0E-03	135.0E-03	58.0E-03	21.0E-03	-64.0E-03
5	-	-5.0E-03	-15.0E-03	-29.0E-03	-33.0E-03	118.0E-03	130.0E-03	9.0E-03	-98.0E-03
6	-	-88.0E-03	-66.0E-03	28.0E-03	-42.0E-03	-27.0E-03	-63.0E-03	-45.0E-03	-99.0E-03
Average	-	-22.8E-03	-15.8E-03	33.0E-03	8.0E-03	66.2E-03	45.8E-03	-10.6E-03	-32.8E-03
Sigma	-	56.9E-03	52.0E-03	44.1E-03	38.0E-03	67.6E-03	61.9E-03	36.3E-03	73.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.525	-0.443	-0.599	-0.441	-0.512	-0.559	-0.453	-0.482	-0.476
OFF samples									
7	-0.462	-0.531	-0.443	-0.473	-0.475	-0.468	-0.449	-0.442	-0.360
8	-0.383	-0.430	-0.352	-0.358	-0.442	-0.330	-0.456	-0.387	-0.388
9	-0.446	-0.416	-0.350	-0.404	-0.369	-0.285	-0.440	-0.344	-0.433
10	-0.445	-0.442	-0.399	-0.394	-0.464	-0.430	-0.374	-0.336	-0.507
11	-0.349	-0.409	-0.375	-0.351	-0.409	-0.426	-0.405	-0.417	-0.366
Statistics									
Min	-0.462	-0.531	-0.443	-0.473	-0.475	-0.468	-0.456	-0.442	-0.507
Max	-0.349	-0.409	-0.350	-0.351	-0.369	-0.285	-0.374	-0.336	-0.360
Average	-0.417	-0.446	-0.384	-0.396	-0.432	-0.388	-0.425	-0.385	-0.411
Sigma	0.043	0.044	0.035	0.044	0.039	0.069	0.031	0.041	0.055

Drift Calculation

INL- 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-69.0E-03	19.0E-03	-11.0E-03	-13.0E-03	-6.0E-03	13.0E-03	20.0E-03	102.0E-03
8	-	-47.0E-03	31.0E-03	25.0E-03	-59.0E-03	53.0E-03	-73.0E-03	-4.0E-03	-5.0E-03
9	-	30.0E-03	96.0E-03	42.0E-03	77.0E-03	161.0E-03	6.0E-03	102.0E-03	13.0E-03
10	-	3.0E-03	46.0E-03	51.0E-03	-19.0E-03	15.0E-03	71.0E-03	109.0E-03	-62.0E-03
11	-	-60.0E-03	-26.0E-03	-2.0E-03	-60.0E-03	-77.0E-03	-56.0E-03	-68.0E-03	-17.0E-03
Average	-	-28.6E-03	33.2E-03	21.0E-03	-14.8E-03	29.2E-03	-7.8E-03	31.8E-03	6.2E-03
Sigma	-	38.4E-03	39.5E-03	24.1E-03	49.9E-03	78.3E-03	51.8E-03	66.7E-03	53.9E-03

Parameter : Integral Non linearity : INL_3VIN1

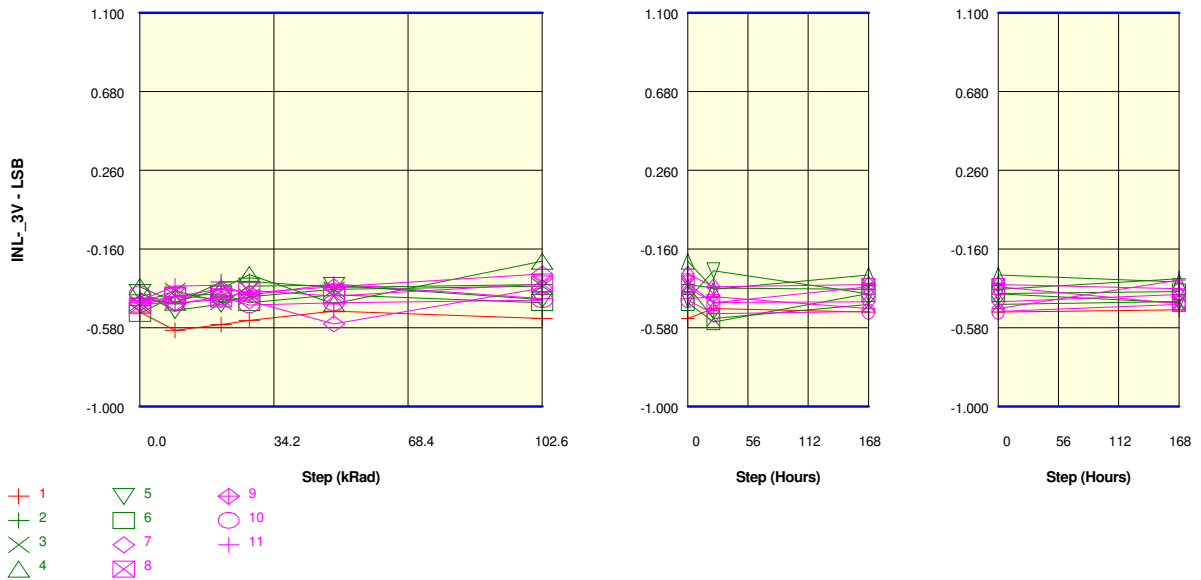
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.496	-0.594	-0.563	-0.539	-0.491	-0.529	-0.477	-0.496	-0.483
ON samples									
2	-0.423	-0.451	-0.336	-0.332	-0.364	-0.348	-0.368	-0.375	-0.319
3	-0.449	-0.383	-0.441	-0.414	-0.375	-0.357	-0.530	-0.455	-0.440
4	-0.361	-0.443	-0.373	-0.296	-0.452	-0.225	-0.375	-0.299	-0.336
5	-0.391	-0.487	-0.453	-0.357	-0.353	-0.430	-0.275	-0.398	-0.445
6	-0.502	-0.408	-0.400	-0.445	-0.404	-0.445	-0.548	-0.397	-0.387
Statistics									
Min	-0.502	-0.487	-0.453	-0.445	-0.452	-0.445	-0.548	-0.455	-0.445
Max	-0.361	-0.383	-0.336	-0.296	-0.353	-0.225	-0.275	-0.299	-0.319
Average	-0.425	-0.434	-0.401	-0.369	-0.390	-0.361	-0.419	-0.385	-0.385
Sigma	0.048	0.036	0.043	0.054	0.036	0.078	0.104	0.050	0.052

Drift Calculation

INL_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-28.0E-03	87.0E-03	91.0E-03	59.0E-03	75.0E-03	55.0E-03	48.0E-03	104.0E-03
3	-	66.0E-03	8.0E-03	35.0E-03	74.0E-03	92.0E-03	-81.0E-03	-6.0E-03	9.0E-03
4	-	-82.0E-03	-12.0E-03	65.0E-03	-91.0E-03	136.0E-03	-14.0E-03	62.0E-03	25.0E-03
5	-	-96.0E-03	-62.0E-03	34.0E-03	38.0E-03	-39.0E-03	116.0E-03	-7.0E-03	-54.0E-03
6	-	94.0E-03	102.0E-03	57.0E-03	98.0E-03	57.0E-03	-46.0E-03	105.0E-03	115.0E-03
Average	-	-9.2E-03	24.6E-03	56.4E-03	35.6E-03	64.2E-03	6.0E-03	40.4E-03	39.8E-03
Sigma	-	76.8E-03	61.6E-03	21.1E-03	66.3E-03	57.9E-03	71.0E-03	42.7E-03	62.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.496	-0.594	-0.563	-0.539	-0.491	-0.529	-0.477	-0.496	-0.483
OFF samples									
7	-0.452	-0.450	-0.427	-0.436	-0.559	-0.367	-0.444	-0.441	-0.403
8	-0.463	-0.410	-0.426	-0.379	-0.411	-0.345	-0.445	-0.360	-0.451
9	-0.447	-0.413	-0.370	-0.394	-0.361	-0.293	-0.360	-0.349	-0.371
10	-0.399	-0.451	-0.416	-0.458	-0.447	-0.432	-0.505	-0.493	-0.454
11	-0.434	-0.358	-0.353	-0.406	-0.345	-0.424	-0.413	-0.478	-0.325
Statistics									
Min	-0.463	-0.451	-0.427	-0.458	-0.559	-0.432	-0.505	-0.493	-0.454
Max	-0.399	-0.358	-0.353	-0.379	-0.345	-0.293	-0.360	-0.349	-0.325
Average	-0.439	-0.416	-0.398	-0.415	-0.425	-0.372	-0.433	-0.424	-0.401
Sigma	0.022	0.034	0.031	0.029	0.076	0.052	0.047	0.059	0.049

Drift Calculation

INL- 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	2.0E-03	25.0E-03	16.0E-03	-107.0E-03	85.0E-03	8.0E-03	11.0E-03	49.0E-03
8	-	53.0E-03	37.0E-03	84.0E-03	52.0E-03	118.0E-03	18.0E-03	103.0E-03	12.0E-03
9	-	34.0E-03	77.0E-03	53.0E-03	86.0E-03	154.0E-03	87.0E-03	98.0E-03	76.0E-03
10	-	-52.0E-03	-17.0E-03	-59.0E-03	-48.0E-03	-33.0E-03	-106.0E-03	-94.0E-03	-55.0E-03
11	-	76.0E-03	81.0E-03	28.0E-03	89.0E-03	10.0E-03	21.0E-03	-44.0E-03	109.0E-03
Average	-	22.6E-03	40.6E-03	24.4E-03	14.4E-03	66.8E-03	5.6E-03	14.8E-03	38.2E-03
Sigma	-	44.5E-03	36.1E-03	47.8E-03	78.4E-03	68.9E-03	62.4E-03	77.5E-03	56.4E-03

Parameter : Integral Non linearity : INL_3VIN2

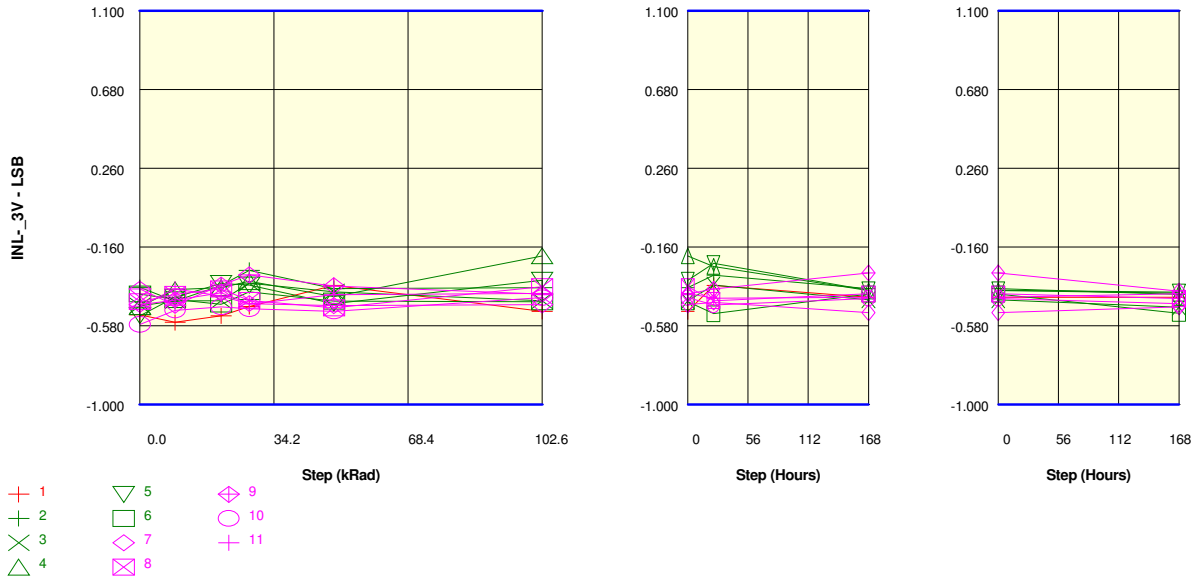
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.100

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.521	-0.562	-0.527	-0.477	-0.365	-0.503	-0.365	-0.427	-0.427
ON samples									
2	-0.375	-0.449	-0.365	-0.284	-0.382	-0.377	-0.310	-0.381	-0.412
3	-0.473	-0.447	-0.446	-0.352	-0.399	-0.446	-0.363	-0.441	-0.480
4	-0.477	-0.387	-0.377	-0.343	-0.424	-0.207	-0.263	-0.393	-0.405
5	-0.526	-0.427	-0.354	-0.363	-0.461	-0.337	-0.247	-0.389	-0.400
6	-0.410	-0.440	-0.464	-0.398	-0.448	-0.452	-0.515	-0.411	-0.513
Statistics									
Min	-0.526	-0.449	-0.464	-0.398	-0.461	-0.452	-0.515	-0.441	-0.513
Max	-0.375	-0.387	-0.354	-0.284	-0.382	-0.207	-0.247	-0.381	-0.400
Average	-0.452	-0.430	-0.401	-0.348	-0.423	-0.364	-0.340	-0.403	-0.442
Sigma	0.053	0.023	0.045	0.037	0.029	0.089	0.097	0.021	0.046

Drift Calculation

INL_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-74.0E-03	10.0E-03	91.0E-03	-7.0E-03	-2.0E-03	65.0E-03	-6.0E-03	-37.0E-03
3	-	26.0E-03	27.0E-03	121.0E-03	74.0E-03	27.0E-03	110.0E-03	32.0E-03	-7.0E-03
4	-	90.0E-03	100.0E-03	134.0E-03	53.0E-03	270.0E-03	214.0E-03	84.0E-03	72.0E-03
5	-	99.0E-03	172.0E-03	163.0E-03	65.0E-03	189.0E-03	279.0E-03	137.0E-03	126.0E-03
6	-	-30.0E-03	-54.0E-03	12.0E-03	-38.0E-03	-42.0E-03	-105.0E-03	-1.0E-03	-103.0E-03
Average	-	22.2E-03	51.0E-03	104.2E-03	29.4E-03	88.4E-03	112.6E-03	49.2E-03	10.2E-03
Sigma	-	67.1E-03	77.9E-03	51.6E-03	44.0E-03	120.0E-03	132.4E-03	54.4E-03	80.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.521	-0.562	-0.527	-0.477	-0.365	-0.503	-0.365	-0.427	-0.427
OFF samples									
7	-0.466	-0.442	-0.404	-0.461	-0.472	-0.468	-0.454	-0.510	-0.479
8	-0.451	-0.412	-0.383	-0.444	-0.484	-0.371	-0.445	-0.409	-0.434
9	-0.384	-0.470	-0.363	-0.308	-0.367	-0.411	-0.384	-0.298	-0.395
10	-0.573	-0.497	-0.479	-0.489	-0.502	-0.430	-0.469	-0.434	-0.462
11	-0.475	-0.384	-0.420	-0.463	-0.413	-0.407	-0.432	-0.427	-0.408
Statistics									
Min	-0.573	-0.497	-0.479	-0.489	-0.502	-0.468	-0.469	-0.510	-0.479
Max	-0.384	-0.384	-0.363	-0.308	-0.367	-0.371	-0.384	-0.298	-0.395
Average	-0.470	-0.441	-0.410	-0.433	-0.448	-0.417	-0.437	-0.416	-0.436
Sigma	0.061	0.040	0.040	0.064	0.050	0.032	0.029	0.068	0.032

Drift Calculation

INL- 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	24.0E-03	62.0E-03	5.0E-03	-6.0E-03	-2.0E-03	12.0E-03	-44.0E-03	-13.0E-03
8	-	39.0E-03	68.0E-03	7.0E-03	-33.0E-03	80.0E-03	6.0E-03	42.0E-03	17.0E-03
9	-	-86.0E-03	21.0E-03	76.0E-03	17.0E-03	-27.0E-03	0.0E+00	86.0E-03	-11.0E-03
10	-	76.0E-03	94.0E-03	84.0E-03	71.0E-03	143.0E-03	104.0E-03	139.0E-03	111.0E-03
11	-	91.0E-03	55.0E-03	12.0E-03	62.0E-03	68.0E-03	43.0E-03	48.0E-03	67.0E-03
Average	-	28.8E-03	60.0E-03	36.8E-03	22.2E-03	52.4E-03	33.0E-03	54.2E-03	34.2E-03
Sigma	-	62.3E-03	23.5E-03	35.4E-03	39.6E-03	60.8E-03	38.5E-03	60.1E-03	48.0E-03

Parameter : Integral Non linearity : INL_3VIN3

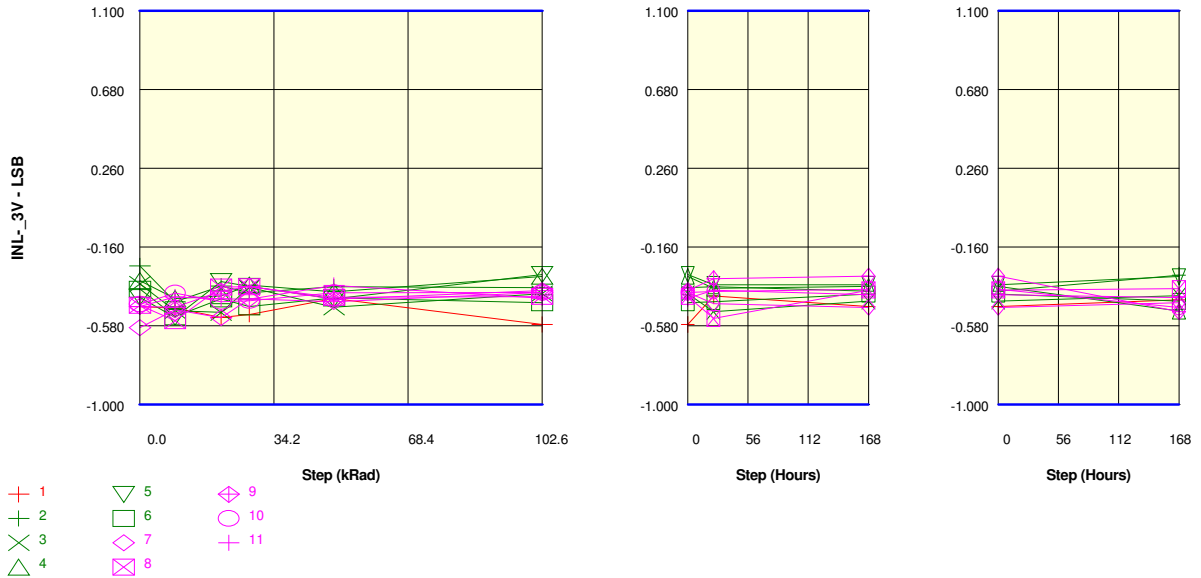
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.477	-0.485	-0.535	-0.519	-0.434	-0.573	-0.420	-0.478	-0.441
ON samples									
2	-0.261	-0.452	-0.368	-0.404	-0.372	-0.376	-0.372	-0.396	-0.310
3	-0.356	-0.499	-0.509	-0.375	-0.480	-0.408	-0.504	-0.448	-0.419
4	-0.339	-0.434	-0.420	-0.363	-0.398	-0.316	-0.379	-0.369	-0.501
5	-0.428	-0.535	-0.344	-0.369	-0.437	-0.306	-0.360	-0.360	-0.318
6	-0.384	-0.531	-0.436	-0.478	-0.431	-0.457	-0.451	-0.411	-0.449
Statistics									
Min	-0.428	-0.535	-0.509	-0.478	-0.480	-0.457	-0.504	-0.448	-0.501
Max	-0.261	-0.434	-0.344	-0.363	-0.372	-0.306	-0.360	-0.360	-0.310
Average	-0.354	-0.490	-0.415	-0.398	-0.424	-0.373	-0.413	-0.397	-0.399
Sigma	0.055	0.041	0.058	0.042	0.037	0.057	0.055	0.031	0.075

Drift Calculation

INL_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-191.0E-03	-107.0E-03	-143.0E-03	-111.0E-03	-115.0E-03	-111.0E-03	-135.0E-03	-49.0E-03
3	-	-143.0E-03	-153.0E-03	-19.0E-03	-124.0E-03	-52.0E-03	-148.0E-03	-92.0E-03	-63.0E-03
4	-	-95.0E-03	-81.0E-03	-24.0E-03	-59.0E-03	23.0E-03	-40.0E-03	-30.0E-03	-162.0E-03
5	-	-107.0E-03	84.0E-03	59.0E-03	-9.0E-03	122.0E-03	68.0E-03	68.0E-03	110.0E-03
6	-	-147.0E-03	-52.0E-03	-94.0E-03	-47.0E-03	-73.0E-03	-67.0E-03	-27.0E-03	-65.0E-03
Average	-	-136.6E-03	-61.8E-03	-44.2E-03	-70.0E-03	-19.0E-03	-59.6E-03	-43.2E-03	-45.8E-03
Sigma	-	33.8E-03	80.1E-03	69.2E-03	42.4E-03	83.5E-03	73.7E-03	68.7E-03	87.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.477	-0.485	-0.535	-0.519	-0.434	-0.573	-0.420	-0.478	-0.441
OFF samples									
7	-0.590	-0.494	-0.536	-0.436	-0.451	-0.403	-0.461	-0.482	-0.457
8	-0.470	-0.553	-0.373	-0.371	-0.427	-0.423	-0.541	-0.389	-0.382
9	-0.476	-0.480	-0.395	-0.369	-0.438	-0.392	-0.328	-0.315	-0.505
10	-0.465	-0.405	-0.451	-0.446	-0.404	-0.403	-0.397	-0.385	-0.482
11	-0.478	-0.426	-0.436	-0.438	-0.364	-0.433	-0.390	-0.414	-0.430
Statistics									
Min	-0.590	-0.553	-0.536	-0.446	-0.451	-0.433	-0.541	-0.482	-0.505
Max	-0.465	-0.405	-0.373	-0.369	-0.364	-0.392	-0.328	-0.315	-0.382
Average	-0.496	-0.472	-0.438	-0.412	-0.417	-0.411	-0.423	-0.397	-0.451
Sigma	0.047	0.052	0.056	0.034	0.031	0.015	0.072	0.054	0.043

Drift Calculation

INL- 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	96.0E-03	54.0E-03	154.0E-03	139.0E-03	187.0E-03	129.0E-03	108.0E-03	133.0E-03
8	-	-83.0E-03	97.0E-03	99.0E-03	43.0E-03	47.0E-03	-71.0E-03	81.0E-03	88.0E-03
9	-	-4.0E-03	81.0E-03	107.0E-03	38.0E-03	84.0E-03	148.0E-03	161.0E-03	-29.0E-03
10	-	60.0E-03	14.0E-03	19.0E-03	61.0E-03	62.0E-03	68.0E-03	80.0E-03	-17.0E-03
11	-	52.0E-03	42.0E-03	40.0E-03	114.0E-03	45.0E-03	88.0E-03	64.0E-03	48.0E-03
Average	-	24.2E-03	57.6E-03	83.8E-03	79.0E-03	85.0E-03	72.4E-03	98.8E-03	44.6E-03
Sigma	-	62.4E-03	29.2E-03	48.6E-03	40.3E-03	52.9E-03	77.1E-03	34.2E-03	61.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Integral Non linearity : INL_3VIN4

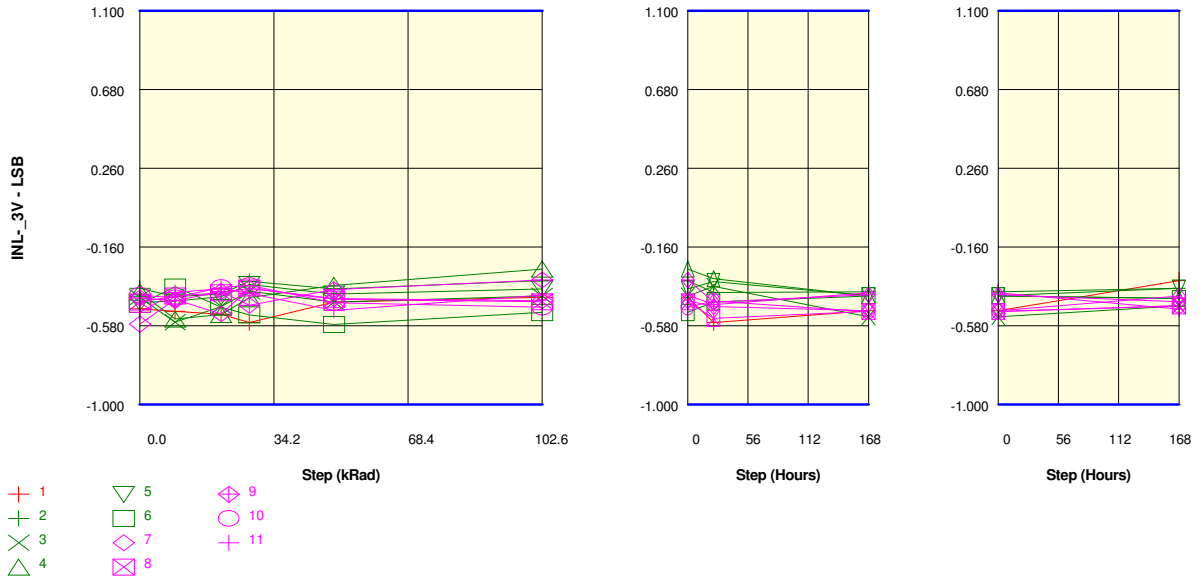
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.100

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.490	-0.502	-0.517	-0.563	-0.453	-0.427	-0.563	-0.500	-0.339
ON samples									
2	-0.380	-0.424	-0.410	-0.343	-0.383	-0.338	-0.401	-0.399	-0.379
3	-0.427	-0.561	-0.476	-0.395	-0.453	-0.421	-0.369	-0.532	-0.474
4	-0.400	-0.544	-0.520	-0.430	-0.364	-0.277	-0.329	-0.420	-0.432
5	-0.456	-0.448	-0.425	-0.359	-0.410	-0.383	-0.344	-0.419	-0.379
6	-0.465	-0.372	-0.481	-0.521	-0.573	-0.509	-0.453	-0.420	-0.434
Statistics									
Min	-0.465	-0.561	-0.520	-0.521	-0.573	-0.509	-0.453	-0.532	-0.474
Max	-0.380	-0.372	-0.410	-0.343	-0.364	-0.277	-0.329	-0.399	-0.379
Average	-0.426	-0.470	-0.462	-0.410	-0.437	-0.386	-0.379	-0.438	-0.420
Sigma	0.032	0.072	0.040	0.063	0.074	0.078	0.044	0.048	0.036

Drift Calculation

INL_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-44.0E-03	-30.0E-03	37.0E-03	-3.0E-03	42.0E-03	-21.0E-03	-19.0E-03	1.0E-03
3	-	-134.0E-03	-49.0E-03	32.0E-03	-26.0E-03	6.0E-03	58.0E-03	-105.0E-03	-47.0E-03
4	-	-144.0E-03	-120.0E-03	-30.0E-03	36.0E-03	123.0E-03	71.0E-03	-20.0E-03	-32.0E-03
5	-	8.0E-03	31.0E-03	97.0E-03	46.0E-03	73.0E-03	112.0E-03	37.0E-03	77.0E-03
6	-	93.0E-03	-16.0E-03	-56.0E-03	-108.0E-03	-44.0E-03	12.0E-03	45.0E-03	31.0E-03
Average	-	-44.2E-03	-36.8E-03	16.0E-03	-11.0E-03	40.0E-03	46.4E-03	-12.4E-03	6.0E-03
Sigma	-	89.0E-03	49.3E-03	54.0E-03	55.1E-03	56.9E-03	46.4E-03	53.7E-03	44.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.490	-0.502	-0.517	-0.563	-0.453	-0.427	-0.563	-0.500	-0.339
OFF samples									
7	-0.571	-0.440	-0.516	-0.380	-0.435	-0.447	-0.477	-0.499	-0.421
8	-0.453	-0.421	-0.404	-0.379	-0.438	-0.452	-0.540	-0.503	-0.474
9	-0.431	-0.446	-0.397	-0.471	-0.387	-0.336	-0.453	-0.413	-0.451
10	-0.417	-0.430	-0.375	-0.365	-0.457	-0.481	-0.448	-0.504	-0.472
11	-0.508	-0.402	-0.382	-0.407	-0.497	-0.416	-0.466	-0.404	-0.491
Statistics									
Min	-0.571	-0.446	-0.516	-0.471	-0.497	-0.481	-0.540	-0.504	-0.491
Max	-0.417	-0.402	-0.375	-0.365	-0.387	-0.336	-0.448	-0.404	-0.421
Average	-0.476	-0.428	-0.415	-0.400	-0.443	-0.426	-0.477	-0.465	-0.462
Sigma	0.057	0.015	0.052	0.038	0.036	0.050	0.033	0.046	0.024

Drift Calculation

INL- 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	131.0E-03	55.0E-03	191.0E-03	136.0E-03	124.0E-03	94.0E-03	72.0E-03	150.0E-03
8	-	32.0E-03	49.0E-03	74.0E-03	15.0E-03	1.0E-03	-87.0E-03	-50.0E-03	-21.0E-03
9	-	-15.0E-03	34.0E-03	-40.0E-03	44.0E-03	95.0E-03	-22.0E-03	18.0E-03	-20.0E-03
10	-	-13.0E-03	42.0E-03	52.0E-03	-40.0E-03	-64.0E-03	-31.0E-03	-87.0E-03	-55.0E-03
11	-	106.0E-03	126.0E-03	101.0E-03	11.0E-03	92.0E-03	42.0E-03	104.0E-03	17.0E-03
Average	-	48.2E-03	61.2E-03	75.6E-03	33.2E-03	49.6E-03	-800.0E-06	11.4E-03	14.2E-03
Sigma	-	60.3E-03	33.2E-03	74.7E-03	58.1E-03	70.2E-03	62.6E-03	71.8E-03	71.6E-03

Parameter : Integral Non linearity : INL_3VIN5

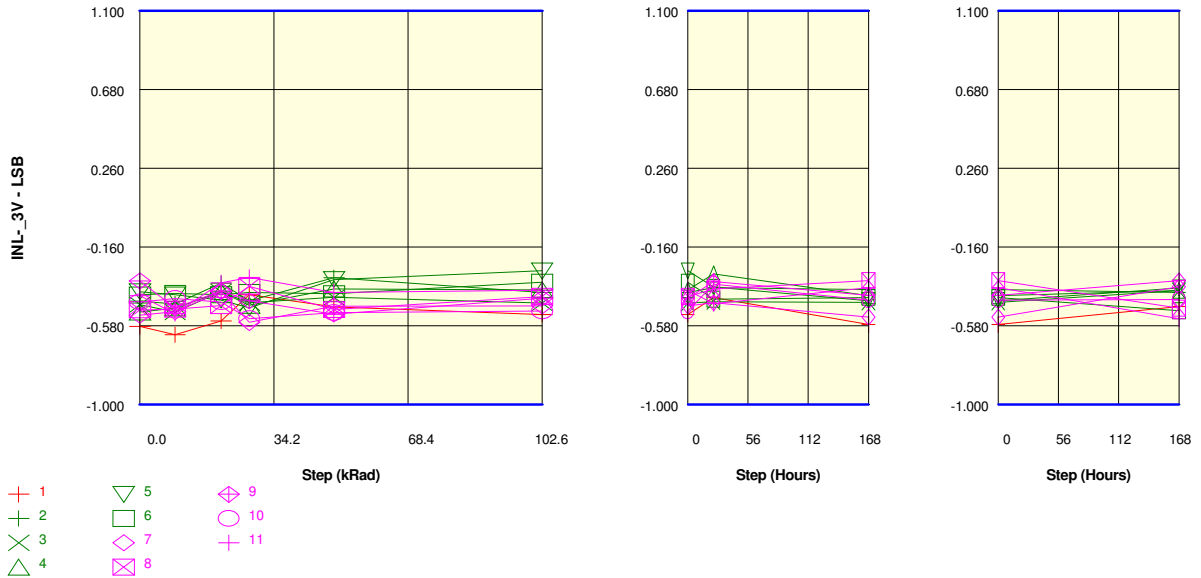
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.583	-0.627	-0.554	-0.413	-0.479	-0.519	-0.429	-0.573	-0.477
ON samples									
2	-0.448	-0.463	-0.353	-0.447	-0.323	-0.403	-0.376	-0.386	-0.401
3	-0.467	-0.506	-0.399	-0.457	-0.428	-0.458	-0.451	-0.454	-0.393
4	-0.506	-0.485	-0.398	-0.470	-0.383	-0.388	-0.303	-0.419	-0.391
5	-0.398	-0.415	-0.442	-0.484	-0.333	-0.287	-0.374	-0.445	-0.378
6	-0.415	-0.407	-0.414	-0.402	-0.408	-0.347	-0.438	-0.429	-0.499
Statistics									
Min	-0.506	-0.506	-0.442	-0.484	-0.428	-0.458	-0.451	-0.454	-0.499
Max	-0.398	-0.407	-0.353	-0.402	-0.323	-0.287	-0.303	-0.386	-0.378
Average	-0.447	-0.455	-0.401	-0.452	-0.375	-0.377	-0.388	-0.427	-0.412
Sigma	0.038	0.039	0.029	0.028	0.041	0.057	0.053	0.024	0.044

Drift Calculation

INL_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-15.0E-03	95.0E-03	1.0E-03	125.0E-03	45.0E-03	72.0E-03	62.0E-03	47.0E-03
3	-	-39.0E-03	68.0E-03	10.0E-03	39.0E-03	9.0E-03	16.0E-03	13.0E-03	74.0E-03
4	-	21.0E-03	108.0E-03	36.0E-03	123.0E-03	118.0E-03	203.0E-03	87.0E-03	115.0E-03
5	-	-17.0E-03	-44.0E-03	-86.0E-03	65.0E-03	111.0E-03	24.0E-03	-47.0E-03	20.0E-03
6	-	8.0E-03	1.0E-03	13.0E-03	7.0E-03	68.0E-03	-23.0E-03	-14.0E-03	-84.0E-03
Average	-	-8.4E-03	45.6E-03	-5.2E-03	71.8E-03	70.2E-03	58.4E-03	20.2E-03	34.4E-03
Sigma	-	20.9E-03	58.1E-03	42.0E-03	46.4E-03	40.8E-03	78.4E-03	48.9E-03	67.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.583	-0.627	-0.554	-0.413	-0.479	-0.519	-0.429	-0.573	-0.477
OFF samples									
7	-0.523	-0.505	-0.397	-0.562	-0.475	-0.474	-0.457	-0.533	-0.372
8	-0.495	-0.491	-0.472	-0.369	-0.493	-0.423	-0.383	-0.338	-0.486
9	-0.341	-0.484	-0.394	-0.447	-0.517	-0.432	-0.344	-0.417	-0.340
10	-0.453	-0.435	-0.453	-0.542	-0.510	-0.501	-0.358	-0.442	-0.439
11	-0.419	-0.515	-0.351	-0.322	-0.401	-0.390	-0.461	-0.377	-0.542
Statistics									
Min	-0.523	-0.515	-0.472	-0.562	-0.517	-0.501	-0.461	-0.533	-0.542
Max	-0.341	-0.435	-0.351	-0.322	-0.401	-0.390	-0.344	-0.338	-0.340
Average	-0.446	-0.486	-0.413	-0.448	-0.479	-0.444	-0.401	-0.421	-0.436
Sigma	0.063	0.028	0.044	0.094	0.042	0.039	0.049	0.066	0.074

Drift Calculation

INL- 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	18.0E-03	126.0E-03	-39.0E-03	48.0E-03	49.0E-03	66.0E-03	-10.0E-03	151.0E-03
8	-	4.0E-03	23.0E-03	126.0E-03	2.0E-03	72.0E-03	112.0E-03	157.0E-03	9.0E-03
9	-	-143.0E-03	-53.0E-03	-106.0E-03	-176.0E-03	-91.0E-03	-3.0E-03	-76.0E-03	1.0E-03
10	-	18.0E-03	0.0E+00	-89.0E-03	-57.0E-03	-48.0E-03	95.0E-03	11.0E-03	14.0E-03
11	-	-96.0E-03	68.0E-03	97.0E-03	18.0E-03	29.0E-03	-42.0E-03	42.0E-03	-123.0E-03
Average	-	-39.8E-03	32.8E-03	-2.2E-03	-33.0E-03	2.2E-03	45.6E-03	24.8E-03	10.4E-03
Sigma	-	66.9E-03	60.8E-03	95.9E-03	79.3E-03	61.6E-03	58.8E-03	76.6E-03	86.8E-03

Parameter : Integral Non linearity : INL_3VIN6

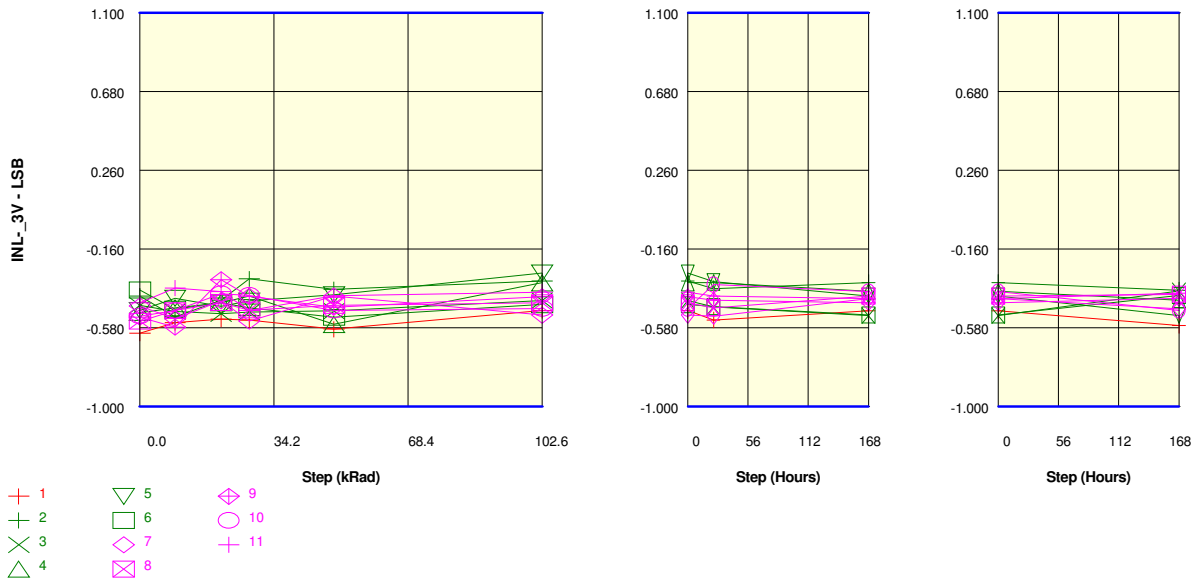
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.608	-0.553	-0.534	-0.538	-0.587	-0.487	-0.538	-0.489	-0.567
ON samples									
2	-0.410	-0.522	-0.433	-0.319	-0.375	-0.330	-0.371	-0.338	-0.380
3	-0.460	-0.493	-0.505	-0.496	-0.490	-0.435	-0.469	-0.515	-0.383
4	-0.498	-0.474	-0.445	-0.411	-0.562	-0.340	-0.338	-0.385	-0.432
5	-0.487	-0.422	-0.464	-0.437	-0.404	-0.288	-0.333	-0.410	-0.514
6	-0.378	-0.480	-0.447	-0.473	-0.524	-0.456	-0.467	-0.511	-0.407
Statistics									
Min	-0.498	-0.522	-0.505	-0.496	-0.562	-0.456	-0.469	-0.515	-0.514
Max	-0.378	-0.422	-0.433	-0.319	-0.375	-0.288	-0.333	-0.338	-0.380
Average	-0.447	-0.478	-0.459	-0.427	-0.471	-0.370	-0.396	-0.432	-0.423
Sigma	0.046	0.033	0.025	0.061	0.071	0.065	0.061	0.070	0.049

Drift Calculation

INL_ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-112.0E-03	-23.0E-03	91.0E-03	35.0E-03	80.0E-03	39.0E-03	72.0E-03	30.0E-03
3	-	-33.0E-03	-45.0E-03	-36.0E-03	-30.0E-03	25.0E-03	-9.0E-03	-55.0E-03	77.0E-03
4	-	24.0E-03	53.0E-03	87.0E-03	-64.0E-03	158.0E-03	160.0E-03	113.0E-03	66.0E-03
5	-	65.0E-03	23.0E-03	50.0E-03	83.0E-03	199.0E-03	154.0E-03	77.0E-03	-27.0E-03
6	-	-102.0E-03	-69.0E-03	-95.0E-03	-146.0E-03	-78.0E-03	-89.0E-03	-133.0E-03	-29.0E-03
Average	-	-31.6E-03	-12.2E-03	19.4E-03	-24.4E-03	76.8E-03	51.0E-03	14.8E-03	23.4E-03
Sigma	-	69.1E-03	44.5E-03	73.2E-03	79.3E-03	98.2E-03	95.7E-03	93.3E-03	44.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

INL- 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.608	-0.553	-0.534	-0.538	-0.587	-0.487	-0.538	-0.489	-0.567
OFF samples									
7	-0.463	-0.532	-0.436	-0.544	-0.411	-0.512	-0.518	-0.423	-0.479
8	-0.545	-0.488	-0.445	-0.485	-0.460	-0.446	-0.473	-0.411	-0.401
9	-0.524	-0.576	-0.323	-0.412	-0.470	-0.413	-0.432	-0.445	-0.422
10	-0.518	-0.488	-0.398	-0.407	-0.487	-0.477	-0.350	-0.387	-0.487
11	-0.447	-0.368	-0.386	-0.487	-0.408	-0.389	-0.410	-0.424	-0.396
Statistics									
Min	-0.545	-0.576	-0.445	-0.544	-0.487	-0.512	-0.518	-0.445	-0.487
Max	-0.447	-0.368	-0.323	-0.407	-0.408	-0.389	-0.350	-0.387	-0.396
Average	-0.499	-0.490	-0.398	-0.467	-0.447	-0.447	-0.437	-0.418	-0.437
Sigma	0.038	0.069	0.043	0.052	0.032	0.044	0.057	0.019	0.039

Drift Calculation

INL- 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-69.0E-03	27.0E-03	-81.0E-03	52.0E-03	-49.0E-03	-55.0E-03	40.0E-03	-16.0E-03
8	-	57.0E-03	100.0E-03	60.0E-03	85.0E-03	99.0E-03	72.0E-03	134.0E-03	144.0E-03
9	-	-52.0E-03	201.0E-03	112.0E-03	54.0E-03	111.0E-03	92.0E-03	79.0E-03	102.0E-03
10	-	30.0E-03	120.0E-03	111.0E-03	31.0E-03	41.0E-03	168.0E-03	131.0E-03	31.0E-03
11	-	79.0E-03	61.0E-03	-40.0E-03	39.0E-03	58.0E-03	37.0E-03	23.0E-03	51.0E-03
Average	-	9.0E-03	101.8E-03	32.4E-03	52.2E-03	52.0E-03	62.8E-03	81.4E-03	62.4E-03
Sigma	-	59.1E-03	59.1E-03	79.2E-03	18.5E-03	56.7E-03	72.9E-03	45.5E-03	55.7E-03

Parameter : Integral Non linearity : INL_3VIN7

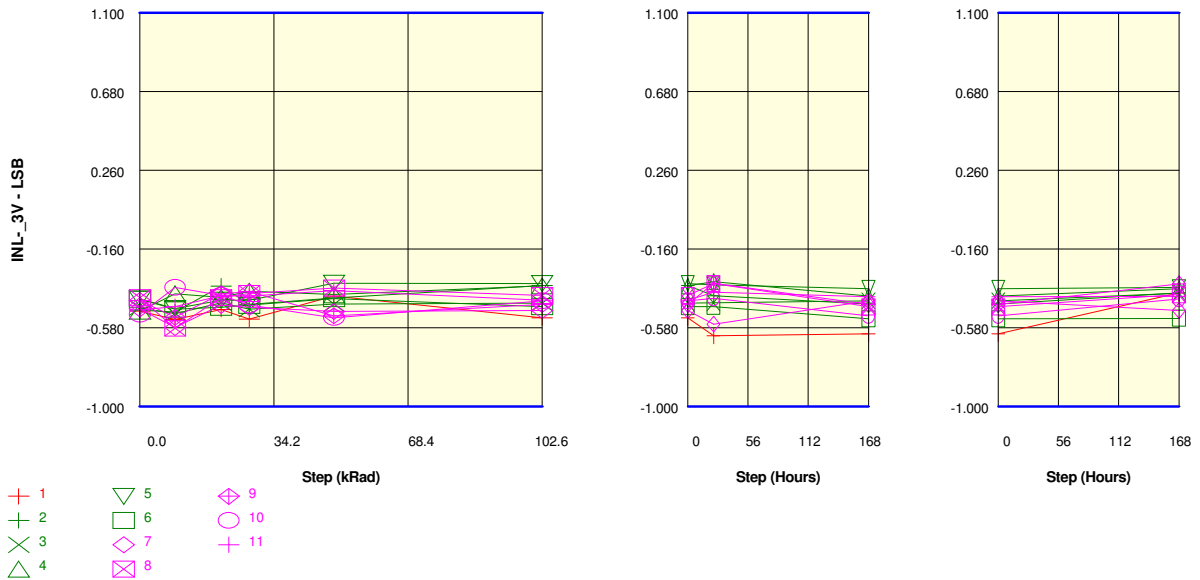
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.000

Spec Limit Max : 1.100

Spec limits are represented in bold lines on the graphic.



Measurements

INL_ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.491	-0.535	-0.482	-0.533	-0.410	-0.526	-0.622	-0.611	-0.394
ON samples									
2	-0.486	-0.496	-0.357	-0.456	-0.421	-0.355	-0.409	-0.453	-0.394
3	-0.473	-0.504	-0.446	-0.480	-0.453	-0.448	-0.446	-0.436	-0.395
4	-0.491	-0.399	-0.418	-0.385	-0.403	-0.356	-0.333	-0.411	-0.371
5	-0.426	-0.477	-0.432	-0.433	-0.342	-0.344	-0.351	-0.370	-0.365
6	-0.427	-0.480	-0.470	-0.459	-0.424	-0.467	-0.466	-0.532	-0.529
Statistics									
Min	-0.491	-0.504	-0.470	-0.480	-0.453	-0.467	-0.466	-0.532	-0.529
Max	-0.426	-0.399	-0.357	-0.385	-0.342	-0.344	-0.333	-0.370	-0.365
Average	-0.461	-0.471	-0.425	-0.443	-0.409	-0.394	-0.401	-0.440	-0.411
Sigma	0.028	0.037	0.038	0.032	0.037	0.052	0.052	0.054	0.060

Drift Calculation

INL_ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-10.0E-03	129.0E-03	30.0E-03	65.0E-03	131.0E-03	77.0E-03	33.0E-03	92.0E-03
3	-	-31.0E-03	27.0E-03	-7.0E-03	20.0E-03	25.0E-03	27.0E-03	37.0E-03	78.0E-03
4	-	92.0E-03	73.0E-03	106.0E-03	88.0E-03	135.0E-03	158.0E-03	80.0E-03	120.0E-03
5	-	-51.0E-03	-6.0E-03	-7.0E-03	84.0E-03	82.0E-03	75.0E-03	56.0E-03	61.0E-03
6	-	-53.0E-03	-43.0E-03	-32.0E-03	3.0E-03	-40.0E-03	-39.0E-03	-105.0E-03	-102.0E-03
Average	-	-10.6E-03	36.0E-03	18.0E-03	52.0E-03	66.6E-03	59.6E-03	20.2E-03	49.8E-03
Sigma	-	53.6E-03	60.2E-03	48.2E-03	34.4E-03	66.6E-03	64.8E-03	64.8E-03	78.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

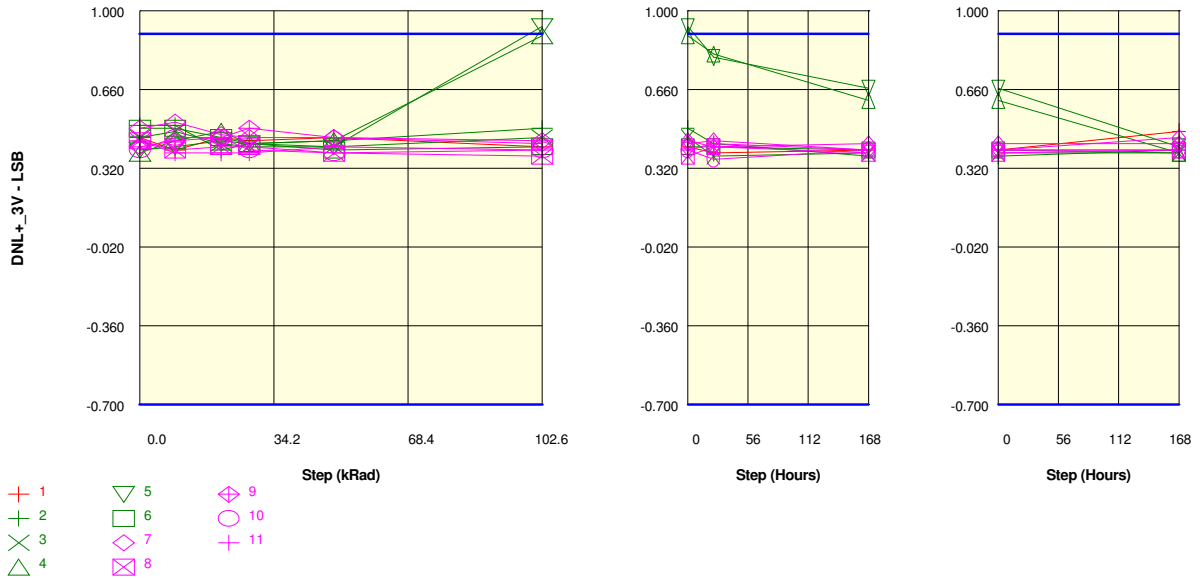
Measurements

INL- 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.491	-0.535	-0.482	-0.533	-0.410	-0.526	-0.622	-0.611	-0.394
OFF samples									
7	-0.479	-0.578	-0.459	-0.471	-0.493	-0.487	-0.560	-0.437	-0.488
8	-0.419	-0.582	-0.418	-0.397	-0.368	-0.407	-0.344	-0.468	-0.403
9	-0.434	-0.524	-0.399	-0.387	-0.516	-0.455	-0.342	-0.456	-0.345
10	-0.509	-0.364	-0.407	-0.458	-0.526	-0.436	-0.422	-0.516	-0.426
11	-0.483	-0.466	-0.408	-0.410	-0.381	-0.433	-0.390	-0.413	-0.412
Statistics									
Min	-0.509	-0.582	-0.459	-0.471	-0.526	-0.487	-0.560	-0.516	-0.488
Max	-0.419	-0.364	-0.399	-0.387	-0.368	-0.407	-0.342	-0.413	-0.345
Average	-0.465	-0.503	-0.418	-0.425	-0.457	-0.444	-0.412	-0.458	-0.415
Sigma	0.033	0.081	0.021	0.034	0.068	0.027	0.080	0.034	0.046

Drift Calculation

INL- 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-99.0E-03	20.0E-03	8.0E-03	-14.0E-03	-8.0E-03	-81.0E-03	42.0E-03	-9.0E-03
8	-	-163.0E-03	1.0E-03	22.0E-03	51.0E-03	12.0E-03	75.0E-03	-49.0E-03	16.0E-03
9	-	-90.0E-03	35.0E-03	47.0E-03	-82.0E-03	-21.0E-03	92.0E-03	-22.0E-03	89.0E-03
10	-	145.0E-03	102.0E-03	51.0E-03	-17.0E-03	73.0E-03	87.0E-03	-7.0E-03	83.0E-03
11	-	17.0E-03	75.0E-03	73.0E-03	102.0E-03	50.0E-03	93.0E-03	70.0E-03	71.0E-03
Average	-	-38.0E-03	46.6E-03	40.2E-03	8.0E-03	21.2E-03	53.2E-03	6.8E-03	50.0E-03
Sigma	-	108.2E-03	36.9E-03	22.8E-03	63.1E-03	35.3E-03	67.4E-03	43.3E-03	39.2E-03

Parameter : Differential Non linearity : DNL+_3VIN0
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.453	0.399	0.453	0.439	0.453	0.413	0.386	0.399	0.479
ON samples									
2	0.506	0.506	0.399	0.426	0.439	0.493	0.426	0.373	0.399
3	0.453	0.479	0.426	0.413	0.413	0.453	0.373	0.386	0.386
4	0.386	0.439	0.479	0.426	0.439	0.892	0.813	0.613	0.386
5	0.399	0.413	0.439	0.426	0.413	0.932	0.799	0.666	0.413
6	0.493	0.493	0.453	0.426	0.399	0.413	0.413	0.399	0.386
Statistics									
Min	0.386	0.413	0.399	0.413	0.399	0.413	0.373	0.373	0.386
Max	0.506	0.506	0.479	0.426	0.439	0.932	0.813	0.666	0.413
Average	0.447	0.466	0.439	0.423	0.421	0.637	0.565	0.487	0.394
Sigma	0.048	0.035	0.027	0.005	0.016	0.227	0.198	0.126	0.011

Drift Calculation

DNL+_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	-107.0E-03	-80.0E-03	-67.0E-03	-13.0E-03	-80.0E-03	-133.0E-03	-107.0E-03
3	-	26.0E-03	-27.0E-03	-40.0E-03	-40.0E-03	0.0E+00	-80.0E-03	-67.0E-03	-67.0E-03
4	-	53.0E-03	93.0E-03	40.0E-03	53.0E-03	506.0E-03	427.0E-03	227.0E-03	0.0E+00
5	-	14.0E-03	40.0E-03	27.0E-03	14.0E-03	533.0E-03	400.0E-03	267.0E-03	14.0E-03
6	-	0.0E+00	-40.0E-03	-67.0E-03	-94.0E-03	-80.0E-03	-80.0E-03	-94.0E-03	-107.0E-03
Average	-	18.6E-03	-8.2E-03	-24.0E-03	-26.8E-03	189.2E-03	117.4E-03	40.0E-03	-53.4E-03
Sigma	-	19.8E-03	68.8E-03	48.9E-03	53.6E-03	271.2E-03	241.9E-03	170.8E-03	51.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

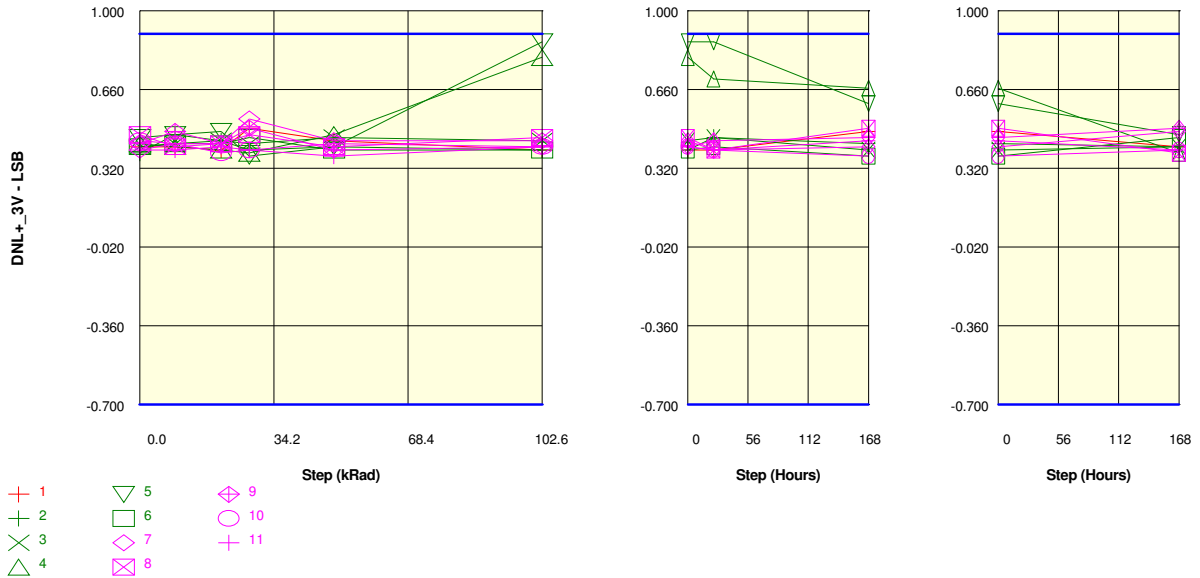
Measurements

DNL+ 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.453	0.399	0.453	0.439	0.453	0.413	0.386	0.399	0.479
OFF samples									
7	0.493	0.519	0.466	0.453	0.453	0.426	0.439	0.399	0.453
8	0.439	0.399	0.413	0.413	0.386	0.373	0.413	0.386	0.399
9	0.413	0.439	0.453	0.493	0.453	0.439	0.413	0.426	0.426
10	0.399	0.453	0.453	0.399	0.386	0.399	0.359	0.399	0.399
11	0.439	0.386	0.386	0.386	0.413	0.399	0.426	0.399	0.399
Statistics									
Min	0.399	0.386	0.386	0.386	0.386	0.373	0.359	0.386	0.399
Max	0.493	0.519	0.466	0.493	0.453	0.439	0.439	0.426	0.453
Average	0.437	0.439	0.434	0.429	0.418	0.407	0.410	0.402	0.415
Sigma	0.032	0.047	0.030	0.039	0.030	0.023	0.027	0.013	0.022

Drift Calculation

DNL+ 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	26.0E-03	-27.0E-03	-40.0E-03	-40.0E-03	-67.0E-03	-54.0E-03	-94.0E-03	-40.0E-03
8	-	-40.0E-03	-26.0E-03	-26.0E-03	-53.0E-03	-66.0E-03	-26.0E-03	-53.0E-03	-40.0E-03
9	-	26.0E-03	40.0E-03	80.0E-03	40.0E-03	26.0E-03	0.0E+00	13.0E-03	13.0E-03
10	-	54.0E-03	54.0E-03	0.0E+00	-13.0E-03	0.0E+00	-40.0E-03	0.0E+00	0.0E+00
11	-	-53.0E-03	-53.0E-03	-53.0E-03	-26.0E-03	-40.0E-03	-13.0E-03	-40.0E-03	-40.0E-03
Average	-	2.6E-03	-2.4E-03	-7.8E-03	-18.4E-03	-29.4E-03	-26.6E-03	-34.8E-03	-21.4E-03
Sigma	-	41.6E-03	41.7E-03	47.3E-03	32.1E-03	36.9E-03	19.1E-03	38.4E-03	23.1E-03

Parameter : Differential Non linearity : DNL+_3VIN1
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.413	0.413	0.399	0.493	0.439	0.399	0.399	0.479	0.413
ON samples									
2	0.386	0.466	0.439	0.399	0.413	0.399	0.453	0.426	0.413
3	0.413	0.426	0.439	0.426	0.453	0.439	0.453	0.399	0.413
4	0.426	0.413	0.399	0.386	0.466	0.799	0.706	0.666	0.386
5	0.453	0.466	0.479	0.373	0.413	0.866	0.866	0.599	0.466
6	0.413	0.426	0.426	0.453	0.399	0.399	0.413	0.373	0.453
Statistics									
Min	0.386	0.413	0.399	0.373	0.399	0.399	0.413	0.373	0.386
Max	0.453	0.466	0.479	0.453	0.466	0.866	0.866	0.666	0.466
Average	0.418	0.439	0.436	0.407	0.429	0.580	0.578	0.493	0.426
Sigma	0.022	0.022	0.026	0.029	0.026	0.207	0.178	0.117	0.029

Drift Calculation

DNL+ 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	80.0E-03	53.0E-03	13.0E-03	27.0E-03	13.0E-03	67.0E-03	40.0E-03	27.0E-03
3	-	13.0E-03	26.0E-03	13.0E-03	40.0E-03	26.0E-03	40.0E-03	-14.0E-03	0.0E+00
4	-	-13.0E-03	-27.0E-03	-40.0E-03	40.0E-03	373.0E-03	280.0E-03	240.0E-03	-40.0E-03
5	-	13.0E-03	26.0E-03	-80.0E-03	-40.0E-03	413.0E-03	413.0E-03	146.0E-03	13.0E-03
6	-	13.0E-03	13.0E-03	40.0E-03	-14.0E-03	-14.0E-03	0.0E+00	-40.0E-03	40.0E-03
Average	-	21.2E-03	18.2E-03	-10.8E-03	10.6E-03	162.2E-03	160.0E-03	74.4E-03	8.0E-03
Sigma	-	31.1E-03	26.1E-03	43.3E-03	32.1E-03	189.3E-03	159.4E-03	104.5E-03	27.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

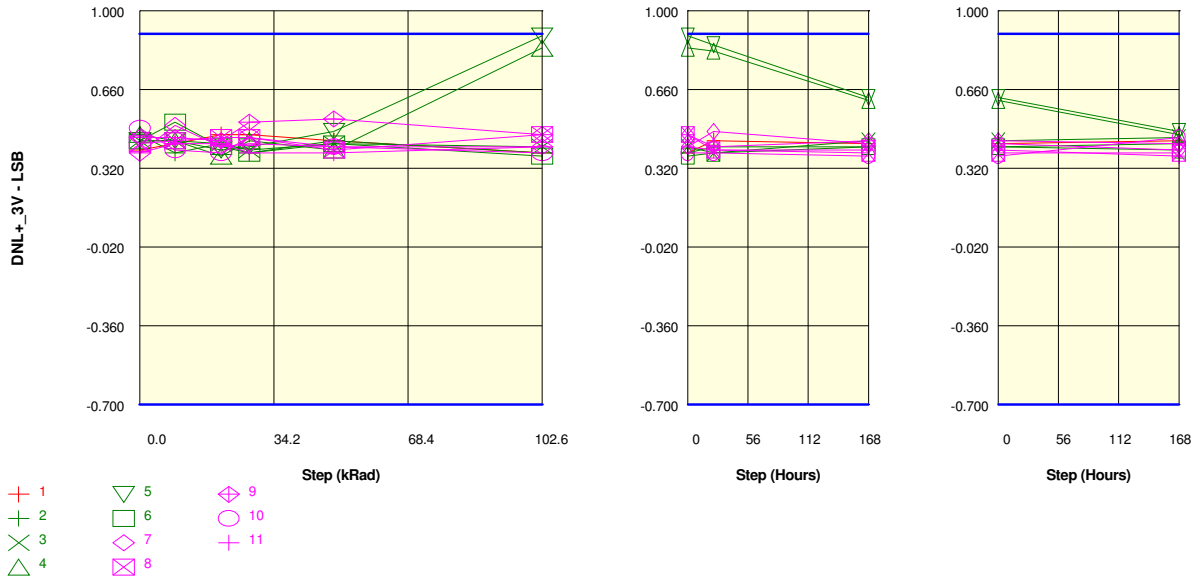
Measurements

DNL+ 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.413	0.413	0.399	0.493	0.439	0.399	0.399	0.479	0.413
OFF samples									
7	0.399	0.426	0.426	0.533	0.439	0.439	0.399	0.413	0.479
8	0.466	0.413	0.426	0.466	0.413	0.453	0.399	0.493	0.386
9	0.426	0.479	0.426	0.493	0.399	0.413	0.439	0.453	0.493
10	0.439	0.426	0.386	0.399	0.426	0.413	0.399	0.373	0.399
11	0.399	0.399	0.413	0.399	0.373	0.413	0.399	0.439	0.399
Statistics									
Min	0.399	0.399	0.386	0.399	0.373	0.413	0.399	0.373	0.386
Max	0.466	0.479	0.426	0.533	0.439	0.453	0.439	0.493	0.493
Average	0.426	0.429	0.415	0.458	0.410	0.426	0.407	0.434	0.431
Sigma	0.025	0.027	0.016	0.053	0.023	0.017	0.016	0.040	0.045

Drift Calculation

DNL+ 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	27.0E-03	27.0E-03	134.0E-03	40.0E-03	40.0E-03	0.0E+00	14.0E-03	80.0E-03
8	-	-53.0E-03	-40.0E-03	0.0E+00	-53.0E-03	-13.0E-03	-67.0E-03	27.0E-03	-80.0E-03
9	-	53.0E-03	0.0E+00	67.0E-03	-27.0E-03	-13.0E-03	13.0E-03	27.0E-03	67.0E-03
10	-	-13.0E-03	-53.0E-03	-40.0E-03	-13.0E-03	-26.0E-03	-40.0E-03	-66.0E-03	-40.0E-03
11	-	0.0E+00	14.0E-03	0.0E+00	-26.0E-03	14.0E-03	0.0E+00	40.0E-03	0.0E+00
Average	-	2.8E-03	-10.4E-03	32.2E-03	-15.8E-03	400.0E-06	-18.8E-03	8.4E-03	5.4E-03
Sigma	-	36.0E-03	31.0E-03	61.4E-03	30.8E-03	23.7E-03	30.0E-03	38.1E-03	61.2E-03

Parameter : Differential Non linearity : DNL+_3VIN2
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.399	0.426	0.466	0.466	0.439	0.386	0.439	0.426	0.439
ON samples									
2	0.466	0.386	0.426	0.386	0.439	0.386	0.413	0.413	0.426
3	0.439	0.439	0.426	0.399	0.426	0.413	0.386	0.439	0.453
4	0.466	0.439	0.373	0.439	0.399	0.839	0.826	0.613	0.466
5	0.439	0.439	0.399	0.413	0.479	0.892	0.853	0.626	0.479
6	0.439	0.519	0.413	0.386	0.426	0.373	0.386	0.413	0.399
Statistics									
Min	0.439	0.386	0.373	0.386	0.399	0.373	0.386	0.413	0.399
Max	0.466	0.519	0.426	0.439	0.479	0.892	0.853	0.626	0.479
Average	0.450	0.444	0.407	0.405	0.434	0.581	0.573	0.501	0.445
Sigma	0.013	0.043	0.020	0.020	0.026	0.234	0.218	0.097	0.029

Drift Calculation

DNL+ 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-80.0E-03	-40.0E-03	-80.0E-03	-27.0E-03	-80.0E-03	-53.0E-03	-53.0E-03	-40.0E-03
3	-	0.0E+00	-13.0E-03	-40.0E-03	-13.0E-03	-26.0E-03	-53.0E-03	0.0E+00	14.0E-03
4	-	-27.0E-03	-93.0E-03	-27.0E-03	-67.0E-03	373.0E-03	360.0E-03	147.0E-03	0.0E+00
5	-	0.0E+00	-40.0E-03	-26.0E-03	40.0E-03	453.0E-03	414.0E-03	187.0E-03	40.0E-03
6	-	80.0E-03	-26.0E-03	-53.0E-03	-13.0E-03	-66.0E-03	-53.0E-03	-26.0E-03	-40.0E-03
Average	-	-5.4E-03	-42.4E-03	-45.2E-03	-16.0E-03	130.8E-03	123.0E-03	51.0E-03	-5.2E-03
Sigma	-	51.7E-03	27.2E-03	20.0E-03	34.3E-03	232.5E-03	216.2E-03	97.0E-03	31.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

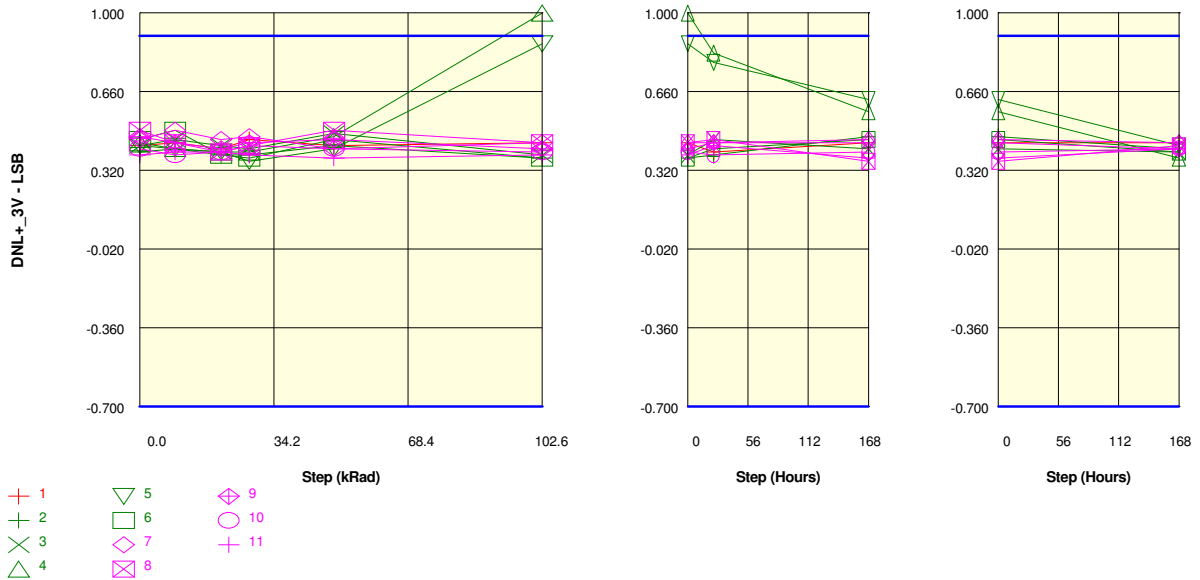
Measurements

DNL+ 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.399	0.426	0.466	0.466	0.439	0.386	0.439	0.426	0.439
OFF samples									
7	0.386	0.506	0.413	0.426	0.413	0.413	0.479	0.426	0.399
8	0.426	0.439	0.453	0.453	0.399	0.466	0.399	0.386	0.386
9	0.453	0.453	0.439	0.519	0.533	0.466	0.413	0.439	0.426
10	0.493	0.399	0.386	0.453	0.413	0.386	0.386	0.373	0.453
11	0.386	0.426	0.426	0.386	0.386	0.413	0.399	0.399	0.373
Statistics									
Min	0.386	0.399	0.386	0.386	0.386	0.386	0.386	0.373	0.373
Max	0.493	0.506	0.453	0.519	0.533	0.466	0.479	0.439	0.453
Average	0.429	0.445	0.423	0.447	0.429	0.429	0.415	0.405	0.407
Sigma	0.041	0.035	0.023	0.043	0.053	0.032	0.033	0.025	0.029

Drift Calculation

DNL+ 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	120.0E-03	27.0E-03	40.0E-03	27.0E-03	27.0E-03	93.0E-03	40.0E-03	13.0E-03
8	-	13.0E-03	27.0E-03	27.0E-03	-27.0E-03	40.0E-03	-27.0E-03	-40.0E-03	-40.0E-03
9	-	0.0E+00	-14.0E-03	66.0E-03	80.0E-03	13.0E-03	-40.0E-03	-14.0E-03	-27.0E-03
10	-	-94.0E-03	-107.0E-03	-40.0E-03	-80.0E-03	-107.0E-03	-107.0E-03	-120.0E-03	-40.0E-03
11	-	40.0E-03	40.0E-03	0.0E+00	0.0E+00	27.0E-03	13.0E-03	13.0E-03	-13.0E-03
Average	-	15.8E-03	-5.4E-03	18.6E-03	0.0E+00	0.0E+00	-13.6E-03	-24.2E-03	-21.4E-03
Sigma	-	68.9E-03	54.0E-03	36.2E-03	53.4E-03	54.2E-03	65.8E-03	54.8E-03	19.9E-03

Parameter : Differential Non linearity : DNL+_3VIN3
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.426	0.439	0.413	0.453	0.426	0.439	0.399	0.439	0.439
ON samples									
2	0.399	0.413	0.386	0.386	0.426	0.373	0.386	0.466	0.413
3	0.426	0.453	0.426	0.413	0.479	0.386	0.453	0.413	0.399
4	0.439	0.413	0.399	0.399	0.466	0.999	0.826	0.573	0.373
5	0.426	0.413	0.399	0.359	0.413	0.866	0.786	0.626	0.426
6	0.453	0.493	0.386	0.373	0.453	0.373	0.413	0.453	0.399
Statistics									
Min	0.399	0.413	0.386	0.359	0.413	0.373	0.386	0.413	0.373
Max	0.453	0.493	0.426	0.413	0.479	0.999	0.826	0.626	0.426
Average	0.429	0.437	0.399	0.386	0.447	0.599	0.573	0.506	0.402
Sigma	0.018	0.032	0.015	0.019	0.025	0.275	0.192	0.080	0.018

Drift Calculation

DNL+ 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	14.0E-03	-13.0E-03	-13.0E-03	27.0E-03	-26.0E-03	-13.0E-03	67.0E-03	14.0E-03
3	-	27.0E-03	0.0E+00	-13.0E-03	53.0E-03	-40.0E-03	27.0E-03	-13.0E-03	-27.0E-03
4	-	-26.0E-03	-40.0E-03	-40.0E-03	27.0E-03	560.0E-03	387.0E-03	134.0E-03	-66.0E-03
5	-	-13.0E-03	-27.0E-03	-67.0E-03	-13.0E-03	440.0E-03	360.0E-03	200.0E-03	0.0E+00
6	-	40.0E-03	-67.0E-03	-80.0E-03	0.0E+00	-80.0E-03	-40.0E-03	0.0E+00	-54.0E-03
Average	-	8.4E-03	-29.4E-03	-42.6E-03	18.8E-03	170.8E-03	144.2E-03	77.6E-03	-26.6E-03
Sigma	-	24.6E-03	23.1E-03	27.4E-03	23.1E-03	272.0E-03	188.6E-03	80.6E-03	30.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

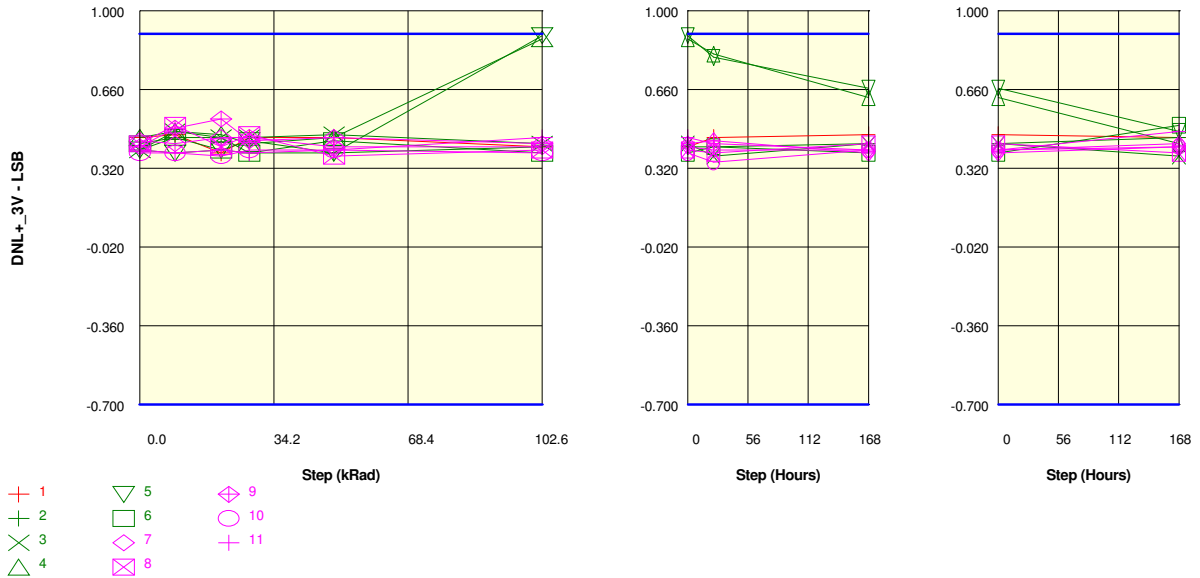
Measurements

DNL+ 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.426	0.439	0.413	0.453	0.426	0.439	0.399	0.439	0.439
OFF samples									
7	0.453	0.493	0.453	0.466	0.413	0.439	0.439	0.453	0.439
8	0.493	0.439	0.399	0.426	0.493	0.439	0.453	0.359	0.426
9	0.466	0.439	0.413	0.439	0.453	0.413	0.439	0.439	0.413
10	0.413	0.386	0.399	0.426	0.413	0.399	0.386	0.399	0.413
11	0.386	0.399	0.399	0.386	0.373	0.386	0.426	0.373	0.413
Statistics									
Min	0.386	0.386	0.399	0.386	0.373	0.386	0.386	0.359	0.413
Max	0.493	0.493	0.453	0.466	0.493	0.439	0.453	0.453	0.439
Average	0.442	0.431	0.413	0.429	0.429	0.415	0.429	0.405	0.421
Sigma	0.038	0.037	0.021	0.026	0.041	0.021	0.023	0.036	0.010

Drift Calculation

DNL+ 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	40.0E-03	0.0E+00	13.0E-03	-40.0E-03	-14.0E-03	-14.0E-03	0.0E+00	-14.0E-03
8	-	-54.0E-03	-94.0E-03	-67.0E-03	0.0E+00	-54.0E-03	-40.0E-03	-134.0E-03	-67.0E-03
9	-	-27.0E-03	-53.0E-03	-27.0E-03	-13.0E-03	-53.0E-03	-27.0E-03	-27.0E-03	-53.0E-03
10	-	-27.0E-03	-14.0E-03	13.0E-03	0.0E+00	-14.0E-03	-27.0E-03	-14.0E-03	0.0E+00
11	-	13.0E-03	13.0E-03	0.0E+00	-13.0E-03	0.0E+00	40.0E-03	-13.0E-03	27.0E-03
Average	-	-11.0E-03	-29.6E-03	-13.6E-03	-13.2E-03	-27.0E-03	-13.6E-03	-37.6E-03	-21.4E-03
Sigma	-	33.3E-03	39.1E-03	30.4E-03	14.6E-03	22.2E-03	28.0E-03	49.0E-03	34.4E-03

Parameter : Differential Non linearity : DNL+_3VIN4
Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.453	0.466	0.386	0.453	0.453	0.413	0.453	0.466	0.453
ON samples									
2	0.399	0.453	0.453	0.386	0.386	0.413	0.413	0.426	0.453
3	0.399	0.479	0.453	0.453	0.466	0.426	0.373	0.426	0.373
4	0.453	0.479	0.466	0.426	0.453	0.879	0.813	0.626	0.426
5	0.399	0.386	0.399	0.439	0.386	0.893	0.799	0.666	0.479
6	0.426	0.453	0.399	0.386	0.439	0.386	0.413	0.386	0.506
Statistics									
Min	0.399	0.386	0.399	0.386	0.386	0.386	0.373	0.386	0.373
Max	0.453	0.479	0.466	0.453	0.466	0.893	0.813	0.666	0.506
Average	0.415	0.450	0.434	0.418	0.426	0.599	0.562	0.506	0.447
Sigma	0.022	0.034	0.029	0.027	0.034	0.234	0.200	0.116	0.046

Drift Calculation

DNL+ 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	54.0E-03	54.0E-03	-13.0E-03	-13.0E-03	14.0E-03	14.0E-03	27.0E-03	54.0E-03
3	-	80.0E-03	54.0E-03	54.0E-03	67.0E-03	27.0E-03	-26.0E-03	27.0E-03	-26.0E-03
4	-	26.0E-03	13.0E-03	-27.0E-03	0.0E+00	426.0E-03	360.0E-03	173.0E-03	-27.0E-03
5	-	-13.0E-03	0.0E+00	40.0E-03	-13.0E-03	494.0E-03	400.0E-03	267.0E-03	80.0E-03
6	-	27.0E-03	-27.0E-03	-40.0E-03	13.0E-03	-40.0E-03	-13.0E-03	-40.0E-03	80.0E-03
Average	-	34.8E-03	18.8E-03	2.8E-03	10.8E-03	184.2E-03	147.0E-03	90.8E-03	32.2E-03
Sigma	-	31.1E-03	31.5E-03	37.3E-03	29.7E-03	227.3E-03	191.1E-03	112.3E-03	48.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

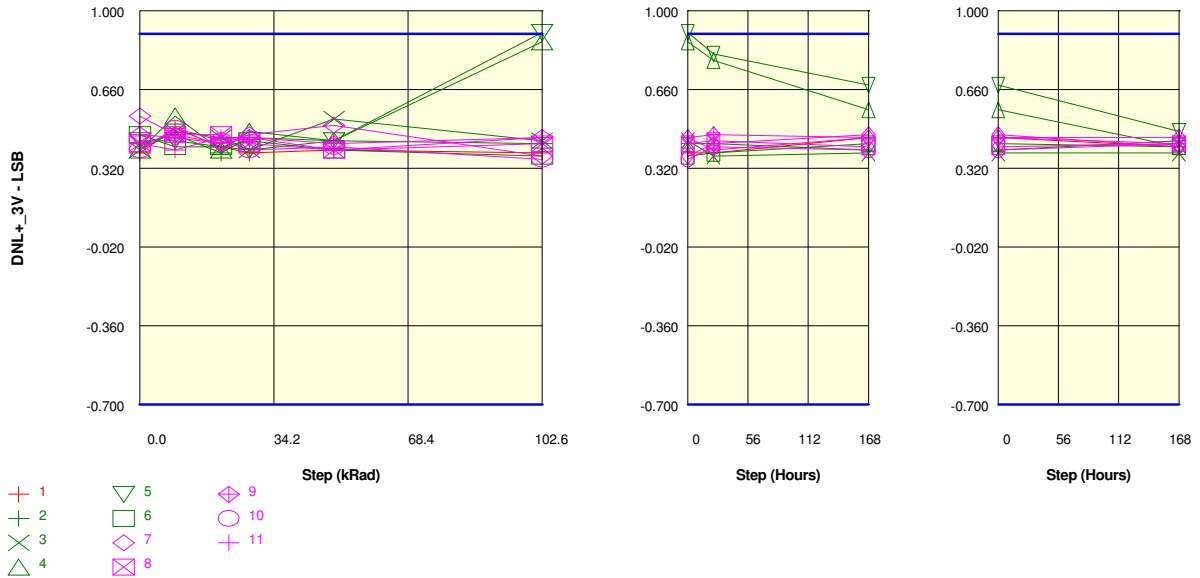
Measurements

DNL+ 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.453	0.466	0.386	0.453	0.453	0.413	0.453	0.466	0.453
OFF samples									
7	0.439	0.426	0.453	0.453	0.413	0.413	0.399	0.399	0.426
8	0.426	0.506	0.413	0.466	0.373	0.399	0.386	0.426	0.386
9	0.413	0.493	0.533	0.439	0.453	0.426	0.439	0.386	0.413
10	0.386	0.386	0.373	0.399	0.399	0.386	0.346	0.399	0.413
11	0.399	0.386	0.399	0.386	0.399	0.453	0.426	0.399	0.479
Statistics									
Min	0.386	0.386	0.373	0.386	0.373	0.386	0.346	0.386	0.386
Max	0.439	0.506	0.533	0.466	0.453	0.453	0.439	0.426	0.479
Average	0.413	0.439	0.434	0.429	0.407	0.415	0.399	0.402	0.423
Sigma	0.019	0.051	0.056	0.031	0.026	0.023	0.033	0.013	0.031

Drift Calculation

DNL+ 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-13.0E-03	14.0E-03	14.0E-03	-26.0E-03	-26.0E-03	-40.0E-03	-40.0E-03	-13.0E-03
8	-	80.0E-03	-13.0E-03	40.0E-03	-53.0E-03	-27.0E-03	-40.0E-03	0.0E+00	-40.0E-03
9	-	80.0E-03	120.0E-03	26.0E-03	40.0E-03	13.0E-03	26.0E-03	-27.0E-03	0.0E+00
10	-	0.0E+00	-13.0E-03	13.0E-03	13.0E-03	0.0E+00	-40.0E-03	13.0E-03	27.0E-03
11	-	-13.0E-03	0.0E+00	-13.0E-03	0.0E+00	54.0E-03	27.0E-03	0.0E+00	80.0E-03
Average	-	26.8E-03	21.6E-03	16.0E-03	-5.2E-03	2.8E-03	-13.4E-03	-10.8E-03	10.8E-03
Sigma	-	43.7E-03	50.2E-03	17.5E-03	32.0E-03	29.8E-03	32.6E-03	19.6E-03	40.8E-03

Parameter : Differential Non linearity : DNL+_3VIN5
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.386	0.493	0.413	0.386	0.399	0.386	0.386	0.453	0.413
ON samples									
2	0.426	0.466	0.386	0.453	0.439	0.426	0.426	0.399	0.439
3	0.399	0.479	0.453	0.399	0.533	0.439	0.373	0.386	0.386
4	0.399	0.546	0.399	0.479	0.440	0.866	0.786	0.573	0.413
5	0.439	0.439	0.413	0.399	0.439	0.906	0.813	0.679	0.479
6	0.466	0.413	0.413	0.439	0.399	0.373	0.386	0.426	0.413
Statistics									
Min	0.399	0.413	0.386	0.399	0.399	0.373	0.373	0.386	0.386
Max	0.466	0.546	0.453	0.479	0.533	0.906	0.813	0.679	0.479
Average	0.426	0.469	0.413	0.434	0.450	0.602	0.557	0.493	0.426
Sigma	0.025	0.045	0.022	0.031	0.044	0.233	0.199	0.115	0.031

Drift Calculation

DNL+ 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	40.0E-03	-40.0E-03	27.0E-03	13.0E-03	0.0E+00	0.0E+00	-27.0E-03	13.0E-03
3	-	80.0E-03	54.0E-03	0.0E+00	134.0E-03	40.0E-03	-26.0E-03	-13.0E-03	-13.0E-03
4	-	147.0E-03	0.0E+00	80.0E-03	41.0E-03	467.0E-03	387.0E-03	174.0E-03	14.0E-03
5	-	0.0E+00	-26.0E-03	-40.0E-03	0.0E+00	467.0E-03	374.0E-03	240.0E-03	40.0E-03
6	-	-53.0E-03	-53.0E-03	-27.0E-03	-67.0E-03	-93.0E-03	-80.0E-03	-40.0E-03	-53.0E-03
Average	-	42.8E-03	-13.0E-03	8.0E-03	24.2E-03	176.2E-03	131.0E-03	66.8E-03	200.0E-06
Sigma	-	68.2E-03	37.8E-03	42.8E-03	65.4E-03	241.3E-03	205.4E-03	116.7E-03	31.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

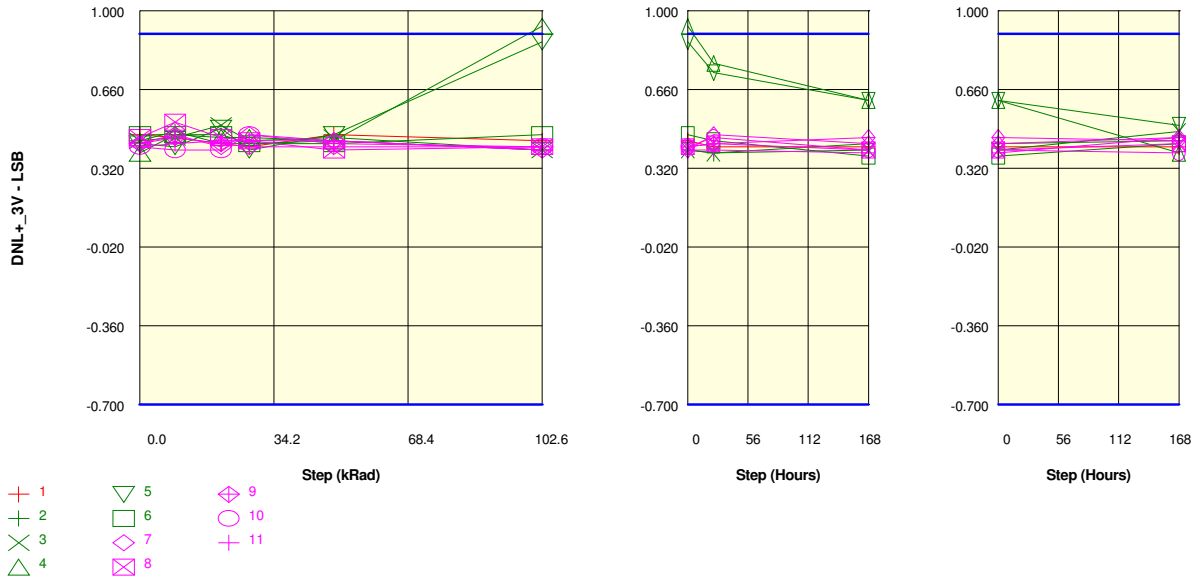
Measurements

DNL+ 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.386	0.493	0.413	0.386	0.399	0.386	0.386	0.453	0.413
OFF samples									
7	0.546	0.466	0.426	0.466	0.506	0.373	0.426	0.466	0.413
8	0.426	0.466	0.466	0.426	0.399	0.426	0.439	0.413	0.426
9	0.466	0.453	0.426	0.453	0.426	0.453	0.466	0.453	0.453
10	0.399	0.493	0.439	0.399	0.413	0.359	0.413	0.399	0.426
11	0.426	0.399	0.453	0.453	0.399	0.453	0.399	0.453	0.426
Statistics									
Min	0.399	0.399	0.426	0.399	0.399	0.359	0.399	0.399	0.413
Max	0.546	0.493	0.466	0.466	0.506	0.453	0.466	0.466	0.453
Average	0.453	0.455	0.442	0.439	0.429	0.413	0.429	0.437	0.429
Sigma	0.051	0.031	0.016	0.024	0.040	0.040	0.023	0.026	0.013

Drift Calculation

DNL+ 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-80.0E-03	-120.0E-03	-80.0E-03	-40.0E-03	-173.0E-03	-120.0E-03	-80.0E-03	-133.0E-03
8	-	40.0E-03	40.0E-03	0.0E+00	-27.0E-03	0.0E+00	13.0E-03	-13.0E-03	0.0E+00
9	-	-13.0E-03	-40.0E-03	-13.0E-03	-40.0E-03	-13.0E-03	0.0E+00	-13.0E-03	-13.0E-03
10	-	94.0E-03	40.0E-03	0.0E+00	14.0E-03	-40.0E-03	14.0E-03	0.0E+00	27.0E-03
11	-	-27.0E-03	27.0E-03	27.0E-03	-27.0E-03	27.0E-03	-27.0E-03	27.0E-03	0.0E+00
Average	-	2.8E-03	-10.6E-03	-13.2E-03	-24.0E-03	-39.8E-03	-24.0E-03	-15.8E-03	-23.8E-03
Sigma	-	59.5E-03	62.2E-03	35.9E-03	19.9E-03	70.0E-03	50.2E-03	35.3E-03	56.1E-03

Parameter : Differential Non linearity : DNL+_3VIN6
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.466	0.453	0.426	0.413	0.466	0.439	0.413	0.413	0.413
ON samples									
2	0.439	0.479	0.426	0.426	0.439	0.399	0.386	0.426	0.439
3	0.439	0.453	0.506	0.439	0.453	0.399	0.386	0.399	0.479
4	0.386	0.466	0.453	0.453	0.439	0.933	0.773	0.613	0.386
5	0.426	0.413	0.493	0.399	0.466	0.866	0.733	0.613	0.506
6	0.466	0.466	0.466	0.426	0.426	0.466	0.439	0.373	0.426
Statistics									
Min	0.386	0.413	0.426	0.399	0.426	0.399	0.386	0.373	0.386
Max	0.466	0.479	0.506	0.453	0.466	0.933	0.773	0.613	0.506
Average	0.431	0.455	0.469	0.429	0.445	0.613	0.543	0.485	0.447
Sigma	0.026	0.023	0.028	0.018	0.014	0.236	0.173	0.106	0.042

Drift Calculation

DNL+ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	40.0E-03	-13.0E-03	-13.0E-03	0.0E+00	-40.0E-03	-53.0E-03	-13.0E-03	0.0E+00
3	-	14.0E-03	67.0E-03	0.0E+00	14.0E-03	-40.0E-03	-53.0E-03	-40.0E-03	40.0E-03
4	-	80.0E-03	67.0E-03	67.0E-03	53.0E-03	547.0E-03	387.0E-03	227.0E-03	0.0E+00
5	-	-13.0E-03	67.0E-03	-27.0E-03	40.0E-03	440.0E-03	307.0E-03	187.0E-03	80.0E-03
6	-	0.0E+00	0.0E+00	-40.0E-03	-40.0E-03	0.0E+00	-27.0E-03	-93.0E-03	-40.0E-03
Average	-	24.2E-03	37.6E-03	-2.6E-03	13.4E-03	181.4E-03	112.2E-03	53.6E-03	16.0E-03
Sigma	-	33.0E-03	36.2E-03	37.3E-03	32.6E-03	257.5E-03	193.6E-03	128.5E-03	40.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

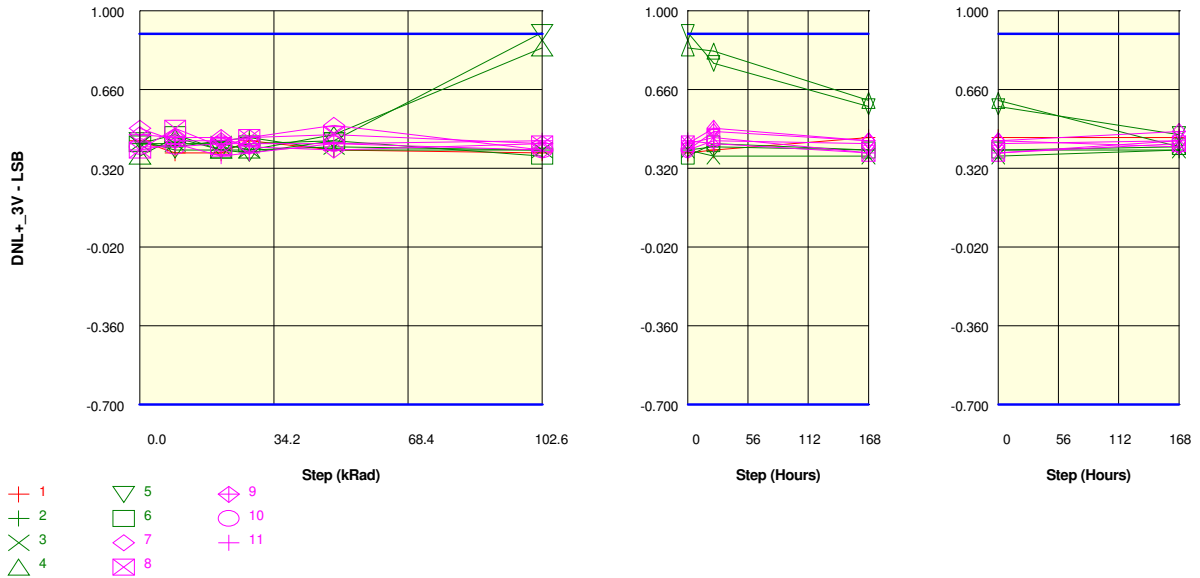
Measurements

DNL+ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.466	0.453	0.426	0.413	0.466	0.439	0.413	0.413	0.413
OFF samples									
7	0.426	0.466	0.413	0.466	0.439	0.399	0.466	0.426	0.453
8	0.453	0.519	0.453	0.439	0.399	0.413	0.426	0.399	0.426
9	0.426	0.453	0.426	0.413	0.413	0.413	0.426	0.453	0.439
10	0.413	0.399	0.399	0.466	0.426	0.413	0.453	0.399	0.386
11	0.413	0.426	0.439	0.439	0.439	0.399	0.399	0.386	0.453
Statistics									
Min	0.413	0.399	0.399	0.413	0.399	0.399	0.399	0.386	0.386
Max	0.453	0.519	0.453	0.466	0.439	0.413	0.466	0.453	0.453
Average	0.426	0.453	0.426	0.445	0.423	0.407	0.434	0.413	0.431
Sigma	0.015	0.040	0.019	0.020	0.015	0.007	0.023	0.024	0.025

Drift Calculation

DNL+ 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	40.0E-03	-13.0E-03	40.0E-03	13.0E-03	-27.0E-03	40.0E-03	0.0E+00	27.0E-03
8	-	66.0E-03	0.0E+00	-14.0E-03	-54.0E-03	-40.0E-03	-27.0E-03	-54.0E-03	-27.0E-03
9	-	27.0E-03	0.0E+00	-13.0E-03	-13.0E-03	-13.0E-03	0.0E+00	27.0E-03	13.0E-03
10	-	-14.0E-03	-14.0E-03	53.0E-03	13.0E-03	0.0E+00	40.0E-03	-14.0E-03	-27.0E-03
11	-	13.0E-03	26.0E-03	26.0E-03	26.0E-03	-14.0E-03	-14.0E-03	-27.0E-03	40.0E-03
Average	-	26.4E-03	-200.0E-06	18.4E-03	-3.0E-03	-18.8E-03	7.8E-03	-13.6E-03	5.2E-03
Sigma	-	26.7E-03	14.4E-03	27.4E-03	28.5E-03	13.6E-03	27.6E-03	27.0E-03	27.6E-03

Parameter : Differential Non linearity : DNL+_3VIN7
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.439	0.386	0.386	0.439	0.399	0.386	0.399	0.453	0.453
ON samples									
2	0.426	0.413	0.439	0.453	0.399	0.399	0.413	0.399	0.399
3	0.426	0.426	0.426	0.399	0.413	0.399	0.373	0.373	0.399
4	0.373	0.453	0.399	0.399	0.466	0.840	0.826	0.613	0.413
5	0.439	0.399	0.399	0.386	0.439	0.906	0.773	0.586	0.466
6	0.426	0.466	0.399	0.426	0.439	0.373	0.426	0.399	0.413
Statistics									
Min	0.373	0.399	0.399	0.386	0.399	0.373	0.373	0.373	0.399
Max	0.439	0.466	0.439	0.453	0.466	0.906	0.826	0.613	0.466
Average	0.418	0.431	0.412	0.413	0.431	0.583	0.562	0.474	0.418
Sigma	0.023	0.025	0.017	0.024	0.023	0.238	0.195	0.103	0.025

Drift Calculation

DNL+ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-13.0E-03	13.0E-03	27.0E-03	-27.0E-03	-27.0E-03	-13.0E-03	-27.0E-03	-27.0E-03
3	-	0.0E+00	0.0E+00	-27.0E-03	-13.0E-03	-27.0E-03	-53.0E-03	-53.0E-03	-27.0E-03
4	-	80.0E-03	26.0E-03	26.0E-03	93.0E-03	467.0E-03	453.0E-03	240.0E-03	40.0E-03
5	-	-40.0E-03	-40.0E-03	-53.0E-03	0.0E+00	467.0E-03	334.0E-03	147.0E-03	27.0E-03
6	-	40.0E-03	-27.0E-03	0.0E+00	13.0E-03	-53.0E-03	0.0E+00	-27.0E-03	-13.0E-03
Average	-	13.4E-03	-5.6E-03	-5.4E-03	13.2E-03	165.4E-03	144.2E-03	56.0E-03	11.1E-18
Sigma	-	42.1E-03	24.6E-03	31.0E-03	42.1E-03	246.4E-03	207.7E-03	116.4E-03	28.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

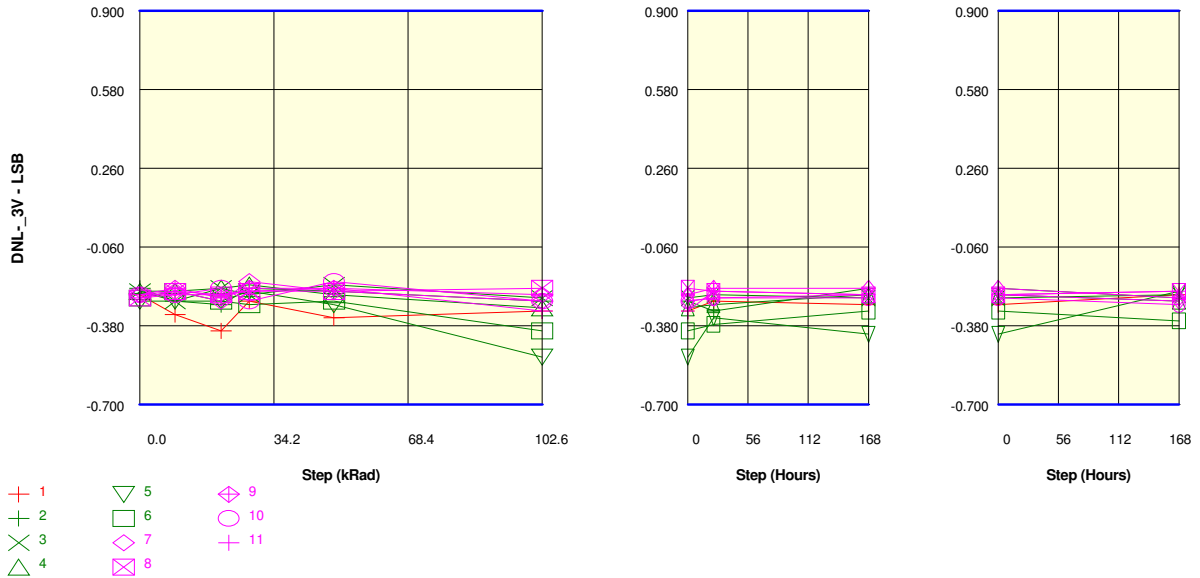
Measurements

DNL+ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.439	0.386	0.386	0.439	0.399	0.386	0.399	0.453	0.453
OFF samples									
7	0.493	0.439	0.439	0.453	0.506	0.399	0.479	0.439	0.413
8	0.399	0.493	0.413	0.453	0.466	0.426	0.453	0.386	0.426
9	0.466	0.453	0.453	0.413	0.399	0.426	0.493	0.439	0.479
10	0.413	0.413	0.426	0.426	0.426	0.399	0.439	0.426	0.439
11	0.399	0.426	0.373	0.386	0.426	0.439	0.426	0.386	0.439
Statistics									
Min	0.399	0.413	0.373	0.386	0.399	0.399	0.426	0.386	0.413
Max	0.493	0.493	0.453	0.453	0.506	0.439	0.493	0.439	0.479
Average	0.434	0.445	0.421	0.426	0.445	0.418	0.458	0.415	0.439
Sigma	0.038	0.028	0.027	0.025	0.037	0.016	0.025	0.024	0.022

Drift Calculation

DNL+ 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-54.0E-03	-54.0E-03	-40.0E-03	13.0E-03	-94.0E-03	-14.0E-03	-54.0E-03	-80.0E-03
8	-	94.0E-03	14.0E-03	54.0E-03	67.0E-03	27.0E-03	54.0E-03	-13.0E-03	27.0E-03
9	-	-13.0E-03	-13.0E-03	-53.0E-03	-67.0E-03	-40.0E-03	27.0E-03	-27.0E-03	13.0E-03
10	-	0.0E+00	13.0E-03	13.0E-03	13.0E-03	-14.0E-03	26.0E-03	13.0E-03	26.0E-03
11	-	27.0E-03	-26.0E-03	-13.0E-03	27.0E-03	40.0E-03	27.0E-03	-13.0E-03	40.0E-03
Average	-	10.8E-03	-13.2E-03	-7.8E-03	10.6E-03	-16.2E-03	24.0E-03	-18.8E-03	5.2E-03
Sigma	-	49.1E-03	25.5E-03	38.4E-03	43.6E-03	48.3E-03	21.8E-03	21.8E-03	43.4E-03

Parameter : Differential Non linearity : DNL- 3VIN0
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.254	-0.334	-0.400	-0.280	-0.347	-0.320	-0.280	-0.294	-0.254
ON samples									
2	-0.227	-0.280	-0.294	-0.227	-0.240	-0.280	-0.320	-0.227	-0.267
3	-0.240	-0.280	-0.227	-0.254	-0.214	-0.267	-0.254	-0.267	-0.254
4	-0.240	-0.240	-0.227	-0.214	-0.254	-0.307	-0.294	-0.254	-0.280
5	-0.280	-0.280	-0.280	-0.240	-0.294	-0.507	-0.347	-0.414	-0.240
6	-0.267	-0.240	-0.280	-0.294	-0.280	-0.400	-0.374	-0.320	-0.360
Statistics									
Min	-0.280	-0.280	-0.294	-0.294	-0.294	-0.507	-0.374	-0.414	-0.360
Max	-0.227	-0.240	-0.227	-0.214	-0.214	-0.267	-0.254	-0.227	-0.240
Average	-0.251	-0.264	-0.262	-0.246	-0.256	-0.352	-0.318	-0.296	-0.280
Sigma	0.020	0.020	0.029	0.028	0.028	0.090	0.042	0.066	0.042

Drift Calculation

DNL- 3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-53.0E-03	-67.0E-03	0.0E+00	-13.0E-03	-53.0E-03	-93.0E-03	0.0E+00	-40.0E-03
3	-	-40.0E-03	13.0E-03	-14.0E-03	26.0E-03	-27.0E-03	-14.0E-03	-27.0E-03	-14.0E-03
4	-	0.0E+00	13.0E-03	26.0E-03	-14.0E-03	-67.0E-03	-54.0E-03	-14.0E-03	-40.0E-03
5	-	0.0E+00	0.0E+00	40.0E-03	-14.0E-03	-227.0E-03	-67.0E-03	-134.0E-03	40.0E-03
6	-	27.0E-03	-13.0E-03	-27.0E-03	-13.0E-03	-133.0E-03	-107.0E-03	-53.0E-03	-93.0E-03
Average	-	-13.2E-03	-10.8E-03	5.0E-03	-5.6E-03	-101.4E-03	-67.0E-03	-45.6E-03	-29.4E-03
Sigma	-	29.2E-03	29.7E-03	24.8E-03	15.8E-03	71.9E-03	32.4E-03	47.5E-03	43.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

DNL_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.254	-0.334	-0.400	-0.280	-0.347	-0.320	-0.280	-0.294	-0.254
OFF samples									
7	-0.254	-0.240	-0.280	-0.200	-0.240	-0.280	-0.267	-0.254	-0.280
8	-0.267	-0.240	-0.254	-0.240	-0.240	-0.227	-0.240	-0.254	-0.240
9	-0.254	-0.227	-0.267	-0.227	-0.227	-0.254	-0.227	-0.227	-0.267
10	-0.254	-0.254	-0.227	-0.280	-0.200	-0.280	-0.267	-0.267	-0.294
11	-0.267	-0.254	-0.254	-0.240	-0.227	-0.320	-0.240	-0.254	-0.240
Statistics									
Min	-0.267	-0.254	-0.280	-0.280	-0.240	-0.320	-0.267	-0.267	-0.294
Max	-0.254	-0.227	-0.227	-0.200	-0.200	-0.227	-0.227	-0.227	-0.240
Average	-0.259	-0.243	-0.256	-0.237	-0.227	-0.272	-0.248	-0.251	-0.264
Sigma	0.006	0.010	0.018	0.026	0.015	0.031	0.016	0.013	0.022

Drift Calculation

DNL_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	14.0E-03	-26.0E-03	54.0E-03	14.0E-03	-26.0E-03	-13.0E-03	0.0E+00	-26.0E-03
8	-	27.0E-03	13.0E-03	27.0E-03	27.0E-03	40.0E-03	27.0E-03	13.0E-03	27.0E-03
9	-	27.0E-03	-13.0E-03	27.0E-03	27.0E-03	0.0E+00	27.0E-03	27.0E-03	-13.0E-03
10	-	0.0E+00	27.0E-03	-26.0E-03	54.0E-03	-26.0E-03	-13.0E-03	-13.0E-03	-40.0E-03
11	-	13.0E-03	13.0E-03	27.0E-03	40.0E-03	-53.0E-03	27.0E-03	13.0E-03	27.0E-03
Average	-	16.2E-03	2.8E-03	21.8E-03	32.4E-03	-13.0E-03	11.0E-03	8.0E-03	-5.0E-03
Sigma	-	10.1E-03	19.4E-03	26.1E-03	13.6E-03	31.4E-03	19.6E-03	13.5E-03	27.5E-03

Parameter : Differential Non linearity : DNL- 3VIN1

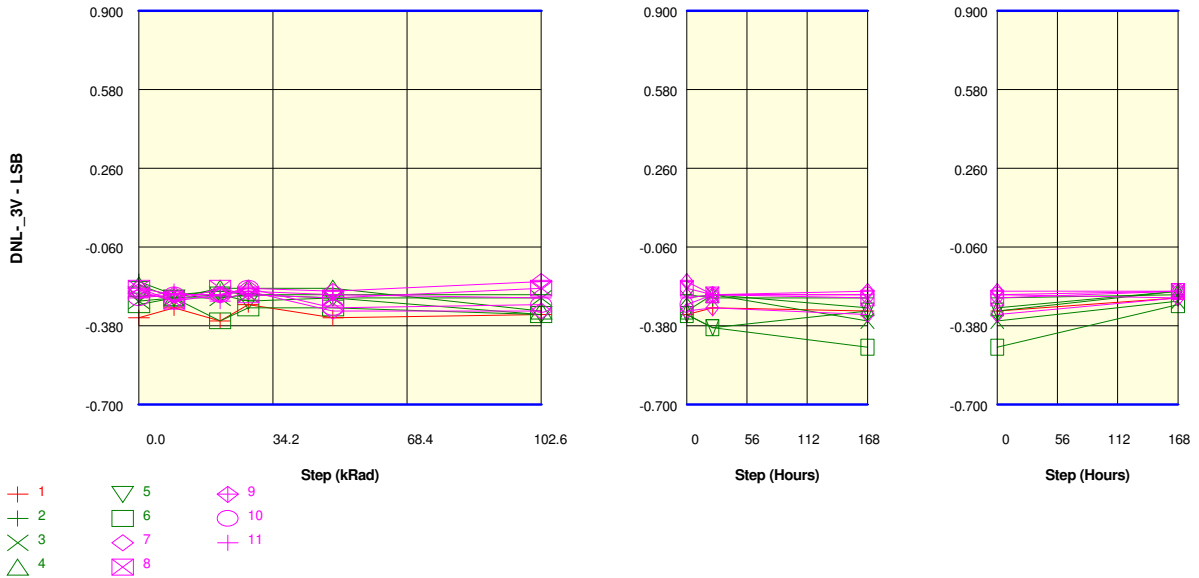
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -0.700

Spec Limit Max : 0.900

Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.347	-0.307	-0.360	-0.294	-0.347	-0.334	-0.307	-0.320	-0.267
ON samples									
2	-0.200	-0.254	-0.240	-0.254	-0.254	-0.254	-0.267	-0.267	-0.254
3	-0.280	-0.267	-0.267	-0.254	-0.267	-0.267	-0.254	-0.360	-0.280
4	-0.214	-0.267	-0.227	-0.227	-0.227	-0.320	-0.254	-0.307	-0.240
5	-0.254	-0.267	-0.254	-0.280	-0.267	-0.334	-0.387	-0.320	-0.240
6	-0.294	-0.267	-0.360	-0.307	-0.307	-0.334	-0.387	-0.467	-0.294
Statistics									
Min	-0.294	-0.267	-0.360	-0.307	-0.307	-0.334	-0.387	-0.467	-0.294
Max	-0.200	-0.254	-0.227	-0.227	-0.227	-0.254	-0.254	-0.267	-0.240
Average	-0.248	-0.264	-0.270	-0.264	-0.264	-0.302	-0.310	-0.344	-0.262
Sigma	0.036	0.005	0.047	0.027	0.026	0.034	0.063	0.068	0.022

Drift Calculation

DNL- 3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-54.0E-03	-40.0E-03	-54.0E-03	-54.0E-03	-54.0E-03	-67.0E-03	-67.0E-03	-54.0E-03
3	-	13.0E-03	13.0E-03	26.0E-03	13.0E-03	13.0E-03	26.0E-03	-80.0E-03	0.0E+00
4	-	-53.0E-03	-13.0E-03	-13.0E-03	-13.0E-03	-106.0E-03	-40.0E-03	-93.0E-03	-26.0E-03
5	-	-13.0E-03	0.0E+00	-26.0E-03	-13.0E-03	-80.0E-03	-133.0E-03	-66.0E-03	14.0E-03
6	-	27.0E-03	-66.0E-03	-13.0E-03	-13.0E-03	-40.0E-03	-93.0E-03	-173.0E-03	0.0E+00
Average	-	-16.0E-03	-21.2E-03	-16.0E-03	-16.0E-03	-53.4E-03	-61.4E-03	-95.8E-03	-13.2E-03
Sigma	-	33.2E-03	28.4E-03	25.8E-03	21.5E-03	40.2E-03	53.4E-03	39.8E-03	24.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

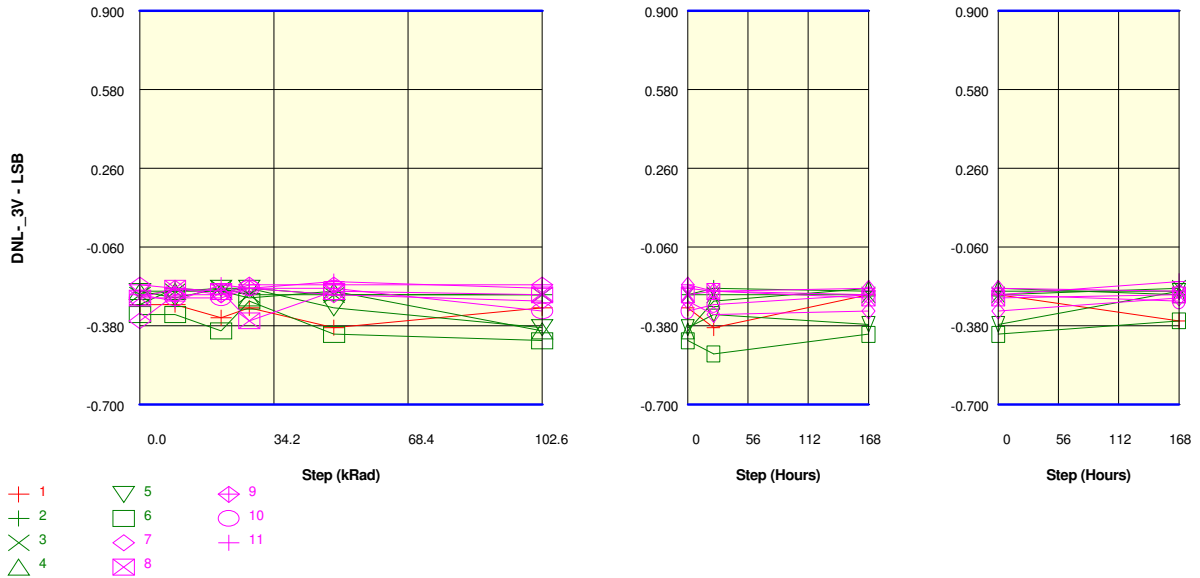
Measurements

DNL_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.347	-0.307	-0.360	-0.294	-0.347	-0.334	-0.307	-0.320	-0.267
OFF samples									
7	-0.240	-0.280	-0.254	-0.240	-0.320	-0.320	-0.307	-0.334	-0.267
8	-0.227	-0.280	-0.227	-0.254	-0.267	-0.227	-0.254	-0.267	-0.240
9	-0.227	-0.254	-0.254	-0.227	-0.240	-0.200	-0.254	-0.240	-0.240
10	-0.267	-0.254	-0.254	-0.227	-0.307	-0.294	-0.254	-0.254	-0.240
11	-0.267	-0.240	-0.280	-0.240	-0.254	-0.267	-0.254	-0.254	-0.267
Statistics									
Min	-0.267	-0.280	-0.280	-0.254	-0.320	-0.320	-0.307	-0.334	-0.267
Max	-0.227	-0.240	-0.227	-0.227	-0.240	-0.200	-0.254	-0.240	-0.240
Average	-0.246	-0.262	-0.254	-0.238	-0.278	-0.262	-0.265	-0.270	-0.251
Sigma	0.018	0.016	0.017	0.010	0.031	0.044	0.021	0.033	0.013

Drift Calculation

DNL_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-40.0E-03	-14.0E-03	0.0E+00	-80.0E-03	-80.0E-03	-67.0E-03	-94.0E-03	-27.0E-03
8	-	-53.0E-03	0.0E+00	-27.0E-03	-40.0E-03	0.0E+00	-27.0E-03	-40.0E-03	-13.0E-03
9	-	-27.0E-03	-27.0E-03	0.0E+00	-13.0E-03	27.0E-03	-27.0E-03	-13.0E-03	-13.0E-03
10	-	13.0E-03	13.0E-03	40.0E-03	-40.0E-03	-27.0E-03	13.0E-03	13.0E-03	27.0E-03
11	-	27.0E-03	-13.0E-03	27.0E-03	13.0E-03	0.0E+00	13.0E-03	13.0E-03	0.0E+00
Average	-	-16.0E-03	-8.2E-03	8.0E-03	-32.0E-03	-16.0E-03	-19.0E-03	-24.2E-03	-5.2E-03
Sigma	-	30.8E-03	13.6E-03	23.4E-03	31.0E-03	36.3E-03	29.9E-03	40.0E-03	18.2E-03

Parameter : Differential Non linearity : DNL-_3VIN2
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.294	-0.294	-0.347	-0.307	-0.387	-0.307	-0.387	-0.254	-0.360
ON samples									
2	-0.294	-0.227	-0.240	-0.227	-0.254	-0.254	-0.227	-0.240	-0.240
3	-0.254	-0.240	-0.227	-0.254	-0.254	-0.254	-0.254	-0.254	-0.227
4	-0.240	-0.240	-0.240	-0.267	-0.240	-0.400	-0.280	-0.227	-0.254
5	-0.240	-0.267	-0.227	-0.227	-0.307	-0.387	-0.334	-0.374	-0.240
6	-0.334	-0.334	-0.400	-0.280	-0.414	-0.440	-0.494	-0.414	-0.360
Statistics									
Min	-0.334	-0.334	-0.400	-0.280	-0.414	-0.440	-0.494	-0.414	-0.360
Max	-0.240	-0.227	-0.227	-0.227	-0.240	-0.254	-0.227	-0.227	-0.227
Average	-0.272	-0.262	-0.267	-0.251	-0.294	-0.347	-0.318	-0.302	-0.264
Sigma	0.037	0.038	0.067	0.021	0.064	0.078	0.095	0.077	0.049

Drift Calculation

DNL- 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	67.0E-03	54.0E-03	67.0E-03	40.0E-03	40.0E-03	67.0E-03	54.0E-03	54.0E-03
3	-	14.0E-03	27.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	27.0E-03
4	-	0.0E+00	0.0E+00	-27.0E-03	0.0E+00	-160.0E-03	-40.0E-03	13.0E-03	-14.0E-03
5	-	-27.0E-03	13.0E-03	13.0E-03	-67.0E-03	-147.0E-03	-94.0E-03	-134.0E-03	0.0E+00
6	-	0.0E+00	-66.0E-03	54.0E-03	-80.0E-03	-106.0E-03	-160.0E-03	-80.0E-03	-26.0E-03
Average	-	10.8E-03	5.6E-03	21.4E-03	-21.4E-03	-74.6E-03	-45.4E-03	-29.4E-03	8.2E-03
Sigma	-	31.1E-03	40.0E-03	34.7E-03	45.2E-03	80.3E-03	77.7E-03	68.0E-03	28.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

DNL- 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.294	-0.294	-0.347	-0.307	-0.387	-0.307	-0.387	-0.254	-0.360
OFF samples									
7	-0.360	-0.254	-0.254	-0.227	-0.254	-0.280	-0.334	-0.320	-0.267
8	-0.267	-0.227	-0.240	-0.360	-0.240	-0.254	-0.240	-0.267	-0.254
9	-0.214	-0.227	-0.254	-0.214	-0.214	-0.214	-0.240	-0.227	-0.240
10	-0.267	-0.267	-0.267	-0.227	-0.227	-0.320	-0.294	-0.254	-0.280
11	-0.254	-0.280	-0.214	-0.227	-0.200	-0.227	-0.240	-0.254	-0.200
Statistics									
Min	-0.360	-0.280	-0.267	-0.360	-0.254	-0.320	-0.334	-0.320	-0.280
Max	-0.214	-0.227	-0.214	-0.214	-0.200	-0.214	-0.240	-0.227	-0.200
Average	-0.272	-0.251	-0.246	-0.251	-0.227	-0.259	-0.270	-0.264	-0.248
Sigma	0.048	0.021	0.018	0.055	0.019	0.038	0.038	0.031	0.028

Drift Calculation

DNL- 3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	106.0E-03	106.0E-03	133.0E-03	106.0E-03	80.0E-03	26.0E-03	40.0E-03	93.0E-03
8	-	40.0E-03	27.0E-03	-93.0E-03	27.0E-03	13.0E-03	27.0E-03	0.0E+00	13.0E-03
9	-	-13.0E-03	-40.0E-03	0.0E+00	0.0E+00	0.0E+00	-26.0E-03	-13.0E-03	-26.0E-03
10	-	0.0E+00	0.0E+00	40.0E-03	40.0E-03	-53.0E-03	-27.0E-03	13.0E-03	-13.0E-03
11	-	-26.0E-03	40.0E-03	27.0E-03	54.0E-03	27.0E-03	14.0E-03	0.0E+00	54.0E-03
Average	-	21.4E-03	26.6E-03	21.4E-03	45.4E-03	13.4E-03	2.8E-03	8.0E-03	24.2E-03
Sigma	-	47.7E-03	48.2E-03	72.6E-03	35.1E-03	42.9E-03	24.4E-03	18.0E-03	43.9E-03

Parameter : Differential Non linearity : DNL- 3VIN3

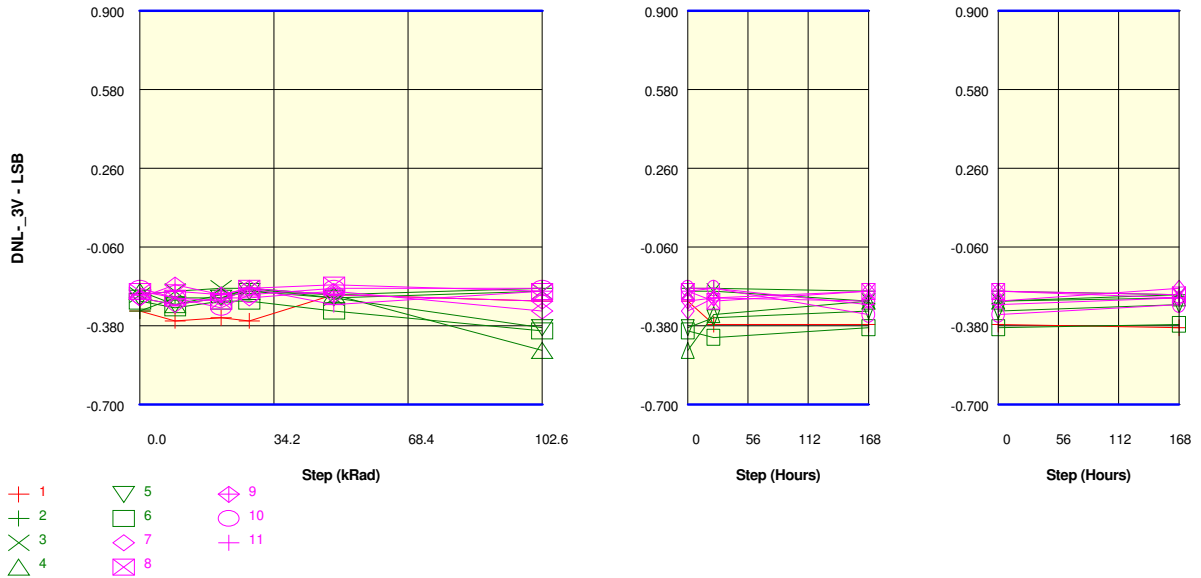
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -0.700

Spec Limit Max : 0.900

Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.320	-0.360	-0.347	-0.360	-0.254	-0.280	-0.374	-0.374	-0.387
ON samples									
2	-0.320	-0.267	-0.267	-0.227	-0.254	-0.227	-0.227	-0.240	-0.254
3	-0.254	-0.240	-0.227	-0.227	-0.267	-0.240	-0.240	-0.280	-0.254
4	-0.240	-0.294	-0.254	-0.240	-0.254	-0.480	-0.334	-0.280	-0.267
5	-0.267	-0.294	-0.267	-0.240	-0.267	-0.387	-0.347	-0.320	-0.294
6	-0.280	-0.307	-0.280	-0.280	-0.320	-0.400	-0.427	-0.387	-0.374
Statistics									
Min	-0.320	-0.307	-0.280	-0.280	-0.320	-0.480	-0.427	-0.387	-0.374
Max	-0.240	-0.240	-0.227	-0.227	-0.254	-0.227	-0.227	-0.240	-0.254
Average	-0.272	-0.280	-0.259	-0.243	-0.272	-0.347	-0.315	-0.301	-0.289
Sigma	0.027	0.024	0.018	0.019	0.024	0.098	0.074	0.050	0.045

Drift Calculation

DNL- 3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	53.0E-03	53.0E-03	93.0E-03	66.0E-03	93.0E-03	93.0E-03	80.0E-03	66.0E-03
3	-	14.0E-03	27.0E-03	27.0E-03	-13.0E-03	14.0E-03	14.0E-03	-26.0E-03	0.0E+00
4	-	-54.0E-03	-14.0E-03	0.0E+00	-14.0E-03	-240.0E-03	-94.0E-03	-40.0E-03	-27.0E-03
5	-	-27.0E-03	0.0E+00	27.0E-03	0.0E+00	-120.0E-03	-80.0E-03	-53.0E-03	-27.0E-03
6	-	-27.0E-03	0.0E+00	0.0E+00	-40.0E-03	-120.0E-03	-147.0E-03	-107.0E-03	-94.0E-03
Average	-	-8.2E-03	13.2E-03	29.4E-03	-200.0E-06	-74.6E-03	-42.8E-03	-29.2E-03	-16.4E-03
Sigma	-	37.5E-03	23.9E-03	34.0E-03	35.6E-03	116.1E-03	85.5E-03	61.1E-03	51.6E-03

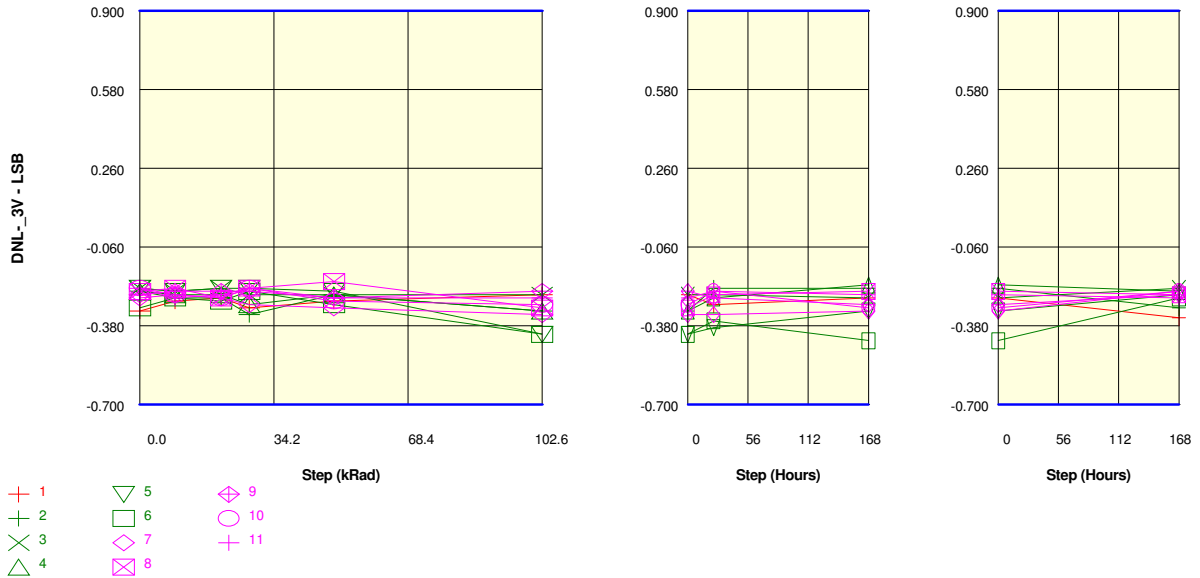
Measurements

DNL_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.320	-0.360	-0.347	-0.360	-0.254	-0.280	-0.374	-0.374	-0.387
OFF samples									
7	-0.267	-0.294	-0.267	-0.267	-0.240	-0.320	-0.267	-0.280	-0.227
8	-0.240	-0.267	-0.280	-0.227	-0.214	-0.240	-0.280	-0.240	-0.254
9	-0.267	-0.214	-0.254	-0.227	-0.254	-0.280	-0.267	-0.240	-0.267
10	-0.227	-0.267	-0.307	-0.254	-0.227	-0.227	-0.227	-0.334	-0.294
11	-0.254	-0.240	-0.254	-0.227	-0.294	-0.240	-0.227	-0.294	-0.267
Statistics									
Min	-0.267	-0.294	-0.307	-0.267	-0.294	-0.320	-0.280	-0.334	-0.294
Max	-0.227	-0.214	-0.254	-0.227	-0.214	-0.227	-0.227	-0.240	-0.227
Average	-0.251	-0.256	-0.272	-0.240	-0.246	-0.261	-0.254	-0.278	-0.262
Sigma	0.016	0.027	0.020	0.017	0.028	0.034	0.022	0.035	0.022

Drift Calculation

DNL_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-27.0E-03	0.0E+00	0.0E+00	27.0E-03	-53.0E-03	0.0E+00	-13.0E-03	40.0E-03
8	-	-27.0E-03	-40.0E-03	13.0E-03	26.0E-03	0.0E+00	-40.0E-03	0.0E+00	-14.0E-03
9	-	53.0E-03	13.0E-03	40.0E-03	13.0E-03	-13.0E-03	0.0E+00	27.0E-03	0.0E+00
10	-	-40.0E-03	-80.0E-03	-27.0E-03	0.0E+00	0.0E+00	0.0E+00	-107.0E-03	-67.0E-03
11	-	14.0E-03	0.0E+00	27.0E-03	-40.0E-03	14.0E-03	27.0E-03	-40.0E-03	-13.0E-03
Average	-	-5.4E-03	-21.4E-03	10.6E-03	5.2E-03	-10.4E-03	-2.6E-03	-26.6E-03	-10.8E-03
Sigma	-	34.4E-03	34.3E-03	23.1E-03	24.7E-03	22.9E-03	21.4E-03	45.6E-03	34.3E-03

Parameter : Differential Non linearity : DNL-_3VIN4
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.320	-0.280	-0.267	-0.307	-0.280	-0.254	-0.294	-0.267	-0.347
ON samples									
2	-0.240	-0.267	-0.267	-0.334	-0.254	-0.320	-0.227	-0.227	-0.307
3	-0.227	-0.240	-0.227	-0.254	-0.254	-0.254	-0.254	-0.267	-0.227
4	-0.240	-0.254	-0.254	-0.294	-0.254	-0.320	-0.267	-0.214	-0.240
5	-0.227	-0.240	-0.227	-0.227	-0.240	-0.414	-0.387	-0.320	-0.254
6	-0.307	-0.267	-0.280	-0.240	-0.294	-0.414	-0.360	-0.440	-0.267
Statistics									
Min	-0.307	-0.267	-0.280	-0.334	-0.294	-0.414	-0.387	-0.440	-0.307
Max	-0.227	-0.240	-0.227	-0.227	-0.240	-0.254	-0.227	-0.214	-0.227
Average	-0.248	-0.254	-0.251	-0.270	-0.259	-0.344	-0.299	-0.294	-0.259
Sigma	0.030	0.012	0.021	0.039	0.018	0.062	0.063	0.082	0.027

Drift Calculation

DNL- 3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-27.0E-03	-27.0E-03	-94.0E-03	-14.0E-03	-80.0E-03	13.0E-03	13.0E-03	-67.0E-03
3	-	-13.0E-03	0.0E+00	-27.0E-03	-27.0E-03	-27.0E-03	-27.0E-03	-40.0E-03	0.0E+00
4	-	-14.0E-03	-14.0E-03	-54.0E-03	-14.0E-03	-80.0E-03	-27.0E-03	26.0E-03	0.0E+00
5	-	-13.0E-03	0.0E+00	0.0E+00	-13.0E-03	-187.0E-03	-160.0E-03	-93.0E-03	-27.0E-03
6	-	40.0E-03	27.0E-03	67.0E-03	13.0E-03	-107.0E-03	-53.0E-03	-133.0E-03	40.0E-03
Average	-	-5.4E-03	-2.8E-03	-21.6E-03	-11.0E-03	-96.2E-03	-50.8E-03	-45.4E-03	-10.8E-03
Sigma	-	23.3E-03	18.0E-03	54.1E-03	13.1E-03	52.3E-03	58.5E-03	60.8E-03	35.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

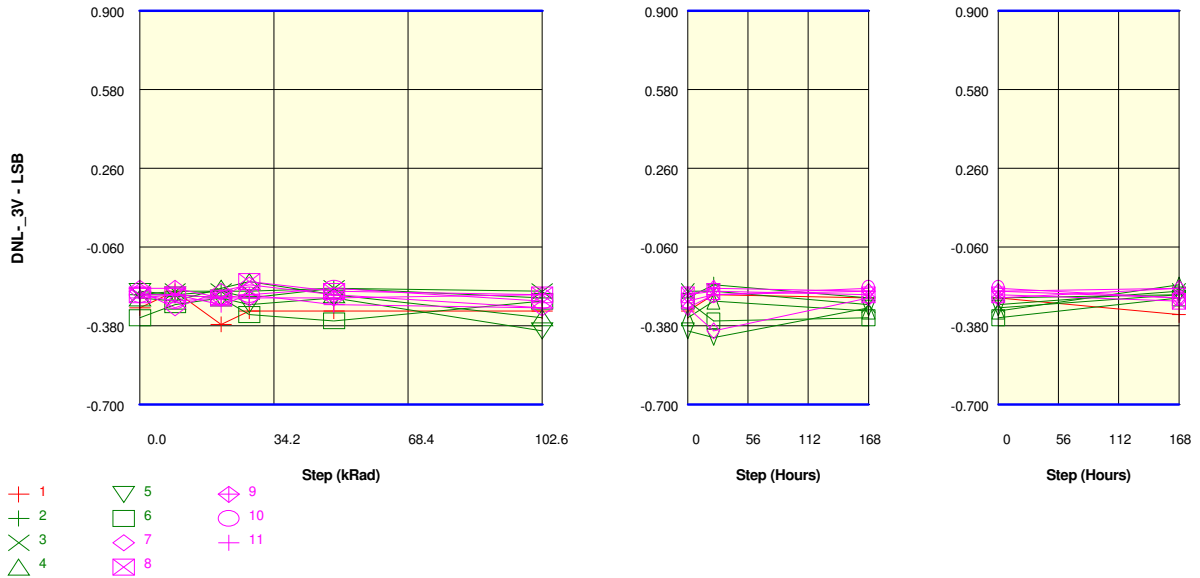
Measurements

DNL_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.320	-0.280	-0.267	-0.307	-0.280	-0.254	-0.294	-0.267	-0.347
OFF samples									
7	-0.267	-0.254	-0.267	-0.294	-0.307	-0.334	-0.334	-0.320	-0.240
8	-0.240	-0.227	-0.267	-0.227	-0.200	-0.307	-0.254	-0.240	-0.254
9	-0.254	-0.240	-0.240	-0.240	-0.267	-0.240	-0.267	-0.294	-0.254
10	-0.227	-0.254	-0.267	-0.227	-0.280	-0.294	-0.240	-0.307	-0.240
11	-0.227	-0.267	-0.254	-0.227	-0.267	-0.267	-0.240	-0.254	-0.267
Statistics									
Min	-0.267	-0.267	-0.267	-0.294	-0.307	-0.334	-0.334	-0.320	-0.267
Max	-0.227	-0.227	-0.240	-0.227	-0.200	-0.240	-0.240	-0.240	-0.240
Average	-0.243	-0.248	-0.259	-0.243	-0.264	-0.288	-0.267	-0.283	-0.251
Sigma	0.016	0.014	0.011	0.026	0.035	0.032	0.035	0.031	0.010

Drift Calculation

DNL_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	13.0E-03	0.0E+00	-27.0E-03	-40.0E-03	-67.0E-03	-67.0E-03	-53.0E-03	27.0E-03
8	-	13.0E-03	-27.0E-03	13.0E-03	40.0E-03	-67.0E-03	-14.0E-03	0.0E+00	-14.0E-03
9	-	14.0E-03	14.0E-03	14.0E-03	-13.0E-03	14.0E-03	-13.0E-03	-40.0E-03	0.0E+00
10	-	-27.0E-03	-40.0E-03	0.0E+00	-53.0E-03	-67.0E-03	-13.0E-03	-80.0E-03	-13.0E-03
11	-	-40.0E-03	-27.0E-03	0.0E+00	-40.0E-03	-40.0E-03	-13.0E-03	-27.0E-03	-40.0E-03
Average	-	-5.4E-03	-16.0E-03	5.6E-18	-21.2E-03	-45.4E-03	-24.0E-03	-40.0E-03	-8.0E-03
Sigma	-	23.3E-03	19.9E-03	14.8E-03	33.3E-03	31.5E-03	21.5E-03	26.6E-03	21.8E-03

Parameter : Differential Non linearity : DNL- 3VIN5
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.307	-0.240	-0.374	-0.320	-0.320	-0.320	-0.254	-0.267	-0.334
ON samples									
2	-0.254	-0.254	-0.240	-0.267	-0.227	-0.267	-0.214	-0.267	-0.254
3	-0.254	-0.240	-0.240	-0.240	-0.227	-0.240	-0.240	-0.294	-0.240
4	-0.267	-0.280	-0.227	-0.200	-0.254	-0.347	-0.280	-0.320	-0.214
5	-0.240	-0.254	-0.267	-0.294	-0.267	-0.400	-0.427	-0.307	-0.254
6	-0.347	-0.294	-0.267	-0.334	-0.360	-0.280	-0.360	-0.347	-0.267
Statistics									
Min	-0.347	-0.294	-0.267	-0.334	-0.360	-0.400	-0.427	-0.347	-0.267
Max	-0.240	-0.240	-0.227	-0.200	-0.227	-0.240	-0.214	-0.267	-0.214
Average	-0.272	-0.264	-0.248	-0.267	-0.267	-0.307	-0.304	-0.307	-0.246
Sigma	0.038	0.020	0.016	0.046	0.049	0.058	0.079	0.027	0.018

Drift Calculation

DNL- 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	14.0E-03	-13.0E-03	27.0E-03	-13.0E-03	40.0E-03	-13.0E-03	0.0E+00
3	-	14.0E-03	14.0E-03	14.0E-03	27.0E-03	14.0E-03	14.0E-03	-40.0E-03	14.0E-03
4	-	-13.0E-03	40.0E-03	67.0E-03	13.0E-03	-80.0E-03	-13.0E-03	-53.0E-03	53.0E-03
5	-	-14.0E-03	-27.0E-03	-54.0E-03	-27.0E-03	-160.0E-03	-187.0E-03	-67.0E-03	-14.0E-03
6	-	53.0E-03	80.0E-03	13.0E-03	-13.0E-03	67.0E-03	-13.0E-03	0.0E+00	80.0E-03
Average	-	8.0E-03	24.2E-03	5.4E-03	5.4E-03	-34.4E-03	-31.8E-03	-34.6E-03	26.6E-03
Sigma	-	24.7E-03	35.2E-03	39.5E-03	21.8E-03	78.7E-03	80.1E-03	24.8E-03	34.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

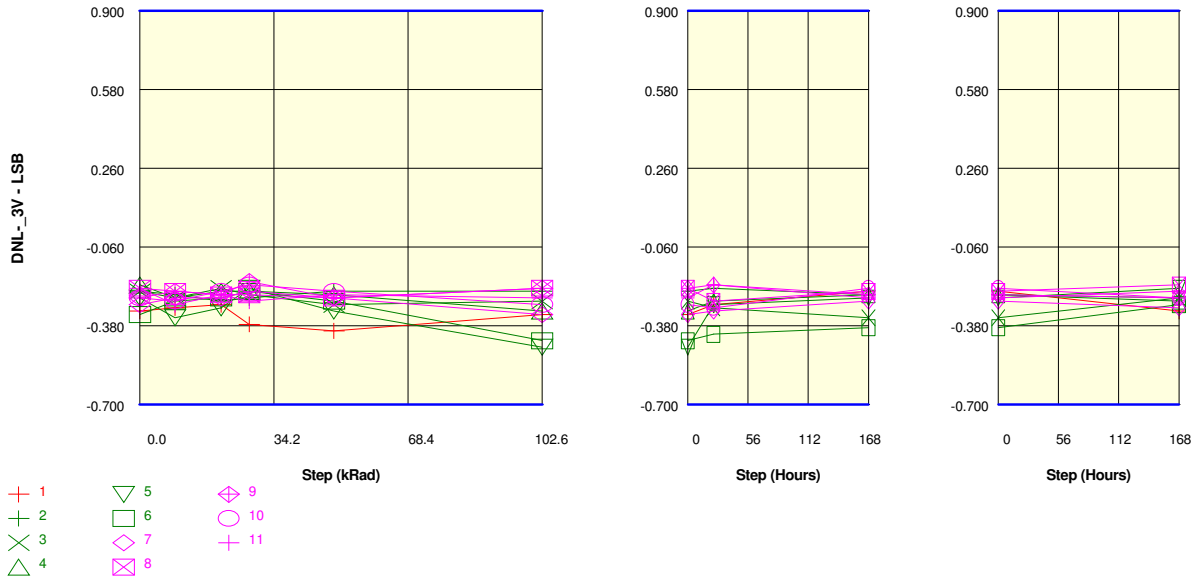
Measurements

DNL- 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.307	-0.240	-0.374	-0.320	-0.320	-0.320	-0.254	-0.267	-0.334
OFF samples									
7	-0.240	-0.307	-0.240	-0.214	-0.254	-0.307	-0.400	-0.267	-0.227
8	-0.254	-0.254	-0.267	-0.200	-0.240	-0.254	-0.240	-0.254	-0.280
9	-0.227	-0.227	-0.267	-0.267	-0.267	-0.254	-0.227	-0.240	-0.267
10	-0.254	-0.280	-0.267	-0.254	-0.227	-0.280	-0.254	-0.227	-0.267
11	-0.267	-0.254	-0.294	-0.254	-0.294	-0.307	-0.254	-0.240	-0.227
Statistics									
Min	-0.267	-0.307	-0.294	-0.267	-0.294	-0.307	-0.400	-0.267	-0.280
Max	-0.227	-0.227	-0.240	-0.200	-0.227	-0.254	-0.227	-0.227	-0.227
Average	-0.248	-0.264	-0.267	-0.238	-0.256	-0.280	-0.275	-0.246	-0.254
Sigma	0.014	0.027	0.017	0.026	0.023	0.024	0.063	0.014	0.022

Drift Calculation

DNL- 3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-67.0E-03	0.0E+00	26.0E-03	-14.0E-03	-67.0E-03	-160.0E-03	-27.0E-03	13.0E-03
8	-	0.0E+00	-13.0E-03	54.0E-03	14.0E-03	0.0E+00	14.0E-03	0.0E+00	-26.0E-03
9	-	0.0E+00	-40.0E-03	-40.0E-03	-40.0E-03	-27.0E-03	0.0E+00	-13.0E-03	-40.0E-03
10	-	-26.0E-03	-13.0E-03	0.0E+00	27.0E-03	-26.0E-03	0.0E+00	27.0E-03	-13.0E-03
11	-	13.0E-03	-27.0E-03	13.0E-03	-27.0E-03	-40.0E-03	13.0E-03	27.0E-03	40.0E-03
Average	-	-16.0E-03	-18.6E-03	10.6E-03	-8.0E-03	-32.0E-03	-26.6E-03	2.8E-03	-5.2E-03
Sigma	-	28.5E-03	13.7E-03	31.0E-03	25.0E-03	21.8E-03	67.0E-03	21.5E-03	28.6E-03

Parameter : Differential Non linearity : DNL- 3VIN6
Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.320	-0.307	-0.294	-0.374	-0.400	-0.334	-0.294	-0.240	-0.320
ON samples									
2	-0.240	-0.254	-0.280	-0.267	-0.240	-0.240	-0.227	-0.254	-0.267
3	-0.240	-0.267	-0.227	-0.254	-0.294	-0.280	-0.307	-0.347	-0.267
4	-0.214	-0.267	-0.240	-0.240	-0.254	-0.320	-0.280	-0.254	-0.280
5	-0.267	-0.347	-0.307	-0.227	-0.320	-0.467	-0.294	-0.267	-0.227
6	-0.334	-0.280	-0.267	-0.240	-0.280	-0.440	-0.414	-0.387	-0.294
Statistics									
Min	-0.334	-0.347	-0.307	-0.267	-0.320	-0.467	-0.414	-0.387	-0.294
Max	-0.214	-0.254	-0.227	-0.227	-0.240	-0.240	-0.227	-0.254	-0.227
Average	-0.259	-0.283	-0.264	-0.246	-0.278	-0.349	-0.304	-0.302	-0.267
Sigma	0.041	0.033	0.028	0.014	0.028	0.089	0.061	0.055	0.022

Drift Calculation

DNL- 3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-14.0E-03	-40.0E-03	-27.0E-03	0.0E+00	0.0E+00	13.0E-03	-14.0E-03	-27.0E-03
3	-	-27.0E-03	13.0E-03	-14.0E-03	-54.0E-03	-40.0E-03	-67.0E-03	-107.0E-03	-27.0E-03
4	-	-53.0E-03	-26.0E-03	-26.0E-03	-40.0E-03	-106.0E-03	-66.0E-03	-40.0E-03	-66.0E-03
5	-	-80.0E-03	-40.0E-03	40.0E-03	-53.0E-03	-200.0E-03	-27.0E-03	0.0E+00	40.0E-03
6	-	54.0E-03	67.0E-03	94.0E-03	54.0E-03	-106.0E-03	-80.0E-03	-53.0E-03	40.0E-03
Average	-	-24.0E-03	-5.2E-03	13.4E-03	-18.6E-03	-90.4E-03	-45.4E-03	-42.8E-03	-8.0E-03
Sigma	-	45.1E-03	41.0E-03	47.2E-03	41.3E-03	68.1E-03	34.2E-03	37.1E-03	41.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

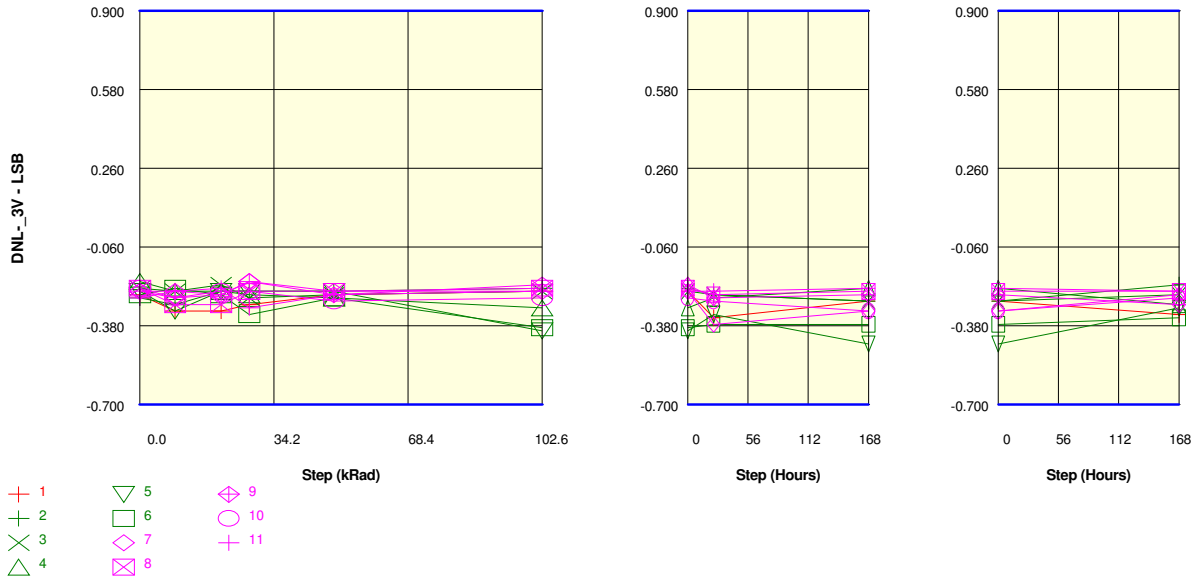
Measurements

DNL_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.320	-0.307	-0.294	-0.374	-0.400	-0.334	-0.294	-0.240	-0.320
OFF samples									
7	-0.294	-0.267	-0.267	-0.240	-0.267	-0.334	-0.320	-0.280	-0.307
8	-0.227	-0.240	-0.254	-0.254	-0.267	-0.227	-0.280	-0.240	-0.214
9	-0.267	-0.240	-0.254	-0.200	-0.267	-0.227	-0.214	-0.254	-0.267
10	-0.267	-0.280	-0.240	-0.214	-0.240	-0.294	-0.307	-0.227	-0.267
11	-0.227	-0.294	-0.254	-0.280	-0.254	-0.267	-0.214	-0.267	-0.240
Statistics									
Min	-0.294	-0.294	-0.267	-0.280	-0.267	-0.334	-0.320	-0.280	-0.307
Max	-0.227	-0.240	-0.240	-0.200	-0.240	-0.227	-0.214	-0.227	-0.214
Average	-0.256	-0.264	-0.254	-0.238	-0.259	-0.270	-0.267	-0.254	-0.259
Sigma	0.026	0.022	0.009	0.028	0.011	0.041	0.045	0.019	0.031

Drift Calculation

DNL_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	27.0E-03	27.0E-03	54.0E-03	27.0E-03	-40.0E-03	-26.0E-03	14.0E-03	-13.0E-03
8	-	-13.0E-03	-27.0E-03	-27.0E-03	-40.0E-03	0.0E+00	-53.0E-03	-13.0E-03	13.0E-03
9	-	27.0E-03	13.0E-03	67.0E-03	0.0E+00	40.0E-03	53.0E-03	13.0E-03	0.0E+00
10	-	-13.0E-03	27.0E-03	53.0E-03	27.0E-03	-27.0E-03	-40.0E-03	40.0E-03	0.0E+00
11	-	-67.0E-03	-27.0E-03	-53.0E-03	-27.0E-03	-40.0E-03	13.0E-03	-40.0E-03	-13.0E-03
Average	-	-7.8E-03	2.6E-03	18.8E-03	-2.6E-03	-13.4E-03	-10.6E-03	2.8E-03	-2.6E-03
Sigma	-	34.6E-03	24.7E-03	49.0E-03	27.4E-03	30.4E-03	38.7E-03	27.2E-03	9.7E-03

Parameter : Differential Non linearity : DNL- 3VIN7
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.700
 Spec Limit Max : 0.900
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.254	-0.320	-0.320	-0.294	-0.254	-0.240	-0.347	-0.280	-0.334
ON samples									
2	-0.267	-0.294	-0.240	-0.240	-0.240	-0.227	-0.254	-0.280	-0.214
3	-0.227	-0.240	-0.214	-0.267	-0.254	-0.240	-0.254	-0.280	-0.254
4	-0.200	-0.240	-0.240	-0.254	-0.267	-0.307	-0.267	-0.227	-0.294
5	-0.240	-0.320	-0.240	-0.240	-0.240	-0.400	-0.334	-0.454	-0.307
6	-0.254	-0.227	-0.254	-0.334	-0.267	-0.387	-0.374	-0.374	-0.347
Statistics									
Min	-0.267	-0.320	-0.254	-0.334	-0.267	-0.400	-0.374	-0.454	-0.347
Max	-0.200	-0.227	-0.214	-0.240	-0.240	-0.227	-0.254	-0.227	-0.214
Average	-0.238	-0.264	-0.238	-0.267	-0.254	-0.312	-0.297	-0.323	-0.283
Sigma	0.023	0.036	0.013	0.035	0.012	0.072	0.049	0.081	0.046

Drift Calculation

DNL- 3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-27.0E-03	27.0E-03	27.0E-03	27.0E-03	40.0E-03	13.0E-03	-13.0E-03	53.0E-03
3	-	-13.0E-03	13.0E-03	-40.0E-03	-27.0E-03	-13.0E-03	-27.0E-03	-53.0E-03	-27.0E-03
4	-	-40.0E-03	-40.0E-03	-54.0E-03	-67.0E-03	-107.0E-03	-67.0E-03	-27.0E-03	-94.0E-03
5	-	-80.0E-03	0.0E+00	0.0E+00	0.0E+00	-160.0E-03	-94.0E-03	-214.0E-03	-67.0E-03
6	-	27.0E-03	0.0E+00	-80.0E-03	-13.0E-03	-133.0E-03	-120.0E-03	-120.0E-03	-93.0E-03
Average	-	-26.6E-03	11.1E-18	-29.4E-03	-16.0E-03	-74.6E-03	-59.0E-03	-85.4E-03	-45.6E-03
Sigma	-	34.9E-03	22.4E-03	38.3E-03	31.1E-03	75.7E-03	47.4E-03	74.1E-03	55.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

DNL-_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.254	-0.320	-0.320	-0.294	-0.254	-0.240	-0.347	-0.280	-0.334
OFF samples									
7	-0.240	-0.267	-0.254	-0.200	-0.240	-0.240	-0.374	-0.320	-0.254
8	-0.227	-0.294	-0.294	-0.240	-0.240	-0.227	-0.254	-0.240	-0.240
9	-0.240	-0.240	-0.254	-0.200	-0.254	-0.214	-0.267	-0.254	-0.294
10	-0.227	-0.267	-0.240	-0.240	-0.280	-0.267	-0.280	-0.320	-0.267
11	-0.267	-0.240	-0.227	-0.307	-0.254	-0.240	-0.240	-0.227	-0.240
Statistics									
Min	-0.267	-0.294	-0.294	-0.307	-0.280	-0.267	-0.374	-0.320	-0.294
Max	-0.227	-0.240	-0.227	-0.200	-0.240	-0.214	-0.240	-0.227	-0.240
Average	-0.240	-0.262	-0.254	-0.237	-0.254	-0.238	-0.283	-0.272	-0.259
Sigma	0.015	0.020	0.022	0.039	0.015	0.018	0.047	0.040	0.020

Drift Calculation

DNL-_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-27.0E-03	-14.0E-03	40.0E-03	0.0E+00	0.0E+00	-134.0E-03	-80.0E-03	-14.0E-03
8	-	-67.0E-03	-67.0E-03	-13.0E-03	-13.0E-03	0.0E+00	-27.0E-03	-13.0E-03	-13.0E-03
9	-	0.0E+00	-14.0E-03	40.0E-03	-14.0E-03	26.0E-03	-27.0E-03	-14.0E-03	-54.0E-03
10	-	-40.0E-03	-13.0E-03	-13.0E-03	-53.0E-03	-40.0E-03	-53.0E-03	-93.0E-03	-40.0E-03
11	-	27.0E-03	40.0E-03	-40.0E-03	13.0E-03	27.0E-03	27.0E-03	40.0E-03	27.0E-03
Average	-	-21.4E-03	-13.6E-03	2.8E-03	-13.4E-03	2.6E-03	-42.8E-03	-32.0E-03	-18.8E-03
Sigma	-	32.4E-03	33.8E-03	31.9E-03	22.1E-03	24.4E-03	52.5E-03	48.8E-03	27.7E-03

Parameter : Offset Error : Voff_3VIN0

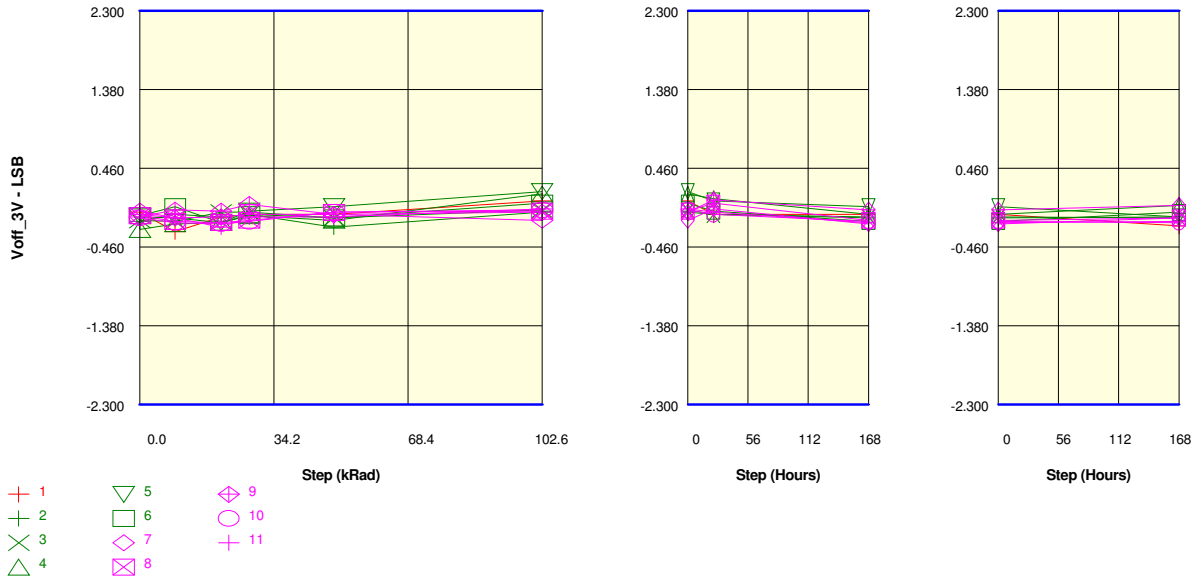
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.053	-0.280	-0.107	-0.080	-0.080	0.080	-0.080	-0.080	-0.213
ON samples									
2	-0.160	-0.080	-0.107	-0.080	-0.227	-0.053	-0.080	-0.120	-0.107
3	-0.147	-0.160	-0.053	-0.053	-0.120	-0.027	-0.080	-0.107	-0.120
4	-0.253	-0.187	-0.173	-0.093	-0.147	0.160	0.107	-0.080	0.027
5	-0.107	-0.120	-0.173	-0.040	0.013	0.187	0.080	0.013	-0.107
6	-0.093	0.013	-0.173	-0.080	-0.120	0.053	-0.040	-0.160	-0.053
Statistics									
Min	-0.253	-0.187	-0.173	-0.093	-0.227	-0.053	-0.080	-0.160	-0.120
Max	-0.093	0.013	-0.053	-0.040	0.013	0.187	0.107	0.013	0.027
Average	-0.152	-0.107	-0.136	-0.069	-0.120	0.064	-0.003	-0.091	-0.072
Sigma	0.056	0.070	0.049	0.020	0.077	0.096	0.080	0.058	0.055

Drift Calculation

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	80.0E-03	53.0E-03	80.0E-03	-67.0E-03	107.0E-03	80.0E-03	40.0E-03	53.0E-03
3	-	-13.0E-03	94.0E-03	94.0E-03	27.0E-03	120.0E-03	67.0E-03	40.0E-03	27.0E-03
4	-	66.0E-03	80.0E-03	160.0E-03	106.0E-03	413.0E-03	360.0E-03	173.0E-03	280.0E-03
5	-	-13.0E-03	-66.0E-03	67.0E-03	120.0E-03	294.0E-03	187.0E-03	120.0E-03	0.0E+00
6	-	106.0E-03	-80.0E-03	13.0E-03	-27.0E-03	146.0E-03	53.0E-03	-67.0E-03	40.0E-03
Average	-	45.2E-03	16.2E-03	82.8E-03	31.8E-03	216.0E-03	149.4E-03	61.2E-03	80.0E-03
Sigma	-	49.2E-03	74.1E-03	47.4E-03	72.8E-03	119.1E-03	115.5E-03	81.6E-03	101.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.053	-0.280	-0.107	-0.080	-0.080	0.080	-0.080	-0.080	-0.213
OFF samples									
7	-0.040	-0.120	-0.107	-0.080	-0.080	-0.147	-0.013	-0.187	-0.120
8	-0.093	-0.160	-0.173	-0.147	-0.053	-0.040	0.053	-0.147	-0.120
9	-0.107	-0.027	-0.040	0.040	-0.080	-0.053	0.093	-0.027	0.027
10	-0.120	-0.173	-0.187	-0.160	-0.053	-0.027	-0.080	-0.160	-0.173
11	-0.080	-0.120	-0.227	-0.107	-0.107	-0.013	-0.053	-0.173	-0.160
Statistics									
Min	-0.120	-0.173	-0.227	-0.160	-0.107	-0.147	-0.080	-0.187	-0.173
Max	-0.040	-0.027	-0.040	0.040	-0.053	-0.013	0.093	-0.027	0.027
Average	-0.088	-0.120	-0.147	-0.091	-0.075	-0.056	0.000	-0.139	-0.109
Sigma	0.027	0.051	0.066	0.071	0.020	0.047	0.065	0.057	0.071

Drift Calculation

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-80.0E-03	-67.0E-03	-40.0E-03	-40.0E-03	-107.0E-03	27.0E-03	-147.0E-03	-80.0E-03
8	-	-67.0E-03	-80.0E-03	-54.0E-03	40.0E-03	53.0E-03	146.0E-03	-54.0E-03	-27.0E-03
9	-	80.0E-03	67.0E-03	147.0E-03	27.0E-03	54.0E-03	200.0E-03	80.0E-03	134.0E-03
10	-	-53.0E-03	-67.0E-03	-40.0E-03	67.0E-03	93.0E-03	40.0E-03	-40.0E-03	-53.0E-03
11	-	-40.0E-03	-147.0E-03	-27.0E-03	-27.0E-03	67.0E-03	27.0E-03	-93.0E-03	-80.0E-03
Average	-	-32.0E-03	-58.8E-03	-2.8E-03	13.4E-03	32.0E-03	88.0E-03	-50.8E-03	-21.2E-03
Sigma	-	57.6E-03	69.6E-03	75.4E-03	40.6E-03	71.0E-03	71.6E-03	75.2E-03	80.1E-03

Parameter : Offset Error : Voff_3VIN1

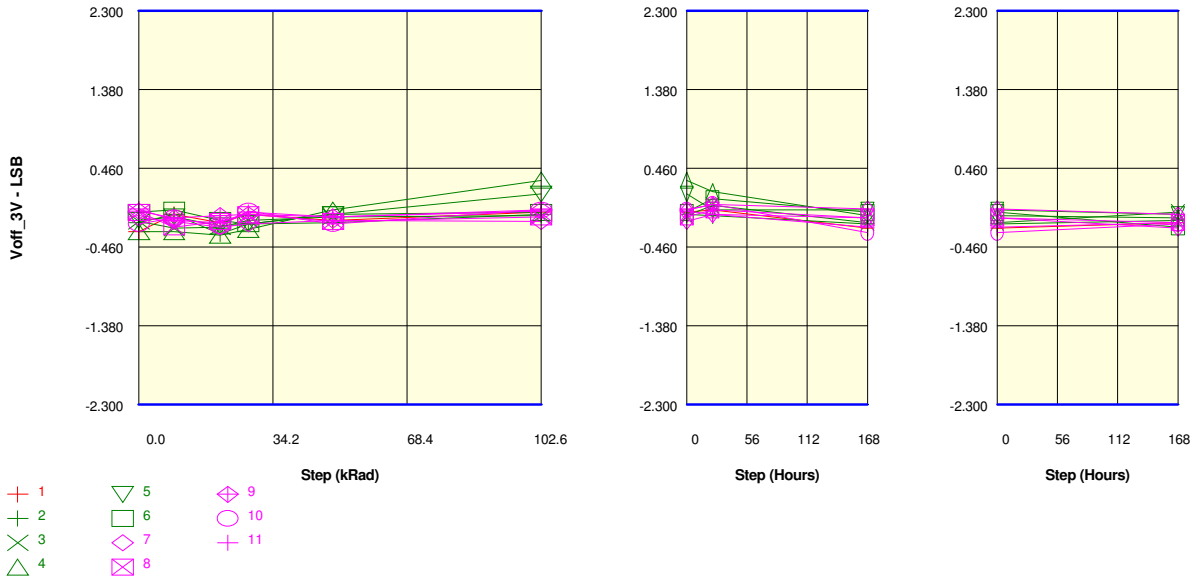
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.280	-0.080	-0.173	-0.080	-0.147	-0.053	-0.027	-0.240	-0.173
ON samples									
2	-0.173	-0.080	-0.307	-0.187	-0.173	-0.080	-0.093	-0.187	-0.147
3	-0.160	-0.240	-0.227	-0.147	-0.107	-0.093	0.027	-0.173	-0.053
4	-0.280	-0.280	-0.320	-0.253	-0.027	0.320	0.187	-0.093	-0.120
5	-0.147	-0.107	-0.213	-0.187	-0.080	0.160	-0.027	-0.027	-0.080
6	-0.053	-0.027	-0.147	-0.187	-0.080	-0.053	0.107	-0.053	-0.227
Statistics									
Min	-0.280	-0.280	-0.320	-0.253	-0.173	-0.093	-0.093	-0.187	-0.227
Max	-0.053	-0.027	-0.147	-0.147	-0.027	0.320	0.187	-0.027	-0.053
Average	-0.163	-0.147	-0.243	-0.192	-0.093	0.051	0.040	-0.107	-0.125
Sigma	0.072	0.097	0.064	0.034	0.048	0.163	0.098	0.064	0.060

Drift Calculation

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	93.0E-03	-134.0E-03	-14.0E-03	0.0E+00	93.0E-03	80.0E-03	-14.0E-03	26.0E-03
3	-	-80.0E-03	-67.0E-03	13.0E-03	53.0E-03	67.0E-03	187.0E-03	-13.0E-03	107.0E-03
4	-	0.0E+00	-40.0E-03	27.0E-03	253.0E-03	600.0E-03	467.0E-03	187.0E-03	160.0E-03
5	-	40.0E-03	-66.0E-03	-40.0E-03	67.0E-03	307.0E-03	120.0E-03	120.0E-03	67.0E-03
6	-	26.0E-03	-94.0E-03	-134.0E-03	-27.0E-03	0.0E+00	160.0E-03	0.0E+00	-174.0E-03
Average	-	15.8E-03	-80.2E-03	-29.6E-03	69.2E-03	213.4E-03	202.8E-03	56.0E-03	37.2E-03
Sigma	-	56.7E-03	31.9E-03	57.0E-03	98.1E-03	218.9E-03	137.0E-03	82.5E-03	114.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.280	-0.080	-0.173	-0.080	-0.147	-0.053	-0.027	-0.240	-0.173
OFF samples									
7	-0.120	-0.160	-0.227	-0.187	-0.147	-0.160	-0.080	-0.120	-0.240
8	-0.053	-0.227	-0.160	-0.080	-0.160	-0.107	-0.027	-0.120	-0.173
9	-0.040	-0.120	-0.093	-0.080	-0.107	-0.027	0.040	-0.013	-0.080
10	-0.187	-0.120	-0.213	-0.040	-0.187	-0.027	0.040	-0.293	-0.187
11	-0.013	-0.147	-0.173	-0.053	-0.107	-0.040	-0.080	-0.227	-0.173
Statistics									
Min	-0.187	-0.227	-0.227	-0.187	-0.187	-0.160	-0.080	-0.293	-0.240
Max	-0.013	-0.120	-0.093	-0.040	-0.107	-0.027	0.040	-0.013	-0.080
Average	-0.083	-0.155	-0.173	-0.088	-0.142	-0.072	-0.021	-0.155	-0.171
Sigma	0.063	0.039	0.047	0.052	0.031	0.053	0.054	0.097	0.052

Drift Calculation

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-40.0E-03	-107.0E-03	-67.0E-03	-27.0E-03	-40.0E-03	40.0E-03	0.0E+00	-120.0E-03
8	-	-174.0E-03	-107.0E-03	-27.0E-03	-107.0E-03	-54.0E-03	26.0E-03	-67.0E-03	-120.0E-03
9	-	-80.0E-03	-53.0E-03	-40.0E-03	-67.0E-03	13.0E-03	80.0E-03	27.0E-03	-40.0E-03
10	-	67.0E-03	-26.0E-03	147.0E-03	0.0E+00	160.0E-03	227.0E-03	-106.0E-03	0.0E+00
11	-	-134.0E-03	-160.0E-03	-40.0E-03	-94.0E-03	-27.0E-03	-67.0E-03	-214.0E-03	-160.0E-03
Average	-	-72.2E-03	-90.6E-03	-5.4E-03	-59.0E-03	10.4E-03	61.2E-03	-72.0E-03	-88.0E-03
Sigma	-	83.3E-03	46.8E-03	77.3E-03	40.2E-03	78.1E-03	95.9E-03	85.2E-03	58.8E-03

Parameter : Offset Error : Voff_3VIN2

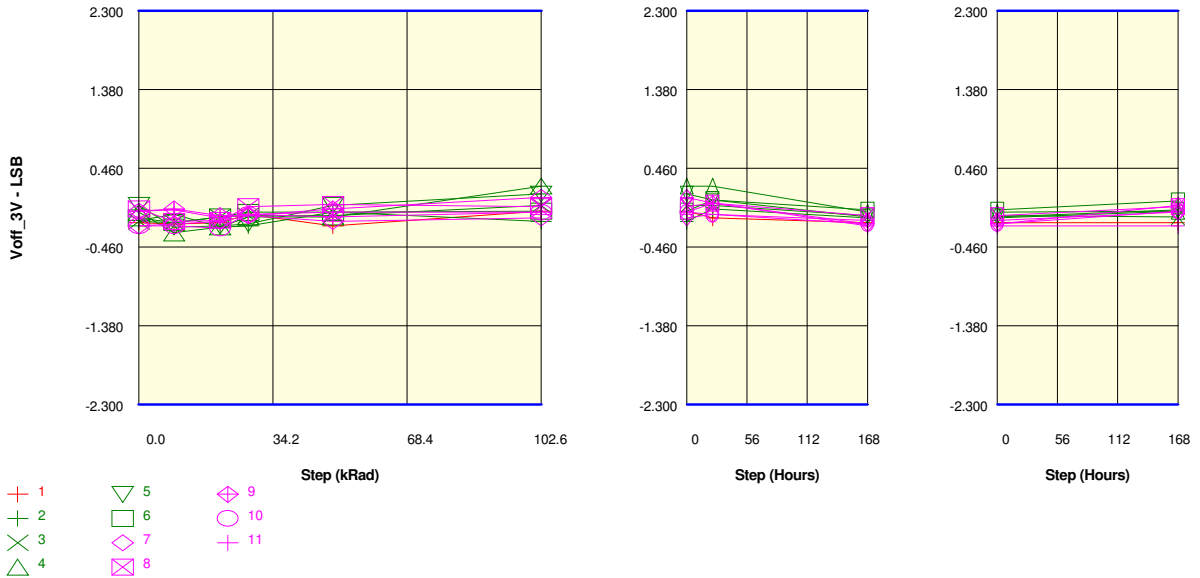
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.173	-0.187	-0.173	-0.080	-0.213	-0.040	-0.120	-0.173	-0.173
ON samples									
2	-0.147	-0.080	-0.227	-0.213	-0.053	-0.160	-0.013	-0.120	-0.040
3	-0.160	-0.173	-0.107	-0.093	-0.093	0.027	0.027	-0.093	-0.107
4	-0.053	-0.293	-0.227	-0.107	-0.107	0.253	0.253	-0.053	-0.040
5	0.027	-0.227	-0.213	-0.187	0.027	0.160	0.093	-0.107	-0.027
6	-0.120	-0.173	-0.107	-0.053	-0.053	-0.040	0.093	-0.027	0.080
Statistics									
Min	-0.160	-0.293	-0.227	-0.213	-0.107	-0.160	-0.013	-0.120	-0.107
Max	0.027	-0.080	-0.107	-0.053	0.027	0.253	0.253	-0.027	0.080
Average	-0.091	-0.189	-0.176	-0.131	-0.056	0.048	0.091	-0.080	-0.027
Sigma	0.069	0.070	0.057	0.060	0.047	0.146	0.091	0.035	0.060

Drift Calculation

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	67.0E-03	-80.0E-03	-66.0E-03	94.0E-03	-13.0E-03	134.0E-03	27.0E-03	107.0E-03
3	-	-13.0E-03	53.0E-03	67.0E-03	67.0E-03	187.0E-03	187.0E-03	67.0E-03	53.0E-03
4	-	-240.0E-03	-174.0E-03	-54.0E-03	-54.0E-03	306.0E-03	306.0E-03	0.0E+00	13.0E-03
5	-	-254.0E-03	-240.0E-03	-214.0E-03	0.0E+00	133.0E-03	66.0E-03	-134.0E-03	-54.0E-03
6	-	-53.0E-03	13.0E-03	67.0E-03	67.0E-03	80.0E-03	213.0E-03	93.0E-03	200.0E-03
Average	-	-98.6E-03	-85.6E-03	-40.0E-03	34.8E-03	138.6E-03	181.2E-03	10.6E-03	63.8E-03
Sigma	-	127.3E-03	110.1E-03	104.0E-03	54.2E-03	106.6E-03	80.1E-03	79.1E-03	86.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.173	-0.187	-0.173	-0.080	-0.213	-0.040	-0.120	-0.173	-0.173
OFF samples									
7	-0.213	-0.187	-0.160	-0.093	-0.160	-0.120	-0.080	-0.147	-0.053
8	-0.013	-0.160	-0.147	0.013	0.040	0.013	0.053	-0.093	0.013
9	-0.040	-0.013	-0.093	-0.093	-0.013	0.120	0.053	-0.187	0.027
10	-0.213	-0.213	-0.240	-0.080	-0.053	-0.053	-0.080	-0.187	-0.040
11	-0.040	-0.027	-0.120	-0.080	-0.107	-0.053	0.053	-0.213	-0.213
Statistics									
Min	-0.213	-0.213	-0.240	-0.093	-0.160	-0.120	-0.080	-0.213	-0.213
Max	-0.013	-0.013	-0.093	0.013	0.040	0.120	0.053	-0.093	0.027
Average	-0.104	-0.120	-0.152	-0.067	-0.059	-0.019	0.000	-0.165	-0.053
Sigma	0.090	0.083	0.050	0.040	0.070	0.081	0.065	0.042	0.085

Drift Calculation

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	26.0E-03	53.0E-03	120.0E-03	53.0E-03	93.0E-03	133.0E-03	66.0E-03	160.0E-03
8	-	-147.0E-03	-134.0E-03	26.0E-03	53.0E-03	26.0E-03	66.0E-03	-80.0E-03	26.0E-03
9	-	27.0E-03	-53.0E-03	-53.0E-03	27.0E-03	160.0E-03	93.0E-03	-147.0E-03	67.0E-03
10	-	0.0E+00	-27.0E-03	133.0E-03	160.0E-03	160.0E-03	133.0E-03	26.0E-03	173.0E-03
11	-	13.0E-03	-80.0E-03	-40.0E-03	-67.0E-03	-13.0E-03	93.0E-03	-173.0E-03	-173.0E-03
Average	-	-16.2E-03	-48.2E-03	37.2E-03	45.2E-03	85.2E-03	103.6E-03	-61.6E-03	50.6E-03
Sigma	-	66.1E-03	61.8E-03	77.8E-03	72.4E-03	69.9E-03	26.0E-03	93.8E-03	124.8E-03

Parameter : Offset Error : Voff_3VIN3

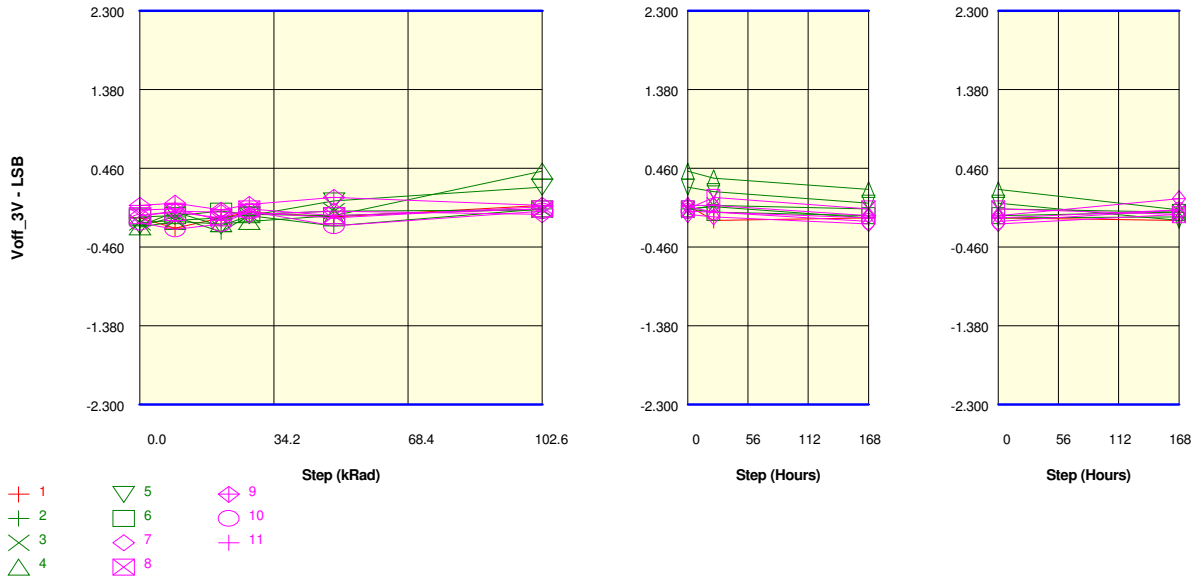
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.120	-0.240	-0.120	-0.053	-0.107	0.027	-0.147	-0.120	-0.147
ON samples									
2	-0.213	-0.107	-0.280	-0.093	-0.213	-0.013	0.013	-0.120	-0.107
3	-0.173	-0.147	-0.120	-0.080	-0.040	-0.027	0.027	-0.013	-0.053
4	-0.227	-0.160	-0.187	-0.160	-0.093	0.427	0.347	0.213	-0.027
5	-0.213	-0.053	-0.213	-0.093	0.080	0.240	0.187	0.053	-0.147
6	-0.107	-0.093	-0.040	-0.080	-0.093	-0.013	-0.053	-0.093	-0.053
Statistics									
Min	-0.227	-0.160	-0.280	-0.160	-0.213	-0.027	-0.053	-0.120	-0.147
Max	-0.107	-0.053	-0.040	-0.080	0.080	0.427	0.347	0.213	-0.027
Average	-0.187	-0.112	-0.168	-0.101	-0.072	0.123	0.104	0.008	-0.077
Sigma	0.044	0.038	0.082	0.030	0.095	0.182	0.145	0.119	0.043

Drift Calculation

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	106.0E-03	-67.0E-03	120.0E-03	0.0E+00	200.0E-03	226.0E-03	93.0E-03	106.0E-03
3	-	26.0E-03	53.0E-03	93.0E-03	133.0E-03	146.0E-03	200.0E-03	160.0E-03	120.0E-03
4	-	67.0E-03	40.0E-03	67.0E-03	134.0E-03	654.0E-03	574.0E-03	440.0E-03	200.0E-03
5	-	160.0E-03	0.0E+00	120.0E-03	293.0E-03	453.0E-03	400.0E-03	266.0E-03	66.0E-03
6	-	14.0E-03	67.0E-03	27.0E-03	14.0E-03	94.0E-03	54.0E-03	14.0E-03	54.0E-03
Average	-	74.6E-03	18.6E-03	85.4E-03	114.8E-03	309.4E-03	290.8E-03	194.6E-03	109.2E-03
Sigma	-	53.6E-03	48.3E-03	35.2E-03	105.6E-03	211.9E-03	179.2E-03	148.0E-03	51.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.120	-0.240	-0.120	-0.053	-0.107	0.027	-0.147	-0.120	-0.147
OFF samples									
7	-0.093	-0.040	-0.053	-0.080	-0.040	-0.080	-0.107	-0.187	-0.080
8	-0.093	-0.053	-0.120	-0.013	-0.093	-0.013	0.120	-0.013	-0.080
9	0.027	0.053	-0.027	0.040	0.120	0.027	0.027	-0.093	0.107
10	-0.173	-0.253	-0.187	-0.040	-0.213	-0.040	-0.053	-0.160	-0.027
11	-0.027	-0.013	-0.147	-0.053	-0.120	0.013	-0.053	-0.120	-0.027
Statistics									
Min	-0.173	-0.253	-0.187	-0.080	-0.213	-0.080	-0.107	-0.187	-0.080
Max	0.027	0.053	-0.027	0.040	0.120	0.027	0.120	-0.013	0.107
Average	-0.072	-0.061	-0.107	-0.029	-0.069	-0.019	-0.013	-0.115	-0.021
Sigma	0.068	0.103	0.059	0.041	0.110	0.038	0.079	0.060	0.068

Drift Calculation

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	53.0E-03	40.0E-03	13.0E-03	53.0E-03	13.0E-03	-14.0E-03	-94.0E-03	13.0E-03
8	-	40.0E-03	-27.0E-03	80.0E-03	0.0E+00	80.0E-03	213.0E-03	80.0E-03	13.0E-03
9	-	26.0E-03	-54.0E-03	13.0E-03	93.0E-03	0.0E+00	0.0E+00	-120.0E-03	80.0E-03
10	-	-80.0E-03	-14.0E-03	133.0E-03	-40.0E-03	133.0E-03	120.0E-03	13.0E-03	146.0E-03
11	-	14.0E-03	-120.0E-03	-26.0E-03	-93.0E-03	40.0E-03	-26.0E-03	-93.0E-03	0.0E+00
Average	-	10.6E-03	-35.0E-03	42.6E-03	2.6E-03	53.2E-03	58.6E-03	-42.8E-03	50.4E-03
Sigma	-	47.2E-03	52.4E-03	56.6E-03	65.8E-03	48.4E-03	93.2E-03	76.5E-03	55.4E-03

Parameter : Offset Error : Voff_3VIN4

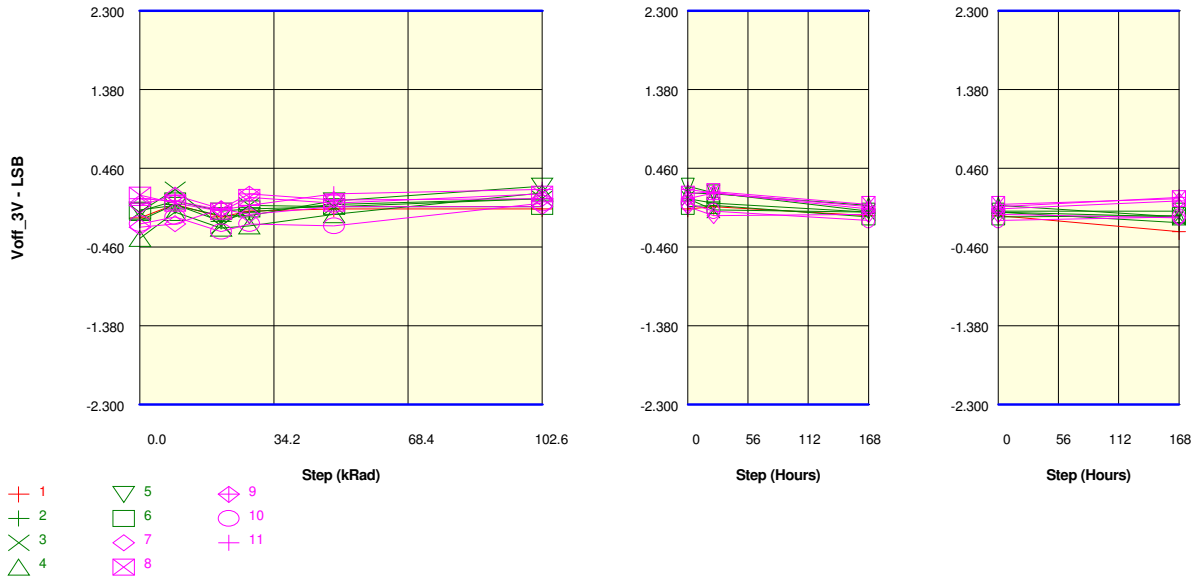
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.120	0.040	-0.107	-0.040	-0.013	-0.013	0.013	-0.093	-0.280
ON samples									
2	-0.147	0.040	-0.160	-0.053	0.040	0.107	0.053	-0.053	-0.173
3	-0.053	0.213	-0.213	0.027	0.013	0.107	-0.027	-0.053	-0.107
4	-0.360	-0.053	-0.240	-0.213	-0.080	0.173	0.160	0.027	-0.107
5	-0.027	0.027	-0.093	-0.093	0.080	0.253	0.173	-0.040	-0.040
6	-0.040	0.080	-0.040	-0.013	0.013	0.013	0.027	-0.107	-0.093
Statistics									
Min	-0.360	-0.053	-0.240	-0.213	-0.080	0.013	-0.027	-0.107	-0.173
Max	-0.027	0.213	-0.040	0.027	0.080	0.253	0.173	0.027	-0.040
Average	-0.125	0.061	-0.149	-0.069	0.013	0.131	0.077	-0.045	-0.104
Sigma	0.125	0.087	0.074	0.082	0.053	0.080	0.077	0.043	0.042

Drift Calculation

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	187.0E-03	-13.0E-03	94.0E-03	187.0E-03	254.0E-03	200.0E-03	94.0E-03	-26.0E-03
3	-	266.0E-03	-160.0E-03	80.0E-03	66.0E-03	160.0E-03	26.0E-03	0.0E+00	-54.0E-03
4	-	307.0E-03	120.0E-03	147.0E-03	280.0E-03	533.0E-03	520.0E-03	387.0E-03	253.0E-03
5	-	54.0E-03	-66.0E-03	-66.0E-03	107.0E-03	280.0E-03	200.0E-03	-13.0E-03	-13.0E-03
6	-	120.0E-03	0.0E+00	27.0E-03	53.0E-03	53.0E-03	67.0E-03	-67.0E-03	-53.0E-03
Average	-	186.8E-03	-23.8E-03	56.4E-03	138.6E-03	256.0E-03	202.6E-03	80.2E-03	21.4E-03
Sigma	-	92.5E-03	91.3E-03	72.1E-03	84.8E-03	159.8E-03	173.4E-03	161.9E-03	116.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.120	0.040	-0.107	-0.040	-0.013	-0.013	0.013	-0.093	-0.280
OFF samples									
7	-0.227	-0.187	-0.013	-0.080	0.013	0.013	-0.093	-0.080	-0.120
8	0.147	0.053	-0.040	0.120	0.053	0.160	0.187	0.040	0.107
9	0.027	0.147	-0.013	0.160	0.093	0.107	0.173	-0.013	0.080
10	-0.187	-0.107	-0.280	-0.187	-0.213	0.053	-0.040	-0.147	-0.107
11	0.107	0.080	-0.027	0.027	0.160	0.213	0.173	0.013	0.120
Statistics									
Min	-0.227	-0.187	-0.280	-0.187	-0.213	0.013	-0.093	-0.147	-0.120
Max	0.147	0.147	-0.013	0.160	0.160	0.213	0.187	0.040	0.120
Average	-0.027	-0.003	-0.075	0.008	0.021	0.109	0.080	-0.037	0.016
Sigma	0.153	0.124	0.103	0.128	0.127	0.072	0.121	0.068	0.107

Drift Calculation

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	40.0E-03	214.0E-03	147.0E-03	240.0E-03	240.0E-03	134.0E-03	147.0E-03	107.0E-03
8	-	-94.0E-03	-187.0E-03	-27.0E-03	-94.0E-03	13.0E-03	40.0E-03	-107.0E-03	-40.0E-03
9	-	120.0E-03	-40.0E-03	133.0E-03	66.0E-03	80.0E-03	146.0E-03	-40.0E-03	53.0E-03
10	-	80.0E-03	-93.0E-03	0.0E+00	-26.0E-03	240.0E-03	147.0E-03	40.0E-03	80.0E-03
11	-	-27.0E-03	-134.0E-03	-80.0E-03	53.0E-03	106.0E-03	66.0E-03	-94.0E-03	13.0E-03
Average	-	23.8E-03	-48.0E-03	34.6E-03	47.8E-03	135.8E-03	106.6E-03	-10.8E-03	42.6E-03
Sigma	-	76.3E-03	139.6E-03	89.9E-03	112.1E-03	90.3E-03	44.8E-03	94.4E-03	51.7E-03

Parameter : Offset Error : Voff_3VIN5

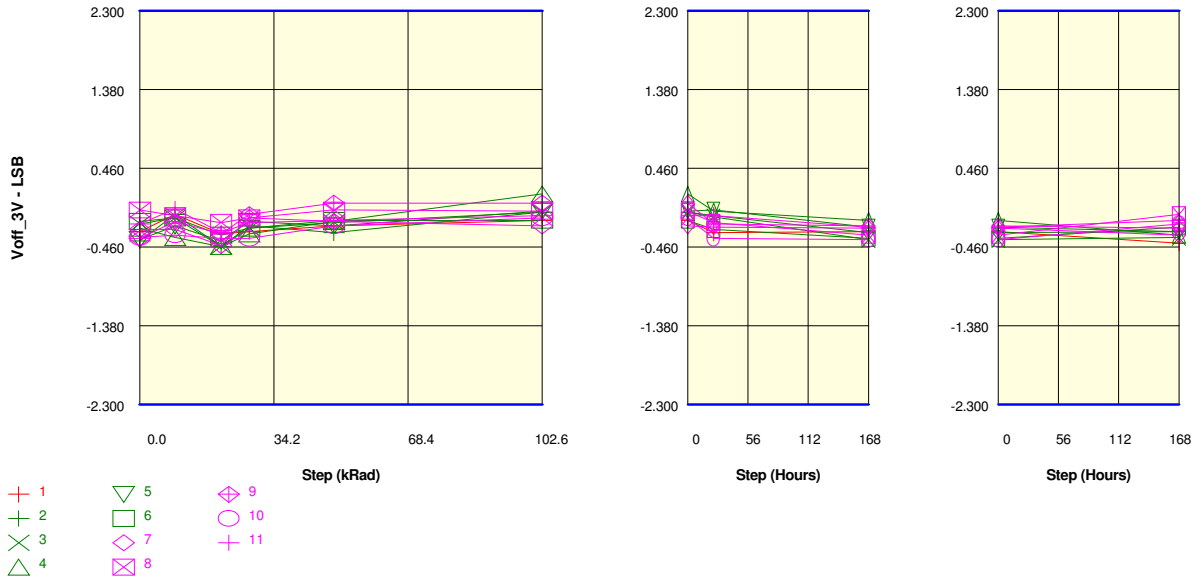
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.280	-0.080	-0.307	-0.280	-0.213	-0.147	-0.293	-0.280	-0.413
ON samples									
2	-0.387	-0.080	-0.453	-0.213	-0.293	-0.053	-0.093	-0.293	-0.280
3	-0.187	-0.120	-0.453	-0.240	-0.173	-0.053	-0.107	-0.373	-0.347
4	-0.240	-0.347	-0.453	-0.307	-0.160	0.160	-0.040	-0.147	-0.320
5	-0.373	-0.213	-0.387	-0.160	-0.213	-0.040	-0.027	-0.227	-0.280
6	-0.160	-0.120	-0.320	-0.240	-0.147	-0.147	-0.253	-0.360	-0.227
Statistics									
Min	-0.387	-0.347	-0.453	-0.307	-0.293	-0.147	-0.253	-0.373	-0.347
Max	-0.160	-0.080	-0.320	-0.160	-0.147	0.160	-0.027	-0.147	-0.227
Average	-0.269	-0.176	-0.413	-0.232	-0.197	-0.027	-0.104	-0.280	-0.291
Sigma	0.094	0.096	0.053	0.048	0.053	0.101	0.080	0.085	0.041

Drift Calculation

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	307.0E-03	-66.0E-03	174.0E-03	94.0E-03	334.0E-03	294.0E-03	94.0E-03	107.0E-03
3	-	67.0E-03	-266.0E-03	-53.0E-03	14.0E-03	134.0E-03	80.0E-03	-186.0E-03	-160.0E-03
4	-	-107.0E-03	-213.0E-03	-67.0E-03	80.0E-03	400.0E-03	200.0E-03	93.0E-03	-80.0E-03
5	-	160.0E-03	-14.0E-03	213.0E-03	160.0E-03	333.0E-03	346.0E-03	146.0E-03	93.0E-03
6	-	40.0E-03	-160.0E-03	-80.0E-03	13.0E-03	13.0E-03	-93.0E-03	-200.0E-03	-67.0E-03
Average	-	93.4E-03	-143.8E-03	37.4E-03	72.2E-03	242.8E-03	165.4E-03	-10.6E-03	-21.4E-03
Sigma	-	136.9E-03	92.6E-03	128.3E-03	55.0E-03	145.5E-03	157.7E-03	150.2E-03	104.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.280	-0.080	-0.307	-0.280	-0.213	-0.147	-0.293	-0.280	-0.413
OFF samples									
7	-0.253	-0.253	-0.440	-0.120	-0.160	-0.213	-0.227	-0.240	-0.320
8	-0.027	-0.093	-0.173	-0.120	-0.027	-0.040	-0.173	-0.320	-0.080
9	-0.360	-0.160	-0.307	-0.080	0.053	0.053	-0.187	-0.213	-0.240
10	-0.347	-0.320	-0.360	-0.360	-0.213	-0.120	-0.360	-0.373	-0.187
11	-0.187	-0.013	-0.293	-0.173	-0.147	-0.093	-0.093	-0.227	-0.147
Statistics									
Min	-0.360	-0.320	-0.440	-0.360	-0.213	-0.213	-0.360	-0.373	-0.320
Max	-0.027	-0.013	-0.173	-0.080	0.053	0.053	-0.093	-0.213	-0.080
Average	-0.235	-0.168	-0.315	-0.171	-0.099	-0.083	-0.208	-0.275	-0.195
Sigma	0.122	0.110	0.088	0.099	0.097	0.088	0.088	0.062	0.082

Drift Calculation

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	-187.0E-03	133.0E-03	93.0E-03	40.0E-03	26.0E-03	13.0E-03	-67.0E-03
8	-	-66.0E-03	-146.0E-03	-93.0E-03	0.0E+00	-13.0E-03	-146.0E-03	-293.0E-03	-53.0E-03
9	-	200.0E-03	53.0E-03	280.0E-03	413.0E-03	413.0E-03	173.0E-03	147.0E-03	120.0E-03
10	-	27.0E-03	-13.0E-03	-13.0E-03	134.0E-03	227.0E-03	-13.0E-03	-26.0E-03	160.0E-03
11	-	174.0E-03	-106.0E-03	14.0E-03	40.0E-03	94.0E-03	94.0E-03	-40.0E-03	40.0E-03
Average	-	67.0E-03	-79.8E-03	64.2E-03	136.0E-03	152.2E-03	26.8E-03	-39.8E-03	40.0E-03
Sigma	-	102.9E-03	87.9E-03	130.0E-03	145.8E-03	152.9E-03	107.1E-03	142.8E-03	90.4E-03

Parameter : Offset Error : Voff_3VIN6

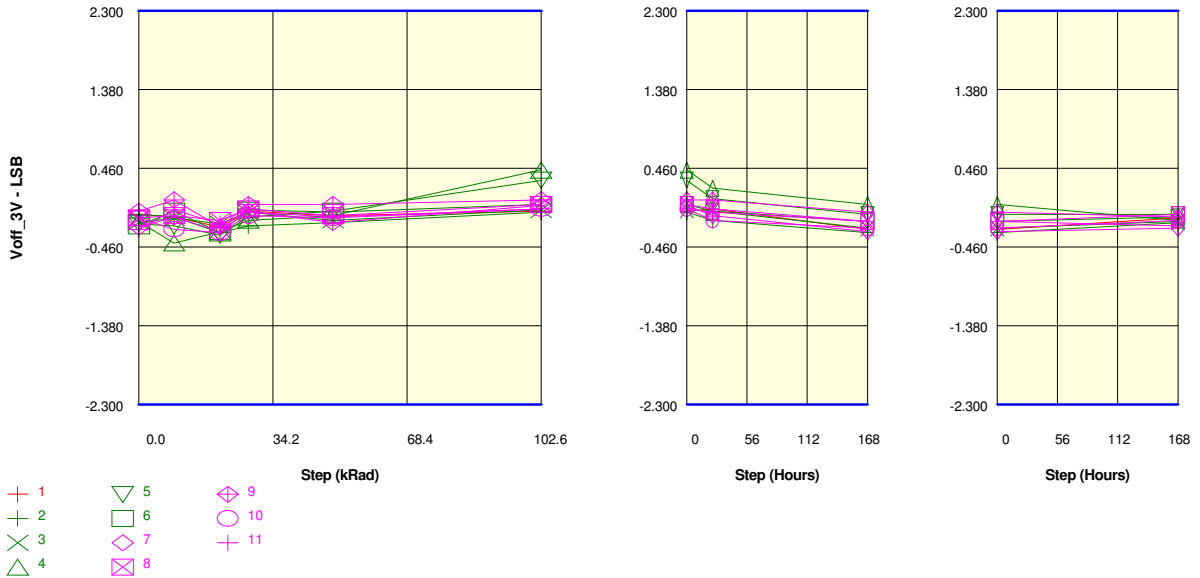
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.080	-0.107	-0.227	-0.040	-0.093	-0.040	-0.013	-0.253	-0.120
ON samples									
2	-0.080	-0.107	-0.293	-0.213	-0.173	-0.053	-0.147	-0.293	-0.173
3	-0.173	-0.120	-0.187	-0.053	-0.147	-0.027	-0.040	-0.240	-0.160
4	-0.160	-0.413	-0.280	-0.147	-0.093	0.440	0.227	0.040	-0.147
5	-0.187	-0.213	-0.320	-0.107	-0.040	0.320	0.107	-0.080	-0.080
6	-0.213	-0.040	-0.293	-0.027	-0.053	0.040	-0.040	-0.160	-0.107
Statistics									
Min	-0.213	-0.413	-0.320	-0.213	-0.173	-0.053	-0.147	-0.293	-0.173
Max	-0.080	-0.040	-0.187	-0.027	-0.040	0.440	0.227	0.040	-0.080
Average	-0.163	-0.179	-0.275	-0.109	-0.101	0.144	0.021	-0.147	-0.133
Sigma	0.045	0.130	0.046	0.067	0.052	0.199	0.131	0.118	0.035

Drift Calculation

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-27.0E-03	-213.0E-03	-133.0E-03	-93.0E-03	27.0E-03	-67.0E-03	-213.0E-03	-93.0E-03
3	-	53.0E-03	-14.0E-03	120.0E-03	26.0E-03	146.0E-03	133.0E-03	-67.0E-03	13.0E-03
4	-	-253.0E-03	-120.0E-03	13.0E-03	67.0E-03	600.0E-03	387.0E-03	200.0E-03	13.0E-03
5	-	-26.0E-03	-133.0E-03	80.0E-03	147.0E-03	507.0E-03	294.0E-03	107.0E-03	107.0E-03
6	-	173.0E-03	-80.0E-03	186.0E-03	160.0E-03	253.0E-03	173.0E-03	53.0E-03	106.0E-03
Average	-	-16.0E-03	-112.0E-03	53.2E-03	61.4E-03	306.6E-03	184.0E-03	16.0E-03	29.2E-03
Sigma	-	139.2E-03	65.3E-03	108.7E-03	91.8E-03	215.9E-03	154.3E-03	143.4E-03	74.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.080	-0.107	-0.227	-0.040	-0.093	-0.040	-0.013	-0.253	-0.120
OFF samples									
7	-0.227	-0.107	-0.280	-0.040	-0.173	0.027	-0.093	-0.280	-0.240
8	-0.120	-0.093	-0.147	-0.013	-0.093	0.040	-0.013	-0.160	-0.080
9	-0.040	0.093	-0.227	0.040	0.040	0.093	0.093	-0.053	-0.107
10	-0.120	-0.253	-0.293	-0.093	-0.120	-0.013	-0.147	-0.240	-0.147
11	-0.253	-0.027	-0.187	-0.053	-0.107	-0.013	-0.053	-0.160	-0.213
Statistics									
Min	-0.253	-0.253	-0.293	-0.093	-0.173	-0.013	-0.147	-0.280	-0.240
Max	-0.040	0.093	-0.147	0.040	0.040	0.093	0.093	-0.053	-0.080
Average	-0.152	-0.077	-0.227	-0.032	-0.091	0.027	-0.043	-0.179	-0.157
Sigma	0.078	0.113	0.055	0.044	0.071	0.039	0.081	0.078	0.061

Drift Calculation

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	120.0E-03	-53.0E-03	187.0E-03	54.0E-03	254.0E-03	134.0E-03	-53.0E-03	-13.0E-03
8	-	27.0E-03	-27.0E-03	107.0E-03	27.0E-03	160.0E-03	107.0E-03	-40.0E-03	40.0E-03
9	-	133.0E-03	-187.0E-03	80.0E-03	80.0E-03	133.0E-03	133.0E-03	-13.0E-03	-67.0E-03
10	-	-133.0E-03	-173.0E-03	27.0E-03	0.0E+00	107.0E-03	-27.0E-03	-120.0E-03	-27.0E-03
11	-	226.0E-03	66.0E-03	200.0E-03	146.0E-03	240.0E-03	200.0E-03	93.0E-03	40.0E-03
Average	-	74.6E-03	-74.8E-03	120.2E-03	61.4E-03	178.8E-03	109.4E-03	-26.6E-03	-5.4E-03
Sigma	-	121.5E-03	94.7E-03	65.3E-03	50.0E-03	58.3E-03	74.8E-03	69.4E-03	41.1E-03

Parameter : Offset Error : Voff_3VIN7

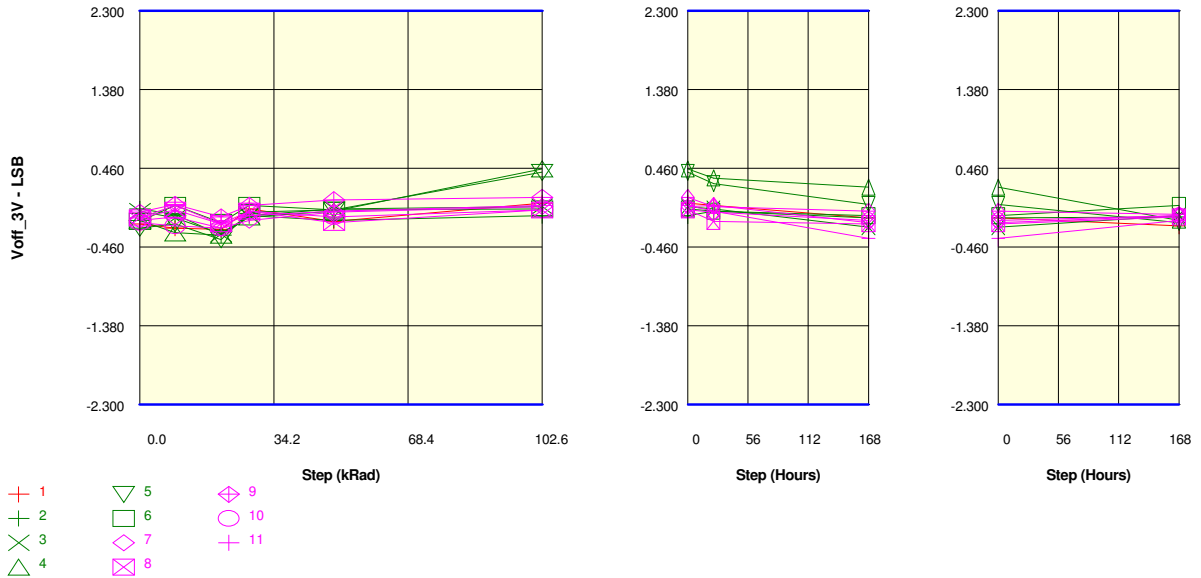
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.187	-0.240	-0.253	-0.013	-0.160	0.053	0.027	-0.120	-0.213
ON samples									
2	-0.013	-0.080	-0.320	-0.093	-0.147	-0.093	-0.040	-0.120	-0.107
3	-0.040	-0.120	-0.307	-0.093	-0.013	0.013	-0.013	-0.227	-0.093
4	-0.147	-0.293	-0.320	-0.107	-0.040	0.453	0.347	0.240	-0.147
5	-0.240	-0.187	-0.373	-0.053	-0.027	0.413	0.280	0.040	-0.173
6	-0.160	0.027	-0.173	0.027	-0.027	-0.013	-0.040	-0.093	0.027
Statistics									
Min	-0.240	-0.293	-0.373	-0.107	-0.147	-0.093	-0.040	-0.227	-0.173
Max	-0.013	0.027	-0.173	0.027	-0.013	0.453	0.347	0.240	0.027
Average	-0.120	-0.131	-0.299	-0.064	-0.051	0.155	0.107	-0.032	-0.099
Sigma	0.083	0.107	0.067	0.049	0.049	0.230	0.170	0.160	0.069

Drift Calculation

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-67.0E-03	-307.0E-03	-80.0E-03	-134.0E-03	-80.0E-03	-27.0E-03	-107.0E-03	-94.0E-03
3	-	-80.0E-03	-267.0E-03	-53.0E-03	27.0E-03	53.0E-03	27.0E-03	-187.0E-03	-53.0E-03
4	-	-146.0E-03	-173.0E-03	40.0E-03	107.0E-03	600.0E-03	494.0E-03	387.0E-03	0.0E+00
5	-	53.0E-03	-133.0E-03	187.0E-03	213.0E-03	653.0E-03	520.0E-03	280.0E-03	67.0E-03
6	-	187.0E-03	-13.0E-03	187.0E-03	133.0E-03	147.0E-03	120.0E-03	67.0E-03	187.0E-03
Average	-	-10.6E-03	-178.6E-03	56.2E-03	69.2E-03	274.6E-03	226.8E-03	88.0E-03	21.4E-03
Sigma	-	117.8E-03	103.8E-03	114.0E-03	117.7E-03	296.7E-03	233.7E-03	219.3E-03	98.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.187	-0.240	-0.253	-0.013	-0.160	0.053	0.027	-0.120	-0.213
OFF samples									
7	-0.147	-0.107	-0.240	-0.147	-0.053	0.013	0.027	-0.173	-0.093
8	-0.120	-0.027	-0.187	-0.040	-0.173	-0.027	-0.160	-0.187	-0.107
9	-0.053	0.040	-0.107	0.027	0.093	0.120	0.013	-0.040	-0.080
10	-0.173	-0.213	-0.240	-0.040	-0.107	-0.027	-0.053	-0.147	-0.093
11	-0.120	0.027	-0.187	-0.093	-0.040	0.027	-0.040	-0.360	-0.147
Statistics									
Min	-0.173	-0.213	-0.240	-0.147	-0.173	-0.027	-0.160	-0.360	-0.147
Max	-0.053	0.040	-0.107	0.027	0.093	0.120	0.027	-0.040	-0.080
Average	-0.123	-0.056	-0.192	-0.059	-0.056	0.021	-0.043	-0.181	-0.104
Sigma	0.040	0.094	0.049	0.058	0.088	0.054	0.066	0.103	0.023

Drift Calculation

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	40.0E-03	-93.0E-03	0.0E+00	94.0E-03	160.0E-03	174.0E-03	-26.0E-03	54.0E-03
8	-	93.0E-03	-67.0E-03	80.0E-03	-53.0E-03	93.0E-03	-40.0E-03	-67.0E-03	13.0E-03
9	-	93.0E-03	-54.0E-03	80.0E-03	146.0E-03	173.0E-03	66.0E-03	13.0E-03	-27.0E-03
10	-	-40.0E-03	-67.0E-03	133.0E-03	66.0E-03	146.0E-03	120.0E-03	26.0E-03	80.0E-03
11	-	147.0E-03	-67.0E-03	27.0E-03	80.0E-03	147.0E-03	80.0E-03	-240.0E-03	-27.0E-03
Average	-	66.6E-03	-69.6E-03	64.0E-03	66.6E-03	143.8E-03	80.0E-03	-58.8E-03	18.6E-03
Sigma	-	63.1E-03	12.7E-03	46.3E-03	65.6E-03	27.2E-03	70.8E-03	96.3E-03	42.9E-03

Parameter : Offset Error : Voff_3VIN0

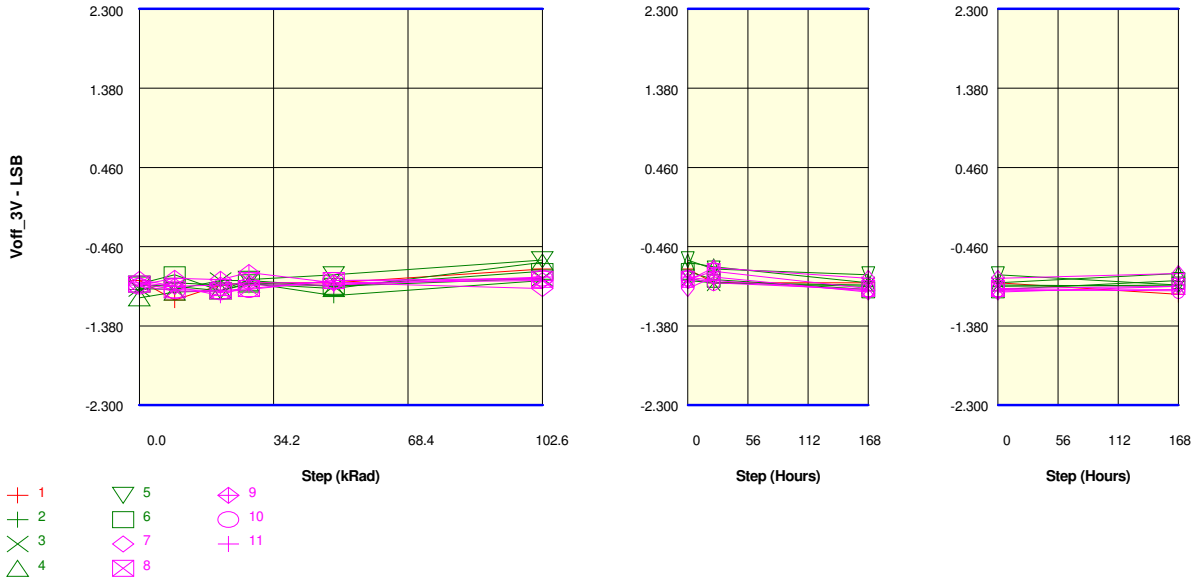
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.853	-1.080	-0.907	-0.880	-0.880	-0.720	-0.880	-0.880	-1.013
ON samples									
2	-0.960	-0.880	-0.907	-0.880	-1.027	-0.853	-0.880	-0.920	-0.907
3	-0.947	-0.960	-0.853	-0.853	-0.920	-0.827	-0.880	-0.907	-0.920
4	-1.053	-0.987	-0.973	-0.893	-0.947	-0.640	-0.693	-0.880	-0.773
5	-0.907	-0.920	-0.973	-0.840	-0.787	-0.613	-0.720	-0.787	-0.907
6	-0.893	-0.787	-0.973	-0.880	-0.920	-0.747	-0.840	-0.960	-0.853
Statistics									
Min	-1.053	-0.987	-0.973	-0.893	-1.027	-0.853	-0.880	-0.960	-0.920
Max	-0.893	-0.787	-0.853	-0.840	-0.787	-0.613	-0.693	-0.787	-0.773
Average	-0.952	-0.907	-0.936	-0.869	-0.920	-0.736	-0.803	-0.891	-0.872
Sigma	0.056	0.070	0.049	0.020	0.077	0.096	0.080	0.058	0.055

Drift Calculation

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	80.0E-03	53.0E-03	80.0E-03	-67.0E-03	107.0E-03	80.0E-03	40.0E-03	53.0E-03
3	-	-13.0E-03	94.0E-03	94.0E-03	27.0E-03	120.0E-03	67.0E-03	40.0E-03	27.0E-03
4	-	66.0E-03	80.0E-03	160.0E-03	106.0E-03	413.0E-03	360.0E-03	173.0E-03	280.0E-03
5	-	-13.0E-03	-66.0E-03	67.0E-03	120.0E-03	294.0E-03	187.0E-03	120.0E-03	0.0E+00
6	-	106.0E-03	-80.0E-03	13.0E-03	-27.0E-03	146.0E-03	53.0E-03	-67.0E-03	40.0E-03
Average	-	45.2E-03	16.2E-03	82.8E-03	31.8E-03	216.0E-03	149.4E-03	61.2E-03	80.0E-03
Sigma	-	49.2E-03	74.1E-03	47.4E-03	72.8E-03	119.1E-03	115.5E-03	81.6E-03	101.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.853	-1.080	-0.907	-0.880	-0.880	-0.720	-0.880	-0.880	-1.013
OFF samples									
7	-0.840	-0.920	-0.907	-0.880	-0.880	-0.947	-0.813	-0.987	-0.920
8	-0.893	-0.960	-0.973	-0.947	-0.853	-0.840	-0.747	-0.947	-0.920
9	-0.907	-0.827	-0.840	-0.760	-0.880	-0.853	-0.707	-0.827	-0.773
10	-0.920	-0.973	-0.987	-0.960	-0.853	-0.827	-0.880	-0.960	-0.973
11	-0.880	-0.920	-1.027	-0.907	-0.907	-0.813	-0.853	-0.973	-0.960
Statistics									
Min	-0.920	-0.973	-1.027	-0.960	-0.907	-0.947	-0.880	-0.987	-0.973
Max	-0.840	-0.827	-0.840	-0.760	-0.853	-0.813	-0.707	-0.827	-0.773
Average	-0.888	-0.920	-0.947	-0.891	-0.875	-0.856	-0.800	-0.939	-0.909
Sigma	0.027	0.051	0.066	0.071	0.020	0.047	0.065	0.057	0.071

Drift Calculation

Voff_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-80.0E-03	-67.0E-03	-40.0E-03	-40.0E-03	-107.0E-03	27.0E-03	-147.0E-03	-80.0E-03
8	-	-67.0E-03	-80.0E-03	-54.0E-03	40.0E-03	53.0E-03	146.0E-03	-54.0E-03	-27.0E-03
9	-	80.0E-03	67.0E-03	147.0E-03	27.0E-03	54.0E-03	200.0E-03	80.0E-03	134.0E-03
10	-	-53.0E-03	-67.0E-03	-40.0E-03	67.0E-03	93.0E-03	40.0E-03	-40.0E-03	-53.0E-03
11	-	-40.0E-03	-147.0E-03	-27.0E-03	-27.0E-03	67.0E-03	27.0E-03	-93.0E-03	-80.0E-03
Average	-	-32.0E-03	-58.8E-03	-2.8E-03	13.4E-03	32.0E-03	88.0E-03	-50.8E-03	-21.2E-03
Sigma	-	57.6E-03	69.6E-03	75.4E-03	40.6E-03	71.0E-03	71.6E-03	75.2E-03	80.1E-03

Parameter : Offset Error : Voff_3VIN1

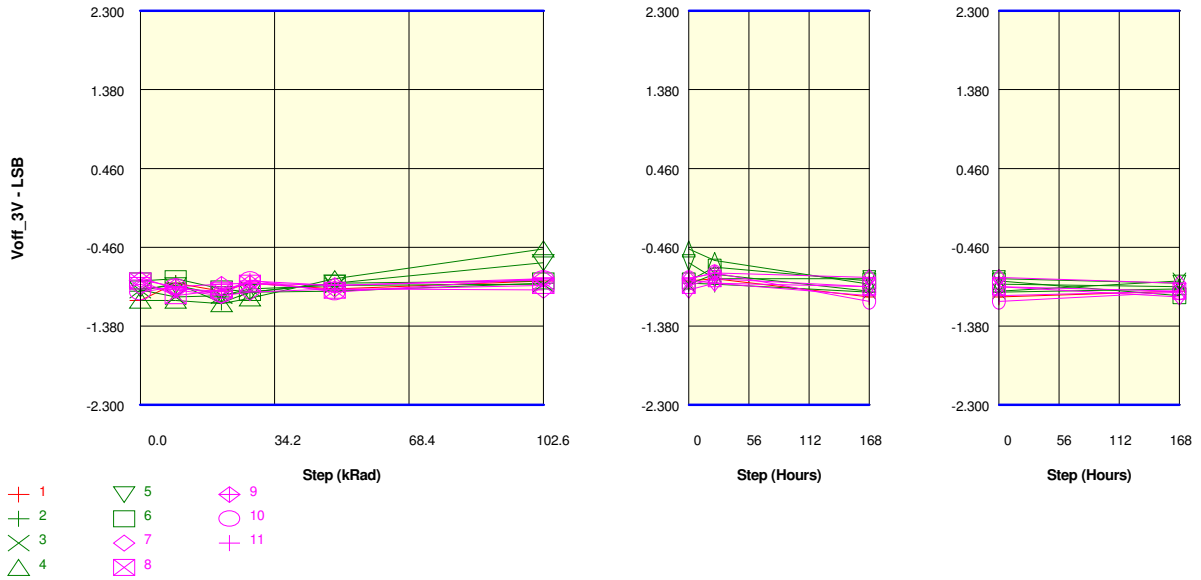
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-1.080	-0.880	-0.973	-0.880	-0.947	-0.853	-0.827	-1.040	-0.973
ON samples									
2	-0.973	-0.880	-1.107	-0.987	-0.973	-0.880	-0.893	-0.987	-0.947
3	-0.960	-1.040	-1.027	-0.947	-0.907	-0.893	-0.773	-0.973	-0.853
4	-1.080	-1.080	-1.120	-1.053	-0.827	-0.480	-0.613	-0.893	-0.920
5	-0.947	-0.907	-1.013	-0.987	-0.880	-0.640	-0.827	-0.827	-0.880
6	-0.853	-0.827	-0.947	-0.987	-0.880	-0.853	-0.693	-0.853	-1.027
Statistics									
Min	-1.080	-1.080	-1.120	-1.053	-0.973	-0.893	-0.893	-0.987	-1.027
Max	-0.853	-0.827	-0.947	-0.947	-0.827	-0.480	-0.613	-0.827	-0.853
Average	-0.963	-0.947	-1.043	-0.992	-0.893	-0.749	-0.760	-0.907	-0.925
Sigma	0.072	0.097	0.064	0.034	0.048	0.163	0.098	0.064	0.060

Drift Calculation

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	93.0E-03	-134.0E-03	-14.0E-03	0.0E+00	93.0E-03	80.0E-03	-14.0E-03	26.0E-03
3	-	-80.0E-03	-67.0E-03	13.0E-03	53.0E-03	67.0E-03	187.0E-03	-13.0E-03	107.0E-03
4	-	0.0E+00	-40.0E-03	27.0E-03	253.0E-03	600.0E-03	467.0E-03	187.0E-03	160.0E-03
5	-	40.0E-03	-66.0E-03	-40.0E-03	67.0E-03	307.0E-03	120.0E-03	120.0E-03	67.0E-03
6	-	26.0E-03	-94.0E-03	-134.0E-03	-27.0E-03	0.0E+00	160.0E-03	0.0E+00	-174.0E-03
Average	-	15.8E-03	-80.2E-03	-29.6E-03	69.2E-03	213.4E-03	202.8E-03	56.0E-03	37.2E-03
Sigma	-	56.7E-03	31.9E-03	57.0E-03	98.1E-03	218.9E-03	137.0E-03	82.5E-03	114.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-1.080	-0.880	-0.973	-0.880	-0.947	-0.853	-0.827	-1.040	-0.973
OFF samples									
7	-0.920	-0.960	-1.027	-0.987	-0.947	-0.960	-0.880	-0.920	-1.040
8	-0.853	-1.027	-0.960	-0.880	-0.960	-0.907	-0.827	-0.920	-0.973
9	-0.840	-0.920	-0.893	-0.880	-0.907	-0.827	-0.760	-0.813	-0.880
10	-0.987	-0.920	-1.013	-0.840	-0.987	-0.827	-0.760	-1.093	-0.987
11	-0.813	-0.947	-0.973	-0.853	-0.907	-0.840	-0.880	-1.027	-0.973
Statistics									
Min	-0.987	-1.027	-1.027	-0.987	-0.987	-0.960	-0.880	-1.093	-1.040
Max	-0.813	-0.920	-0.893	-0.840	-0.907	-0.827	-0.760	-0.813	-0.880
Average	-0.883	-0.955	-0.973	-0.888	-0.942	-0.872	-0.821	-0.955	-0.971
Sigma	0.063	0.039	0.047	0.052	0.031	0.053	0.054	0.097	0.052

Drift Calculation

Voff_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-40.0E-03	-107.0E-03	-67.0E-03	-27.0E-03	-40.0E-03	40.0E-03	0.0E+00	-120.0E-03
8	-	-174.0E-03	-107.0E-03	-27.0E-03	-107.0E-03	-54.0E-03	26.0E-03	-67.0E-03	-120.0E-03
9	-	-80.0E-03	-53.0E-03	-40.0E-03	-67.0E-03	13.0E-03	80.0E-03	27.0E-03	-40.0E-03
10	-	67.0E-03	-26.0E-03	147.0E-03	0.0E+00	160.0E-03	227.0E-03	-106.0E-03	0.0E+00
11	-	-134.0E-03	-160.0E-03	-40.0E-03	-94.0E-03	-27.0E-03	-67.0E-03	-214.0E-03	-160.0E-03
Average	-	-72.2E-03	-90.6E-03	-5.4E-03	-59.0E-03	10.4E-03	61.2E-03	-72.0E-03	-88.0E-03
Sigma	-	83.3E-03	46.8E-03	77.3E-03	40.2E-03	78.1E-03	95.9E-03	85.2E-03	58.8E-03

Parameter : Offset Error : Voff_3VIN2

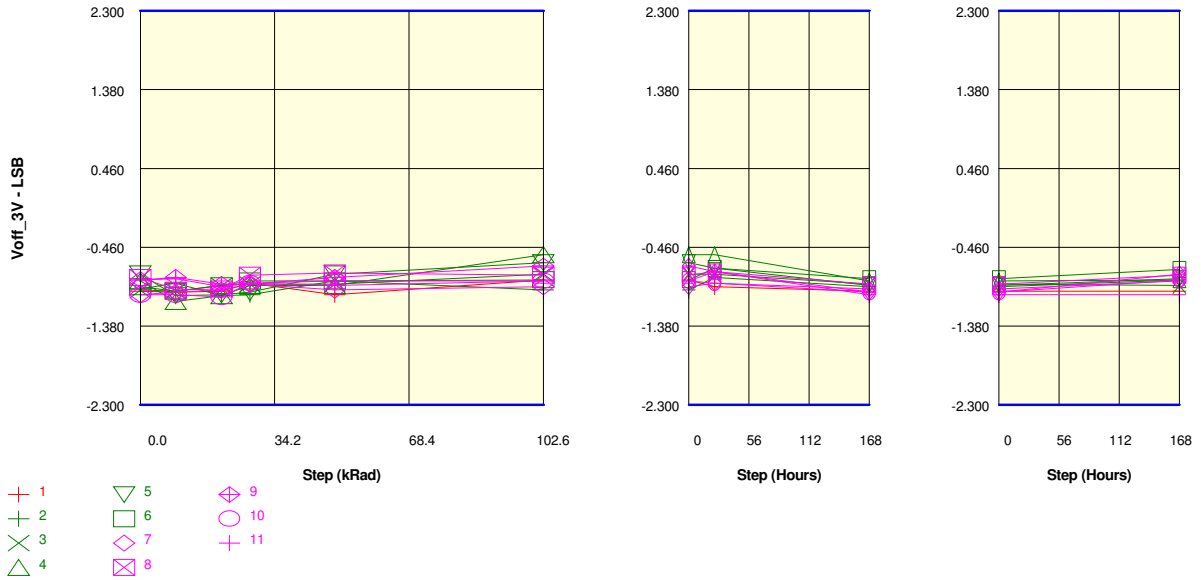
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.973	-0.987	-0.973	-0.880	-1.013	-0.840	-0.920	-0.973	-0.973
ON samples									
2	-0.947	-0.880	-1.027	-1.013	-0.853	-0.960	-0.813	-0.920	-0.840
3	-0.960	-0.973	-0.907	-0.893	-0.893	-0.773	-0.773	-0.893	-0.907
4	-0.853	-1.093	-1.027	-0.907	-0.907	-0.547	-0.547	-0.853	-0.840
5	-0.773	-1.027	-1.013	-0.987	-0.773	-0.640	-0.707	-0.907	-0.827
6	-0.920	-0.973	-0.907	-0.853	-0.853	-0.840	-0.707	-0.827	-0.720
Statistics									
Min	-0.960	-1.093	-1.027	-1.013	-0.907	-0.960	-0.813	-0.920	-0.907
Max	-0.773	-0.880	-0.907	-0.853	-0.773	-0.547	-0.547	-0.827	-0.720
Average	-0.891	-0.989	-0.976	-0.931	-0.856	-0.752	-0.709	-0.880	-0.827
Sigma	0.069	0.070	0.057	0.060	0.047	0.146	0.091	0.035	0.060

Drift Calculation

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	67.0E-03	-80.0E-03	-66.0E-03	94.0E-03	-13.0E-03	134.0E-03	27.0E-03	107.0E-03
3	-	-13.0E-03	53.0E-03	67.0E-03	67.0E-03	187.0E-03	187.0E-03	67.0E-03	53.0E-03
4	-	-240.0E-03	-174.0E-03	-54.0E-03	-54.0E-03	306.0E-03	306.0E-03	0.0E+00	13.0E-03
5	-	-254.0E-03	-240.0E-03	-214.0E-03	0.0E+00	133.0E-03	66.0E-03	-134.0E-03	-54.0E-03
6	-	-53.0E-03	13.0E-03	67.0E-03	67.0E-03	80.0E-03	213.0E-03	93.0E-03	200.0E-03
Average	-	-98.6E-03	-85.6E-03	-40.0E-03	34.8E-03	138.6E-03	181.2E-03	10.6E-03	63.8E-03
Sigma	-	127.3E-03	110.1E-03	104.0E-03	54.2E-03	106.6E-03	80.1E-03	79.1E-03	86.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.973	-0.987	-0.973	-0.880	-1.013	-0.840	-0.920	-0.973	-0.973
OFF samples									
7	-1.013	-0.987	-0.960	-0.893	-0.960	-0.920	-0.880	-0.947	-0.853
8	-0.813	-0.960	-0.947	-0.787	-0.760	-0.787	-0.747	-0.893	-0.787
9	-0.840	-0.813	-0.893	-0.893	-0.813	-0.680	-0.747	-0.987	-0.773
10	-1.013	-1.013	-1.040	-0.880	-0.853	-0.853	-0.880	-0.987	-0.840
11	-0.840	-0.827	-0.920	-0.880	-0.907	-0.853	-0.747	-1.013	-1.013
Statistics									
Min	-1.013	-1.013	-1.040	-0.893	-0.960	-0.920	-0.880	-1.013	-1.013
Max	-0.813	-0.813	-0.893	-0.787	-0.760	-0.680	-0.747	-0.893	-0.773
Average	-0.904	-0.920	-0.952	-0.867	-0.859	-0.819	-0.800	-0.965	-0.853
Sigma	0.090	0.083	0.050	0.040	0.070	0.081	0.065	0.042	0.085

Drift Calculation

Voff_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	26.0E-03	53.0E-03	120.0E-03	53.0E-03	93.0E-03	133.0E-03	66.0E-03	160.0E-03
8	-	-147.0E-03	-134.0E-03	26.0E-03	53.0E-03	26.0E-03	66.0E-03	-80.0E-03	26.0E-03
9	-	27.0E-03	-53.0E-03	-53.0E-03	27.0E-03	160.0E-03	93.0E-03	-147.0E-03	67.0E-03
10	-	0.0E+00	-27.0E-03	133.0E-03	160.0E-03	160.0E-03	133.0E-03	26.0E-03	173.0E-03
11	-	13.0E-03	-80.0E-03	-40.0E-03	-67.0E-03	-13.0E-03	93.0E-03	-173.0E-03	-173.0E-03
Average	-	-16.2E-03	-48.2E-03	37.2E-03	45.2E-03	85.2E-03	103.6E-03	-61.6E-03	50.6E-03
Sigma	-	66.1E-03	61.8E-03	77.8E-03	72.4E-03	69.9E-03	26.0E-03	93.8E-03	124.8E-03

Parameter : Offset Error : Voff_3VIN3

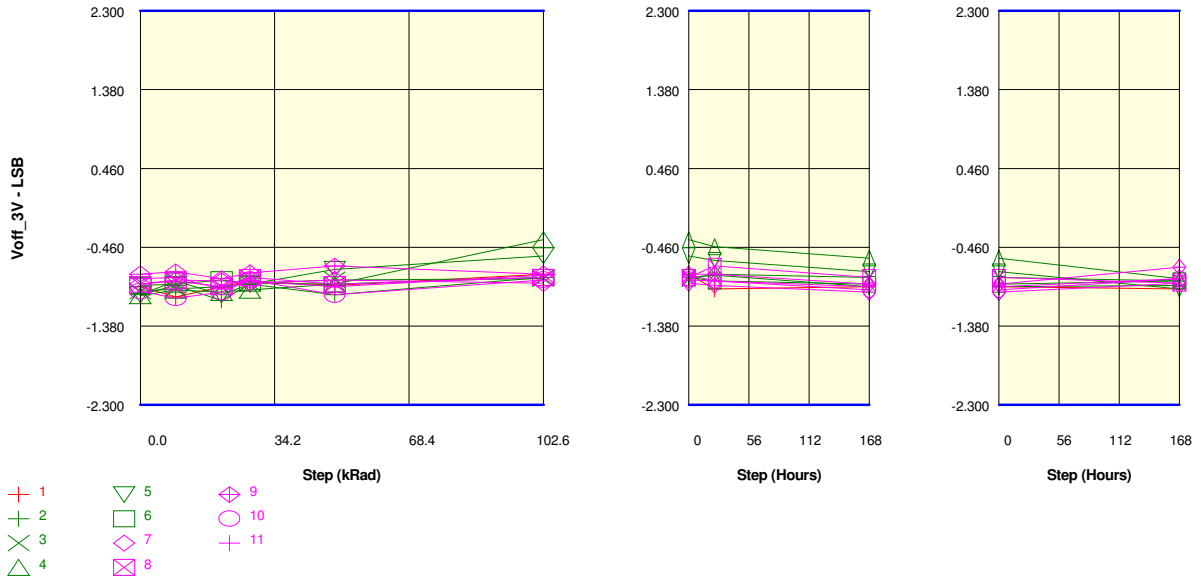
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.920	-1.040	-0.920	-0.853	-0.907	-0.773	-0.947	-0.920	-0.947
ON samples									
2	-1.013	-0.907	-1.080	-0.893	-1.013	-0.813	-0.787	-0.920	-0.907
3	-0.973	-0.947	-0.920	-0.880	-0.840	-0.827	-0.773	-0.813	-0.853
4	-1.027	-0.960	-0.987	-0.960	-0.893	-0.373	-0.453	-0.587	-0.827
5	-1.013	-0.853	-1.013	-0.893	-0.720	-0.560	-0.613	-0.747	-0.947
6	-0.907	-0.893	-0.840	-0.880	-0.893	-0.813	-0.853	-0.893	-0.853
Statistics									
Min	-1.027	-0.960	-1.080	-0.960	-1.013	-0.827	-0.853	-0.920	-0.947
Max	-0.907	-0.853	-0.840	-0.880	-0.720	-0.373	-0.453	-0.587	-0.827
Average	-0.987	-0.912	-0.968	-0.901	-0.872	-0.677	-0.696	-0.792	-0.877
Sigma	0.044	0.038	0.082	0.030	0.095	0.182	0.145	0.119	0.043

Drift Calculation

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	106.0E-03	-67.0E-03	120.0E-03	0.0E+00	200.0E-03	226.0E-03	93.0E-03	106.0E-03
3	-	26.0E-03	53.0E-03	93.0E-03	133.0E-03	146.0E-03	200.0E-03	160.0E-03	120.0E-03
4	-	67.0E-03	40.0E-03	67.0E-03	134.0E-03	654.0E-03	574.0E-03	440.0E-03	200.0E-03
5	-	160.0E-03	0.0E+00	120.0E-03	293.0E-03	453.0E-03	400.0E-03	266.0E-03	66.0E-03
6	-	14.0E-03	67.0E-03	27.0E-03	14.0E-03	94.0E-03	54.0E-03	14.0E-03	54.0E-03
Average	-	74.6E-03	18.6E-03	85.4E-03	114.8E-03	309.4E-03	290.8E-03	194.6E-03	109.2E-03
Sigma	-	53.6E-03	48.3E-03	35.2E-03	105.6E-03	211.9E-03	179.2E-03	148.0E-03	51.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.920	-1.040	-0.920	-0.853	-0.907	-0.773	-0.947	-0.920	-0.947
OFF samples									
7	-0.893	-0.840	-0.853	-0.880	-0.840	-0.880	-0.907	-0.987	-0.880
8	-0.893	-0.853	-0.920	-0.813	-0.893	-0.813	-0.680	-0.813	-0.880
9	-0.773	-0.747	-0.827	-0.760	-0.680	-0.773	-0.773	-0.893	-0.693
10	-0.973	-1.053	-0.987	-0.840	-1.013	-0.840	-0.853	-0.960	-0.827
11	-0.827	-0.813	-0.947	-0.853	-0.920	-0.787	-0.853	-0.920	-0.827
Statistics									
Min	-0.973	-1.053	-0.987	-0.880	-1.013	-0.880	-0.907	-0.987	-0.880
Max	-0.773	-0.747	-0.827	-0.760	-0.680	-0.773	-0.680	-0.813	-0.693
Average	-0.872	-0.861	-0.907	-0.829	-0.869	-0.819	-0.813	-0.915	-0.821
Sigma	0.068	0.103	0.059	0.041	0.110	0.038	0.079	0.060	0.068

Drift Calculation

Voff_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	53.0E-03	40.0E-03	13.0E-03	53.0E-03	13.0E-03	-14.0E-03	-94.0E-03	13.0E-03
8	-	40.0E-03	-27.0E-03	80.0E-03	0.0E+00	80.0E-03	213.0E-03	80.0E-03	13.0E-03
9	-	26.0E-03	-54.0E-03	13.0E-03	93.0E-03	0.0E+00	0.0E+00	-120.0E-03	80.0E-03
10	-	-80.0E-03	-14.0E-03	133.0E-03	-40.0E-03	133.0E-03	120.0E-03	13.0E-03	146.0E-03
11	-	14.0E-03	-120.0E-03	-26.0E-03	-93.0E-03	40.0E-03	-26.0E-03	-93.0E-03	0.0E+00
Average	-	10.6E-03	-35.0E-03	42.6E-03	2.6E-03	53.2E-03	58.6E-03	-42.8E-03	50.4E-03
Sigma	-	47.2E-03	52.4E-03	56.6E-03	65.8E-03	48.4E-03	93.2E-03	76.5E-03	55.4E-03

Parameter : Offset Error : Voff_3VIN4

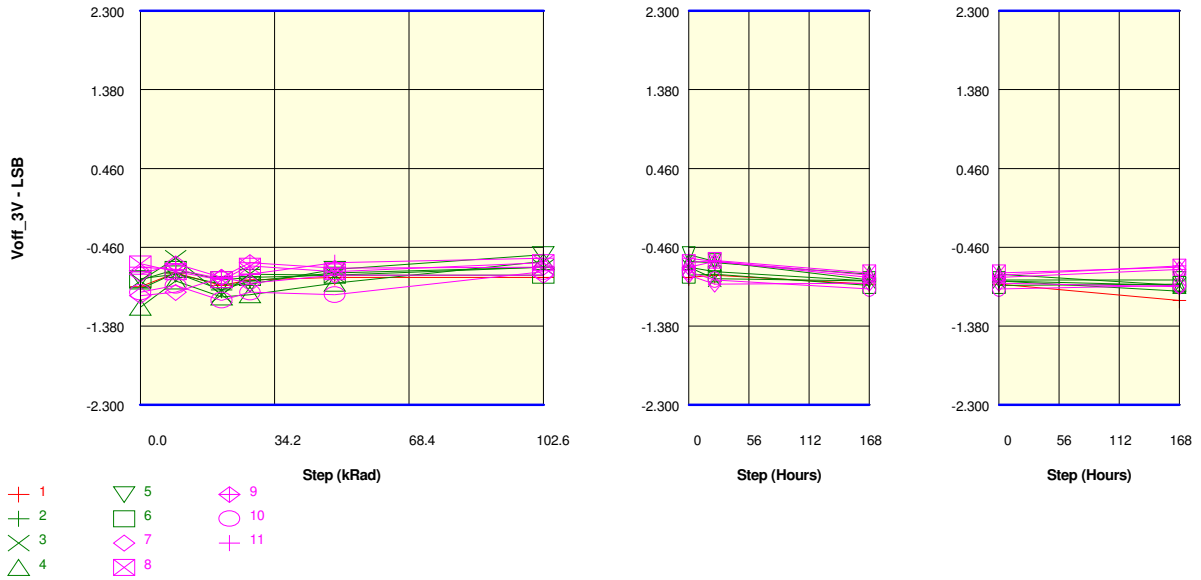
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.920	-0.760	-0.907	-0.840	-0.813	-0.813	-0.787	-0.893	-1.080
ON samples									
2	-0.947	-0.760	-0.960	-0.853	-0.760	-0.693	-0.747	-0.853	-0.973
3	-0.853	-0.587	-1.013	-0.773	-0.787	-0.693	-0.827	-0.853	-0.907
4	-1.160	-0.853	-1.040	-1.013	-0.880	-0.627	-0.640	-0.773	-0.907
5	-0.827	-0.773	-0.893	-0.893	-0.720	-0.547	-0.627	-0.840	-0.840
6	-0.840	-0.720	-0.840	-0.813	-0.787	-0.773	-0.773	-0.907	-0.893
Statistics									
Min	-1.160	-0.853	-1.040	-1.013	-0.880	-0.787	-0.827	-0.907	-0.973
Max	-0.827	-0.587	-0.840	-0.773	-0.720	-0.547	-0.627	-0.773	-0.840
Average	-0.925	-0.739	-0.949	-0.869	-0.787	-0.669	-0.723	-0.845	-0.904
Sigma	0.125	0.087	0.074	0.082	0.053	0.080	0.077	0.043	0.042

Drift Calculation

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	187.0E-03	-13.0E-03	94.0E-03	187.0E-03	254.0E-03	200.0E-03	94.0E-03	-26.0E-03
3	-	266.0E-03	-160.0E-03	80.0E-03	66.0E-03	160.0E-03	26.0E-03	0.0E+00	-54.0E-03
4	-	307.0E-03	120.0E-03	147.0E-03	280.0E-03	533.0E-03	520.0E-03	387.0E-03	253.0E-03
5	-	54.0E-03	-66.0E-03	-66.0E-03	107.0E-03	280.0E-03	200.0E-03	-13.0E-03	-13.0E-03
6	-	120.0E-03	0.0E+00	27.0E-03	53.0E-03	53.0E-03	67.0E-03	-67.0E-03	-53.0E-03
Average	-	186.8E-03	-23.8E-03	56.4E-03	138.6E-03	256.0E-03	202.6E-03	80.2E-03	21.4E-03
Sigma	-	92.5E-03	91.3E-03	72.1E-03	84.8E-03	159.8E-03	173.4E-03	161.9E-03	116.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.920	-0.760	-0.907	-0.840	-0.813	-0.813	-0.787	-0.893	-1.080
OFF samples									
7	-1.027	-0.987	-0.813	-0.880	-0.787	-0.787	-0.893	-0.880	-0.920
8	-0.653	-0.747	-0.840	-0.680	-0.747	-0.640	-0.613	-0.760	-0.693
9	-0.773	-0.653	-0.813	-0.640	-0.707	-0.693	-0.627	-0.813	-0.720
10	-0.987	-0.907	-1.080	-0.987	-1.013	-0.747	-0.840	-0.947	-0.907
11	-0.693	-0.720	-0.827	-0.773	-0.640	-0.587	-0.627	-0.787	-0.680
Statistics									
Min	-1.027	-0.987	-1.080	-0.987	-1.013	-0.787	-0.893	-0.947	-0.920
Max	-0.653	-0.653	-0.813	-0.640	-0.640	-0.587	-0.613	-0.760	-0.680
Average	-0.827	-0.803	-0.875	-0.792	-0.779	-0.691	-0.720	-0.837	-0.784
Sigma	0.153	0.124	0.103	0.128	0.127	0.072	0.121	0.068	0.107

Drift Calculation

Voff_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	40.0E-03	214.0E-03	147.0E-03	240.0E-03	240.0E-03	134.0E-03	147.0E-03	107.0E-03
8	-	-94.0E-03	-187.0E-03	-27.0E-03	-94.0E-03	13.0E-03	40.0E-03	-107.0E-03	-40.0E-03
9	-	120.0E-03	-40.0E-03	133.0E-03	66.0E-03	80.0E-03	146.0E-03	-40.0E-03	53.0E-03
10	-	80.0E-03	-93.0E-03	0.0E+00	-26.0E-03	240.0E-03	147.0E-03	40.0E-03	80.0E-03
11	-	-27.0E-03	-134.0E-03	-80.0E-03	53.0E-03	106.0E-03	66.0E-03	-94.0E-03	13.0E-03
Average	-	23.8E-03	-48.0E-03	34.6E-03	47.8E-03	135.8E-03	106.6E-03	-10.8E-03	42.6E-03
Sigma	-	76.3E-03	139.6E-03	89.9E-03	112.1E-03	90.3E-03	44.8E-03	94.4E-03	51.7E-03

Parameter : Offset Error : Voff_3VIN5

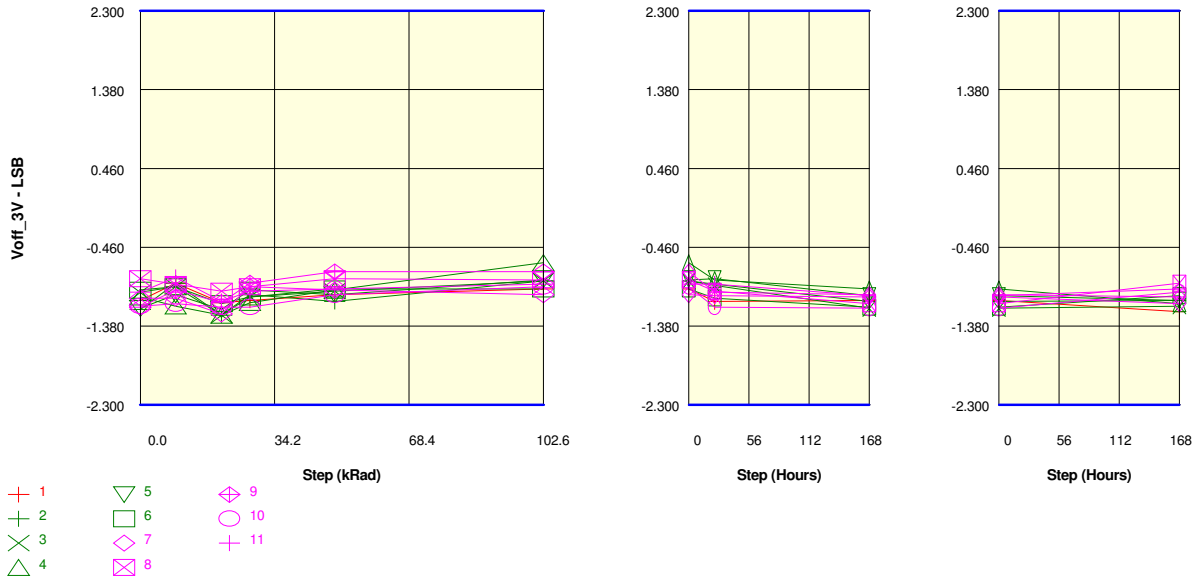
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-1.080	-0.880	-1.107	-1.080	-1.013	-0.947	-1.093	-1.080	-1.213
ON samples									
2	-1.187	-0.880	-1.253	-1.013	-1.093	-0.853	-0.893	-1.093	-1.080
3	-0.987	-0.920	-1.253	-1.040	-0.973	-0.853	-0.907	-1.173	-1.147
4	-1.040	-1.147	-1.253	-1.107	-0.960	-0.640	-0.840	-0.947	-1.120
5	-1.173	-1.013	-1.187	-0.960	-1.013	-0.840	-0.827	-1.027	-1.080
6	-0.960	-0.920	-1.120	-1.040	-0.947	-0.947	-1.053	-1.160	-1.027
Statistics									
Min	-1.187	-1.147	-1.253	-1.107	-1.093	-0.947	-1.053	-1.173	-1.147
Max	-0.960	-0.880	-1.120	-0.960	-0.947	-0.640	-0.827	-0.947	-1.027
Average	-1.069	-0.976	-1.213	-1.032	-0.997	-0.827	-0.904	-1.080	-1.091
Sigma	0.094	0.096	0.053	0.048	0.053	0.101	0.080	0.085	0.041

Drift Calculation

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	307.0E-03	-66.0E-03	174.0E-03	94.0E-03	334.0E-03	294.0E-03	94.0E-03	107.0E-03
3	-	67.0E-03	-266.0E-03	-53.0E-03	14.0E-03	134.0E-03	80.0E-03	-186.0E-03	-160.0E-03
4	-	-107.0E-03	-213.0E-03	-67.0E-03	80.0E-03	400.0E-03	200.0E-03	93.0E-03	-80.0E-03
5	-	160.0E-03	-14.0E-03	213.0E-03	160.0E-03	333.0E-03	346.0E-03	146.0E-03	93.0E-03
6	-	40.0E-03	-160.0E-03	-80.0E-03	13.0E-03	13.0E-03	-93.0E-03	-200.0E-03	-67.0E-03
Average	-	93.4E-03	-143.8E-03	37.4E-03	72.2E-03	242.8E-03	165.4E-03	-10.6E-03	-21.4E-03
Sigma	-	136.9E-03	92.6E-03	128.3E-03	55.0E-03	145.5E-03	157.7E-03	150.2E-03	104.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-1.080	-0.880	-1.107	-1.080	-1.013	-0.947	-1.093	-1.080	-1.213
OFF samples									
7	-1.053	-1.053	-1.240	-0.920	-0.960	-1.013	-1.027	-1.040	-1.120
8	-0.827	-0.893	-0.973	-0.920	-0.827	-0.840	-0.973	-1.120	-0.880
9	-1.160	-0.960	-1.107	-0.880	-0.747	-0.747	-0.987	-1.013	-1.040
10	-1.147	-1.120	-1.160	-1.160	-1.013	-0.920	-1.160	-1.173	-0.987
11	-0.987	-0.813	-1.093	-0.973	-0.947	-0.893	-0.893	-1.027	-0.947
Statistics									
Min	-1.160	-1.120	-1.240	-1.160	-1.013	-1.013	-1.160	-1.173	-1.120
Max	-0.827	-0.813	-0.973	-0.880	-0.747	-0.747	-0.893	-1.013	-0.880
Average	-1.035	-0.968	-1.115	-0.971	-0.899	-0.883	-1.008	-1.075	-0.995
Sigma	0.122	0.110	0.088	0.099	0.097	0.088	0.088	0.062	0.082

Drift Calculation

Voff_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	-187.0E-03	133.0E-03	93.0E-03	40.0E-03	26.0E-03	13.0E-03	-67.0E-03
8	-	-66.0E-03	-146.0E-03	-93.0E-03	0.0E+00	-13.0E-03	-146.0E-03	-293.0E-03	-53.0E-03
9	-	200.0E-03	53.0E-03	280.0E-03	413.0E-03	413.0E-03	173.0E-03	147.0E-03	120.0E-03
10	-	27.0E-03	-13.0E-03	-13.0E-03	134.0E-03	227.0E-03	-13.0E-03	-26.0E-03	160.0E-03
11	-	174.0E-03	-106.0E-03	14.0E-03	40.0E-03	94.0E-03	94.0E-03	-40.0E-03	40.0E-03
Average	-	67.0E-03	-79.8E-03	64.2E-03	136.0E-03	152.2E-03	26.8E-03	-39.8E-03	40.0E-03
Sigma	-	102.9E-03	87.9E-03	130.0E-03	145.8E-03	152.9E-03	107.1E-03	142.8E-03	90.4E-03

Parameter : Offset Error : Voff_3VIN6

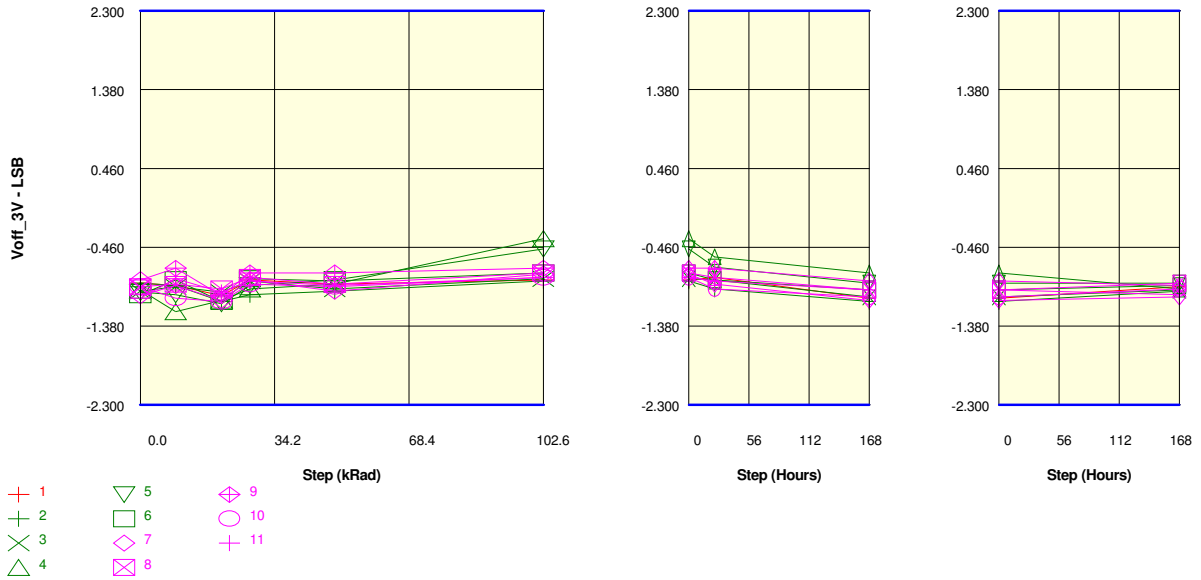
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.880	-0.907	-1.027	-0.840	-0.893	-0.840	-0.813	-1.053	-0.920
ON samples									
2	-0.880	-0.907	-1.093	-1.013	-0.973	-0.853	-0.947	-1.093	-0.973
3	-0.973	-0.920	-0.987	-0.853	-0.947	-0.827	-0.840	-1.040	-0.960
4	-0.960	-1.213	-1.080	-0.947	-0.893	-0.360	-0.573	-0.760	-0.947
5	-0.987	-1.013	-1.120	-0.907	-0.840	-0.480	-0.693	-0.880	-0.880
6	-1.013	-0.840	-1.093	-0.827	-0.853	-0.760	-0.840	-0.960	-0.907
Statistics									
Min	-1.013	-1.213	-1.120	-1.013	-0.973	-0.853	-0.947	-1.093	-0.973
Max	-0.880	-0.840	-0.987	-0.827	-0.840	-0.360	-0.573	-0.760	-0.880
Average	-0.963	-0.979	-1.075	-0.909	-0.901	-0.656	-0.779	-0.947	-0.933
Sigma	0.045	0.130	0.046	0.067	0.052	0.199	0.131	0.118	0.035

Drift Calculation

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-27.0E-03	-213.0E-03	-133.0E-03	-93.0E-03	27.0E-03	-67.0E-03	-213.0E-03	-93.0E-03
3	-	53.0E-03	-14.0E-03	120.0E-03	26.0E-03	146.0E-03	133.0E-03	-67.0E-03	13.0E-03
4	-	-253.0E-03	-120.0E-03	13.0E-03	67.0E-03	600.0E-03	387.0E-03	200.0E-03	13.0E-03
5	-	-26.0E-03	-133.0E-03	80.0E-03	147.0E-03	507.0E-03	294.0E-03	107.0E-03	107.0E-03
6	-	173.0E-03	-80.0E-03	186.0E-03	160.0E-03	253.0E-03	173.0E-03	53.0E-03	106.0E-03
Average	-	-16.0E-03	-112.0E-03	53.2E-03	61.4E-03	306.6E-03	184.0E-03	16.0E-03	29.2E-03
Sigma	-	139.2E-03	65.3E-03	108.7E-03	91.8E-03	215.9E-03	154.3E-03	143.4E-03	74.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.880	-0.907	-1.027	-0.840	-0.893	-0.840	-0.813	-1.053	-0.920
OFF samples									
7	-1.027	-0.907	-1.080	-0.840	-0.973	-0.773	-0.893	-1.080	-1.040
8	-0.920	-0.893	-0.947	-0.813	-0.893	-0.760	-0.813	-0.960	-0.880
9	-0.840	-0.707	-1.027	-0.760	-0.760	-0.707	-0.707	-0.853	-0.907
10	-0.920	-1.053	-1.093	-0.893	-0.920	-0.813	-0.947	-1.040	-0.947
11	-1.053	-0.827	-0.987	-0.853	-0.907	-0.813	-0.853	-0.960	-1.013
Statistics									
Min	-1.053	-1.053	-1.093	-0.893	-0.973	-0.813	-0.947	-1.080	-1.040
Max	-0.840	-0.707	-0.947	-0.760	-0.760	-0.707	-0.707	-0.853	-0.880
Average	-0.952	-0.877	-1.027	-0.832	-0.891	-0.773	-0.843	-0.979	-0.957
Sigma	0.078	0.113	0.055	0.044	0.071	0.039	0.081	0.078	0.061

Drift Calculation

Voff_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	120.0E-03	-53.0E-03	187.0E-03	54.0E-03	254.0E-03	134.0E-03	-53.0E-03	-13.0E-03
8	-	27.0E-03	-27.0E-03	107.0E-03	27.0E-03	160.0E-03	107.0E-03	-40.0E-03	40.0E-03
9	-	133.0E-03	-187.0E-03	80.0E-03	80.0E-03	133.0E-03	133.0E-03	-13.0E-03	-67.0E-03
10	-	-133.0E-03	-173.0E-03	27.0E-03	0.0E+00	107.0E-03	-27.0E-03	-120.0E-03	-27.0E-03
11	-	226.0E-03	66.0E-03	200.0E-03	146.0E-03	240.0E-03	200.0E-03	93.0E-03	40.0E-03
Average	-	74.6E-03	-74.8E-03	120.2E-03	61.4E-03	178.8E-03	109.4E-03	-26.6E-03	-5.4E-03
Sigma	-	121.5E-03	94.7E-03	65.3E-03	50.0E-03	58.3E-03	74.8E-03	69.4E-03	41.1E-03

Parameter : Offset Error : Voff_3VIN7

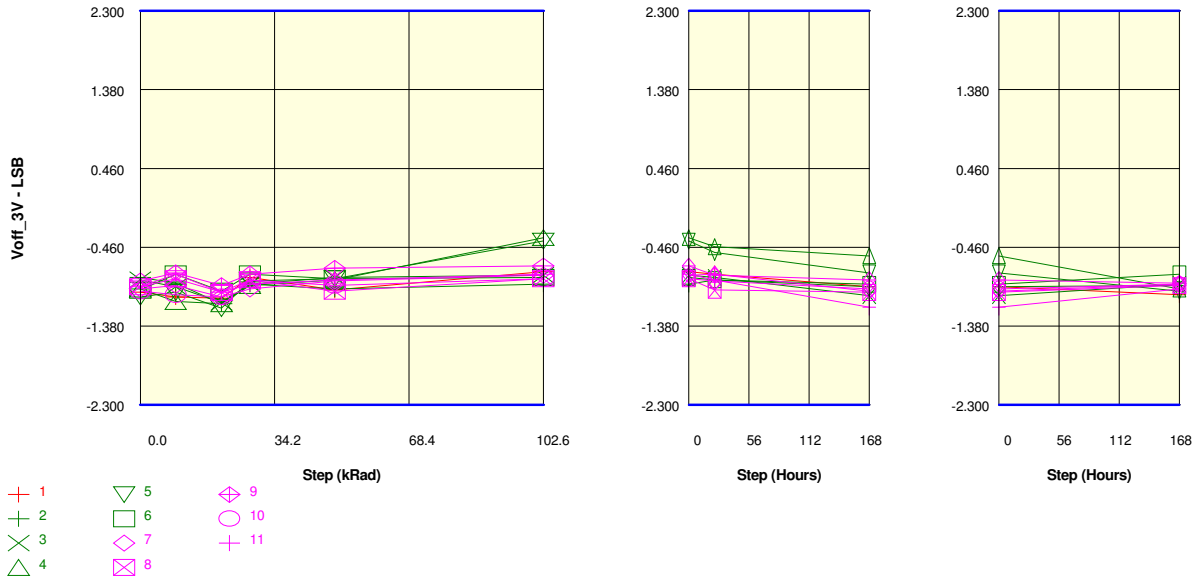
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.987	-1.040	-1.053	-0.813	-0.960	-0.747	-0.773	-0.920	-1.013
ON samples									
2	-0.813	-0.880	-1.120	-0.893	-0.947	-0.893	-0.840	-0.920	-0.907
3	-0.840	-0.920	-1.107	-0.893	-0.813	-0.787	-0.813	-1.027	-0.893
4	-0.947	-1.093	-1.120	-0.907	-0.840	-0.347	-0.453	-0.560	-0.947
5	-1.040	-0.987	-1.173	-0.853	-0.827	-0.387	-0.520	-0.760	-0.973
6	-0.960	-0.773	-0.973	-0.773	-0.827	-0.813	-0.840	-0.893	-0.773
Statistics									
Min	-1.040	-1.093	-1.173	-0.907	-0.947	-0.893	-0.840	-1.027	-0.973
Max	-0.813	-0.773	-0.973	-0.773	-0.813	-0.347	-0.453	-0.560	-0.773
Average	-0.920	-0.931	-1.099	-0.864	-0.851	-0.645	-0.693	-0.832	-0.899
Sigma	0.083	0.107	0.067	0.049	0.049	0.230	0.170	0.160	0.069

Drift Calculation

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-67.0E-03	-307.0E-03	-80.0E-03	-134.0E-03	-80.0E-03	-27.0E-03	-107.0E-03	-94.0E-03
3	-	-80.0E-03	-267.0E-03	-53.0E-03	27.0E-03	53.0E-03	27.0E-03	-187.0E-03	-53.0E-03
4	-	-146.0E-03	-173.0E-03	40.0E-03	107.0E-03	600.0E-03	494.0E-03	387.0E-03	0.0E+00
5	-	53.0E-03	-133.0E-03	187.0E-03	213.0E-03	653.0E-03	520.0E-03	280.0E-03	67.0E-03
6	-	187.0E-03	-13.0E-03	187.0E-03	133.0E-03	147.0E-03	120.0E-03	67.0E-03	187.0E-03
Average	-	-10.6E-03	-178.6E-03	56.2E-03	69.2E-03	274.6E-03	226.8E-03	88.0E-03	21.4E-03
Sigma	-	117.8E-03	103.8E-03	114.0E-03	117.7E-03	296.7E-03	233.7E-03	219.3E-03	98.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.987	-1.040	-1.053	-0.813	-0.960	-0.747	-0.773	-0.920	-1.013
OFF samples									
7	-0.947	-0.907	-1.040	-0.947	-0.853	-0.787	-0.773	-0.973	-0.893
8	-0.920	-0.827	-0.987	-0.840	-0.973	-0.827	-0.960	-0.987	-0.907
9	-0.853	-0.760	-0.907	-0.773	-0.707	-0.680	-0.787	-0.840	-0.880
10	-0.973	-1.013	-1.040	-0.840	-0.907	-0.827	-0.853	-0.947	-0.893
11	-0.920	-0.773	-0.987	-0.893	-0.840	-0.773	-0.840	-1.160	-0.947
Statistics									
Min	-0.973	-1.013	-1.040	-0.947	-0.973	-0.827	-0.960	-1.160	-0.947
Max	-0.853	-0.760	-0.907	-0.773	-0.707	-0.680	-0.773	-0.840	-0.880
Average	-0.923	-0.856	-0.992	-0.859	-0.856	-0.779	-0.843	-0.981	-0.904
Sigma	0.040	0.094	0.049	0.058	0.088	0.054	0.066	0.103	0.023

Drift Calculation

Voff_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	40.0E-03	-93.0E-03	0.0E+00	94.0E-03	160.0E-03	174.0E-03	-26.0E-03	54.0E-03
8	-	93.0E-03	-67.0E-03	80.0E-03	-53.0E-03	93.0E-03	-40.0E-03	-67.0E-03	13.0E-03
9	-	93.0E-03	-54.0E-03	80.0E-03	146.0E-03	173.0E-03	66.0E-03	13.0E-03	-27.0E-03
10	-	-40.0E-03	-67.0E-03	133.0E-03	66.0E-03	146.0E-03	120.0E-03	26.0E-03	80.0E-03
11	-	147.0E-03	-67.0E-03	27.0E-03	80.0E-03	147.0E-03	80.0E-03	-240.0E-03	-27.0E-03
Average	-	66.6E-03	-69.6E-03	64.0E-03	66.6E-03	143.8E-03	80.0E-03	-58.8E-03	18.6E-03
Sigma	-	63.1E-03	12.7E-03	46.3E-03	65.6E-03	27.2E-03	70.8E-03	96.3E-03	42.9E-03

Parameter : Full Scale Error : FSE_3VIN0

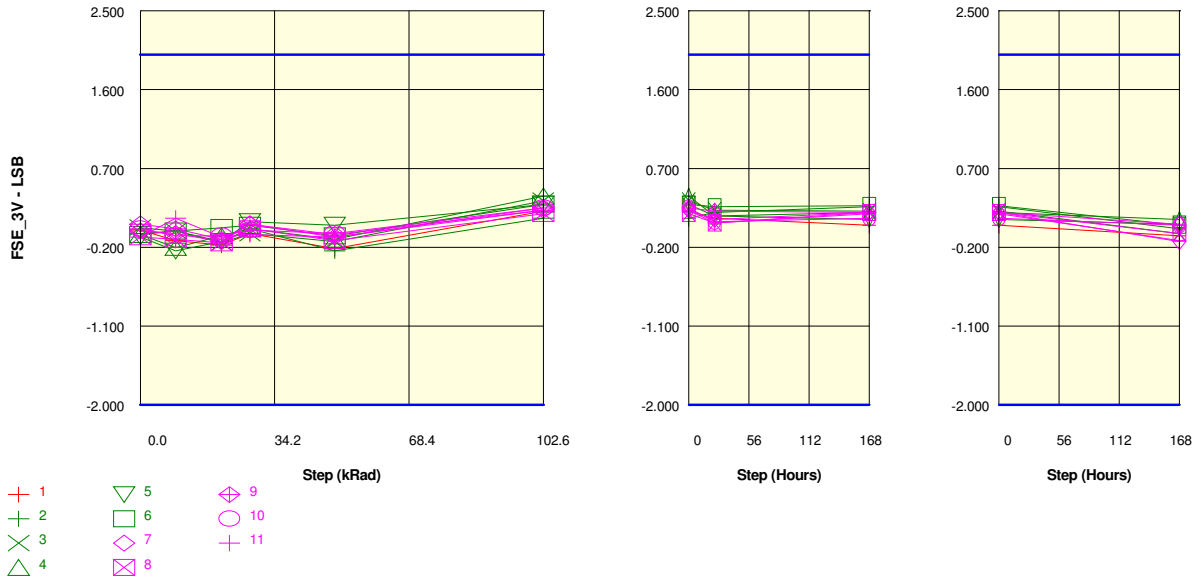
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.003	-0.123	-0.176	-0.043	-0.216	0.211	0.131	0.051	-0.069
ON samples									
2	-0.043	-0.016	-0.136	0.011	-0.243	0.131	0.197	0.264	0.011
3	0.024	-0.016	-0.149	-0.043	-0.136	0.331	0.224	0.211	-0.043
4	-0.056	-0.203	-0.069	0.011	-0.109	0.384	0.157	0.197	0.117
5	-0.083	-0.243	-0.136	0.091	0.051	0.291	0.157	0.117	0.064
6	-0.056	-0.016	0.024	0.051	-0.069	0.291	0.264	0.277	0.051
Statistics									
Min	-0.083	-0.243	-0.149	-0.043	-0.243	0.131	0.157	0.117	-0.043
Max	0.024	-0.016	0.024	0.091	0.051	0.384	0.264	0.277	0.117
Average	-0.043	-0.099	-0.093	0.024	-0.101	0.286	0.200	0.213	0.040
Sigma	0.036	0.102	0.065	0.045	0.095	0.085	0.041	0.057	0.054

Drift Calculation

FSE_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	27.0E-03	-93.0E-03	54.0E-03	-200.0E-03	174.0E-03	240.0E-03	307.0E-03	54.0E-03
3	-	-40.0E-03	-173.0E-03	-67.0E-03	-160.0E-03	307.0E-03	200.0E-03	187.0E-03	-67.0E-03
4	-	-147.0E-03	-13.0E-03	67.0E-03	-53.0E-03	440.0E-03	213.0E-03	253.0E-03	173.0E-03
5	-	-160.0E-03	-53.0E-03	174.0E-03	134.0E-03	374.0E-03	240.0E-03	200.0E-03	147.0E-03
6	-	40.0E-03	80.0E-03	107.0E-03	-13.0E-03	347.0E-03	320.0E-03	333.0E-03	107.0E-03
Average	-	-56.0E-03	-50.4E-03	67.0E-03	-58.4E-03	328.4E-03	242.6E-03	256.0E-03	82.8E-03
Sigma	-	84.2E-03	84.0E-03	79.0E-03	117.9E-03	88.5E-03	41.7E-03	57.3E-03	85.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

FSE_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.003	-0.123	-0.176	-0.043	-0.216	0.211	0.131	0.051	-0.069
OFF samples									
7	-0.016	-0.043	-0.136	0.064	-0.056	0.224	0.117	0.197	-0.136
8	-0.083	-0.109	-0.149	0.011	-0.123	0.184	0.077	0.197	-0.043
9	0.064	0.011	-0.109	0.064	-0.083	0.251	0.211	0.197	0.064
10	0.011	-0.069	-0.069	-0.003	-0.043	0.251	0.091	0.131	0.051
11	-0.083	0.131	-0.083	-0.056	-0.083	0.224	0.077	0.184	-0.123
Statistics									
Min	-0.083	-0.109	-0.149	-0.056	-0.123	0.184	0.077	0.131	-0.136
Max	0.064	0.131	-0.069	0.064	-0.043	0.251	0.211	0.197	0.064
Average	-0.021	-0.016	-0.109	0.016	-0.078	0.227	0.115	0.181	-0.037
Sigma	0.056	0.083	0.030	0.045	0.028	0.025	0.050	0.026	0.084

Drift Calculation

FSE_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-27.0E-03	-120.0E-03	80.0E-03	-40.0E-03	240.0E-03	133.0E-03	213.0E-03	-120.0E-03
8	-	-26.0E-03	-66.0E-03	94.0E-03	-40.0E-03	267.0E-03	160.0E-03	280.0E-03	40.0E-03
9	-	-53.0E-03	-173.0E-03	0.0E+00	-147.0E-03	187.0E-03	147.0E-03	133.0E-03	0.0E+00
10	-	-80.0E-03	-80.0E-03	-14.0E-03	-54.0E-03	240.0E-03	80.0E-03	120.0E-03	40.0E-03
11	-	214.0E-03	0.0E+00	27.0E-03	0.0E+00	307.0E-03	160.0E-03	267.0E-03	-40.0E-03
Average	-	5.6E-03	-87.8E-03	37.4E-03	-56.2E-03	248.2E-03	136.0E-03	202.6E-03	-16.0E-03
Sigma	-	106.1E-03	57.5E-03	42.8E-03	48.9E-03	39.2E-03	29.7E-03	66.2E-03	59.9E-03

Parameter : Full Scale Error : FSE_3VIN1

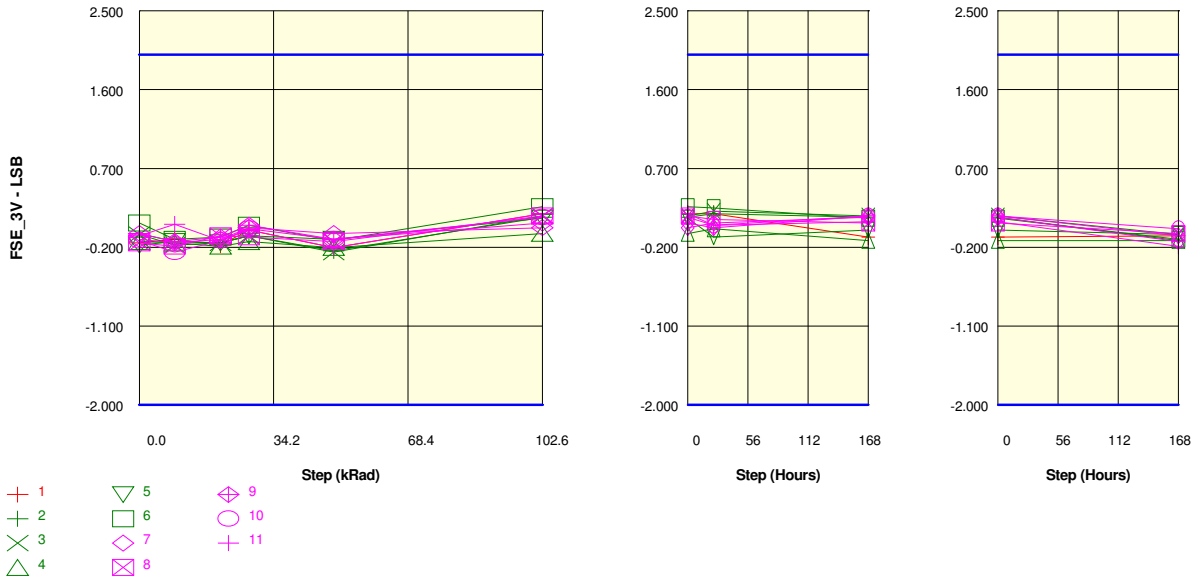
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.149	-0.109	-0.176	-0.003	-0.203	0.184	0.184	-0.083	-0.069
ON samples									
2	-0.043	-0.136	-0.149	-0.069	-0.243	0.144	0.184	0.144	-0.123
3	-0.056	-0.176	-0.149	-0.069	-0.256	0.157	0.211	0.157	-0.056
4	-0.136	-0.149	-0.189	-0.136	-0.203	-0.043	0.011	-0.123	-0.123
5	-0.176	-0.136	-0.149	-0.069	-0.109	0.131	-0.083	-0.003	-0.056
6	0.077	-0.109	-0.083	0.051	-0.123	0.264	0.251	0.131	-0.109
Statistics									
Min	-0.176	-0.176	-0.189	-0.136	-0.256	-0.043	-0.083	-0.123	-0.123
Max	0.077	-0.109	-0.083	0.051	-0.109	0.264	0.251	0.157	-0.056
Average	-0.067	-0.141	-0.144	-0.058	-0.187	0.131	0.115	0.061	-0.093
Sigma	0.087	0.022	0.034	0.061	0.061	0.099	0.128	0.109	0.031

Drift Calculation

FSE_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-93.0E-03	-106.0E-03	-26.0E-03	-200.0E-03	187.0E-03	227.0E-03	187.0E-03	-80.0E-03
3	-	-120.0E-03	-93.0E-03	-13.0E-03	-200.0E-03	213.0E-03	267.0E-03	213.0E-03	0.0E+00
4	-	-13.0E-03	-53.0E-03	0.0E+00	-67.0E-03	93.0E-03	147.0E-03	13.0E-03	13.0E-03
5	-	40.0E-03	27.0E-03	107.0E-03	67.0E-03	307.0E-03	93.0E-03	173.0E-03	120.0E-03
6	-	-186.0E-03	-160.0E-03	-26.0E-03	-200.0E-03	187.0E-03	174.0E-03	54.0E-03	-186.0E-03
Average	-	-74.4E-03	-77.0E-03	8.4E-03	-120.0E-03	197.4E-03	181.6E-03	128.0E-03	-26.6E-03
Sigma	-	79.7E-03	62.3E-03	50.2E-03	106.8E-03	68.4E-03	60.8E-03	79.3E-03	102.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.149	-0.109	-0.176	-0.003	-0.203	0.184	0.184	-0.083	-0.069
OFF samples									
7	-0.109	-0.149	-0.109	0.024	-0.043	0.024	0.077	0.144	-0.136
8	-0.149	-0.189	-0.069	-0.083	-0.136	0.157	0.117	0.077	-0.043
9	-0.043	-0.136	-0.083	0.051	-0.109	0.077	0.024	0.157	-0.069
10	-0.123	-0.256	-0.123	0.011	-0.109	0.144	0.051	0.157	0.011
11	-0.069	0.064	-0.123	-0.003	-0.203	0.184	0.051	0.091	-0.189
Statistics									
Min	-0.149	-0.256	-0.123	-0.083	-0.203	0.024	0.024	0.077	-0.189
Max	-0.043	0.064	-0.069	0.051	-0.043	0.184	0.117	0.157	0.011
Average	-0.099	-0.133	-0.101	0.000	-0.120	0.117	0.064	0.125	-0.085
Sigma	0.038	0.107	0.022	0.045	0.052	0.058	0.031	0.034	0.070

Drift Calculation

FSE_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-40.0E-03	0.0E+00	133.0E-03	66.0E-03	133.0E-03	186.0E-03	253.0E-03	-27.0E-03
8	-	-40.0E-03	80.0E-03	66.0E-03	13.0E-03	306.0E-03	266.0E-03	226.0E-03	106.0E-03
9	-	-93.0E-03	-40.0E-03	94.0E-03	-66.0E-03	120.0E-03	67.0E-03	200.0E-03	-26.0E-03
10	-	-133.0E-03	0.0E+00	134.0E-03	14.0E-03	267.0E-03	174.0E-03	280.0E-03	134.0E-03
11	-	133.0E-03	-54.0E-03	66.0E-03	-134.0E-03	253.0E-03	120.0E-03	160.0E-03	-120.0E-03
Average	-	-34.6E-03	-2.8E-03	98.6E-03	-21.4E-03	215.8E-03	162.6E-03	223.8E-03	13.4E-03
Sigma	-	90.8E-03	46.6E-03	30.3E-03	70.3E-03	75.1E-03	66.8E-03	41.6E-03	93.9E-03

Parameter : Full Scale Error : FSE_3VIN2

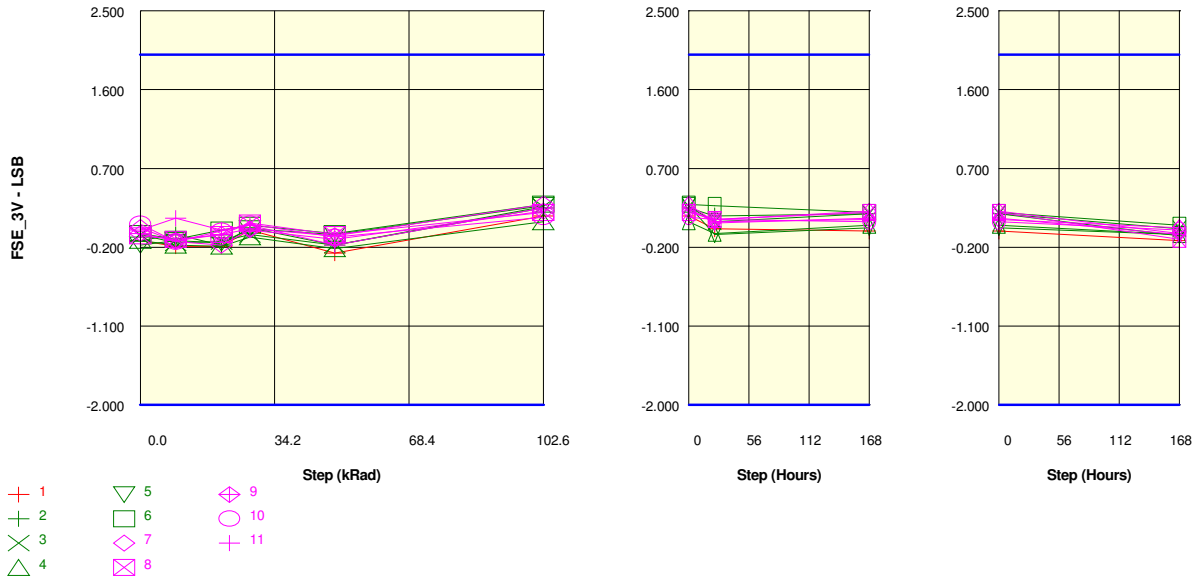
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.123	-0.189	-0.189	-0.003	-0.269	0.157	0.011	-0.016	-0.123
ON samples									
2	-0.123	-0.056	-0.176	0.024	-0.176	0.251	0.157	0.184	-0.069
3	-0.056	-0.149	-0.136	-0.056	-0.176	0.264	0.091	0.184	0.011
4	-0.123	-0.176	-0.189	-0.083	-0.216	0.091	-0.043	0.051	-0.056
5	-0.176	-0.123	-0.149	0.011	-0.056	0.277	-0.056	0.024	-0.056
6	-0.043	-0.109	-0.003	0.051	-0.043	0.291	0.277	0.197	0.051
Statistics									
Min	-0.176	-0.176	-0.189	-0.083	-0.216	0.091	-0.056	0.024	-0.069
Max	-0.043	-0.056	-0.003	0.051	-0.043	0.291	0.277	0.197	0.051
Average	-0.104	-0.123	-0.131	-0.011	-0.133	0.235	0.085	0.128	-0.024
Sigma	0.049	0.040	0.067	0.051	0.070	0.073	0.125	0.075	0.047

Drift Calculation

FSE_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	67.0E-03	-53.0E-03	147.0E-03	-53.0E-03	374.0E-03	280.0E-03	307.0E-03	54.0E-03
3	-	-93.0E-03	-80.0E-03	0.0E+00	-120.0E-03	320.0E-03	147.0E-03	240.0E-03	67.0E-03
4	-	-53.0E-03	-66.0E-03	40.0E-03	-93.0E-03	214.0E-03	80.0E-03	174.0E-03	67.0E-03
5	-	53.0E-03	27.0E-03	187.0E-03	120.0E-03	453.0E-03	120.0E-03	200.0E-03	120.0E-03
6	-	-66.0E-03	40.0E-03	94.0E-03	0.0E+00	334.0E-03	320.0E-03	240.0E-03	94.0E-03
Average	-	-18.4E-03	-26.4E-03	93.6E-03	-29.2E-03	339.0E-03	189.4E-03	232.2E-03	80.4E-03
Sigma	-	65.5E-03	49.8E-03	68.1E-03	84.8E-03	77.8E-03	93.6E-03	45.0E-03	23.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.123	-0.189	-0.189	-0.003	-0.269	0.157	0.011	-0.016	-0.123
OFF samples									
7	0.024	-0.136	-0.176	-0.003	-0.109	0.211	0.117	0.211	-0.043
8	-0.069	-0.109	-0.056	0.077	-0.056	0.197	0.117	0.197	-0.109
9	-0.043	-0.123	-0.056	0.011	-0.069	0.291	0.091	0.117	0.024
10	0.064	-0.136	-0.016	0.064	-0.083	0.144	0.117	0.091	-0.003
11	-0.003	0.131	-0.003	0.051	-0.176	0.251	0.077	0.131	-0.056
Statistics									
Min	-0.069	-0.136	-0.176	-0.003	-0.176	0.144	0.077	0.091	-0.109
Max	0.064	0.131	-0.003	0.077	-0.056	0.291	0.117	0.211	0.024
Average	-0.005	-0.075	-0.061	0.040	-0.099	0.219	0.104	0.149	-0.037
Sigma	0.047	0.103	0.061	0.031	0.043	0.050	0.017	0.047	0.046

Drift Calculation

FSE_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-160.0E-03	-200.0E-03	-27.0E-03	-133.0E-03	187.0E-03	93.0E-03	187.0E-03	-67.0E-03
8	-	-40.0E-03	13.0E-03	146.0E-03	13.0E-03	266.0E-03	186.0E-03	266.0E-03	-40.0E-03
9	-	-80.0E-03	-13.0E-03	54.0E-03	-26.0E-03	334.0E-03	134.0E-03	160.0E-03	67.0E-03
10	-	-200.0E-03	-80.0E-03	0.0E+00	-147.0E-03	80.0E-03	53.0E-03	27.0E-03	-67.0E-03
11	-	134.0E-03	0.0E+00	54.0E-03	-173.0E-03	254.0E-03	80.0E-03	134.0E-03	-53.0E-03
Average	-	-69.2E-03	-56.0E-03	45.4E-03	-93.2E-03	224.2E-03	109.2E-03	154.8E-03	-32.0E-03
Sigma	-	116.3E-03	78.8E-03	59.3E-03	73.0E-03	85.9E-03	46.4E-03	77.7E-03	50.5E-03

Parameter : Full Scale Error : FSE_3VIN3

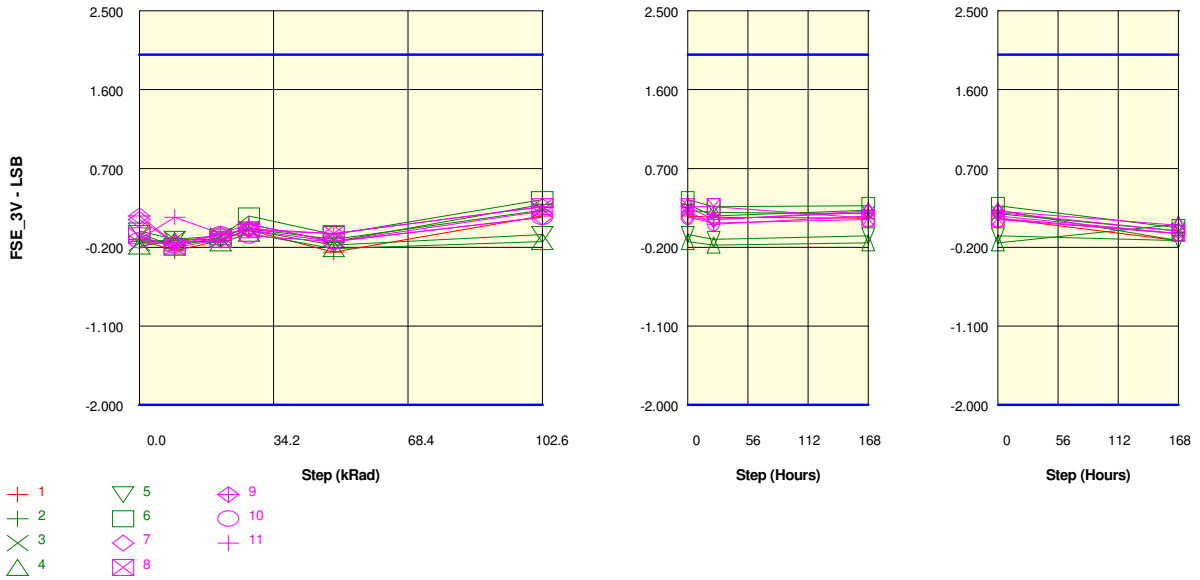
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.109	-0.243	-0.123	-0.003	-0.256	0.157	0.144	0.131	-0.123
ON samples									
2	-0.109	-0.149	-0.123	0.064	-0.136	0.291	0.157	0.224	-0.123
3	-0.149	-0.109	-0.069	0.011	-0.109	0.224	0.197	0.184	-0.016
4	-0.189	-0.123	-0.149	-0.043	-0.216	-0.136	-0.176	-0.149	0.064
5	-0.016	-0.109	-0.109	-0.003	-0.176	-0.056	-0.109	-0.069	-0.123
6	-0.043	-0.189	-0.083	0.157	-0.056	0.344	0.264	0.277	0.024
Statistics									
Min	-0.189	-0.189	-0.149	-0.043	-0.216	-0.136	-0.176	-0.149	-0.123
Max	-0.016	-0.109	-0.069	0.157	-0.056	0.344	0.264	0.277	0.064
Average	-0.101	-0.136	-0.107	0.037	-0.139	0.133	0.067	0.093	-0.035
Sigma	0.064	0.030	0.028	0.069	0.055	0.193	0.175	0.170	0.076

Drift Calculation

FSE_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-40.0E-03	-14.0E-03	173.0E-03	-27.0E-03	400.0E-03	266.0E-03	333.0E-03	-14.0E-03
3	-	40.0E-03	80.0E-03	160.0E-03	40.0E-03	373.0E-03	346.0E-03	333.0E-03	133.0E-03
4	-	66.0E-03	40.0E-03	146.0E-03	-27.0E-03	53.0E-03	13.0E-03	40.0E-03	253.0E-03
5	-	-93.0E-03	-93.0E-03	13.0E-03	-160.0E-03	-40.0E-03	-93.0E-03	-53.0E-03	-107.0E-03
6	-	-146.0E-03	-40.0E-03	200.0E-03	-13.0E-03	387.0E-03	307.0E-03	320.0E-03	67.0E-03
Average	-	-34.6E-03	-5.4E-03	138.4E-03	-37.4E-03	234.6E-03	167.8E-03	194.6E-03	66.4E-03
Sigma	-	79.4E-03	60.5E-03	65.2E-03	66.1E-03	188.7E-03	174.8E-03	166.9E-03	123.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.109	-0.243	-0.123	-0.003	-0.256	0.157	0.144	0.131	-0.123
OFF samples									
7	0.117	-0.149	-0.109	-0.003	-0.136	0.144	0.117	0.197	-0.016
8	-0.069	-0.203	-0.109	-0.003	-0.043	0.264	0.264	0.131	-0.043
9	0.157	-0.149	-0.056	0.011	-0.043	0.264	0.117	0.211	0.051
10	-0.123	-0.176	-0.056	-0.069	-0.136	0.144	0.077	0.117	-0.043
11	-0.109	0.144	-0.043	0.064	-0.136	0.211	0.064	0.157	-0.043
Statistics									
Min	-0.123	-0.203	-0.109	-0.069	-0.136	0.144	0.064	0.117	-0.043
Max	0.157	0.144	-0.043	0.064	-0.043	0.264	0.264	0.211	0.051
Average	-0.005	-0.107	-0.075	0.000	-0.099	0.205	0.128	0.163	-0.019
Sigma	0.118	0.127	0.028	0.042	0.046	0.054	0.071	0.036	0.036

Drift Calculation

FSE_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-266.0E-03	-226.0E-03	-120.0E-03	-253.0E-03	27.0E-03	0.0E+00	80.0E-03	-133.0E-03
8	-	-134.0E-03	-40.0E-03	66.0E-03	26.0E-03	333.0E-03	333.0E-03	200.0E-03	26.0E-03
9	-	-306.0E-03	-213.0E-03	-146.0E-03	-200.0E-03	107.0E-03	-40.0E-03	54.0E-03	-106.0E-03
10	-	-53.0E-03	67.0E-03	54.0E-03	-13.0E-03	267.0E-03	200.0E-03	240.0E-03	80.0E-03
11	-	253.0E-03	66.0E-03	173.0E-03	-27.0E-03	320.0E-03	173.0E-03	266.0E-03	66.0E-03
Average	-	-101.2E-03	-69.2E-03	5.4E-03	-93.4E-03	210.8E-03	133.2E-03	168.0E-03	-13.4E-03
Sigma	-	199.0E-03	128.8E-03	120.6E-03	111.3E-03	122.1E-03	136.9E-03	85.5E-03	88.8E-03

Parameter : Full Scale Error : FSE_3VIN4

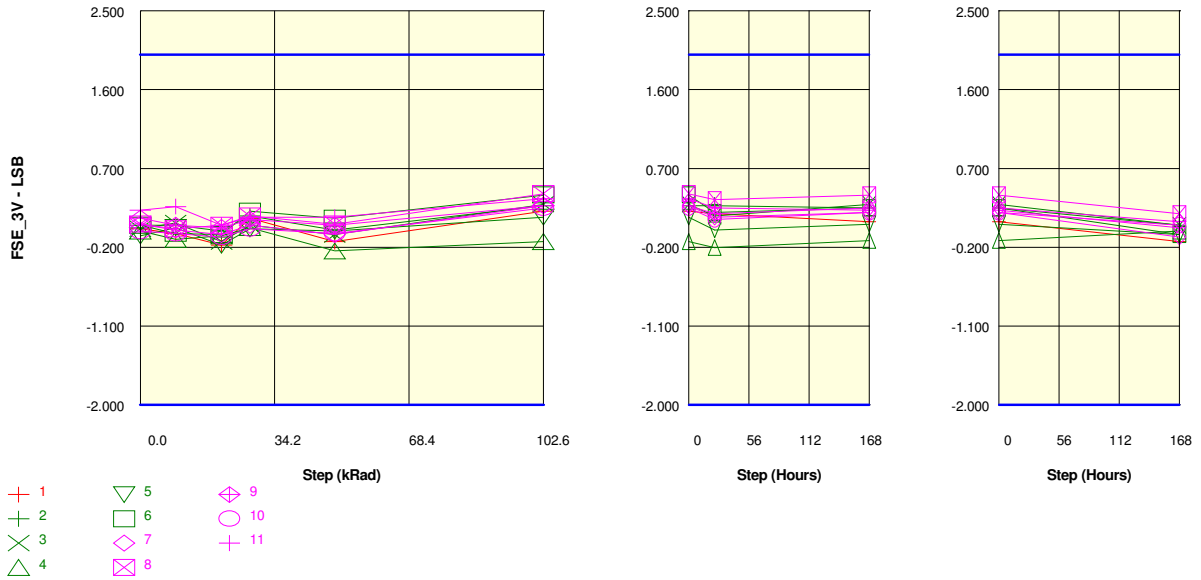
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.011	-0.043	-0.176	0.131	-0.136	0.211	0.184	0.091	-0.136
ON samples									
2	0.051	0.051	-0.016	0.157	-0.003	0.277	0.277	0.251	0.051
3	0.011	0.077	-0.136	0.051	-0.056	0.291	0.157	0.291	0.051
4	-0.016	-0.109	-0.069	0.024	-0.243	-0.136	-0.203	-0.123	-0.016
5	-0.069	0.024	-0.176	0.011	-0.016	0.144	-0.003	0.064	-0.056
6	0.051	-0.043	-0.056	0.211	0.131	0.397	0.197	0.251	-0.056
Statistics									
Min	-0.069	-0.109	-0.176	0.011	-0.243	-0.136	-0.203	-0.123	-0.056
Max	0.051	0.077	-0.016	0.211	0.131	0.397	0.277	0.291	0.051
Average	0.006	0.000	-0.091	0.091	-0.037	0.195	0.085	0.147	-0.005
Sigma	0.045	0.068	0.058	0.079	0.121	0.184	0.170	0.156	0.048

Drift Calculation

FSE_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	-67.0E-03	106.0E-03	-54.0E-03	226.0E-03	226.0E-03	200.0E-03	0.0E+00
3	-	66.0E-03	-147.0E-03	40.0E-03	-67.0E-03	280.0E-03	146.0E-03	280.0E-03	40.0E-03
4	-	-93.0E-03	-53.0E-03	40.0E-03	-227.0E-03	-120.0E-03	-187.0E-03	-107.0E-03	0.0E+00
5	-	93.0E-03	-107.0E-03	80.0E-03	53.0E-03	213.0E-03	66.0E-03	133.0E-03	13.0E-03
6	-	-94.0E-03	-107.0E-03	160.0E-03	80.0E-03	346.0E-03	146.0E-03	200.0E-03	-107.0E-03
Average	-	-5.6E-03	-96.2E-03	85.2E-03	-43.0E-03	189.0E-03	79.4E-03	141.2E-03	-10.8E-03
Sigma	-	77.9E-03	33.3E-03	45.0E-03	108.5E-03	161.5E-03	142.5E-03	132.6E-03	50.3E-03

Measurements

FSE_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.011	-0.043	-0.176	0.131	-0.136	0.211	0.184	0.091	-0.136
OFF samples									
7	0.064	-0.003	-0.056	0.051	-0.056	0.277	0.144	0.197	-0.083
8	0.064	0.011	0.051	0.157	0.064	0.411	0.344	0.397	0.184
9	0.131	0.051	0.024	0.117	0.051	0.277	0.184	0.251	0.091
10	-0.016	-0.043	-0.083	0.011	-0.043	0.251	0.117	0.197	0.051
11	0.224	0.264	0.051	0.144	0.144	0.357	0.251	0.224	0.024
Statistics									
Min	-0.016	-0.043	-0.083	0.011	-0.056	0.251	0.117	0.197	-0.083
Max	0.224	0.264	0.051	0.157	0.144	0.411	0.344	0.397	0.184
Average	0.093	0.056	-0.003	0.096	0.032	0.315	0.208	0.253	0.053
Sigma	0.080	0.108	0.056	0.056	0.074	0.060	0.082	0.075	0.087

Drift Calculation

FSE_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-67.0E-03	-120.0E-03	-13.0E-03	-120.0E-03	213.0E-03	80.0E-03	133.0E-03	-147.0E-03
8	-	-53.0E-03	-13.0E-03	93.0E-03	0.0E+00	347.0E-03	280.0E-03	333.0E-03	120.0E-03
9	-	-80.0E-03	-107.0E-03	-14.0E-03	-80.0E-03	146.0E-03	53.0E-03	120.0E-03	-40.0E-03
10	-	-27.0E-03	-67.0E-03	27.0E-03	-27.0E-03	267.0E-03	133.0E-03	213.0E-03	67.0E-03
11	-	40.0E-03	-173.0E-03	-80.0E-03	-80.0E-03	133.0E-03	27.0E-03	0.0E+00	-200.0E-03
Average	-	-37.4E-03	-96.0E-03	2.6E-03	-61.4E-03	221.2E-03	114.6E-03	159.8E-03	-40.0E-03
Sigma	-	42.5E-03	53.6E-03	56.8E-03	42.6E-03	79.3E-03	89.8E-03	110.2E-03	121.7E-03

Parameter : Full Scale Error : FSE_3VIN5

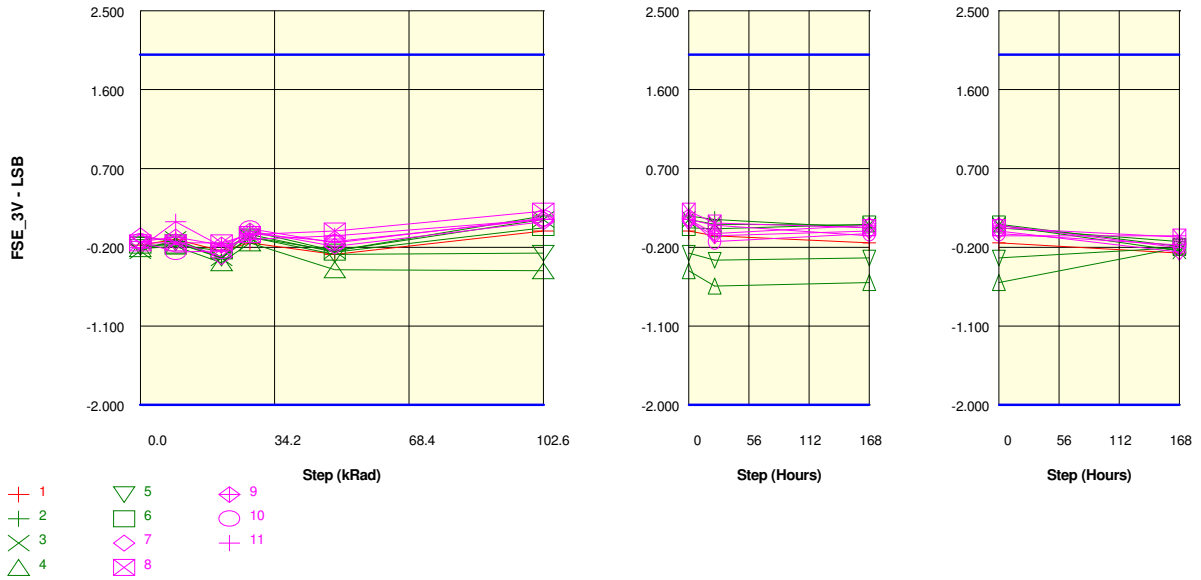
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.176	-0.109	-0.243	-0.149	-0.283	-0.016	-0.069	-0.149	-0.269
ON samples									
2	-0.083	-0.136	-0.323	-0.016	-0.243	0.157	0.117	0.024	-0.136
3	-0.243	-0.109	-0.323	-0.083	-0.243	0.117	0.064	0.051	-0.243
4	-0.216	-0.189	-0.376	-0.149	-0.456	-0.469	-0.643	-0.603	-0.203
5	-0.203	-0.149	-0.323	-0.083	-0.283	-0.269	-0.349	-0.323	-0.203
6	-0.176	-0.176	-0.243	-0.056	-0.256	0.024	0.011	0.064	-0.189
Statistics									
Min	-0.243	-0.189	-0.376	-0.149	-0.456	-0.469	-0.643	-0.603	-0.243
Max	-0.083	-0.109	-0.243	-0.016	-0.243	0.157	0.117	0.064	-0.136
Average	-0.184	-0.152	-0.318	-0.077	-0.296	-0.088	-0.160	-0.157	-0.195
Sigma	0.055	0.028	0.043	0.043	0.081	0.242	0.292	0.265	0.034

Drift Calculation

FSE_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-53.0E-03	-240.0E-03	67.0E-03	-160.0E-03	240.0E-03	200.0E-03	107.0E-03	-53.0E-03
3	-	134.0E-03	-80.0E-03	160.0E-03	0.0E+00	360.0E-03	307.0E-03	294.0E-03	0.0E+00
4	-	27.0E-03	-160.0E-03	67.0E-03	-240.0E-03	-253.0E-03	-427.0E-03	-387.0E-03	13.0E-03
5	-	54.0E-03	-120.0E-03	120.0E-03	-80.0E-03	-66.0E-03	-146.0E-03	-120.0E-03	0.0E+00
6	-	0.0E+00	-67.0E-03	120.0E-03	-80.0E-03	200.0E-03	187.0E-03	240.0E-03	-13.0E-03
Average	-	32.4E-03	-133.4E-03	106.8E-03	-112.0E-03	96.2E-03	24.2E-03	26.8E-03	-10.6E-03
Sigma	-	61.9E-03	62.5E-03	35.6E-03	81.6E-03	223.3E-03	272.0E-03	251.4E-03	22.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

FSE_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.176	-0.109	-0.243	-0.149	-0.283	-0.016	-0.069	-0.149	-0.269
OFF samples									
7	-0.069	-0.136	-0.309	-0.016	-0.189	0.091	-0.069	-0.016	-0.256
8	-0.149	-0.149	-0.149	-0.056	-0.016	0.211	0.077	0.024	-0.083
9	-0.136	-0.083	-0.176	-0.043	-0.136	0.117	-0.043	0.051	-0.203
10	-0.136	-0.256	-0.243	0.011	-0.149	0.131	-0.136	-0.043	-0.176
11	-0.203	0.091	-0.189	-0.109	-0.069	0.117	0.051	-0.069	-0.069
Statistics									
Min	-0.203	-0.256	-0.309	-0.109	-0.189	0.091	-0.136	-0.069	-0.256
Max	-0.069	0.091	-0.149	0.011	-0.016	0.211	0.077	0.051	-0.069
Average	-0.139	-0.107	-0.213	-0.043	-0.112	0.133	-0.024	-0.011	-0.157
Sigma	0.043	0.114	0.057	0.040	0.062	0.041	0.078	0.044	0.071

Drift Calculation

FSE_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-67.0E-03	-240.0E-03	53.0E-03	-120.0E-03	160.0E-03	0.0E+00	53.0E-03	-187.0E-03
8	-	0.0E+00	0.0E+00	93.0E-03	133.0E-03	360.0E-03	226.0E-03	173.0E-03	66.0E-03
9	-	53.0E-03	-40.0E-03	93.0E-03	0.0E+00	253.0E-03	93.0E-03	187.0E-03	-67.0E-03
10	-	-120.0E-03	-107.0E-03	147.0E-03	-13.0E-03	267.0E-03	0.0E+00	93.0E-03	-40.0E-03
11	-	294.0E-03	14.0E-03	94.0E-03	134.0E-03	320.0E-03	254.0E-03	134.0E-03	134.0E-03
Average	-	32.0E-03	-74.6E-03	96.0E-03	26.8E-03	272.0E-03	114.6E-03	128.0E-03	-18.8E-03
Sigma	-	143.5E-03	92.8E-03	29.9E-03	96.6E-03	67.8E-03	108.2E-03	49.8E-03	111.0E-03

Parameter : Full Scale Error : FSE_3VIN6

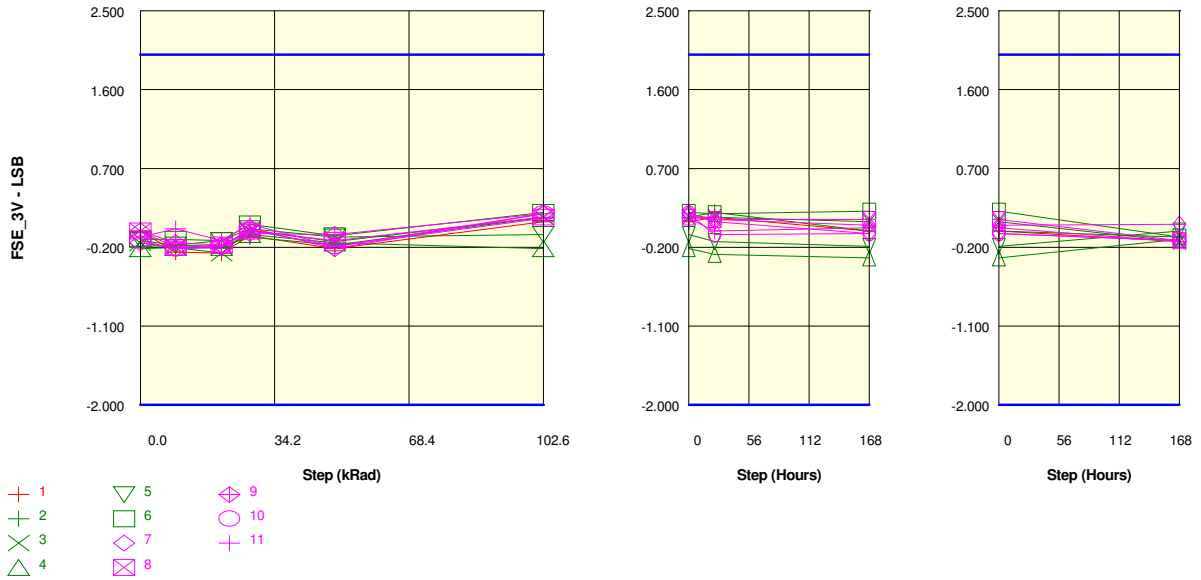
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.016	-0.256	-0.269	-0.069	-0.216	0.091	0.144	-0.016	-0.136
ON samples									
2	-0.189	-0.176	-0.189	-0.083	-0.176	0.144	0.197	-0.016	-0.083
3	-0.149	-0.203	-0.269	-0.003	-0.136	0.144	0.144	0.091	-0.136
4	-0.216	-0.203	-0.203	-0.056	-0.149	-0.216	-0.283	-0.323	-0.109
5	-0.123	-0.176	-0.123	0.011	-0.083	-0.056	-0.136	-0.189	-0.016
6	-0.109	-0.109	-0.123	0.064	-0.069	0.197	0.184	0.211	-0.083
Statistics									
Min	-0.216	-0.203	-0.269	-0.083	-0.176	-0.216	-0.283	-0.323	-0.136
Max	-0.109	-0.109	-0.123	0.064	-0.069	0.197	0.197	0.211	-0.016
Average	-0.157	-0.173	-0.181	-0.013	-0.123	0.043	0.021	-0.045	-0.085
Sigma	0.040	0.034	0.055	0.052	0.040	0.156	0.195	0.191	0.040

Drift Calculation

FSE_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	13.0E-03	0.0E+00	106.0E-03	13.0E-03	333.0E-03	386.0E-03	173.0E-03	106.0E-03
3	-	-54.0E-03	-120.0E-03	146.0E-03	13.0E-03	293.0E-03	293.0E-03	240.0E-03	13.0E-03
4	-	13.0E-03	13.0E-03	160.0E-03	67.0E-03	0.0E+00	-67.0E-03	-107.0E-03	107.0E-03
5	-	-53.0E-03	0.0E+00	134.0E-03	40.0E-03	67.0E-03	-13.0E-03	-66.0E-03	107.0E-03
6	-	0.0E+00	-14.0E-03	173.0E-03	40.0E-03	306.0E-03	293.0E-03	320.0E-03	26.0E-03
Average	-	-16.2E-03	-24.2E-03	143.8E-03	34.6E-03	199.8E-03	178.4E-03	112.0E-03	71.8E-03
Sigma	-	30.8E-03	48.7E-03	23.0E-03	20.2E-03	138.0E-03	182.3E-03	169.1E-03	42.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.016	-0.256	-0.269	-0.069	-0.216	0.091	0.144	-0.016	-0.136
OFF samples									
7	-0.149	-0.216	-0.203	0.024	-0.216	0.184	0.091	-0.043	-0.123
8	-0.016	-0.203	-0.176	-0.016	-0.123	0.144	0.117	0.117	-0.123
9	-0.016	-0.149	-0.176	-0.043	-0.056	0.184	0.117	0.051	0.064
10	-0.123	-0.216	-0.189	-0.003	-0.189	0.184	-0.056	-0.043	-0.123
11	-0.083	0.011	-0.123	0.064	-0.189	0.131	-0.016	0.024	-0.136
Statistics									
Min	-0.149	-0.216	-0.203	-0.043	-0.216	0.131	-0.056	-0.043	-0.136
Max	-0.016	0.011	-0.123	0.064	-0.056	0.184	0.117	0.117	0.064
Average	-0.077	-0.155	-0.173	0.005	-0.155	0.165	0.051	0.021	-0.088
Sigma	0.054	0.086	0.027	0.036	0.058	0.023	0.072	0.061	0.076

Drift Calculation

FSE_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-67.0E-03	-54.0E-03	173.0E-03	-67.0E-03	333.0E-03	240.0E-03	106.0E-03	26.0E-03
8	-	-187.0E-03	-160.0E-03	0.0E+00	-107.0E-03	160.0E-03	133.0E-03	133.0E-03	-107.0E-03
9	-	-133.0E-03	-160.0E-03	-27.0E-03	-40.0E-03	200.0E-03	133.0E-03	67.0E-03	80.0E-03
10	-	-93.0E-03	-66.0E-03	120.0E-03	-66.0E-03	307.0E-03	67.0E-03	80.0E-03	0.0E+00
11	-	94.0E-03	-40.0E-03	147.0E-03	-106.0E-03	214.0E-03	67.0E-03	107.0E-03	-53.0E-03
Average	-	-77.2E-03	-96.0E-03	82.6E-03	-77.2E-03	242.8E-03	128.0E-03	98.6E-03	-10.8E-03
Sigma	-	94.7E-03	52.9E-03	80.7E-03	25.8E-03	66.0E-03	63.3E-03	23.0E-03	64.4E-03

Parameter : Full Scale Error : FSE_3VIN7

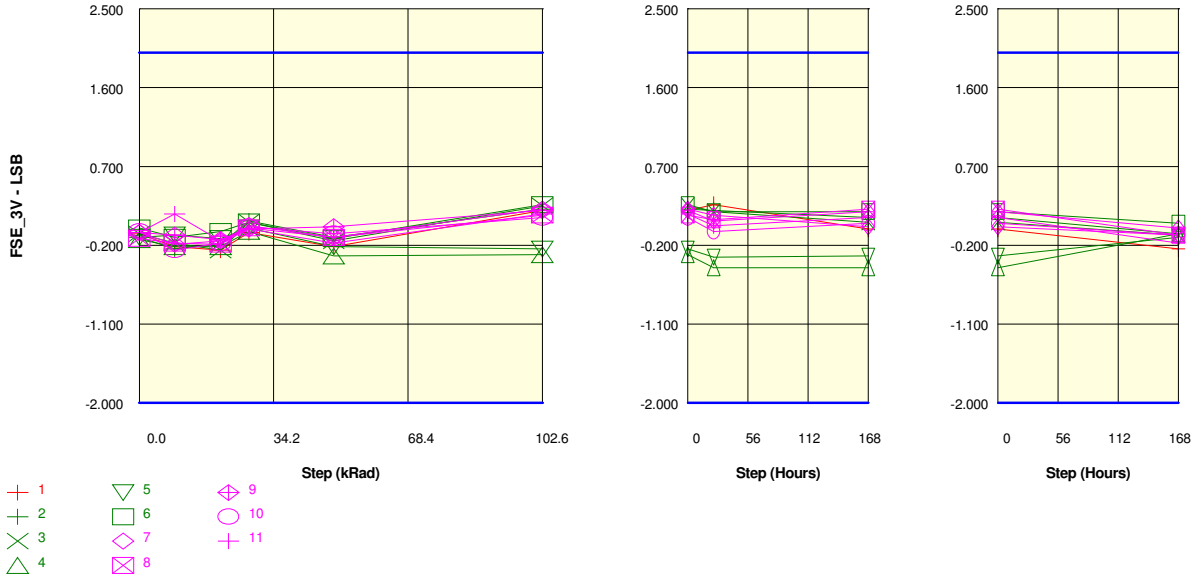
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.069	-0.216	-0.256	-0.056	-0.216	0.197	0.264	-0.016	-0.243
ON samples									
2	-0.109	-0.243	-0.189	0.077	-0.109	0.211	0.197	0.117	-0.069
3	-0.069	-0.176	-0.256	0.064	-0.149	0.251	0.184	0.064	-0.083
4	-0.136	-0.216	-0.216	-0.043	-0.323	-0.309	-0.456	-0.456	-0.069
5	-0.109	-0.083	-0.123	-0.003	-0.216	-0.243	-0.336	-0.323	-0.109
6	-0.003	-0.109	-0.043	0.064	-0.123	0.264	0.184	0.184	0.051
Statistics									
Min	-0.136	-0.243	-0.256	-0.043	-0.323	-0.309	-0.456	-0.456	-0.109
Max	-0.003	-0.083	-0.043	0.077	-0.109	0.264	0.197	0.184	0.051
Average	-0.085	-0.165	-0.165	0.032	-0.184	0.035	-0.045	-0.083	-0.056
Sigma	0.046	0.061	0.075	0.047	0.079	0.255	0.289	0.257	0.055

Drift Calculation

FSE_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-134.0E-03	-80.0E-03	186.0E-03	0.0E+00	320.0E-03	306.0E-03	226.0E-03	40.0E-03
3	-	-107.0E-03	-187.0E-03	133.0E-03	-80.0E-03	320.0E-03	253.0E-03	133.0E-03	-14.0E-03
4	-	-80.0E-03	-80.0E-03	93.0E-03	-187.0E-03	-173.0E-03	-320.0E-03	-320.0E-03	67.0E-03
5	-	26.0E-03	-14.0E-03	106.0E-03	-107.0E-03	-134.0E-03	-227.0E-03	-214.0E-03	0.0E+00
6	-	-106.0E-03	-40.0E-03	67.0E-03	-120.0E-03	267.0E-03	187.0E-03	187.0E-03	54.0E-03
Average	-	-80.2E-03	-80.2E-03	117.0E-03	-98.8E-03	120.0E-03	39.8E-03	2.4E-03	29.4E-03
Sigma	-	55.8E-03	59.0E-03	40.5E-03	60.7E-03	224.5E-03	260.2E-03	224.5E-03	31.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

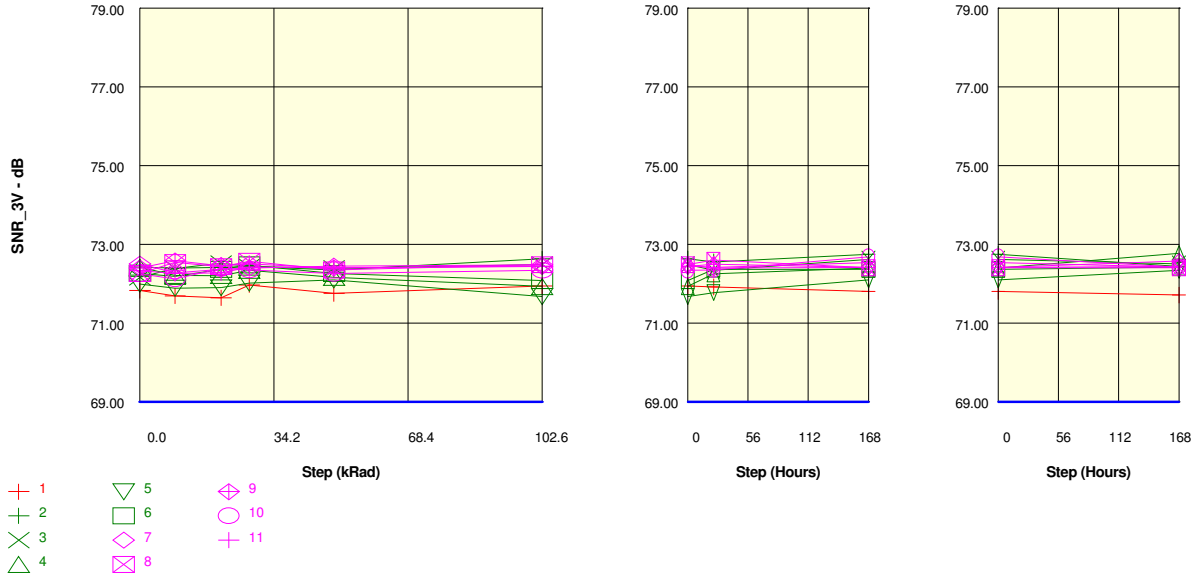
FSE_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.069	-0.216	-0.256	-0.056	-0.216	0.197	0.264	-0.016	-0.243
OFF samples									
7	-0.056	-0.189	-0.149	0.024	-0.109	0.211	0.144	0.011	-0.083
8	-0.123	-0.176	-0.189	-0.003	-0.109	0.144	0.091	0.211	-0.083
9	-0.056	-0.083	-0.136	-0.016	0.011	0.197	0.077	0.184	-0.003
10	-0.043	-0.256	-0.176	0.011	-0.069	0.117	-0.043	0.051	-0.083
11	-0.056	0.157	-0.149	-0.016	-0.176	0.157	0.024	0.117	-0.176
Statistics									
Min	-0.123	-0.256	-0.189	-0.016	-0.176	0.117	-0.043	0.011	-0.176
Max	-0.043	0.157	-0.136	0.024	0.011	0.211	0.144	0.211	-0.003
Average	-0.067	-0.109	-0.160	0.000	-0.090	0.165	0.059	0.115	-0.086
Sigma	0.029	0.144	0.020	0.016	0.061	0.034	0.064	0.076	0.055

Drift Calculation

FSE_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-133.0E-03	-93.0E-03	80.0E-03	-53.0E-03	267.0E-03	200.0E-03	67.0E-03	-27.0E-03
8	-	-53.0E-03	-66.0E-03	120.0E-03	14.0E-03	267.0E-03	214.0E-03	334.0E-03	40.0E-03
9	-	-27.0E-03	-80.0E-03	40.0E-03	67.0E-03	253.0E-03	133.0E-03	240.0E-03	53.0E-03
10	-	-213.0E-03	-133.0E-03	54.0E-03	-26.0E-03	160.0E-03	0.0E+00	94.0E-03	-40.0E-03
11	-	213.0E-03	-93.0E-03	40.0E-03	-120.0E-03	213.0E-03	80.0E-03	173.0E-03	-120.0E-03
Average	-	-42.6E-03	-93.0E-03	66.8E-03	-23.6E-03	232.0E-03	125.4E-03	181.6E-03	-18.8E-03
Sigma	-	143.5E-03	22.4E-03	30.3E-03	62.9E-03	41.1E-03	79.1E-03	97.5E-03	62.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise ratio : SNR_3VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.83	71.69	71.64	71.97	71.75	71.95	71.92	71.81	71.71
ON samples									
2	72.43	72.40	72.41	72.44	72.35	72.63	72.56	72.75	72.44
3	72.17	72.39	72.52	72.44	72.39	72.49	72.34	72.63	72.51
4	72.42	72.22	72.21	72.34	72.16	71.93	72.25	72.40	72.77
5	71.99	71.89	71.90	72.02	72.10	71.68	71.78	72.10	72.34
6	72.27	72.19	72.37	72.48	72.26	72.08	72.37	72.37	72.43
Statistics									
Min	71.99	71.89	71.90	72.02	72.10	71.68	71.78	72.10	72.34
Max	72.43	72.40	72.52	72.48	72.39	72.63	72.56	72.75	72.77
Average	72.25	72.22	72.28	72.34	72.25	72.16	72.26	72.45	72.50
Sigma	0.16	0.19	0.21	0.17	0.11	0.35	0.26	0.22	0.15

Drift Calculation

SNR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-27.0E-03	-14.0E-03	14.0E-03	-75.0E-03	207.0E-03	130.0E-03	324.0E-03	13.0E-03
3	-	225.0E-03	352.0E-03	274.0E-03	229.0E-03	328.0E-03	176.0E-03	460.0E-03	342.0E-03
4	-	-207.0E-03	-214.0E-03	-83.0E-03	-262.0E-03	-490.0E-03	-169.0E-03	-25.0E-03	346.0E-03
5	-	-103.0E-03	-89.0E-03	26.0E-03	105.0E-03	-313.0E-03	-214.0E-03	110.0E-03	353.0E-03
6	-	-80.0E-03	101.0E-03	209.0E-03	-4.0E-03	-184.0E-03	103.0E-03	97.0E-03	157.0E-03
Average	-	-38.4E-03	27.2E-03	88.0E-03	-1.4E-03	-90.4E-03	5.2E-03	193.2E-03	242.2E-03
Sigma	-	144.1E-03	192.0E-03	132.5E-03	166.0E-03	310.3E-03	162.9E-03	174.4E-03	136.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

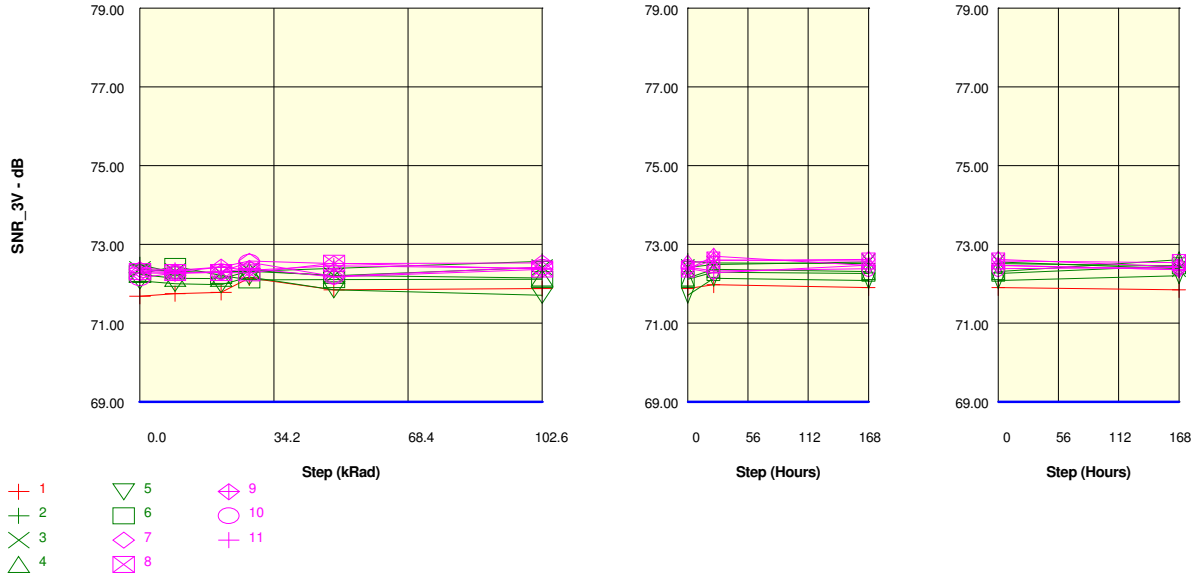
Measurements

SNR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.83	71.69	71.64	71.97	71.75	71.95	71.92	71.81	71.71
OFF samples									
7	72.50	72.28	72.37	72.40	72.45	72.48	72.40	72.42	72.44
8	72.26	72.54	72.43	72.57	72.35	72.49	72.60	72.41	72.41
9	72.40	72.59	72.46	72.51	72.40	72.44	72.50	72.42	72.58
10	72.25	72.12	72.39	72.35	72.26	72.34	72.35	72.68	72.43
11	72.33	72.27	72.27	72.43	72.41	72.45	72.42	72.54	72.43
Statistics									
Min	72.25	72.12	72.27	72.35	72.26	72.34	72.35	72.41	72.41
Max	72.50	72.59	72.46	72.57	72.45	72.49	72.60	72.68	72.58
Average	72.35	72.36	72.39	72.45	72.37	72.44	72.45	72.49	72.45
Sigma	0.09	0.18	0.06	0.08	0.07	0.05	0.09	0.11	0.06

Drift Calculation

SNR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-216.0E-03	-129.0E-03	-102.0E-03	-50.0E-03	-17.0E-03	-105.0E-03	-79.0E-03	-62.0E-03
8	-	282.0E-03	172.0E-03	311.0E-03	91.0E-03	225.0E-03	341.0E-03	148.0E-03	146.0E-03
9	-	181.0E-03	58.0E-03	105.0E-03	-2.0E-03	40.0E-03	91.0E-03	15.0E-03	171.0E-03
10	-	-128.0E-03	139.0E-03	98.0E-03	8.0E-03	88.0E-03	99.0E-03	432.0E-03	175.0E-03
11	-	-67.0E-03	-58.0E-03	94.0E-03	78.0E-03	116.0E-03	86.0E-03	206.0E-03	93.0E-03
Average	-	10.4E-03	36.4E-03	101.2E-03	25.0E-03	90.4E-03	102.4E-03	144.4E-03	104.6E-03
Sigma	-	189.4E-03	114.6E-03	130.7E-03	52.6E-03	81.1E-03	141.7E-03	175.0E-03	88.3E-03

Parameter : Signal to noise ratio : SNR_3VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.69	71.75	71.78	72.15	71.85	71.88	71.98	71.91	71.85
ON samples									
2	72.48	72.29	72.30	72.32	72.39	72.57	72.53	72.52	72.45
3	72.37	72.32	72.28	72.34	72.21	72.42	72.49	72.56	72.39
4	72.24	72.14	72.14	72.32	72.21	72.15	72.37	72.31	72.61
5	72.07	72.00	71.98	72.18	71.85	71.71	72.14	72.08	72.21
6	72.26	72.45	72.21	72.10	72.11	72.11	72.29	72.27	72.46
Statistics									
Min	72.07	72.00	71.98	72.10	71.85	71.71	72.14	72.08	72.21
Max	72.48	72.45	72.30	72.34	72.39	72.57	72.53	72.56	72.61
Average	72.28	72.24	72.18	72.25	72.15	72.19	72.36	72.35	72.42
Sigma	0.14	0.15	0.12	0.10	0.18	0.29	0.14	0.17	0.13

Drift Calculation

SNR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-194.0E-03	-180.0E-03	-160.0E-03	-88.0E-03	90.0E-03	54.0E-03	35.0E-03	-26.0E-03
3	-	-48.0E-03	-88.0E-03	-27.0E-03	-160.0E-03	48.0E-03	122.0E-03	187.0E-03	16.0E-03
4	-	-98.0E-03	-102.0E-03	84.0E-03	-25.0E-03	-92.0E-03	130.0E-03	72.0E-03	376.0E-03
5	-	-69.0E-03	-95.0E-03	107.0E-03	-224.0E-03	-362.0E-03	68.0E-03	10.0E-03	133.0E-03
6	-	189.0E-03	-44.0E-03	-158.0E-03	-147.0E-03	-142.0E-03	35.0E-03	10.0E-03	201.0E-03
Average	-	-44.0E-03	-101.8E-03	-30.8E-03	-128.8E-03	-91.6E-03	81.8E-03	62.8E-03	140.0E-03
Sigma	-	126.8E-03	44.0E-03	114.1E-03	67.5E-03	160.1E-03	37.7E-03	66.1E-03	143.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

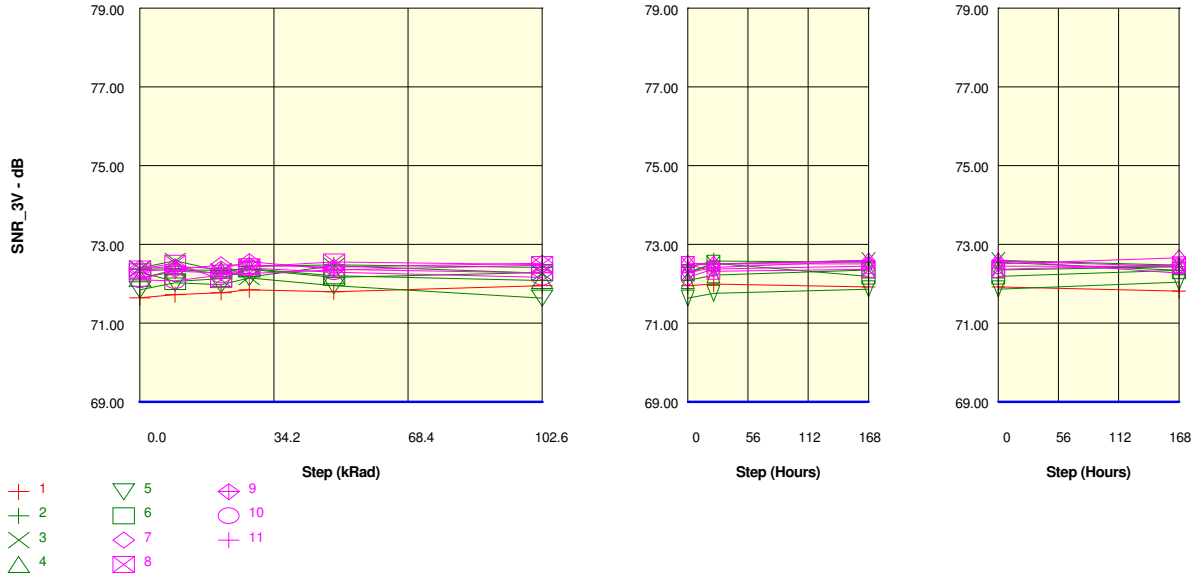
Measurements

SNR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.69	71.75	71.78	72.15	71.85	71.88	71.98	71.91	71.85
OFF samples									
7	72.36	72.31	72.43	72.58	72.51	72.53	72.60	72.62	72.43
8	72.31	72.29	72.29	72.28	72.52	72.38	72.61	72.58	72.54
9	72.28	72.27	72.29	72.39	72.18	72.37	72.70	72.47	72.36
10	72.15	72.28	72.31	72.55	72.19	72.42	72.32	72.38	72.41
11	72.40	72.35	72.42	72.34	72.46	72.39	72.28	72.47	72.36
Statistics									
Min	72.15	72.27	72.29	72.28	72.18	72.37	72.28	72.38	72.36
Max	72.40	72.35	72.43	72.58	72.52	72.53	72.70	72.62	72.54
Average	72.30	72.30	72.35	72.43	72.37	72.42	72.50	72.50	72.42
Sigma	0.09	0.03	0.06	0.12	0.15	0.06	0.17	0.09	0.06

Drift Calculation

SNR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-56.0E-03	64.0E-03	214.0E-03	150.0E-03	173.0E-03	234.0E-03	258.0E-03	66.0E-03
8	-	-21.0E-03	-22.0E-03	-31.0E-03	213.0E-03	69.0E-03	296.0E-03	269.0E-03	228.0E-03
9	-	-13.0E-03	11.0E-03	111.0E-03	-102.0E-03	85.0E-03	421.0E-03	185.0E-03	80.0E-03
10	-	131.0E-03	160.0E-03	403.0E-03	45.0E-03	276.0E-03	177.0E-03	235.0E-03	267.0E-03
11	-	-51.0E-03	27.0E-03	-55.0E-03	62.0E-03	-6.0E-03	-118.0E-03	75.0E-03	-33.0E-03
Average	-	-2.0E-03	48.0E-03	128.4E-03	73.6E-03	119.4E-03	202.0E-03	204.4E-03	121.6E-03
Sigma	-	68.5E-03	62.5E-03	168.6E-03	106.8E-03	96.8E-03	179.4E-03	70.9E-03	110.6E-03

Parameter : Signal to noise ratio : SNR_3VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.64	71.73	71.78	71.85	71.80	71.96	72.00	71.93	71.82
ON samples									
2	72.37	72.39	72.26	72.44	72.48	72.42	72.58	72.55	72.34
3	72.40	72.59	72.32	72.17	72.46	72.27	72.50	72.60	72.47
4	72.14	72.35	72.34	72.39	72.21	72.09	72.23	72.35	72.43
5	71.85	72.03	71.98	72.15	71.96	71.64	71.76	71.87	72.04
6	72.30	72.06	72.13	72.37	72.17	72.29	72.52	72.19	72.34
Statistics									
Min	71.85	72.03	71.98	72.15	71.96	71.64	71.76	71.87	72.04
Max	72.40	72.59	72.34	72.44	72.48	72.42	72.58	72.60	72.47
Average	72.21	72.28	72.21	72.30	72.25	72.14	72.32	72.31	72.32
Sigma	0.20	0.21	0.13	0.12	0.20	0.27	0.31	0.26	0.15

Drift Calculation

SNR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	16.0E-03	-115.0E-03	66.0E-03	106.0E-03	45.0E-03	207.0E-03	179.0E-03	-35.0E-03
3	-	192.0E-03	-79.0E-03	-225.0E-03	62.0E-03	-126.0E-03	109.0E-03	201.0E-03	75.0E-03
4	-	212.0E-03	202.0E-03	250.0E-03	68.0E-03	-52.0E-03	87.0E-03	212.0E-03	291.0E-03
5	-	180.0E-03	131.0E-03	302.0E-03	107.0E-03	-211.0E-03	-91.0E-03	21.0E-03	194.0E-03
6	-	-243.0E-03	-166.0E-03	72.0E-03	-134.0E-03	-12.0E-03	225.0E-03	-105.0E-03	38.0E-03
Average	-	71.4E-03	-5.4E-03	93.0E-03	41.8E-03	-71.2E-03	107.4E-03	101.6E-03	112.6E-03
Sigma	-	172.1E-03	144.8E-03	184.7E-03	89.9E-03	89.4E-03	112.7E-03	124.3E-03	115.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

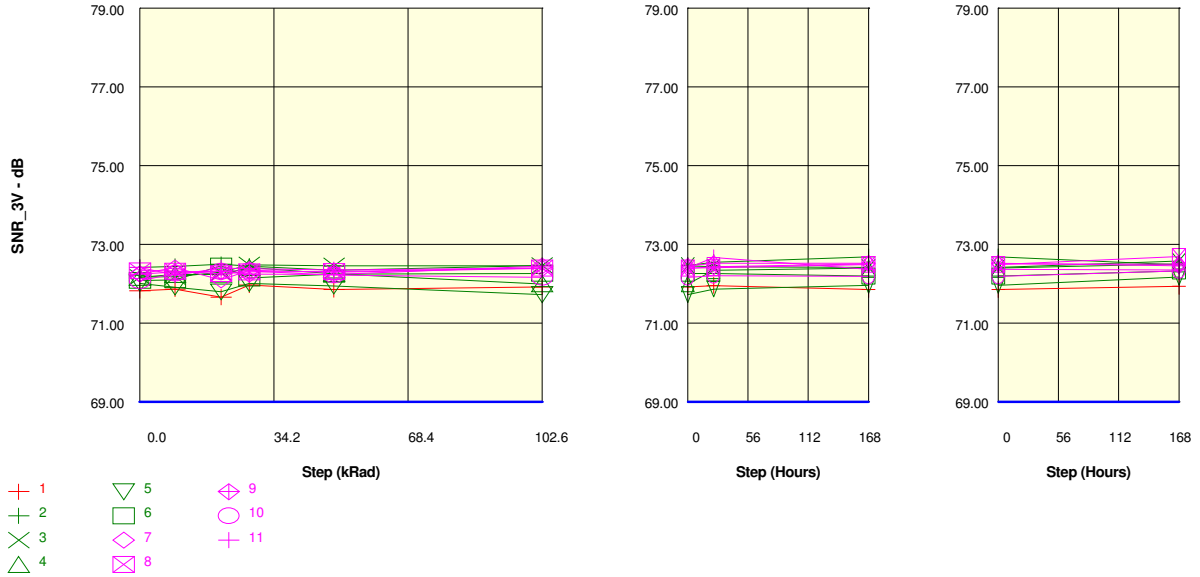
Measurements

SNR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.64	71.73	71.78	71.85	71.80	71.96	72.00	71.93	71.82
OFF samples									
7	72.33	72.36	72.48	72.47	72.42	72.52	72.50	72.51	72.66
8	72.38	72.53	72.11	72.43	72.56	72.49	72.32	72.37	72.48
9	72.39	72.44	72.38	72.56	72.37	72.28	72.42	72.58	72.45
10	72.10	72.07	72.22	72.40	72.30	72.17	72.38	72.45	72.44
11	72.13	72.32	72.28	72.26	72.35	72.47	72.50	72.59	72.27
Statistics									
Min	72.10	72.07	72.11	72.26	72.30	72.17	72.32	72.37	72.27
Max	72.39	72.53	72.48	72.56	72.56	72.52	72.50	72.59	72.66
Average	72.26	72.34	72.29	72.43	72.40	72.38	72.42	72.50	72.46
Sigma	0.13	0.15	0.13	0.10	0.09	0.14	0.07	0.08	0.12

Drift Calculation

SNR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	29.0E-03	153.0E-03	140.0E-03	94.0E-03	190.0E-03	170.0E-03	178.0E-03	328.0E-03
8	-	148.0E-03	-269.0E-03	54.0E-03	177.0E-03	116.0E-03	-57.0E-03	-12.0E-03	104.0E-03
9	-	52.0E-03	-8.0E-03	176.0E-03	-21.0E-03	-113.0E-03	29.0E-03	191.0E-03	57.0E-03
10	-	-29.0E-03	123.0E-03	306.0E-03	202.0E-03	67.0E-03	280.0E-03	350.0E-03	345.0E-03
11	-	192.0E-03	151.0E-03	135.0E-03	219.0E-03	341.0E-03	369.0E-03	461.0E-03	142.0E-03
Average	-	78.4E-03	30.0E-03	162.2E-03	134.2E-03	120.2E-03	158.2E-03	233.6E-03	195.2E-03
Sigma	-	80.5E-03	160.8E-03	82.2E-03	88.7E-03	148.9E-03	156.5E-03	161.5E-03	118.6E-03

Parameter : Signal to noise ratio : SNR_3VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.82	71.87	71.66	71.97	71.85	71.92	71.96	71.85	71.94
ON samples									
2	72.42	72.44	72.50	72.45	72.34	72.46	72.55	72.69	72.48
3	72.18	72.18	72.29	72.48	72.46	72.46	72.44	72.42	72.58
4	72.16	72.24	72.24	72.42	72.26	72.00	72.34	72.40	72.51
5	72.02	71.92	71.80	72.01	71.94	71.73	71.87	71.96	72.18
6	72.09	72.10	72.45	72.15	72.25	72.27	72.26	72.20	72.33
Statistics									
Min	72.02	71.92	71.80	72.01	71.94	71.73	71.87	71.96	72.18
Max	72.42	72.44	72.50	72.48	72.46	72.46	72.55	72.69	72.58
Average	72.17	72.18	72.26	72.30	72.25	72.18	72.29	72.33	72.42
Sigma	0.14	0.17	0.25	0.19	0.17	0.28	0.23	0.24	0.15

Drift Calculation

SNR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	23.0E-03	75.0E-03	29.0E-03	-84.0E-03	43.0E-03	125.0E-03	265.0E-03	63.0E-03
3	-	4.0E-03	114.0E-03	308.0E-03	283.0E-03	286.0E-03	259.0E-03	244.0E-03	406.0E-03
4	-	75.0E-03	79.0E-03	259.0E-03	94.0E-03	-162.0E-03	176.0E-03	241.0E-03	346.0E-03
5	-	-100.0E-03	-219.0E-03	-2.0E-03	-72.0E-03	-288.0E-03	-147.0E-03	-56.0E-03	161.0E-03
6	-	16.0E-03	366.0E-03	61.0E-03	159.0E-03	181.0E-03	176.0E-03	112.0E-03	241.0E-03
Average	-	3.6E-03	83.0E-03	131.0E-03	76.0E-03	12.0E-03	117.8E-03	161.2E-03	243.4E-03
Sigma	-	57.2E-03	185.7E-03	127.0E-03	139.7E-03	212.1E-03	139.2E-03	121.3E-03	123.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

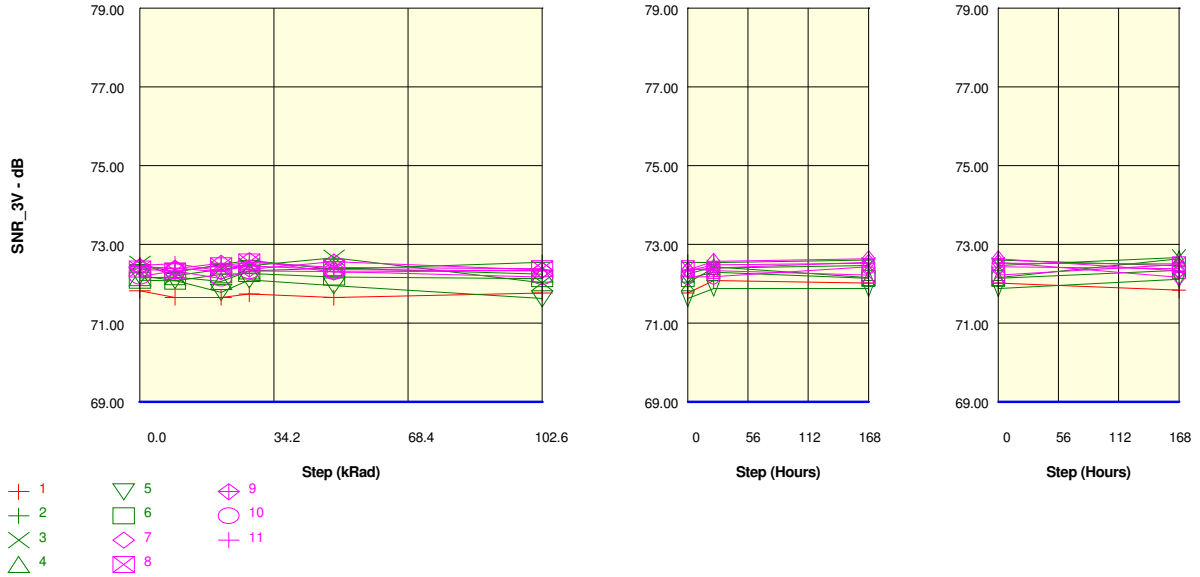
Measurements

SNR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.82	71.87	71.66	71.97	71.85	71.92	71.96	71.85	71.94
OFF samples									
7	72.25	72.41	72.10	72.34	72.29	72.39	72.43	72.50	72.50
8	72.33	72.32	72.26	72.30	72.31	72.40	72.41	72.49	72.70
9	72.24	72.30	72.32	72.25	72.24	72.45	72.52	72.52	72.46
10	72.08	72.26	72.32	72.33	72.22	72.16	72.21	72.19	72.33
11	72.42	72.22	72.40	72.39	72.36	72.40	72.67	72.36	72.35
Statistics									
Min	72.08	72.22	72.10	72.25	72.22	72.16	72.21	72.19	72.33
Max	72.42	72.41	72.40	72.39	72.36	72.45	72.67	72.52	72.70
Average	72.26	72.30	72.28	72.32	72.28	72.36	72.45	72.42	72.47
Sigma	0.11	0.06	0.10	0.05	0.05	0.10	0.15	0.12	0.13

Drift Calculation

SNR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	156.0E-03	-152.0E-03	89.0E-03	39.0E-03	141.0E-03	180.0E-03	252.0E-03	246.0E-03
8	-	-10.0E-03	-75.0E-03	-30.0E-03	-21.0E-03	67.0E-03	77.0E-03	162.0E-03	365.0E-03
9	-	61.0E-03	75.0E-03	4.0E-03	-4.0E-03	208.0E-03	277.0E-03	279.0E-03	212.0E-03
10	-	188.0E-03	248.0E-03	250.0E-03	143.0E-03	85.0E-03	135.0E-03	118.0E-03	256.0E-03
11	-	-204.0E-03	-22.0E-03	-34.0E-03	-63.0E-03	-23.0E-03	245.0E-03	-57.0E-03	-71.0E-03
Average	-	38.2E-03	14.8E-03	55.8E-03	18.8E-03	95.6E-03	182.8E-03	150.8E-03	201.6E-03
Sigma	-	139.9E-03	138.0E-03	106.7E-03	70.2E-03	77.1E-03	72.4E-03	119.2E-03	145.6E-03

Parameter : Signal to noise ratio : SNR_3VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.83	71.65	71.65	71.74	71.65	71.77	72.09	72.02	71.84
ON samples									
2	72.49	72.30	72.49	72.59	72.37	72.55	72.54	72.60	72.46
3	72.51	72.20	72.37	72.45	72.66	72.03	72.40	72.47	72.67
4	72.15	72.18	72.06	72.32	72.40	72.24	72.43	72.15	72.64
5	72.20	72.09	71.78	72.10	71.95	71.62	71.88	71.88	72.11
6	72.09	72.07	72.23	72.26	72.17	72.13	72.29	72.14	72.34
Statistics									
Min	72.09	72.07	71.78	72.10	71.95	71.62	71.88	71.88	72.11
Max	72.51	72.30	72.49	72.59	72.66	72.55	72.54	72.60	72.67
Average	72.29	72.17	72.19	72.35	72.31	72.11	72.31	72.25	72.44
Sigma	0.18	0.08	0.25	0.17	0.24	0.30	0.23	0.26	0.20

Drift Calculation

SNR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-190.0E-03	4.0E-03	106.0E-03	-113.0E-03	60.0E-03	57.0E-03	116.0E-03	-29.0E-03
3	-	-309.0E-03	-140.0E-03	-59.0E-03	148.0E-03	-485.0E-03	-114.0E-03	-46.0E-03	156.0E-03
4	-	25.0E-03	-92.0E-03	172.0E-03	249.0E-03	92.0E-03	282.0E-03	1.0E-03	484.0E-03
5	-	-116.0E-03	-419.0E-03	-99.0E-03	-250.0E-03	-577.0E-03	-317.0E-03	-320.0E-03	-87.0E-03
6	-	-23.0E-03	140.0E-03	172.0E-03	79.0E-03	39.0E-03	199.0E-03	48.0E-03	250.0E-03
Average	-	-122.6E-03	-101.4E-03	58.4E-03	22.6E-03	-174.2E-03	21.4E-03	-40.2E-03	154.8E-03
Sigma	-	119.2E-03	185.4E-03	115.4E-03	180.5E-03	293.3E-03	216.1E-03	149.8E-03	204.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

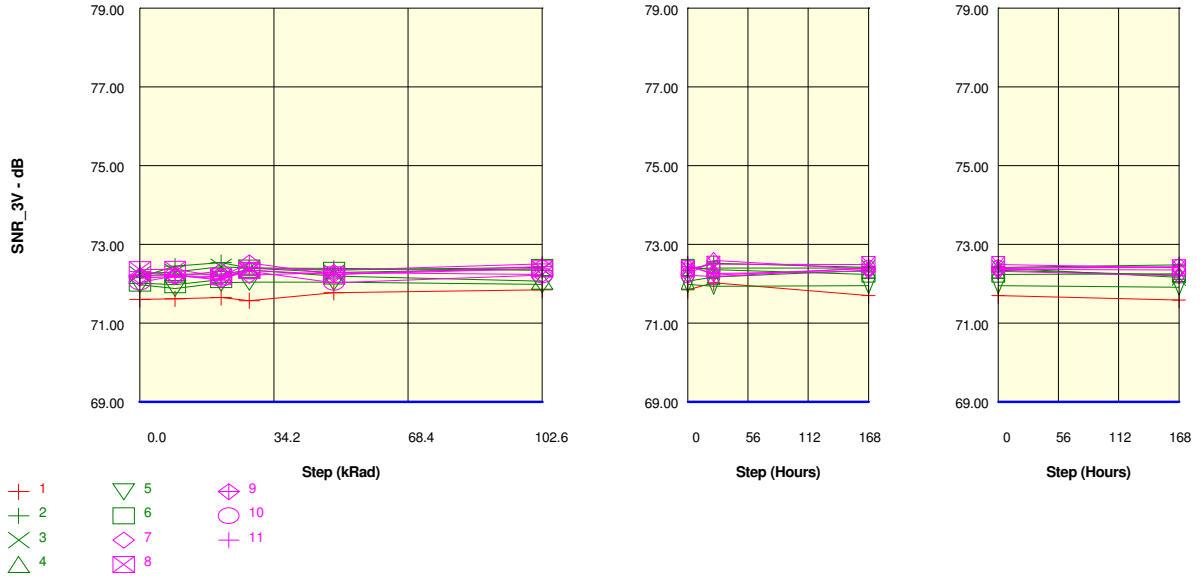
Measurements

SNR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.83	71.65	71.65	71.74	71.65	71.77	72.09	72.02	71.84
OFF samples									
7	72.41	72.40	72.30	72.59	72.30	72.35	72.40	72.55	72.16
8	72.37	72.33	72.46	72.55	72.42	72.39	72.33	72.22	72.49
9	72.44	72.38	72.53	72.37	72.56	72.35	72.57	72.64	72.33
10	72.19	72.33	72.14	72.33	72.31	72.18	72.18	72.43	72.38
11	72.47	72.51	72.32	72.46	72.36	72.33	72.48	72.52	72.50
Statistics									
Min	72.19	72.33	72.14	72.33	72.30	72.18	72.18	72.22	72.16
Max	72.47	72.51	72.53	72.59	72.56	72.39	72.57	72.64	72.50
Average	72.38	72.39	72.35	72.46	72.39	72.32	72.39	72.47	72.37
Sigma	0.10	0.07	0.14	0.10	0.09	0.07	0.13	0.14	0.12

Drift Calculation

SNR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-6.0E-03	-106.0E-03	182.0E-03	-115.0E-03	-64.0E-03	-15.0E-03	139.0E-03	-246.0E-03
8	-	-46.0E-03	85.0E-03	179.0E-03	43.0E-03	13.0E-03	-39.0E-03	-153.0E-03	114.0E-03
9	-	-63.0E-03	82.0E-03	-70.0E-03	116.0E-03	-93.0E-03	127.0E-03	192.0E-03	-112.0E-03
10	-	141.0E-03	-50.0E-03	141.0E-03	127.0E-03	-10.0E-03	-2.0E-03	249.0E-03	198.0E-03
11	-	45.0E-03	-144.0E-03	-9.0E-03	-104.0E-03	-140.0E-03	18.0E-03	52.0E-03	38.0E-03
Average	-	14.2E-03	-26.6E-03	84.6E-03	13.4E-03	-58.8E-03	17.8E-03	95.8E-03	-1.6E-03
Sigma	-	73.5E-03	94.7E-03	104.2E-03	104.5E-03	55.4E-03	57.7E-03	140.3E-03	159.2E-03

Parameter : Signal to noise ratio : SNR_3VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.60	71.62	71.66	71.57	71.78	71.84	72.03	71.70	71.59
ON samples									
2	72.16	72.45	72.54	72.40	72.39	72.34	72.52	72.41	72.48
3	72.25	72.30	72.44	72.40	72.29	72.38	72.40	72.40	72.16
4	72.21	72.24	72.25	72.36	72.20	72.07	72.18	72.34	72.23
5	71.98	71.88	72.02	72.04	72.04	71.98	71.94	71.95	71.91
6	72.02	71.98	72.11	72.40	72.35	72.42	72.36	72.24	72.26
Statistics									
Min	71.98	71.88	72.02	72.04	72.04	71.98	71.94	71.95	71.91
Max	72.25	72.45	72.54	72.40	72.39	72.42	72.52	72.41	72.48
Average	72.12	72.17	72.27	72.32	72.25	72.24	72.28	72.27	72.21
Sigma	0.11	0.21	0.19	0.14	0.13	0.18	0.20	0.17	0.18

Drift Calculation

SNR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	285.0E-03	377.0E-03	240.0E-03	231.0E-03	181.0E-03	357.0E-03	248.0E-03	321.0E-03
3	-	54.0E-03	187.0E-03	149.0E-03	38.0E-03	132.0E-03	155.0E-03	154.0E-03	-87.0E-03
4	-	34.0E-03	36.0E-03	147.0E-03	-11.0E-03	-142.0E-03	-30.0E-03	134.0E-03	16.0E-03
5	-	-94.0E-03	47.0E-03	65.0E-03	64.0E-03	4.0E-03	-41.0E-03	-25.0E-03	-64.0E-03
6	-	-38.0E-03	90.0E-03	387.0E-03	333.0E-03	400.0E-03	344.0E-03	224.0E-03	239.0E-03
Average	-	48.2E-03	147.4E-03	197.6E-03	131.0E-03	115.0E-03	157.0E-03	147.0E-03	85.0E-03
Sigma	-	129.6E-03	126.5E-03	109.7E-03	129.7E-03	181.2E-03	172.7E-03	95.8E-03	164.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

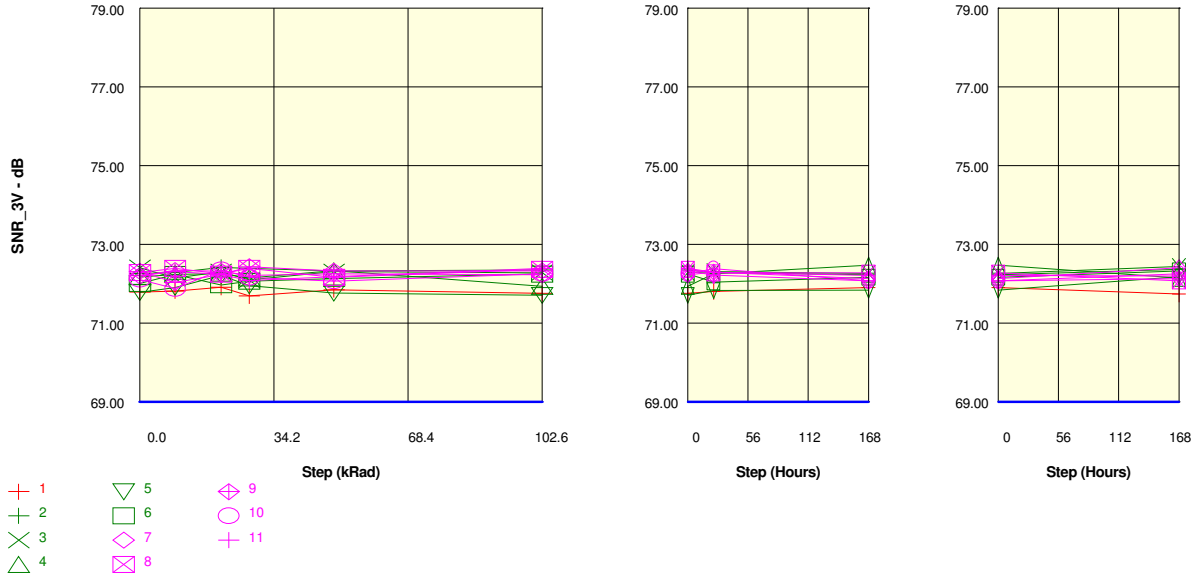
Measurements

SNR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.60	71.62	71.66	71.57	71.78	71.84	72.03	71.70	71.59
OFF samples									
7	72.14	72.19	72.33	72.22	72.29	72.24	72.59	72.37	72.35
8	72.36	72.37	72.18	72.34	72.23	72.38	72.50	72.49	72.41
9	72.20	72.20	72.18	72.53	72.24	72.44	72.26	72.32	72.20
10	72.04	72.21	72.13	72.32	72.03	72.22	72.18	72.40	72.42
11	72.32	72.22	72.09	72.41	72.34	72.50	72.22	72.39	72.43
Statistics									
Min	72.04	72.19	72.09	72.22	72.03	72.22	72.18	72.32	72.20
Max	72.36	72.37	72.33	72.53	72.34	72.50	72.59	72.49	72.43
Average	72.21	72.24	72.18	72.36	72.23	72.36	72.35	72.40	72.36
Sigma	0.12	0.07	0.08	0.10	0.11	0.11	0.16	0.06	0.09

Drift Calculation

SNR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	50.0E-03	188.0E-03	75.0E-03	146.0E-03	94.0E-03	452.0E-03	231.0E-03	207.0E-03
8	-	8.0E-03	-179.0E-03	-16.0E-03	-127.0E-03	24.0E-03	139.0E-03	133.0E-03	49.0E-03
9	-	2.0E-03	-22.0E-03	330.0E-03	40.0E-03	236.0E-03	62.0E-03	118.0E-03	1.0E-03
10	-	172.0E-03	99.0E-03	283.0E-03	-5.0E-03	183.0E-03	146.0E-03	366.0E-03	389.0E-03
11	-	-98.0E-03	-225.0E-03	91.0E-03	27.0E-03	186.0E-03	-93.0E-03	78.0E-03	118.0E-03
Average	-	26.8E-03	-27.8E-03	152.6E-03	16.2E-03	144.6E-03	141.2E-03	185.2E-03	152.8E-03
Sigma	-	87.4E-03	157.8E-03	131.7E-03	87.7E-03	75.7E-03	177.6E-03	103.5E-03	136.9E-03

Parameter : Signal to noise ratio : SNR_3VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.79	71.82	71.91	71.69	71.85	71.76	71.80	71.90	71.74
ON samples									
2	72.26	72.29	72.42	72.39	72.33	72.35	72.29	72.23	72.37
3	72.41	72.14	72.30	72.10	72.31	72.28	72.31	72.27	72.45
4	72.18	72.23	72.27	72.15	72.33	71.94	72.25	72.47	72.14
5	71.78	71.91	72.22	71.95	71.77	71.71	71.83	71.84	72.18
6	72.01	72.24	71.97	72.07	72.14	72.25	72.05	72.17	72.33
Statistics									
Min	71.78	71.91	71.97	71.95	71.77	71.71	71.83	71.84	72.14
Max	72.41	72.29	72.42	72.39	72.33	72.35	72.31	72.47	72.45
Average	72.13	72.16	72.24	72.13	72.17	72.11	72.14	72.20	72.29
Sigma	0.22	0.13	0.15	0.14	0.22	0.24	0.18	0.21	0.11

Drift Calculation

SNR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	30.0E-03	160.0E-03	131.0E-03	66.0E-03	91.0E-03	26.0E-03	-30.0E-03	107.0E-03
3	-	-266.0E-03	-106.0E-03	-313.0E-03	-102.0E-03	-127.0E-03	-98.0E-03	-144.0E-03	35.0E-03
4	-	55.0E-03	88.0E-03	-32.0E-03	153.0E-03	-243.0E-03	69.0E-03	295.0E-03	-35.0E-03
5	-	127.0E-03	433.0E-03	171.0E-03	-17.0E-03	-74.0E-03	46.0E-03	58.0E-03	399.0E-03
6	-	226.0E-03	-38.0E-03	53.0E-03	124.0E-03	236.0E-03	34.0E-03	155.0E-03	318.0E-03
Average	-	34.4E-03	107.4E-03	2.0E-03	44.8E-03	-23.4E-03	15.4E-03	66.8E-03	164.8E-03
Sigma	-	164.9E-03	187.5E-03	172.2E-03	93.6E-03	168.5E-03	58.5E-03	150.8E-03	166.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

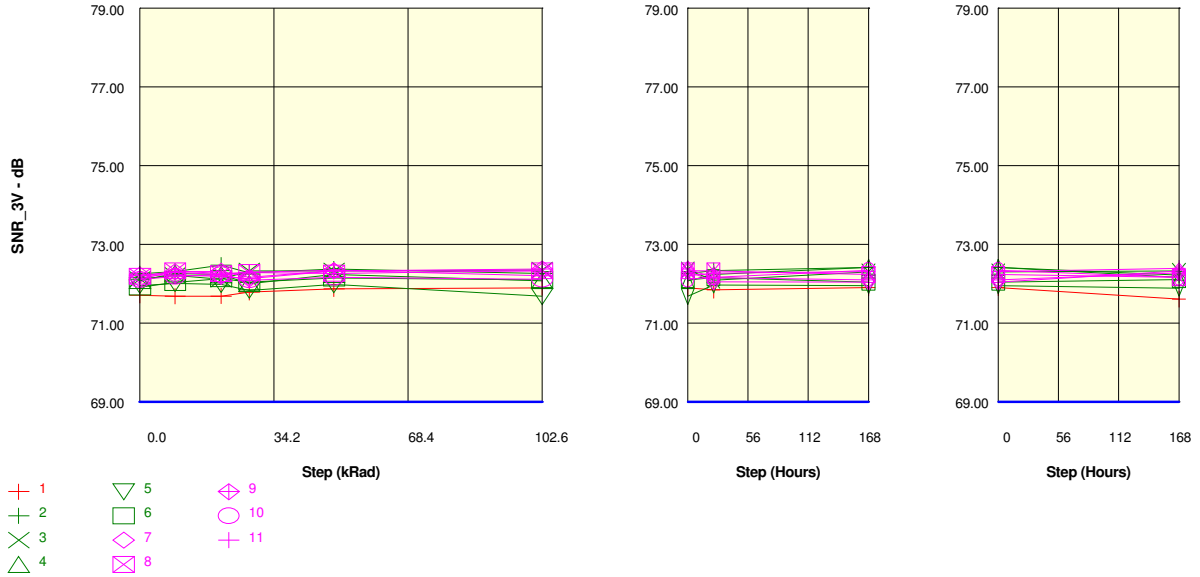
Measurements

SNR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.79	71.82	71.91	71.69	71.85	71.76	71.80	71.90	71.74
OFF samples									
7	72.20	72.34	72.32	72.21	72.26	72.23	72.30	72.13	72.41
8	72.29	72.39	72.25	72.39	72.17	72.37	72.28	72.27	72.08
9	72.32	72.04	72.24	72.43	72.32	72.33	72.22	72.07	72.13
10	72.11	71.88	72.35	72.16	72.07	72.26	72.38	72.08	72.26
11	72.21	72.31	72.24	72.08	72.18	72.39	72.29	72.21	72.20
Statistics									
Min	72.11	71.88	72.24	72.08	72.07	72.23	72.22	72.07	72.08
Max	72.32	72.39	72.35	72.43	72.32	72.39	72.38	72.27	72.41
Average	72.22	72.19	72.28	72.26	72.20	72.32	72.29	72.15	72.21
Sigma	0.07	0.20	0.05	0.13	0.09	0.06	0.05	0.08	0.11

Drift Calculation

SNR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	138.0E-03	117.0E-03	11.0E-03	56.0E-03	27.0E-03	96.0E-03	-67.0E-03	208.0E-03
8	-	105.0E-03	-39.0E-03	106.0E-03	-122.0E-03	82.0E-03	-6.0E-03	-13.0E-03	-211.0E-03
9	-	-280.0E-03	-80.0E-03	115.0E-03	8.0E-03	16.0E-03	-97.0E-03	-241.0E-03	-183.0E-03
10	-	-235.0E-03	242.0E-03	51.0E-03	-44.0E-03	148.0E-03	271.0E-03	-32.0E-03	147.0E-03
11	-	108.0E-03	33.0E-03	-125.0E-03	-21.0E-03	188.0E-03	87.0E-03	7.0E-03	-8.0E-03
Average	-	-32.8E-03	54.6E-03	31.6E-03	-24.6E-03	92.2E-03	70.2E-03	-69.2E-03	-9.4E-03
Sigma	-	184.4E-03	115.2E-03	87.0E-03	59.1E-03	67.0E-03	122.5E-03	89.3E-03	168.8E-03

Parameter : Signal to noise ratio : SNR_3VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 69.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.71	71.69	71.69	71.79	71.87	71.90	71.84	71.91	71.61
ON samples									
2	72.26	72.31	72.47	72.28	72.38	72.27	72.33	72.42	72.22
3	72.12	72.21	72.12	72.33	72.33	72.35	72.09	72.30	72.32
4	72.08	72.27	72.23	72.00	72.24	72.08	72.23	72.42	72.16
5	71.96	72.01	71.98	71.84	71.98	71.68	71.97	71.95	71.89
6	71.91	72.03	72.13	72.05	72.15	72.10	72.16	72.04	72.11
Statistics									
Min	71.91	72.01	71.98	71.84	71.98	71.68	71.97	71.95	71.89
Max	72.26	72.31	72.47	72.33	72.38	72.35	72.33	72.42	72.32
Average	72.07	72.17	72.19	72.10	72.21	72.10	72.16	72.23	72.14
Sigma	0.12	0.12	0.16	0.18	0.14	0.23	0.12	0.19	0.15

Drift Calculation

SNR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	57.0E-03	215.0E-03	23.0E-03	120.0E-03	9.0E-03	77.0E-03	160.0E-03	-36.0E-03
3	-	95.0E-03	-2.0E-03	207.0E-03	208.0E-03	234.0E-03	-28.0E-03	185.0E-03	205.0E-03
4	-	186.0E-03	152.0E-03	-77.0E-03	159.0E-03	-3.0E-03	152.0E-03	335.0E-03	80.0E-03
5	-	52.0E-03	27.0E-03	-122.0E-03	24.0E-03	-277.0E-03	9.0E-03	-6.0E-03	-69.0E-03
6	-	119.0E-03	218.0E-03	131.0E-03	231.0E-03	190.0E-03	244.0E-03	130.0E-03	194.0E-03
Average	-	101.8E-03	122.0E-03	32.4E-03	148.4E-03	30.6E-03	90.8E-03	160.8E-03	74.8E-03
Sigma	-	48.8E-03	92.9E-03	123.4E-03	73.2E-03	180.6E-03	98.2E-03	109.3E-03	113.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

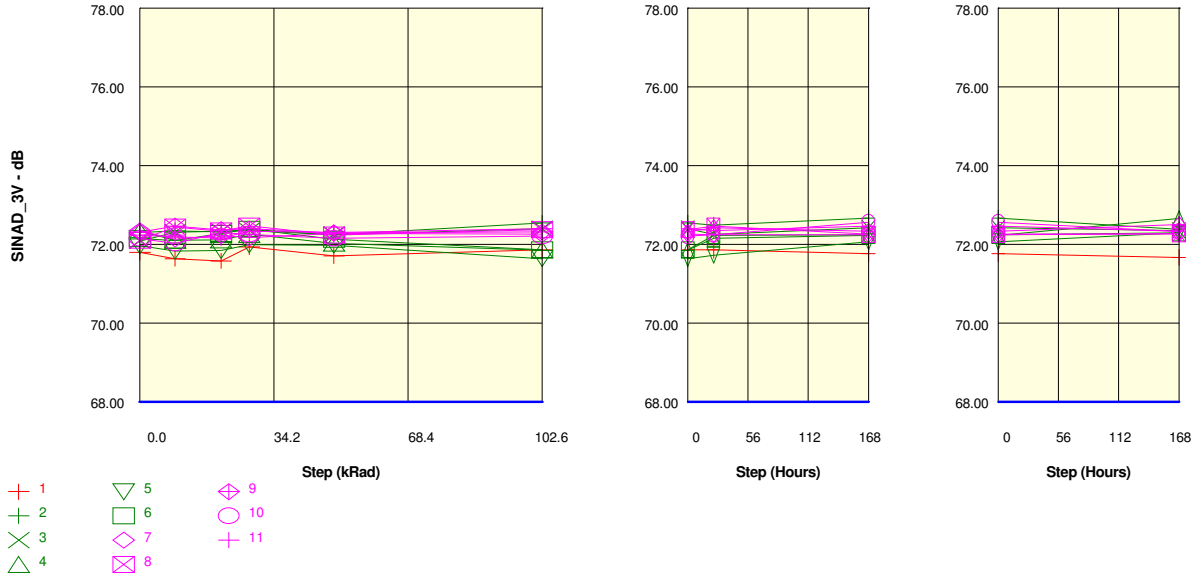
Measurements

SNR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.71	71.69	71.69	71.79	71.87	71.90	71.84	71.91	71.61
OFF samples									
7	72.12	72.31	72.31	72.16	72.33	72.32	72.05	72.05	72.33
8	72.19	72.33	72.26	72.29	72.27	72.33	72.33	72.24	72.16
9	72.22	72.22	72.19	72.13	72.33	72.37	72.15	72.10	72.28
10	72.11	72.19	72.23	72.09	72.16	72.11	72.16	72.34	72.16
11	72.21	72.30	72.23	72.30	72.34	72.21	72.27	72.31	72.39
Statistics									
Min	72.11	72.19	72.19	72.09	72.16	72.11	72.05	72.05	72.16
Max	72.22	72.33	72.31	72.30	72.34	72.37	72.33	72.34	72.39
Average	72.17	72.27	72.24	72.19	72.29	72.27	72.19	72.21	72.26
Sigma	0.05	0.05	0.04	0.08	0.07	0.10	0.10	0.12	0.09

Drift Calculation

SNR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	182.0E-03	190.0E-03	38.0E-03	209.0E-03	200.0E-03	-72.0E-03	-78.0E-03	203.0E-03
8	-	138.0E-03	68.0E-03	96.0E-03	75.0E-03	141.0E-03	134.0E-03	43.0E-03	-32.0E-03
9	-	-3.0E-03	-36.0E-03	-96.0E-03	105.0E-03	151.0E-03	-69.0E-03	-123.0E-03	52.0E-03
10	-	81.0E-03	123.0E-03	-12.0E-03	58.0E-03	7.0E-03	54.0E-03	238.0E-03	55.0E-03
11	-	93.0E-03	24.0E-03	90.0E-03	133.0E-03	2.0E-03	64.0E-03	102.0E-03	185.0E-03
Average	-	98.2E-03	73.8E-03	23.2E-03	116.0E-03	100.2E-03	22.2E-03	36.4E-03	92.6E-03
Sigma	-	61.9E-03	78.1E-03	71.3E-03	53.1E-03	80.7E-03	80.6E-03	129.2E-03	88.7E-03

Parameter : Signal to noise + distortion : SINAD_3VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.80	71.64	71.58	71.93	71.71	71.87	71.86	71.77	71.67
ON samples									
2	72.30	72.34	72.32	72.38	72.25	72.54	72.49	72.67	72.38
3	72.09	72.31	72.34	72.35	72.25	72.40	72.26	72.42	72.35
4	72.34	72.11	72.12	72.26	72.03	71.86	72.16	72.23	72.66
5	71.97	71.83	71.85	72.00	71.98	71.64	71.73	72.07	72.29
6	72.15	72.10	72.28	72.39	72.13	71.87	72.23	72.25	72.30
Statistics									
Min	71.97	71.83	71.85	72.00	71.98	71.64	71.73	72.07	72.29
Max	72.34	72.34	72.34	72.39	72.25	72.54	72.49	72.67	72.66
Average	72.17	72.14	72.18	72.28	72.13	72.06	72.17	72.33	72.40
Sigma	0.14	0.18	0.18	0.15	0.11	0.35	0.25	0.21	0.14

Drift Calculation

SINAD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	41.0E-03	14.0E-03	78.0E-03	-50.0E-03	243.0E-03	189.0E-03	371.0E-03	81.0E-03
3	-	223.0E-03	251.0E-03	264.0E-03	163.0E-03	312.0E-03	169.0E-03	335.0E-03	264.0E-03
4	-	-234.0E-03	-224.0E-03	-80.0E-03	-311.0E-03	-482.0E-03	-182.0E-03	-113.0E-03	318.0E-03
5	-	-138.0E-03	-125.0E-03	26.0E-03	12.0E-03	-330.0E-03	-245.0E-03	97.0E-03	321.0E-03
6	-	-43.0E-03	132.0E-03	243.0E-03	-15.0E-03	-279.0E-03	84.0E-03	99.0E-03	149.0E-03
Average	-	-30.2E-03	9.6E-03	106.2E-03	-40.2E-03	-107.2E-03	3.0E-03	157.8E-03	226.6E-03
Sigma	-	156.5E-03	170.9E-03	130.8E-03	153.7E-03	321.9E-03	181.4E-03	177.4E-03	95.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

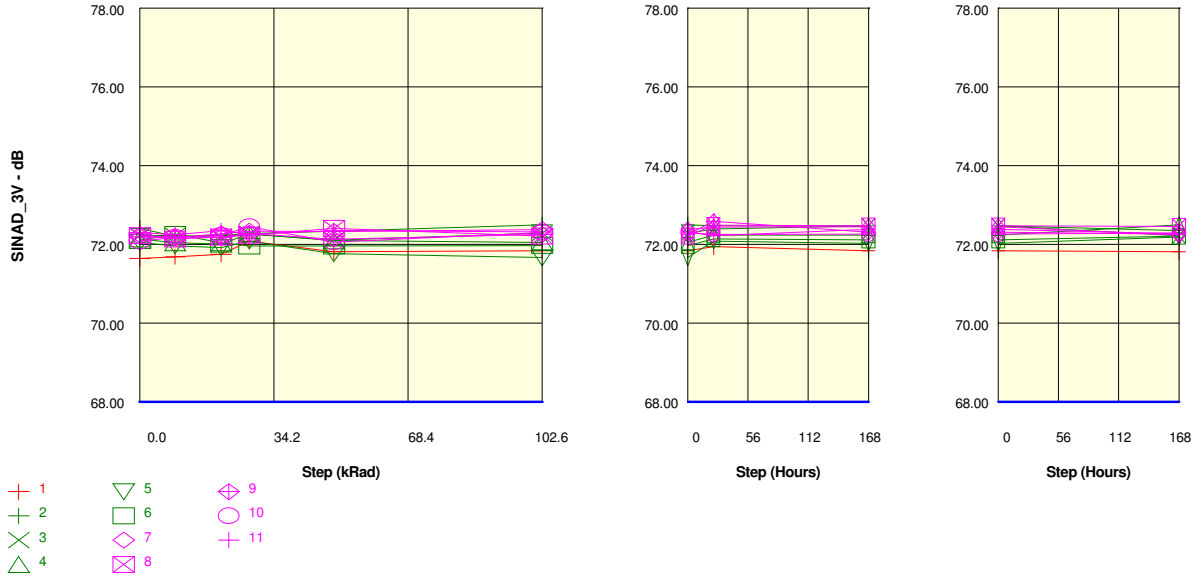
Measurements

SINAD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.80	71.64	71.58	71.93	71.71	71.87	71.86	71.77	71.67
OFF samples									
7	72.35	72.14	72.23	72.17	72.28	72.26	72.25	72.25	72.27
8	72.11	72.44	72.34	72.47	72.24	72.38	72.47	72.26	72.27
9	72.31	72.47	72.37	72.40	72.30	72.32	72.43	72.34	72.51
10	72.15	72.03	72.30	72.26	72.15	72.21	72.25	72.57	72.33
11	72.24	72.19	72.16	72.34	72.30	72.40	72.35	72.46	72.34
Statistics									
Min	72.11	72.03	72.16	72.17	72.15	72.21	72.25	72.25	72.27
Max	72.35	72.47	72.37	72.47	72.30	72.40	72.47	72.57	72.51
Average	72.23	72.25	72.28	72.33	72.25	72.31	72.35	72.38	72.34
Sigma	0.09	0.17	0.08	0.11	0.06	0.07	0.09	0.12	0.09

Drift Calculation

SINAD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-213.0E-03	-118.0E-03	-181.0E-03	-68.0E-03	-86.0E-03	-99.0E-03	-100.0E-03	-78.0E-03
8	-	329.0E-03	229.0E-03	358.0E-03	127.0E-03	264.0E-03	355.0E-03	148.0E-03	160.0E-03
9	-	155.0E-03	62.0E-03	85.0E-03	-15.0E-03	6.0E-03	115.0E-03	27.0E-03	197.0E-03
10	-	-122.0E-03	152.0E-03	107.0E-03	3.0E-03	60.0E-03	101.0E-03	416.0E-03	180.0E-03
11	-	-46.0E-03	-73.0E-03	104.0E-03	65.0E-03	163.0E-03	112.0E-03	227.0E-03	99.0E-03
Average	-	20.6E-03	50.4E-03	94.6E-03	22.4E-03	81.4E-03	116.8E-03	143.6E-03	111.6E-03
Sigma	-	196.2E-03	131.1E-03	170.7E-03	67.4E-03	121.8E-03	143.9E-03	175.6E-03	100.4E-03

Parameter : Signal to noise + distortion : SINAD_3VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.64	71.69	71.75	72.08	71.81	71.84	71.94	71.84	71.82
ON samples									
2	72.41	72.21	72.23	72.28	72.34	72.50	72.47	72.47	72.35
3	72.22	72.23	72.18	72.27	72.11	72.29	72.39	72.47	72.22
4	72.14	72.04	72.01	72.27	72.10	72.05	72.24	72.24	72.50
5	72.05	71.97	71.92	72.09	71.77	71.66	72.09	72.03	72.19
6	72.10	72.26	72.04	71.96	71.96	71.97	72.15	72.11	72.21
Statistics									
Min	72.05	71.97	71.92	71.96	71.77	71.66	72.09	72.03	72.19
Max	72.41	72.26	72.23	72.28	72.34	72.50	72.47	72.47	72.50
Average	72.19	72.14	72.08	72.17	72.05	72.10	72.27	72.26	72.29
Sigma	0.13	0.12	0.11	0.13	0.19	0.28	0.15	0.18	0.12

Drift Calculation

SINAD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-204.0E-03	-184.0E-03	-132.0E-03	-74.0E-03	85.0E-03	60.0E-03	61.0E-03	-59.0E-03
3	-	5.0E-03	-44.0E-03	46.0E-03	-116.0E-03	67.0E-03	170.0E-03	249.0E-03	-2.0E-03
4	-	-101.0E-03	-134.0E-03	128.0E-03	-46.0E-03	-88.0E-03	99.0E-03	99.0E-03	356.0E-03
5	-	-87.0E-03	-130.0E-03	33.0E-03	-286.0E-03	-390.0E-03	35.0E-03	-26.0E-03	132.0E-03
6	-	162.0E-03	-57.0E-03	-139.0E-03	-138.0E-03	-125.0E-03	47.0E-03	15.0E-03	112.0E-03
Average	-	-45.0E-03	-109.8E-03	-12.8E-03	-132.0E-03	-90.2E-03	82.2E-03	79.6E-03	107.8E-03
Sigma	-	122.9E-03	52.2E-03	105.4E-03	83.4E-03	171.2E-03	48.9E-03	94.6E-03	142.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

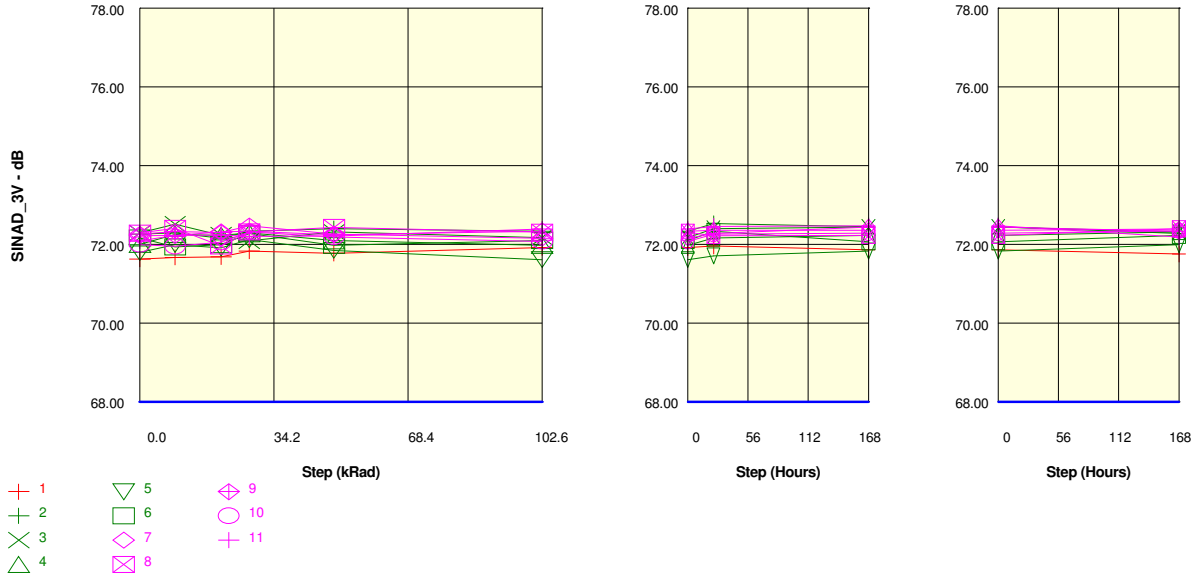
SINAD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.64	71.69	71.75	72.08	71.81	71.84	71.94	71.84	71.82
OFF samples									
7	72.24	72.17	72.27	72.34	72.33	72.38	72.44	72.45	72.24
8	72.22	72.14	72.19	72.24	72.41	72.21	72.49	72.47	72.46
9	72.20	72.19	72.18	72.28	72.14	72.26	72.59	72.31	72.26
10	72.08	72.18	72.23	72.45	72.06	72.30	72.25	72.26	72.30
11	72.30	72.25	72.35	72.25	72.35	72.33	72.22	72.38	72.27
Statistics									
Min	72.08	72.14	72.18	72.24	72.06	72.21	72.22	72.26	72.24
Max	72.30	72.25	72.35	72.45	72.41	72.38	72.59	72.47	72.46
Average	72.21	72.19	72.24	72.31	72.26	72.29	72.40	72.37	72.30
Sigma	0.07	0.04	0.06	0.08	0.13	0.06	0.14	0.08	0.08

Drift Calculation

SINAD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-68.0E-03	29.0E-03	98.0E-03	87.0E-03	137.0E-03	200.0E-03	208.0E-03	-2.0E-03
8	-	-87.0E-03	-37.0E-03	13.0E-03	187.0E-03	-10.0E-03	262.0E-03	245.0E-03	233.0E-03
9	-	-8.0E-03	-15.0E-03	79.0E-03	-62.0E-03	59.0E-03	387.0E-03	114.0E-03	61.0E-03
10	-	95.0E-03	146.0E-03	363.0E-03	-23.0E-03	218.0E-03	170.0E-03	177.0E-03	213.0E-03
11	-	-52.0E-03	44.0E-03	-49.0E-03	46.0E-03	22.0E-03	-82.0E-03	79.0E-03	-32.0E-03
Average	-	-24.0E-03	33.4E-03	100.8E-03	47.0E-03	85.2E-03	187.4E-03	164.6E-03	94.6E-03
Sigma	-	65.0E-03	63.4E-03	141.0E-03	87.2E-03	82.5E-03	153.9E-03	60.6E-03	109.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise + distortion : SINAD_3VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.63	71.67	71.69	71.83	71.78	71.92	71.96	71.87	71.76
ON samples									
2	72.27	72.30	72.16	72.34	72.40	72.34	72.53	72.45	72.28
3	72.29	72.52	72.23	72.09	72.32	72.18	72.40	72.44	72.32
4	72.00	72.25	72.23	72.29	72.10	71.98	72.16	72.24	72.32
5	71.80	72.00	71.91	72.12	71.85	71.61	71.71	71.83	72.00
6	72.17	71.94	71.99	72.27	71.98	72.10	72.34	72.07	72.23
Statistics									
Min	71.80	71.94	71.91	72.09	71.85	71.61	71.71	71.83	72.00
Max	72.29	72.52	72.23	72.34	72.40	72.34	72.53	72.45	72.32
Average	72.11	72.20	72.11	72.22	72.13	72.04	72.23	72.20	72.23
Sigma	0.18	0.21	0.13	0.10	0.21	0.24	0.28	0.23	0.12

Drift Calculation

SINAD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	32.0E-03	-106.0E-03	68.0E-03	133.0E-03	72.0E-03	261.0E-03	180.0E-03	12.0E-03
3	-	225.0E-03	-57.0E-03	-198.0E-03	26.0E-03	-114.0E-03	106.0E-03	145.0E-03	30.0E-03
4	-	249.0E-03	226.0E-03	288.0E-03	91.0E-03	-24.0E-03	159.0E-03	231.0E-03	320.0E-03
5	-	202.0E-03	116.0E-03	326.0E-03	53.0E-03	-184.0E-03	-87.0E-03	32.0E-03	198.0E-03
6	-	-230.0E-03	-173.0E-03	106.0E-03	-191.0E-03	-66.0E-03	172.0E-03	-99.0E-03	59.0E-03
Average	-	95.6E-03	1.2E-03	118.0E-03	22.4E-03	-63.2E-03	122.2E-03	97.8E-03	123.8E-03
Sigma	-	179.8E-03	147.6E-03	186.9E-03	112.6E-03	86.0E-03	115.9E-03	118.1E-03	117.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

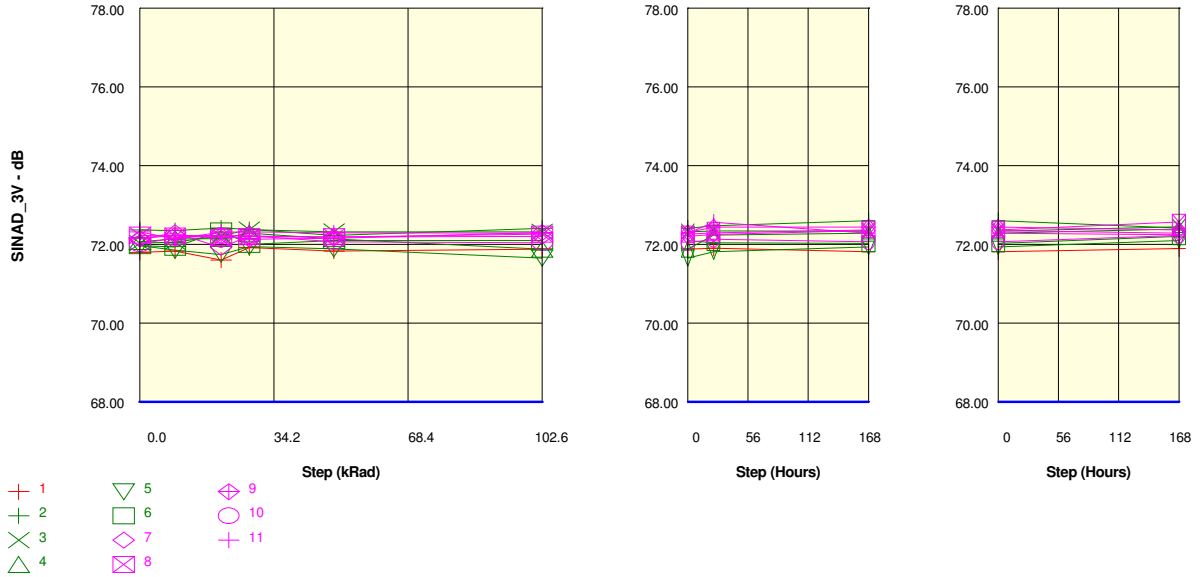
Measurements

SINAD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.63	71.67	71.69	71.83	71.78	71.92	71.96	71.87	71.76
OFF samples									
7	72.22	72.23	72.32	72.34	72.25	72.34	72.36	72.36	72.39
8	72.29	72.41	71.96	72.32	72.43	72.31	72.22	72.23	72.40
9	72.26	72.33	72.30	72.47	72.26	72.16	72.28	72.44	72.33
10	72.00	71.95	72.06	72.32	72.19	72.08	72.26	72.29	72.35
11	72.09	72.23	72.24	72.20	72.21	72.39	72.46	72.47	72.19
Statistics									
Min	72.00	71.95	71.96	72.20	72.19	72.08	72.22	72.23	72.19
Max	72.29	72.41	72.32	72.47	72.43	72.39	72.46	72.47	72.40
Average	72.17	72.23	72.18	72.33	72.27	72.26	72.32	72.36	72.33
Sigma	0.11	0.15	0.14	0.08	0.09	0.12	0.08	0.09	0.07

Drift Calculation

SINAD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	4.0E-03	100.0E-03	116.0E-03	23.0E-03	119.0E-03	136.0E-03	135.0E-03	167.0E-03
8	-	120.0E-03	-328.0E-03	30.0E-03	144.0E-03	20.0E-03	-66.0E-03	-60.0E-03	111.0E-03
9	-	67.0E-03	41.0E-03	209.0E-03	1000.0E-06	-98.0E-03	16.0E-03	180.0E-03	74.0E-03
10	-	-46.0E-03	61.0E-03	321.0E-03	196.0E-03	79.0E-03	264.0E-03	291.0E-03	349.0E-03
11	-	141.0E-03	152.0E-03	115.0E-03	124.0E-03	303.0E-03	368.0E-03	383.0E-03	104.0E-03
Average	-	57.2E-03	5.2E-03	158.2E-03	97.6E-03	84.6E-03	143.6E-03	185.8E-03	161.0E-03
Sigma	-	70.1E-03	170.9E-03	99.2E-03	74.1E-03	131.5E-03	158.2E-03	150.3E-03	98.7E-03

Parameter : Signal to noise + distortion : SINAD_3VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.80	71.83	71.60	71.92	71.83	71.88	71.91	71.81	71.90
ON samples									
2	72.37	72.35	72.42	72.38	72.23	72.41	72.47	72.60	72.42
3	72.04	72.06	72.22	72.38	72.33	72.32	72.35	72.33	72.45
4	72.07	72.15	72.15	72.29	72.15	71.88	72.24	72.29	72.39
5	71.97	71.86	71.75	71.95	71.89	71.65	71.82	71.94	72.10
6	71.97	71.93	72.34	72.00	72.10	72.10	72.04	72.02	72.20
Statistics									
Min	71.97	71.86	71.75	71.95	71.89	71.65	71.82	71.94	72.10
Max	72.37	72.35	72.42	72.38	72.33	72.41	72.47	72.60	72.45
Average	72.08	72.07	72.18	72.20	72.14	72.07	72.18	72.24	72.31
Sigma	0.15	0.17	0.23	0.19	0.15	0.28	0.23	0.24	0.14

Drift Calculation

SINAD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-18.0E-03	51.0E-03	12.0E-03	-139.0E-03	39.0E-03	102.0E-03	233.0E-03	49.0E-03
3	-	26.0E-03	182.0E-03	342.0E-03	289.0E-03	286.0E-03	309.0E-03	297.0E-03	415.0E-03
4	-	75.0E-03	79.0E-03	218.0E-03	75.0E-03	-191.0E-03	170.0E-03	216.0E-03	319.0E-03
5	-	-115.0E-03	-224.0E-03	-24.0E-03	-82.0E-03	-316.0E-03	-151.0E-03	-30.0E-03	132.0E-03
6	-	-38.0E-03	374.0E-03	31.0E-03	129.0E-03	126.0E-03	74.0E-03	52.0E-03	230.0E-03
Average	-	-14.0E-03	92.4E-03	115.8E-03	54.4E-03	-11.2E-03	100.8E-03	153.6E-03	229.0E-03
Sigma	-	63.7E-03	194.6E-03	140.8E-03	153.0E-03	216.7E-03	149.8E-03	122.3E-03	130.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

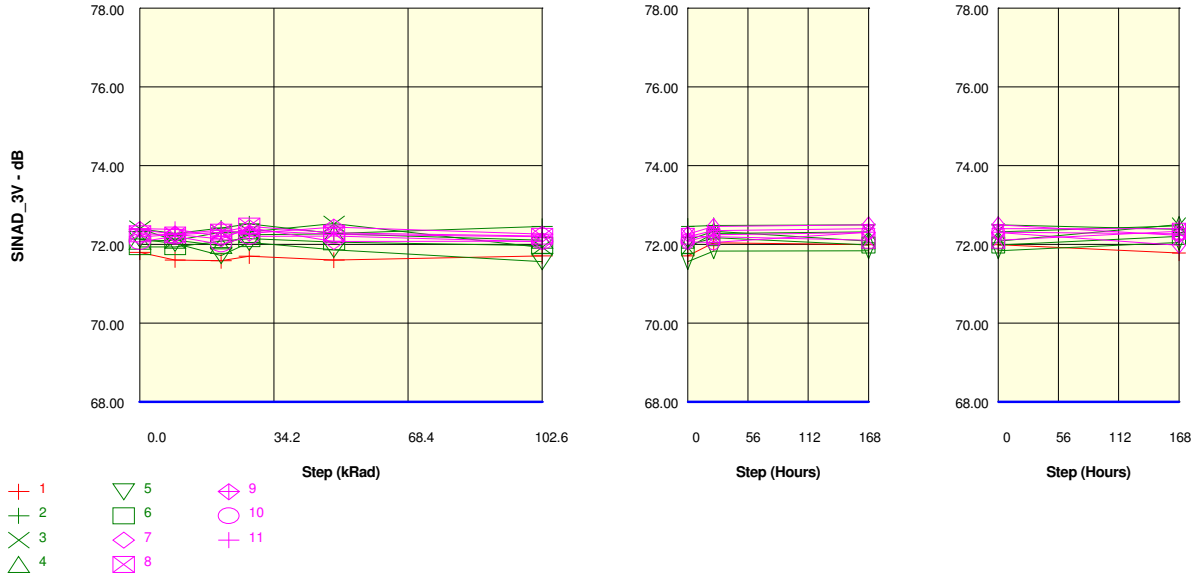
SINAD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.80	71.83	71.60	71.92	71.83	71.88	71.91	71.81	71.90
OFF samples									
7	72.13	72.29	71.92	72.22	72.19	72.21	72.26	72.35	72.29
8	72.24	72.21	72.17	72.20	72.19	72.26	72.30	72.37	72.57
9	72.15	72.23	72.22	72.13	72.16	72.30	72.44	72.44	72.37
10	72.01	72.17	72.22	72.22	72.07	72.05	72.13	72.07	72.23
11	72.32	72.14	72.31	72.32	72.30	72.29	72.57	72.29	72.25
Statistics									
Min	72.01	72.14	71.92	72.13	72.07	72.05	72.13	72.07	72.23
Max	72.32	72.29	72.31	72.32	72.30	72.30	72.57	72.44	72.57
Average	72.17	72.21	72.17	72.22	72.18	72.22	72.34	72.30	72.34
Sigma	0.11	0.05	0.13	0.06	0.07	0.09	0.15	0.13	0.12

Drift Calculation

SINAD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	159.0E-03	-210.0E-03	81.0E-03	60.0E-03	75.0E-03	121.0E-03	217.0E-03	151.0E-03
8	-	-22.0E-03	-63.0E-03	-41.0E-03	-43.0E-03	26.0E-03	60.0E-03	136.0E-03	332.0E-03
9	-	85.0E-03	70.0E-03	-14.0E-03	14.0E-03	154.0E-03	292.0E-03	291.0E-03	217.0E-03
10	-	163.0E-03	209.0E-03	217.0E-03	64.0E-03	39.0E-03	121.0E-03	59.0E-03	220.0E-03
11	-	-181.0E-03	-11.0E-03	-5.0E-03	-26.0E-03	-36.0E-03	242.0E-03	-37.0E-03	-79.0E-03
Average	-	40.8E-03	-1000.0E-06	47.6E-03	13.8E-03	51.6E-03	167.2E-03	133.2E-03	168.2E-03
Sigma	-	129.6E-03	139.1E-03	94.0E-03	43.5E-03	62.5E-03	85.9E-03	115.2E-03	136.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise + distortion : SINAD_3VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.80	71.61	71.59	71.70	71.60	71.71	72.04	71.99	71.79
ON samples									
2	72.39	72.27	72.42	72.52	72.27	72.46	72.48	72.50	72.38
3	72.40	72.10	72.31	72.33	72.53	71.93	72.28	72.32	72.48
4	72.08	72.11	71.97	72.25	72.27	72.11	72.34	72.09	72.51
5	72.13	72.03	71.72	72.05	71.87	71.57	71.84	71.84	72.06
6	71.94	71.94	72.09	72.15	72.06	71.97	72.17	71.99	72.21
Statistics									
Min	71.94	71.94	71.72	72.05	71.87	71.57	71.84	71.84	72.06
Max	72.40	72.27	72.42	72.52	72.53	72.46	72.48	72.50	72.51
Average	72.19	72.09	72.10	72.26	72.20	72.01	72.22	72.15	72.32
Sigma	0.18	0.11	0.25	0.16	0.22	0.29	0.22	0.24	0.17

Drift Calculation

SINAD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-116.0E-03	30.0E-03	132.0E-03	-116.0E-03	68.0E-03	89.0E-03	111.0E-03	-8.0E-03
3	-	-302.0E-03	-90.0E-03	-74.0E-03	127.0E-03	-474.0E-03	-117.0E-03	-78.0E-03	77.0E-03
4	-	23.0E-03	-109.0E-03	169.0E-03	186.0E-03	27.0E-03	259.0E-03	5.0E-03	423.0E-03
5	-	-102.0E-03	-412.0E-03	-81.0E-03	-261.0E-03	-563.0E-03	-292.0E-03	-291.0E-03	-72.0E-03
6	-	-1.0E-03	146.0E-03	207.0E-03	120.0E-03	31.0E-03	230.0E-03	46.0E-03	264.0E-03
Average	-	-99.6E-03	-87.0E-03	70.6E-03	11.2E-03	-182.2E-03	33.8E-03	-41.4E-03	136.8E-03
Sigma	-	114.9E-03	186.6E-03	123.2E-03	170.9E-03	276.4E-03	210.3E-03	139.0E-03	182.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

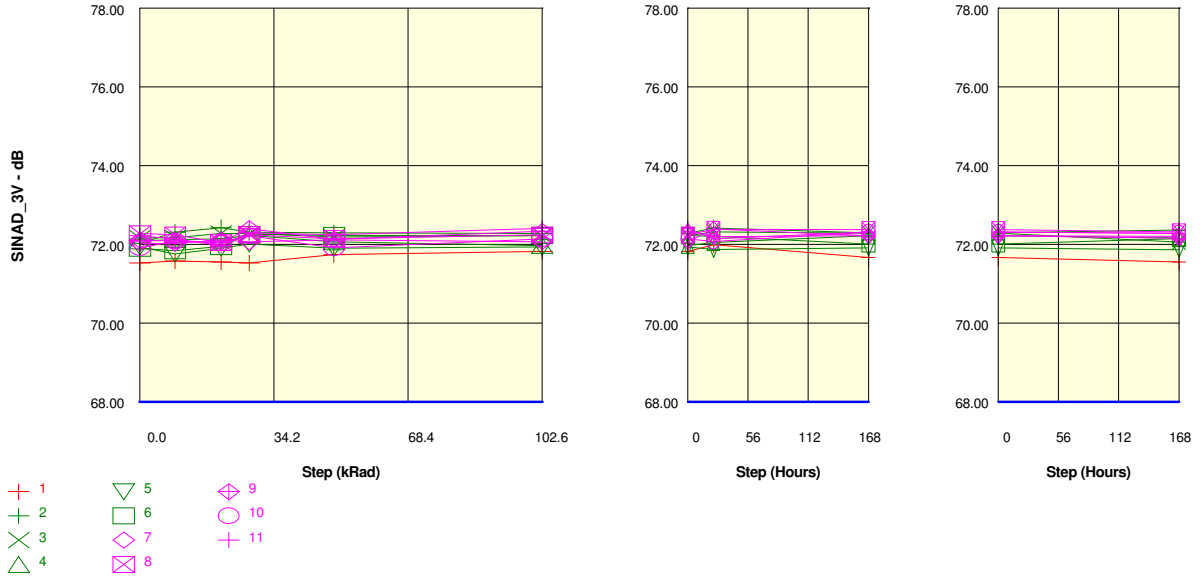
Measurements

SINAD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.80	71.61	71.59	71.70	71.60	71.71	72.04	71.99	71.79
OFF samples									
7	72.19	72.25	72.14	72.43	72.07	72.08	72.25	72.30	71.98
8	72.27	72.24	72.31	72.46	72.29	72.21	72.20	72.11	72.34
9	72.38	72.27	72.37	72.28	72.44	72.26	72.46	72.50	72.24
10	72.07	72.20	72.00	72.20	72.21	72.07	72.06	72.31	72.27
11	72.40	72.39	72.21	72.36	72.25	72.20	72.36	72.40	72.40
Statistics									
Min	72.07	72.20	72.00	72.20	72.07	72.07	72.06	72.11	71.98
Max	72.40	72.39	72.37	72.46	72.44	72.26	72.46	72.50	72.40
Average	72.26	72.27	72.21	72.35	72.25	72.16	72.26	72.32	72.24
Sigma	0.12	0.06	0.13	0.09	0.12	0.08	0.14	0.13	0.15

Drift Calculation

SINAD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	61.0E-03	-54.0E-03	236.0E-03	-118.0E-03	-113.0E-03	53.0E-03	108.0E-03	-215.0E-03
8	-	-28.0E-03	41.0E-03	190.0E-03	19.0E-03	-60.0E-03	-72.0E-03	-162.0E-03	64.0E-03
9	-	-110.0E-03	-4.0E-03	-92.0E-03	65.0E-03	-111.0E-03	80.0E-03	125.0E-03	-139.0E-03
10	-	133.0E-03	-64.0E-03	134.0E-03	144.0E-03	2.0E-03	-13.0E-03	246.0E-03	204.0E-03
11	-	-10.0E-03	-189.0E-03	-35.0E-03	-142.0E-03	-199.0E-03	-41.0E-03	-1.0E-03	7.0E-03
Average	-	9.2E-03	-54.0E-03	86.6E-03	-6.4E-03	-96.2E-03	1.4E-03	63.2E-03	-15.8E-03
Sigma	-	82.4E-03	77.3E-03	128.0E-03	108.8E-03	66.4E-03	57.0E-03	137.2E-03	148.4E-03

Parameter : Signal to noise + distortion : SINAD_3VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.53	71.58	71.56	71.53	71.74	71.82	71.99	71.67	71.56
ON samples									
2	72.02	72.31	72.43	72.31	72.29	72.28	72.42	72.30	72.37
3	72.17	72.17	72.28	72.28	72.19	72.22	72.32	72.29	72.06
4	72.09	72.12	72.14	72.24	72.06	71.97	72.05	72.22	72.16
5	71.94	71.76	71.91	72.01	71.91	71.93	71.87	71.91	71.87
6	71.91	71.84	71.95	72.26	72.23	72.23	72.21	72.01	72.15
Statistics									
Min	71.91	71.76	71.91	72.01	71.91	71.93	71.87	71.91	71.87
Max	72.17	72.31	72.43	72.31	72.29	72.28	72.42	72.30	72.37
Average	72.02	72.04	72.14	72.22	72.14	72.13	72.17	72.15	72.12
Sigma	0.10	0.21	0.20	0.11	0.14	0.14	0.19	0.16	0.16

Drift Calculation

SINAD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	293.0E-03	408.0E-03	292.0E-03	272.0E-03	255.0E-03	399.0E-03	278.0E-03	347.0E-03
3	-	4.0E-03	111.0E-03	109.0E-03	24.0E-03	50.0E-03	153.0E-03	120.0E-03	-104.0E-03
4	-	32.0E-03	46.0E-03	143.0E-03	-28.0E-03	-119.0E-03	-39.0E-03	124.0E-03	71.0E-03
5	-	-178.0E-03	-28.0E-03	74.0E-03	-28.0E-03	-3.0E-03	-62.0E-03	-22.0E-03	-68.0E-03
6	-	-65.0E-03	43.0E-03	354.0E-03	328.0E-03	324.0E-03	300.0E-03	106.0E-03	242.0E-03
Average	-	17.2E-03	116.0E-03	194.4E-03	113.6E-03	101.4E-03	150.2E-03	121.2E-03	97.6E-03
Sigma	-	155.8E-03	152.5E-03	109.0E-03	154.4E-03	164.5E-03	181.8E-03	95.2E-03	174.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

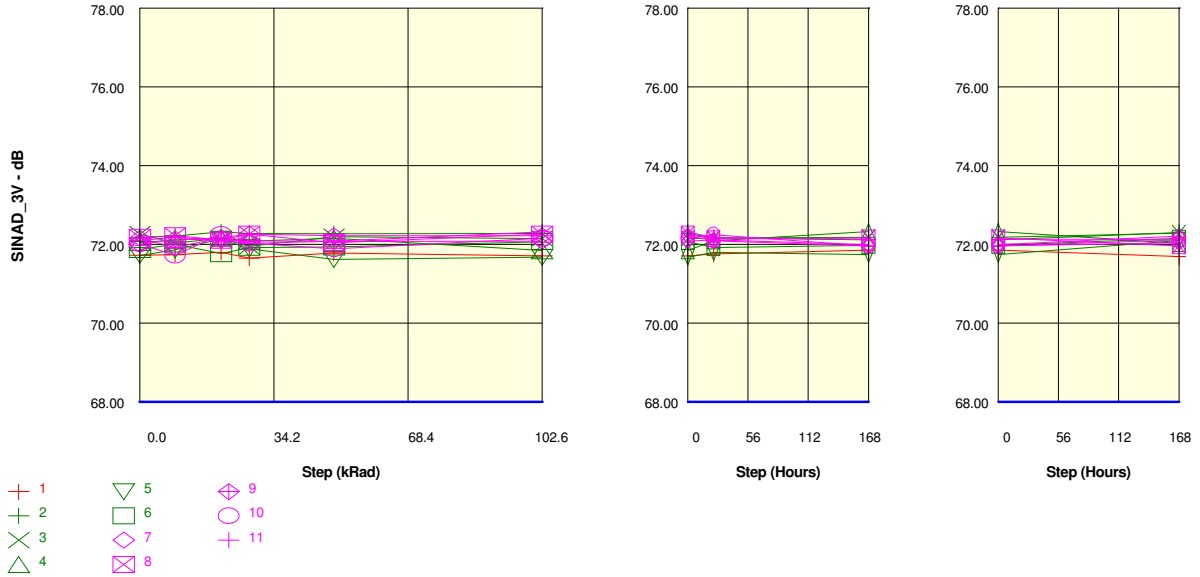
SINAD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.53	71.58	71.56	71.53	71.74	71.82	71.99	71.67	71.56
OFF samples									
7	72.03	72.02	72.11	72.07	72.11	72.07	72.39	72.22	72.20
8	72.27	72.24	72.05	72.25	72.15	72.24	72.39	72.38	72.32
9	72.10	72.09	72.06	72.40	72.13	72.33	72.20	72.22	72.15
10	71.92	72.08	72.04	72.22	71.91	72.14	72.08	72.31	72.29
11	72.22	72.14	71.97	72.30	72.24	72.41	72.14	72.32	72.28
Statistics									
Min	71.92	72.02	71.97	72.07	71.91	72.07	72.08	72.22	72.15
Max	72.27	72.24	72.11	72.40	72.24	72.41	72.39	72.38	72.32
Average	72.11	72.12	72.05	72.25	72.11	72.24	72.24	72.29	72.25
Sigma	0.13	0.07	0.05	0.11	0.11	0.12	0.13	0.06	0.06

Drift Calculation

SINAD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-8.0E-03	83.0E-03	37.0E-03	80.0E-03	41.0E-03	362.0E-03	192.0E-03	171.0E-03
8	-	-30.0E-03	-228.0E-03	-27.0E-03	-129.0E-03	-32.0E-03	112.0E-03	101.0E-03	47.0E-03
9	-	-8.0E-03	-44.0E-03	298.0E-03	29.0E-03	230.0E-03	97.0E-03	117.0E-03	51.0E-03
10	-	165.0E-03	120.0E-03	303.0E-03	-4.0E-03	226.0E-03	161.0E-03	397.0E-03	372.0E-03
11	-	-79.0E-03	-248.0E-03	76.0E-03	22.0E-03	188.0E-03	-77.0E-03	103.0E-03	60.0E-03
Average	-	8.0E-03	-63.4E-03	137.4E-03	-400.0E-06	130.6E-03	131.0E-03	182.0E-03	140.2E-03
Sigma	-	82.7E-03	152.7E-03	137.2E-03	69.8E-03	106.5E-03	140.7E-03	112.6E-03	124.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise + distortion : SINAD_3VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.72	71.75	71.80	71.65	71.78	71.71	71.76	71.86	71.70
ON samples									
2	72.17	72.22	72.32	72.28	72.27	72.28	72.17	72.12	72.30
3	72.26	72.04	72.16	71.95	72.20	72.15	72.17	72.18	72.29
4	72.04	72.11	72.16	72.08	72.16	71.84	72.09	72.33	72.02
5	71.72	71.86	72.14	71.89	71.62	71.68	71.80	71.75	72.10
6	71.88	72.01	71.76	71.92	71.94	72.07	71.92	71.98	72.16
Statistics									
Min	71.72	71.86	71.76	71.89	71.62	71.68	71.80	71.75	72.02
Max	72.26	72.22	72.32	72.28	72.27	72.28	72.17	72.33	72.30
Average	72.01	72.05	72.11	72.03	72.04	72.00	72.03	72.07	72.17
Sigma	0.20	0.12	0.18	0.14	0.24	0.22	0.15	0.20	0.11

Drift Calculation

SINAD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	47.0E-03	153.0E-03	114.0E-03	101.0E-03	112.0E-03	-1.0E-03	-52.0E-03	132.0E-03
3	-	-229.0E-03	-109.0E-03	-315.0E-03	-69.0E-03	-113.0E-03	-99.0E-03	-83.0E-03	23.0E-03
4	-	66.0E-03	120.0E-03	38.0E-03	116.0E-03	-202.0E-03	46.0E-03	283.0E-03	-21.0E-03
5	-	142.0E-03	418.0E-03	169.0E-03	-101.0E-03	-45.0E-03	77.0E-03	25.0E-03	383.0E-03
6	-	134.0E-03	-111.0E-03	48.0E-03	61.0E-03	198.0E-03	43.0E-03	103.0E-03	284.0E-03
Average	-	32.0E-03	94.2E-03	10.8E-03	21.6E-03	-10.0E-03	13.2E-03	55.2E-03	160.2E-03
Sigma	-	135.7E-03	196.1E-03	169.7E-03	89.5E-03	146.2E-03	61.4E-03	130.9E-03	153.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

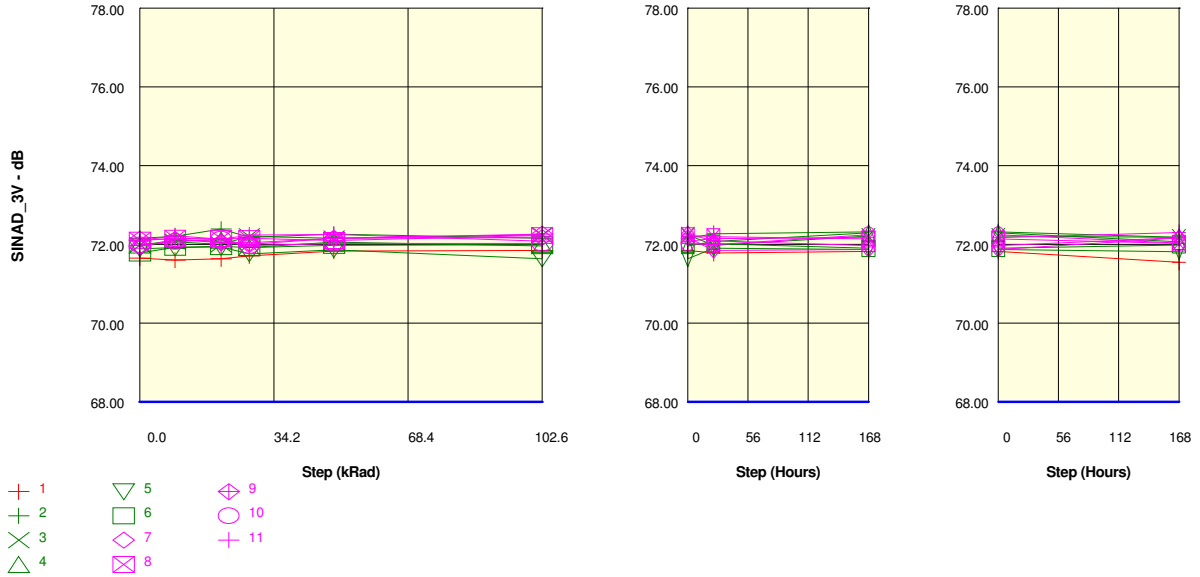
Measurements

SINAD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.72	71.75	71.80	71.65	71.78	71.71	71.76	71.86	71.70
OFF samples									
7	72.00	72.14	72.11	72.09	72.08	72.09	72.12	71.99	72.21
8	72.18	72.22	72.11	72.27	72.04	72.26	72.14	72.17	71.97
9	72.16	71.92	72.17	72.27	72.22	72.22	72.09	71.96	72.05
10	72.01	71.72	72.26	72.03	71.89	72.16	72.24	71.96	72.11
11	72.10	72.18	72.11	72.02	72.09	72.32	72.18	72.13	72.13
Statistics									
Min	72.00	71.72	72.11	72.02	71.89	72.09	72.09	71.96	71.97
Max	72.18	72.22	72.26	72.27	72.22	72.32	72.24	72.17	72.21
Average	72.09	72.04	72.15	72.14	72.06	72.21	72.15	72.04	72.09
Sigma	0.07	0.19	0.06	0.11	0.10	0.08	0.05	0.09	0.08

Drift Calculation

SINAD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	140.0E-03	105.0E-03	92.0E-03	77.0E-03	84.0E-03	118.0E-03	-8.0E-03	213.0E-03
8	-	44.0E-03	-69.0E-03	86.0E-03	-135.0E-03	84.0E-03	-35.0E-03	-12.0E-03	-212.0E-03
9	-	-237.0E-03	16.0E-03	108.0E-03	61.0E-03	66.0E-03	-68.0E-03	-193.0E-03	-111.0E-03
10	-	-290.0E-03	243.0E-03	20.0E-03	-123.0E-03	145.0E-03	230.0E-03	-52.0E-03	97.0E-03
11	-	82.0E-03	14.0E-03	-74.0E-03	-13.0E-03	222.0E-03	79.0E-03	36.0E-03	30.0E-03
Average	-	-52.2E-03	61.8E-03	46.4E-03	-26.6E-03	120.2E-03	64.8E-03	-45.8E-03	3.4E-03
Sigma	-	176.0E-03	106.0E-03	67.3E-03	89.0E-03	57.5E-03	107.6E-03	78.7E-03	150.3E-03

Parameter : Signal to noise + distortion : SINAD_3VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.65	71.60	71.64	71.71	71.83	71.85	71.78	71.82	71.55
ON samples									
2	72.16	72.21	72.39	72.18	72.26	72.16	72.27	72.32	72.18
3	71.98	72.07	72.00	72.20	72.15	72.24	71.98	72.21	72.18
4	71.99	72.10	72.11	71.92	72.06	71.97	72.08	72.30	72.07
5	71.89	71.92	71.93	71.76	71.87	71.63	71.90	71.88	71.82
6	71.78	71.93	71.95	71.92	71.98	72.00	72.02	71.90	71.98
Statistics									
Min	71.78	71.92	71.93	71.76	71.87	71.63	71.90	71.88	71.82
Max	72.16	72.21	72.39	72.20	72.26	72.24	72.27	72.32	72.18
Average	71.96	72.04	72.08	72.00	72.06	72.00	72.05	72.12	72.05
Sigma	0.12	0.11	0.17	0.17	0.14	0.21	0.13	0.19	0.14

Drift Calculation

SINAD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	47.0E-03	230.0E-03	24.0E-03	101.0E-03	2.0E-03	113.0E-03	161.0E-03	24.0E-03
3	-	87.0E-03	20.0E-03	220.0E-03	169.0E-03	259.0E-03	-5.0E-03	228.0E-03	196.0E-03
4	-	111.0E-03	124.0E-03	-68.0E-03	73.0E-03	-21.0E-03	90.0E-03	310.0E-03	87.0E-03
5	-	27.0E-03	42.0E-03	-130.0E-03	-25.0E-03	-258.0E-03	11.0E-03	-14.0E-03	-71.0E-03
6	-	150.0E-03	168.0E-03	138.0E-03	198.0E-03	217.0E-03	239.0E-03	121.0E-03	204.0E-03
Average	-	84.4E-03	116.8E-03	36.8E-03	103.2E-03	39.8E-03	89.6E-03	161.2E-03	88.0E-03
Sigma	-	44.1E-03	78.0E-03	128.7E-03	78.3E-03	186.1E-03	87.2E-03	108.5E-03	104.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

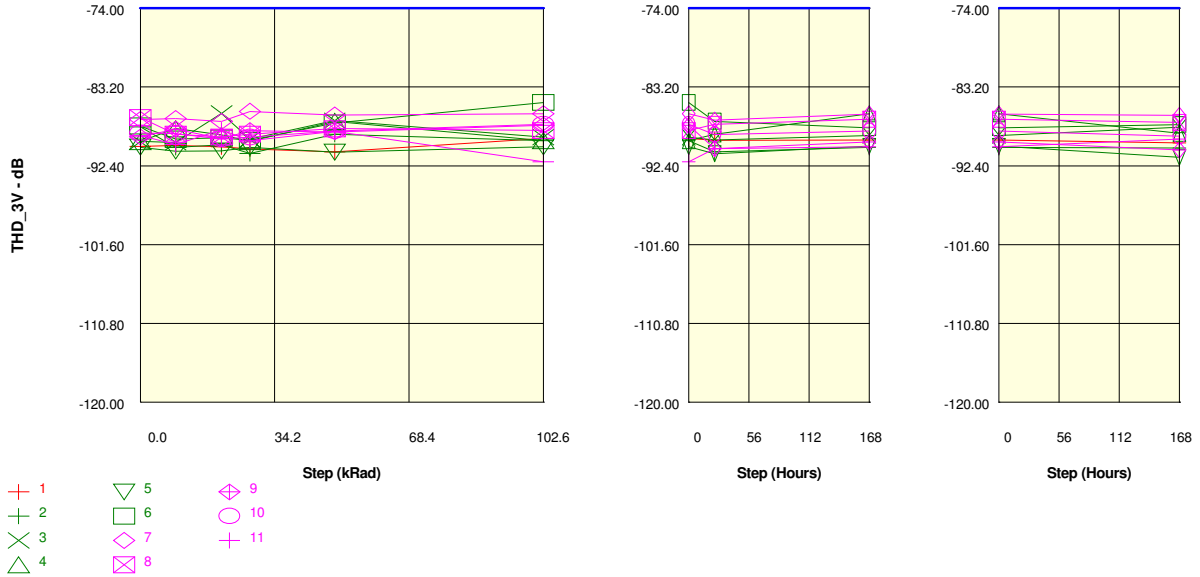
Measurements

SINAD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.65	71.60	71.64	71.71	71.83	71.85	71.78	71.82	71.55
OFF samples									
7	71.95	72.12	72.06	72.04	72.15	72.17	71.85	71.87	72.17
8	72.10	72.16	72.15	72.15	72.10	72.23	72.20	72.14	72.03
9	72.14	72.13	72.04	72.00	72.16	72.27	72.09	71.97	72.17
10	71.99	72.07	72.13	71.97	72.02	72.02	72.00	72.25	72.04
11	72.10	72.22	72.13	72.24	72.26	72.08	72.15	72.17	72.30
Statistics									
Min	71.95	72.07	72.04	71.97	72.02	72.02	71.85	71.87	72.03
Max	72.14	72.22	72.15	72.24	72.26	72.27	72.20	72.25	72.30
Average	72.06	72.14	72.10	72.08	72.14	72.15	72.06	72.08	72.14
Sigma	0.07	0.05	0.04	0.10	0.08	0.09	0.12	0.14	0.10

Drift Calculation

SINAD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	178.0E-03	118.0E-03	92.0E-03	207.0E-03	226.0E-03	-95.0E-03	-71.0E-03	221.0E-03
8	-	54.0E-03	42.0E-03	50.0E-03	-3.0E-03	125.0E-03	92.0E-03	37.0E-03	-72.0E-03
9	-	-10.0E-03	-97.0E-03	-132.0E-03	24.0E-03	129.0E-03	-47.0E-03	-165.0E-03	37.0E-03
10	-	85.0E-03	142.0E-03	-18.0E-03	36.0E-03	35.0E-03	7.0E-03	260.0E-03	48.0E-03
11	-	118.0E-03	30.0E-03	135.0E-03	153.0E-03	-19.0E-03	48.0E-03	71.0E-03	198.0E-03
Average	-	85.0E-03	47.0E-03	25.4E-03	83.4E-03	99.2E-03	1.0E-03	26.4E-03	86.4E-03
Sigma	-	62.8E-03	83.8E-03	93.5E-03	81.7E-03	84.5E-03	66.4E-03	143.4E-03	109.2E-03

Parameter : Total Harmonic Distorsion : THD_3VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-90.14	-90.01	-90.18	-90.45	-90.78	-89.18	-89.43	-89.40	-89.72
ON samples									
2	-87.83	-90.24	-89.93	-90.97	-88.73	-89.49	-90.79	-90.22	-90.33
3	-89.56	-89.68	-86.28	-89.30	-87.12	-89.06	-89.38	-88.85	-87.89
4	-89.57	-88.06	-88.82	-89.56	-87.23	-89.48	-88.71	-86.33	-88.60
5	-90.23	-90.69	-90.68	-90.24	-90.82	-90.20	-91.00	-90.11	-91.42
6	-87.76	-89.29	-89.15	-89.41	-87.40	-85.01	-87.21	-87.96	-87.61
Statistics									
Min	-90.23	-90.69	-90.68	-90.97	-90.82	-90.20	-91.00	-90.22	-91.42
Max	-87.76	-88.06	-86.28	-89.30	-87.12	-85.01	-87.21	-86.33	-87.61
Average	-88.99	-89.59	-88.97	-89.90	-88.26	-88.65	-89.42	-88.69	-89.17
Sigma	1.01	0.90	1.49	0.63	1.41	1.86	1.40	1.45	1.47

Drift Calculation

THD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-2.4E+00	-2.1E+00	-3.1E+00	-895.0E-03	-1.7E+00	-3.0E+00	-2.4E+00	-2.5E+00
3	-	-115.0E-03	3.3E+00	269.0E-03	2.4E+00	505.0E-03	185.0E-03	718.0E-03	1.7E+00
4	-	1.5E+00	749.0E-03	7.0E-03	2.3E+00	86.0E-03	856.0E-03	3.2E+00	964.0E-03
5	-	-455.0E-03	-449.0E-03	-10.0E-03	-594.0E-03	34.0E-03	-768.0E-03	117.0E-03	-1.2E+00
6	-	-1.5E+00	-1.4E+00	-1.7E+00	359.0E-03	2.8E+00	548.0E-03	-205.0E-03	146.0E-03
Average	-	-600.4E-03	18.4E-03	-905.2E-03	730.6E-03	343.0E-03	-426.2E-03	295.8E-03	-179.0E-03
Sigma	-	1.3E+00	1.9E+00	1.3E+00	1.4E+00	1.4E+00	1.4E+00	1.8E+00	1.5E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

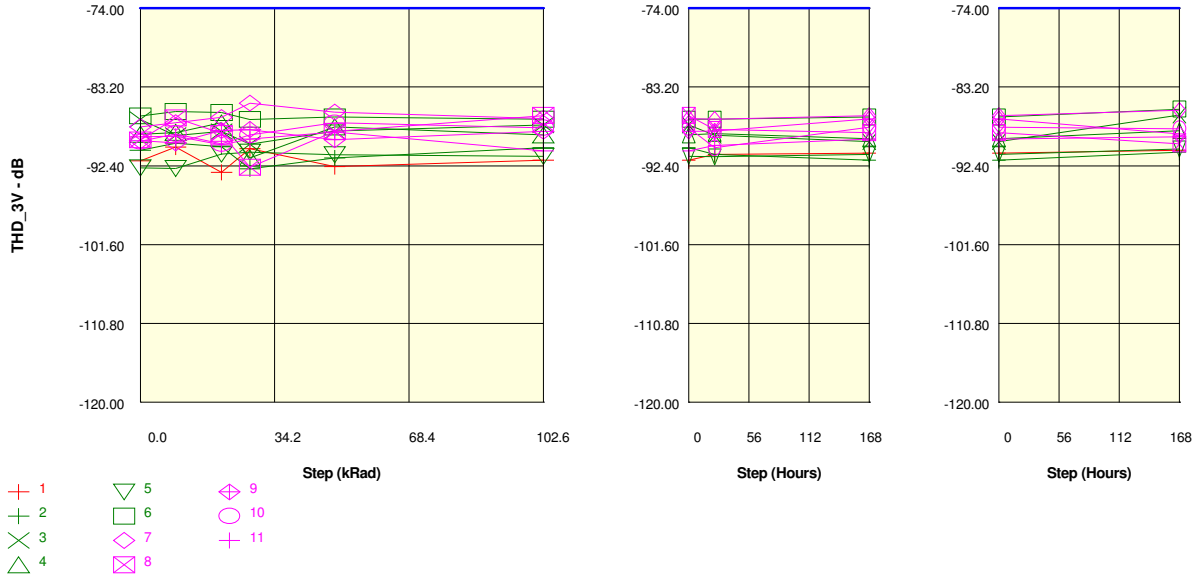
Measurements

THD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-90.14	-90.01	-90.18	-90.45	-90.78	-89.18	-89.43	-89.40	-89.72
OFF samples									
7	-87.00	-86.88	-87.23	-86.05	-86.46	-86.32	-87.09	-86.37	-86.51
8	-86.77	-88.72	-89.04	-88.71	-88.06	-88.28	-87.54	-86.95	-87.34
9	-89.03	-88.11	-89.23	-88.29	-88.43	-87.68	-90.41	-89.62	-90.56
10	-88.56	-88.64	-89.28	-89.07	-88.34	-87.54	-88.75	-88.34	-88.94
11	-88.87	-89.91	-88.20	-89.46	-88.40	-91.95	-90.39	-90.16	-89.28
Statistics									
Min	-89.03	-89.91	-89.28	-89.46	-88.43	-91.95	-90.41	-90.16	-90.56
Max	-86.77	-86.88	-87.23	-86.05	-86.46	-86.32	-87.09	-86.37	-86.51
Average	-88.05	-88.45	-88.60	-88.31	-87.94	-88.35	-88.84	-88.29	-88.52
Sigma	0.96	0.98	0.79	1.20	0.75	1.91	1.39	1.46	1.44

Drift Calculation

THD_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	127.0E-03	-225.0E-03	959.0E-03	540.0E-03	687.0E-03	-82.0E-03	630.0E-03	499.0E-03
8	-	-1.9E+00	-2.3E+00	-1.9E+00	-1.3E+00	-1.5E+00	-770.0E-03	-176.0E-03	-564.0E-03
9	-	917.0E-03	-201.0E-03	741.0E-03	596.0E-03	1.4E+00	-1.4E+00	-587.0E-03	-1.5E+00
10	-	-79.0E-03	-712.0E-03	-504.0E-03	226.0E-03	1.0E+00	-184.0E-03	225.0E-03	-380.0E-03
11	-	-1.0E+00	665.0E-03	-590.0E-03	470.0E-03	-3.1E+00	-1.5E+00	-1.3E+00	-407.0E-03
Average	-	-405.0E-03	-547.2E-03	-265.4E-03	108.6E-03	-304.0E-03	-789.2E-03	-239.4E-03	-476.0E-03
Sigma	-	991.6E-03	965.8E-03	1.0E+00	710.1E-03	1.7E+00	593.9E-03	663.0E-03	644.8E-03

Parameter : Total Harmonic Distorsion : THD_3VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-91.80	-90.22	-93.18	-90.41	-92.50	-91.77	-91.09	-90.91	-90.57
ON samples									
2	-90.58	-89.76	-90.16	-92.75	-91.49	-90.32	-91.05	-91.75	-90.81
3	-87.00	-88.87	-88.40	-89.89	-88.35	-87.63	-88.82	-89.59	-86.48
4	-88.71	-88.51	-87.38	-91.50	-87.85	-88.81	-88.63	-89.25	-88.29
5	-92.64	-92.71	-91.04	-90.80	-91.12	-91.31	-91.35	-91.05	-90.45
6	-86.58	-86.06	-86.18	-86.98	-86.69	-86.95	-86.95	-86.70	-85.78
Statistics									
Min	-92.64	-92.71	-91.04	-92.75	-91.49	-91.31	-91.35	-91.75	-90.81
Max	-86.58	-86.06	-86.18	-86.98	-86.69	-86.95	-86.95	-86.70	-85.78
Average	-89.10	-89.18	-88.63	-90.39	-89.10	-89.00	-89.36	-89.67	-88.36
Sigma	2.26	2.15	1.78	1.94	1.88	1.62	1.64	1.75	2.03

Drift Calculation

THD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	822.0E-03	421.0E-03	-2.2E+00	-904.0E-03	268.0E-03	-467.0E-03	-1.2E+00	-222.0E-03
3	-	-1.9E+00	-1.4E+00	-2.9E+00	-1.4E+00	-629.0E-03	-1.8E+00	-2.6E+00	517.0E-03
4	-	199.0E-03	1.3E+00	-2.8E+00	865.0E-03	-93.0E-03	81.0E-03	-534.0E-03	423.0E-03
5	-	-73.0E-03	1.6E+00	1.8E+00	1.5E+00	1.3E+00	1.3E+00	1.6E+00	2.2E+00
6	-	518.0E-03	402.0E-03	-403.0E-03	-114.0E-03	-370.0E-03	-371.0E-03	-119.0E-03	799.0E-03
Average	-	-80.6E-03	469.0E-03	-1.3E+00	800.0E-06	101.0E-03	-259.4E-03	-564.4E-03	741.2E-03
Sigma	-	943.4E-03	1.0E+00	1.8E+00	1.1E+00	682.4E-03	1.0E+00	1.4E+00	797.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

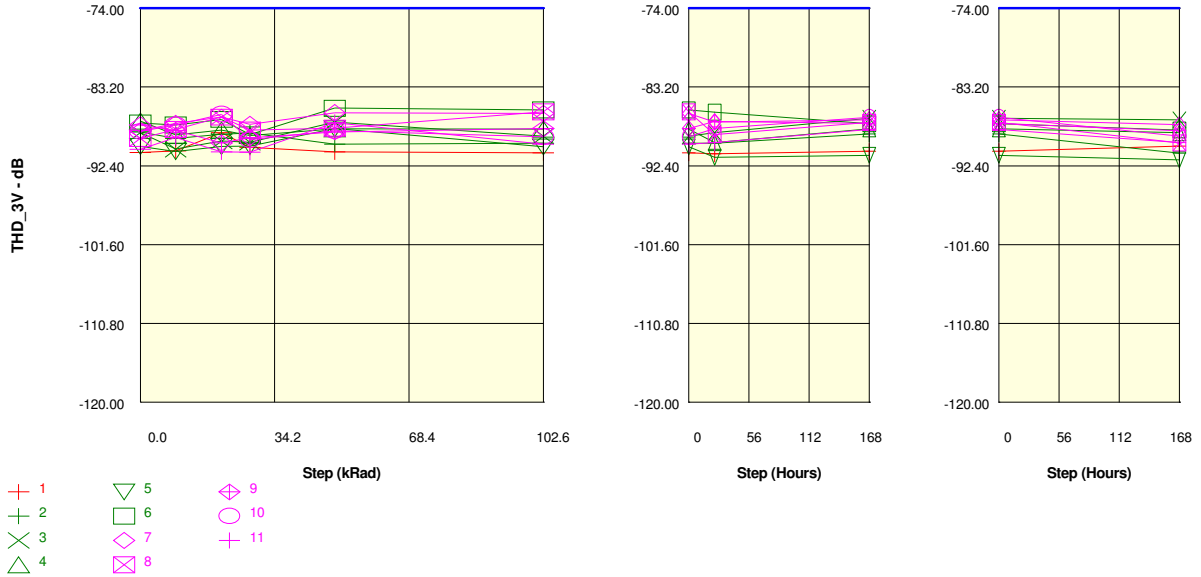
Measurements

THD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-91.80	-90.22	-93.18	-90.41	-92.50	-91.77	-91.09	-90.91	-90.57
OFF samples									
7	-87.83	-87.36	-86.76	-85.07	-86.14	-86.87	-86.97	-86.54	-85.94
8	-89.38	-86.81	-88.62	-92.56	-88.39	-86.53	-88.16	-88.54	-89.83
9	-89.49	-89.73	-88.29	-88.17	-89.35	-88.37	-88.35	-86.93	-88.67
10	-89.56	-88.66	-89.81	-88.80	-87.38	-87.96	-90.31	-87.91	-88.07
11	-89.03	-88.95	-89.96	-89.27	-88.44	-90.65	-90.03	-89.30	-89.01
Statistics									
Min	-89.56	-89.73	-89.96	-92.56	-89.35	-90.65	-90.31	-89.30	-89.83
Max	-87.83	-86.81	-86.76	-85.07	-86.14	-86.53	-86.97	-86.54	-85.94
Average	-89.06	-88.30	-88.69	-88.77	-87.94	-88.08	-88.77	-87.84	-88.31
Sigma	0.64	1.07	1.16	2.39	1.10	1.46	1.25	1.01	1.31

Drift Calculation

THD_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	477.0E-03	1.1E+00	2.8E+00	1.7E+00	962.0E-03	863.0E-03	1.3E+00	1.9E+00
8	-	2.6E+00	766.0E-03	-3.2E+00	990.0E-03	2.9E+00	1.2E+00	844.0E-03	-448.0E-03
9	-	-240.0E-03	1.2E+00	1.3E+00	133.0E-03	1.1E+00	1.1E+00	2.6E+00	816.0E-03
10	-	905.0E-03	-247.0E-03	767.0E-03	2.2E+00	1.6E+00	-746.0E-03	1.7E+00	1.5E+00
11	-	78.0E-03	-930.0E-03	-244.0E-03	584.0E-03	-1.6E+00	-1.0E+00	-277.0E-03	12.0E-03
Average	-	758.0E-03	372.8E-03	285.0E-03	1.1E+00	981.8E-03	293.4E-03	1.2E+00	752.4E-03
Sigma	-	984.1E-03	826.3E-03	2.0E+00	740.1E-03	1.5E+00	967.0E-03	934.2E-03	875.9E-03

Parameter : Total Harmonic Distorsion : THD_3VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-90.86	-90.64	-88.52	-90.27	-90.79	-90.88	-90.99	-90.72	-90.10
ON samples									
2	-88.47	-89.21	-88.70	-88.56	-89.89	-89.76	-89.75	-88.69	-90.95
3	-88.53	-90.46	-89.51	-89.66	-87.30	-88.93	-88.55	-86.84	-87.04
4	-87.19	-88.82	-88.23	-88.87	-88.09	-88.14	-89.69	-88.07	-88.55
5	-90.14	-90.73	-90.13	-90.11	-88.06	-90.19	-91.42	-91.16	-91.71
6	-87.41	-87.64	-87.00	-88.77	-85.68	-85.88	-86.15	-87.50	-88.22
Statistics									
Min	-90.14	-90.73	-90.13	-90.11	-89.89	-90.19	-91.42	-91.16	-91.71
Max	-87.19	-87.64	-87.00	-88.56	-85.68	-85.88	-86.15	-86.84	-87.04
Average	-88.35	-89.37	-88.71	-89.19	-87.80	-88.58	-89.11	-88.45	-89.29
Sigma	1.05	1.13	1.08	0.59	1.36	1.52	1.74	1.49	1.75

Drift Calculation

THD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-747.0E-03	-233.0E-03	-96.0E-03	-1.4E+00	-1.3E+00	-1.3E+00	-220.0E-03	-2.5E+00
3	-	-1.9E+00	-977.0E-03	-1.1E+00	1.2E+00	-401.0E-03	-19.0E-03	1.7E+00	1.5E+00
4	-	-1.6E+00	-1.0E+00	-1.7E+00	-902.0E-03	-952.0E-03	-2.5E+00	-884.0E-03	-1.4E+00
5	-	-586.0E-03	17.0E-03	35.0E-03	2.1E+00	-43.0E-03	-1.3E+00	-1.0E+00	-1.6E+00
6	-	-229.0E-03	417.0E-03	-1.4E+00	1.7E+00	1.5E+00	1.3E+00	-90.0E-03	-809.0E-03
Average	-	-1.0E+00	-364.2E-03	-845.4E-03	544.8E-03	-230.0E-03	-761.2E-03	-104.0E-03	-943.4E-03
Sigma	-	643.9E-03	567.8E-03	689.2E-03	1.4E+00	982.1E-03	1.3E+00	968.9E-03	1.3E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

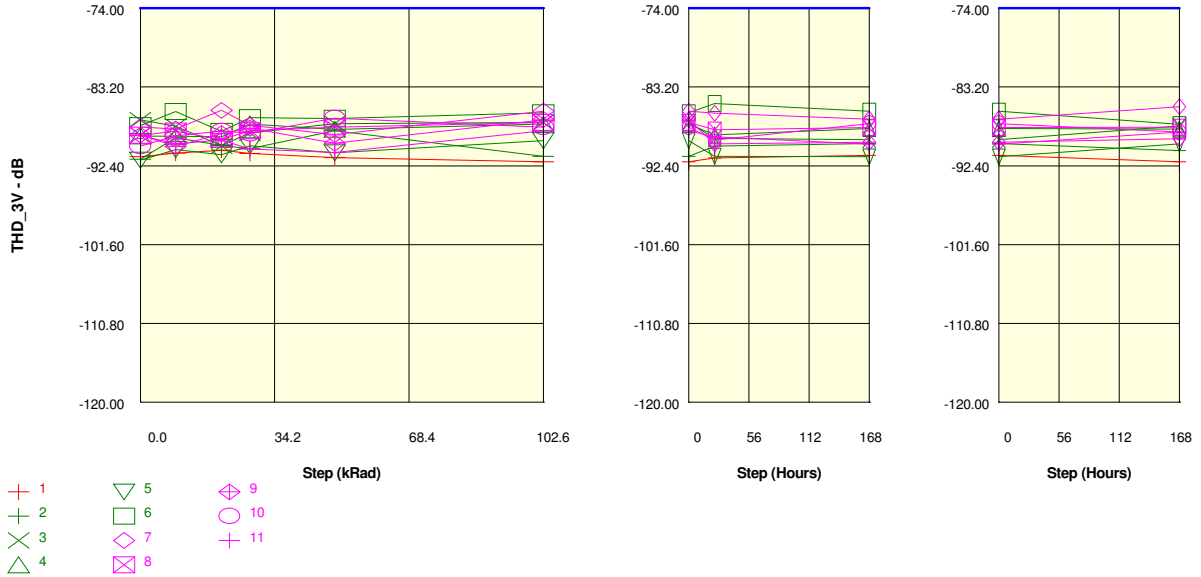
Measurements

THD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-90.86	-90.64	-88.52	-90.27	-90.79	-90.88	-90.99	-90.72	-90.10
OFF samples									
7	-88.32	-87.44	-86.71	-87.57	-86.19	-86.28	-87.29	-87.02	-87.60
8	-89.20	-88.16	-86.72	-88.23	-88.00	-86.11	-88.77	-87.33	-89.72
9	-87.61	-88.25	-89.73	-89.11	-88.44	-88.07	-87.25	-87.46	-88.31
10	-88.40	-87.64	-86.39	-89.36	-88.32	-89.01	-88.05	-86.73	-88.93
11	-90.47	-89.10	-90.78	-90.82	-87.35	-89.89	-89.71	-88.17	-89.68
Statistics									
Min	-90.47	-89.10	-90.78	-90.82	-88.44	-89.89	-89.71	-88.17	-89.72
Max	-87.61	-87.44	-86.39	-87.57	-86.19	-86.11	-87.25	-86.73	-87.60
Average	-88.80	-88.12	-88.06	-89.02	-87.66	-87.87	-88.21	-87.34	-88.85
Sigma	0.97	0.58	1.82	1.10	0.83	1.48	0.94	0.49	0.81

Drift Calculation

THD_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	884.0E-03	1.6E+00	754.0E-03	2.1E+00	2.0E+00	1.0E+00	1.3E+00	718.0E-03
8	-	1.0E+00	2.5E+00	962.0E-03	1.2E+00	3.1E+00	427.0E-03	1.9E+00	-526.0E-03
9	-	-641.0E-03	-2.1E+00	-1.5E+00	-827.0E-03	-456.0E-03	365.0E-03	154.0E-03	-699.0E-03
10	-	753.0E-03	2.0E+00	-968.0E-03	74.0E-03	-610.0E-03	345.0E-03	1.7E+00	-531.0E-03
11	-	1.4E+00	-314.0E-03	-351.0E-03	3.1E+00	577.0E-03	753.0E-03	2.3E+00	782.0E-03
Average	-	680.6E-03	734.2E-03	-221.0E-03	1.1E+00	926.8E-03	585.4E-03	1.5E+00	-51.2E-03
Sigma	-	691.8E-03	1.7E+00	955.6E-03	1.4E+00	1.4E+00	269.6E-03	726.8E-03	657.4E-03

Parameter : Total Harmonic Distorsion : THD_3VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-91.33	-90.92	-90.57	-90.95	-91.45	-91.94	-91.46	-91.20	-91.93
ON samples									
2	-91.62	-89.12	-90.02	-90.40	-88.34	-91.31	-90.12	-89.79	-90.63
3	-87.04	-87.79	-90.05	-88.57	-87.48	-87.33	-89.21	-89.35	-87.75
4	-88.92	-88.96	-89.01	-87.52	-88.15	-87.53	-88.79	-88.05	-88.11
5	-91.75	-90.51	-91.13	-90.06	-90.88	-89.46	-91.30	-91.35	-89.84
6	-87.71	-86.06	-88.38	-86.78	-86.87	-86.21	-85.13	-86.02	-87.59
Statistics									
Min	-91.75	-90.51	-91.13	-90.40	-90.88	-91.31	-91.30	-91.35	-90.63
Max	-87.04	-86.06	-88.38	-86.78	-86.87	-86.21	-85.13	-86.02	-87.59
Average	-89.41	-88.49	-89.72	-88.67	-88.34	-88.37	-88.91	-88.91	-88.78
Sigma	1.96	1.49	0.95	1.40	1.37	1.80	2.08	1.79	1.22

Drift Calculation

THD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	2.5E+00	1.6E+00	1.2E+00	3.3E+00	318.0E-03	1.5E+00	1.8E+00	998.0E-03
3	-	-749.0E-03	-3.0E+00	-1.5E+00	-436.0E-03	-282.0E-03	-2.2E+00	-2.3E+00	-703.0E-03
4	-	-36.0E-03	-89.0E-03	1.4E+00	772.0E-03	1.4E+00	125.0E-03	867.0E-03	805.0E-03
5	-	1.2E+00	626.0E-03	1.7E+00	869.0E-03	2.3E+00	453.0E-03	401.0E-03	1.9E+00
6	-	1.7E+00	-666.0E-03	933.0E-03	842.0E-03	1.5E+00	2.6E+00	1.7E+00	126.0E-03
Average	-	923.0E-03	-306.4E-03	744.6E-03	1.1E+00	1.0E+00	500.0E-03	497.2E-03	627.2E-03
Sigma	-	1.2E+00	1.5E+00	1.2E+00	1.2E+00	912.6E-03	1.6E+00	1.5E+00	875.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

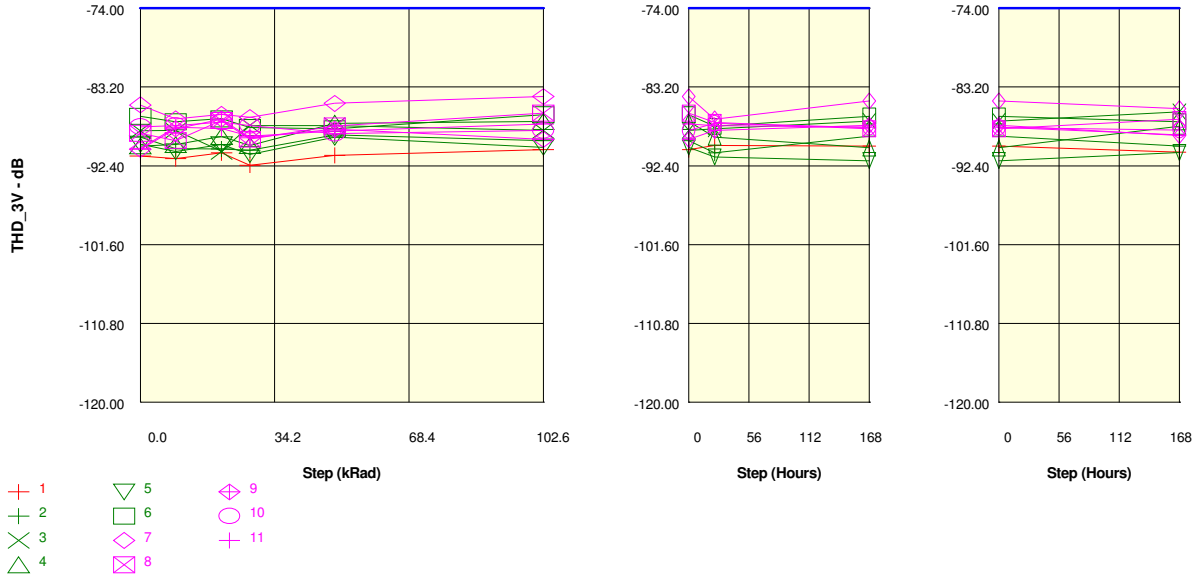
Measurements

THD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-91.33	-90.92	-90.57	-90.95	-91.45	-91.94	-91.46	-91.20	-91.93
OFF samples									
7	-87.83	-88.12	-85.93	-87.66	-88.76	-86.02	-86.25	-86.94	-85.49
8	-88.85	-88.34	-89.34	-88.32	-87.89	-87.34	-88.21	-87.94	-87.90
9	-88.81	-90.14	-88.64	-88.02	-89.76	-87.01	-89.84	-89.65	-89.25
10	-90.11	-88.91	-88.35	-88.62	-86.84	-87.89	-89.39	-87.47	-88.48
11	-88.87	-89.83	-89.39	-90.43	-90.87	-88.31	-89.00	-89.86	-88.47
Statistics									
Min	-90.11	-90.14	-89.39	-90.43	-90.87	-88.31	-89.84	-89.86	-89.25
Max	-87.83	-88.12	-85.93	-87.66	-86.84	-86.02	-86.25	-86.94	-85.49
Average	-88.89	-89.07	-88.33	-88.61	-88.82	-87.31	-88.54	-88.37	-87.92
Sigma	0.72	0.80	1.26	0.96	1.40	0.79	1.26	1.18	1.29

Drift Calculation

THD_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-290.0E-03	1.9E+00	170.0E-03	-929.0E-03	1.8E+00	1.6E+00	892.0E-03	2.3E+00
8	-	512.0E-03	-485.0E-03	528.0E-03	964.0E-03	1.5E+00	636.0E-03	910.0E-03	952.0E-03
9	-	-1.3E+00	165.0E-03	787.0E-03	-949.0E-03	1.8E+00	-1.0E+00	-844.0E-03	-447.0E-03
10	-	1.2E+00	1.8E+00	1.5E+00	3.3E+00	2.2E+00	720.0E-03	2.6E+00	1.6E+00
11	-	-958.0E-03	-516.0E-03	-1.6E+00	-2.0E+00	563.0E-03	-129.0E-03	-986.0E-03	407.0E-03
Average	-	-173.6E-03	565.2E-03	285.4E-03	72.4E-03	1.6E+00	355.0E-03	523.6E-03	978.0E-03
Sigma	-	930.3E-03	1.1E+00	1.0E+00	1.9E+00	556.9E-03	880.5E-03	1.3E+00	964.4E-03

Parameter : Total Harmonic Distorsion : THD_3VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-91.24	-91.55	-90.87	-92.34	-91.18	-90.49	-90.03	-90.08	-90.82
ON samples									
2	-89.05	-90.41	-90.43	-90.57	-88.80	-89.46	-90.88	-88.92	-90.11
3	-88.31	-88.29	-90.73	-87.69	-87.71	-88.26	-88.09	-87.18	-86.10
4	-90.09	-89.93	-88.99	-90.04	-87.45	-87.23	-89.07	-90.31	-87.78
5	-89.89	-90.74	-89.92	-91.07	-89.06	-90.22	-91.38	-91.80	-90.84
6	-86.62	-87.25	-86.90	-87.93	-88.08	-86.44	-87.80	-86.60	-87.26
Statistics									
Min	-90.09	-90.74	-90.73	-91.07	-89.06	-90.22	-91.38	-91.80	-90.84
Max	-86.62	-87.25	-86.90	-87.69	-87.45	-86.44	-87.80	-86.60	-86.10
Average	-88.79	-89.32	-89.39	-89.46	-88.22	-88.32	-89.44	-88.96	-88.42
Sigma	1.26	1.34	1.38	1.39	0.62	1.39	1.45	1.93	1.78

Drift Calculation

THD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-1.4E+00	-1.4E+00	-1.5E+00	258.0E-03	-406.0E-03	-1.8E+00	134.0E-03	-1.1E+00
3	-	27.0E-03	-2.4E+00	624.0E-03	602.0E-03	54.0E-03	227.0E-03	1.1E+00	2.2E+00
4	-	156.0E-03	1.1E+00	52.0E-03	2.6E+00	2.9E+00	1.0E+00	-222.0E-03	2.3E+00
5	-	-852.0E-03	-33.0E-03	-1.2E+00	830.0E-03	-331.0E-03	-1.5E+00	-1.9E+00	-952.0E-03
6	-	-627.0E-03	-282.0E-03	-1.3E+00	-1.5E+00	186.0E-03	-1.2E+00	25.0E-03	-639.0E-03
Average	-	-531.2E-03	-600.8E-03	-665.4E-03	574.2E-03	473.0E-03	-650.8E-03	-167.6E-03	374.2E-03
Sigma	-	562.6E-03	1.2E+00	845.6E-03	1.3E+00	1.2E+00	1.1E+00	985.7E-03	1.5E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

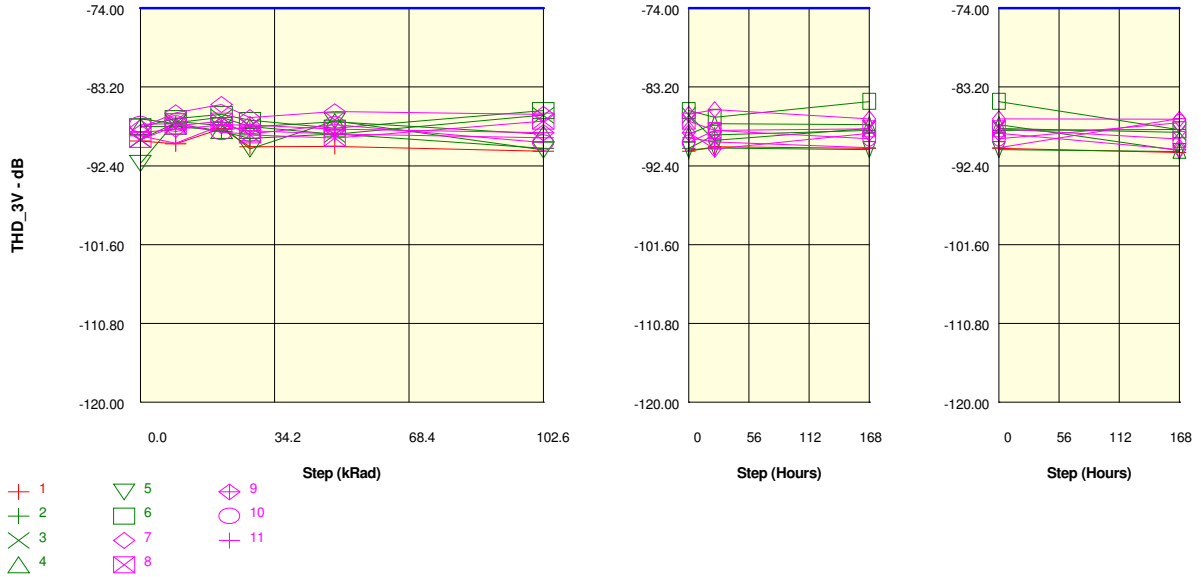
Measurements

THD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-91.24	-91.55	-90.87	-92.34	-91.18	-90.49	-90.03	-90.08	-90.82
OFF samples									
7	-85.30	-86.93	-86.40	-86.75	-85.12	-84.32	-86.94	-84.83	-85.73
8	-88.61	-89.45	-87.11	-89.29	-87.74	-86.26	-87.34	-88.08	-86.97
9	-90.48	-88.09	-86.94	-89.15	-88.13	-89.31	-88.27	-87.67	-88.88
10	-87.83	-87.70	-87.30	-87.69	-88.64	-88.28	-87.43	-87.93	-88.24
11	-90.35	-87.88	-88.04	-88.93	-88.35	-87.53	-87.70	-87.90	-88.78
Statistics									
Min	-90.48	-89.45	-88.04	-89.29	-88.64	-89.31	-88.27	-88.08	-88.88
Max	-85.30	-86.93	-86.40	-86.75	-85.12	-84.32	-86.94	-84.83	-85.73
Average	-88.51	-88.01	-87.16	-88.36	-87.59	-87.14	-87.54	-87.28	-87.72
Sigma	1.90	0.82	0.53	0.99	1.27	1.72	0.44	1.23	1.21

Drift Calculation

THD_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.6E+00	-1.1E+00	-1.5E+00	183.0E-03	980.0E-03	-1.6E+00	472.0E-03	-424.0E-03
8	-	-846.0E-03	1.5E+00	-684.0E-03	872.0E-03	2.4E+00	1.3E+00	529.0E-03	1.6E+00
9	-	2.4E+00	3.5E+00	1.3E+00	2.3E+00	1.2E+00	2.2E+00	2.8E+00	1.6E+00
10	-	131.0E-03	527.0E-03	144.0E-03	-805.0E-03	-450.0E-03	396.0E-03	-99.0E-03	-407.0E-03
11	-	2.5E+00	2.3E+00	1.4E+00	2.0E+00	2.8E+00	2.6E+00	2.4E+00	1.6E+00
Average	-	502.2E-03	1.4E+00	151.8E-03	919.2E-03	1.4E+00	978.0E-03	1.2E+00	794.4E-03
Sigma	-	1.7E+00	1.6E+00	1.1E+00	1.2E+00	1.1E+00	1.5E+00	1.2E+00	988.2E-03

Parameter : Total Harmonic Distorsion : THD_3VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-89.50	-89.86	-88.03	-90.18	-90.13	-90.72	-90.17	-90.38	-90.83
ON samples									
2	-86.93	-87.51	-88.39	-89.18	-88.66	-90.35	-88.82	-88.27	-88.15
3	-89.36	-87.39	-86.74	-87.82	-88.74	-86.49	-89.43	-88.03	-88.49
4	-87.82	-87.81	-88.28	-87.85	-87.26	-88.70	-87.50	-87.61	-90.62
5	-92.13	-87.24	-87.71	-90.43	-87.13	-90.54	-90.33	-90.51	-90.73
6	-87.86	-86.87	-86.40	-87.10	-88.01	-85.96	-86.73	-84.89	-88.19
Statistics									
Min	-92.13	-87.81	-88.39	-90.43	-88.74	-90.54	-90.33	-90.51	-90.73
Max	-86.93	-86.87	-86.40	-87.10	-87.13	-85.96	-86.73	-84.89	-88.15
Average	-88.82	-87.36	-87.51	-88.48	-87.96	-88.41	-88.56	-87.86	-89.24
Sigma	1.83	0.31	0.80	1.19	0.67	1.90	1.30	1.79	1.18

Drift Calculation

THD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-583.0E-03	-1.5E+00	-2.3E+00	-1.7E+00	-3.4E+00	-1.9E+00	-1.3E+00	-1.2E+00
3	-	2.0E+00	2.6E+00	1.5E+00	621.0E-03	2.9E+00	-69.0E-03	1.3E+00	870.0E-03
4	-	19.0E-03	-455.0E-03	-27.0E-03	560.0E-03	-877.0E-03	320.0E-03	219.0E-03	-2.8E+00
5	-	4.9E+00	4.4E+00	1.7E+00	5.0E+00	1.6E+00	1.8E+00	1.6E+00	1.4E+00
6	-	986.0E-03	1.5E+00	759.0E-03	-149.0E-03	1.9E+00	1.1E+00	3.0E+00	-333.0E-03
Average	-	1.5E+00	1.3E+00	343.4E-03	859.0E-03	410.6E-03	257.8E-03	960.4E-03	-417.8E-03
Sigma	-	1.9E+00	2.1E+00	1.4E+00	2.2E+00	2.3E+00	1.3E+00	1.4E+00	1.5E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

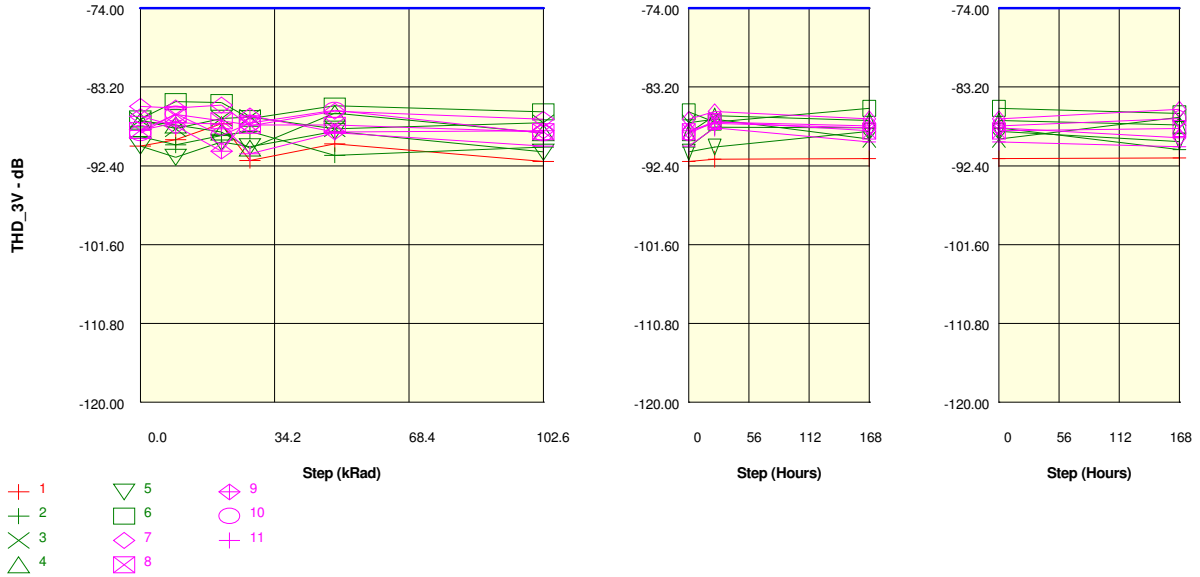
Measurements

THD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-89.50	-89.86	-88.03	-90.18	-90.13	-90.72	-90.17	-90.38	-90.83
OFF samples									
7	-87.98	-86.21	-85.24	-86.78	-86.09	-86.40	-85.83	-86.93	-86.96
8	-89.34	-87.75	-87.19	-88.79	-89.16	-87.19	-88.27	-88.09	-89.29
9	-88.52	-88.13	-87.66	-87.62	-88.13	-88.53	-90.46	-88.61	-90.51
10	-87.56	-87.50	-88.49	-88.65	-87.60	-89.70	-88.29	-89.23	-87.35
11	-88.90	-89.75	-87.67	-88.29	-88.68	-89.15	-89.60	-90.30	-86.90
Statistics									
Min	-89.34	-89.75	-88.49	-88.79	-89.16	-89.70	-90.46	-90.30	-90.51
Max	-87.56	-86.21	-85.24	-86.78	-86.09	-86.40	-85.83	-86.93	-86.90
Average	-88.46	-87.87	-87.25	-88.03	-87.93	-88.19	-88.49	-88.63	-88.20
Sigma	0.63	1.14	1.09	0.74	1.06	1.23	1.57	1.12	1.45

Drift Calculation

THD_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	1.8E+00	2.7E+00	1.2E+00	1.9E+00	1.6E+00	2.1E+00	1.0E+00	1.0E+00
8	-	1.6E+00	2.1E+00	547.0E-03	178.0E-03	2.2E+00	1.1E+00	1.2E+00	44.0E-03
9	-	397.0E-03	864.0E-03	906.0E-03	388.0E-03	-10.0E-03	-1.9E+00	-90.0E-03	-2.0E+00
10	-	60.0E-03	-936.0E-03	-1.1E+00	-47.0E-03	-2.1E+00	-731.0E-03	-1.7E+00	204.0E-03
11	-	-856.0E-03	1.2E+00	607.0E-03	219.0E-03	-250.0E-03	-708.0E-03	-1.4E+00	2.0E+00
Average	-	593.0E-03	1.2E+00	433.2E-03	526.2E-03	265.0E-03	-33.4E-03	-174.8E-03	256.4E-03
Sigma	-	980.8E-03	1.3E+00	799.5E-03	697.3E-03	1.5E+00	1.5E+00	1.2E+00	1.3E+00

Parameter : Total Harmonic Distorsion : THD_3VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-90.10	-89.36	-87.51	-91.79	-89.83	-91.89	-91.64	-91.56	-91.47
ON samples									
2	-88.98	-89.97	-88.86	-88.37	-91.18	-90.21	-87.89	-88.00	-90.53
3	-87.09	-88.06	-86.88	-86.71	-88.09	-87.38	-86.95	-89.30	-86.76
4	-87.18	-87.63	-88.46	-90.36	-86.27	-88.56	-86.57	-87.12	-87.63
5	-90.10	-91.41	-89.63	-90.18	-88.38	-90.80	-90.22	-88.38	-89.57
6	-86.92	-84.91	-85.01	-86.88	-85.41	-86.10	-87.29	-85.68	-86.30
Statistics									
Min	-90.10	-91.41	-89.63	-90.36	-91.18	-90.80	-90.22	-89.30	-90.53
Max	-86.92	-84.91	-85.01	-86.71	-85.41	-86.10	-86.57	-85.68	-86.30
Average	-88.05	-88.40	-87.77	-88.50	-87.86	-88.61	-87.78	-87.70	-88.16
Sigma	1.27	2.21	1.64	1.56	1.99	1.74	1.29	1.23	1.63

Drift Calculation

THD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-996.0E-03	121.0E-03	612.0E-03	-2.2E+00	-1.2E+00	1.1E+00	982.0E-03	-1.6E+00
3	-	-976.0E-03	210.0E-03	375.0E-03	-1.0E+00	-293.0E-03	138.0E-03	-2.2E+00	324.0E-03
4	-	-446.0E-03	-1.3E+00	-3.2E+00	911.0E-03	-1.4E+00	613.0E-03	58.0E-03	-445.0E-03
5	-	-1.3E+00	469.0E-03	-73.0E-03	1.7E+00	-695.0E-03	-118.0E-03	1.7E+00	529.0E-03
6	-	2.0E+00	1.9E+00	48.0E-03	1.5E+00	821.0E-03	-365.0E-03	1.2E+00	627.0E-03
Average	-	-342.2E-03	285.8E-03	-442.4E-03	189.0E-03	-556.2E-03	271.0E-03	358.0E-03	-103.4E-03
Sigma	-	1.2E+00	1.0E+00	1.4E+00	1.5E+00	790.5E-03	520.8E-03	1.4E+00	816.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

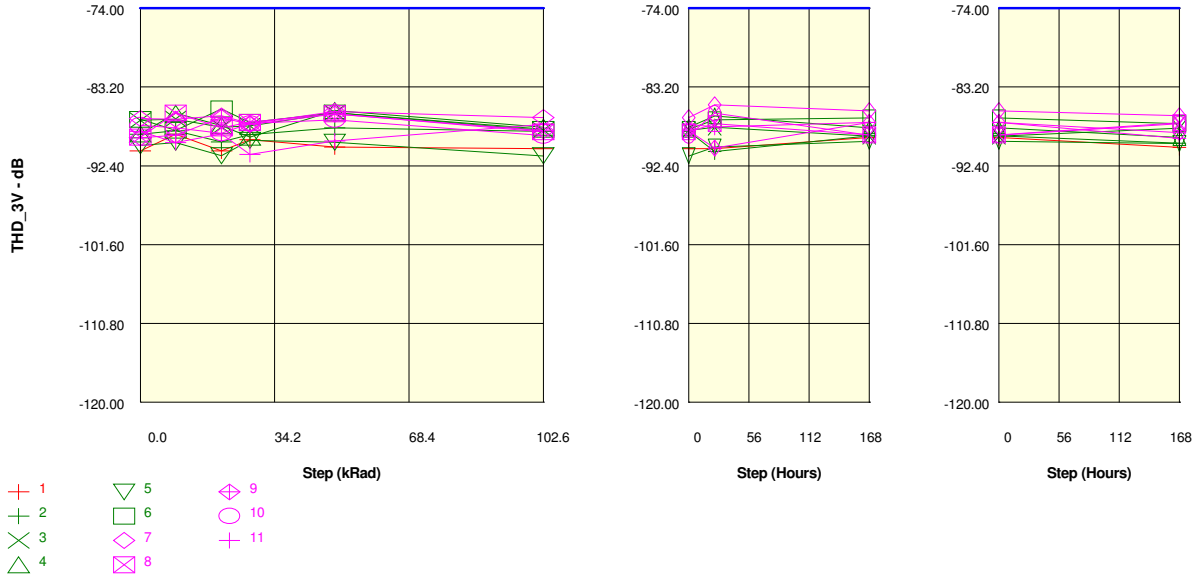
THD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-90.10	-89.36	-87.51	-91.79	-89.83	-91.89	-91.64	-91.56	-91.47
OFF samples									
7	-85.47	-85.66	-85.32	-87.75	-86.03	-86.98	-86.09	-86.93	-85.80
8	-88.26	-86.41	-87.16	-87.65	-87.66	-88.44	-87.22	-88.33	-88.04
9	-86.64	-87.74	-90.68	-86.56	-88.44	-88.32	-87.43	-87.98	-89.14
10	-88.60	-86.35	-88.87	-87.41	-85.90	-88.59	-87.28	-87.74	-86.87
11	-88.25	-87.39	-87.53	-90.98	-88.53	-90.10	-87.99	-89.64	-90.16
Statistics									
Min	-88.60	-87.74	-90.68	-90.98	-88.53	-90.10	-87.99	-89.64	-90.16
Max	-85.47	-85.66	-85.32	-86.56	-85.90	-86.98	-86.09	-86.93	-85.80
Average	-87.44	-86.71	-87.91	-88.07	-87.31	-88.49	-87.20	-88.12	-88.00
Sigma	1.20	0.75	1.79	1.51	1.14	0.99	0.62	0.89	1.55

Drift Calculation

THD_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-187.0E-03	146.0E-03	-2.3E+00	-556.0E-03	-1.5E+00	-616.0E-03	-1.5E+00	-326.0E-03
8	-	1.9E+00	1.1E+00	611.0E-03	602.0E-03	-183.0E-03	1.0E+00	-68.0E-03	216.0E-03
9	-	-1.1E+00	-4.0E+00	71.0E-03	-1.8E+00	-1.7E+00	-795.0E-03	-1.3E+00	-2.5E+00
10	-	2.3E+00	-262.0E-03	1.2E+00	2.7E+00	12.0E-03	1.3E+00	866.0E-03	1.7E+00
11	-	857.0E-03	715.0E-03	-2.7E+00	-288.0E-03	-1.9E+00	254.0E-03	-1.4E+00	-1.9E+00
Average	-	734.2E-03	-469.6E-03	-628.8E-03	131.2E-03	-1.0E+00	239.8E-03	-679.0E-03	-558.6E-03
Sigma	-	1.2E+00	1.8E+00	1.6E+00	1.5E+00	793.1E-03	849.0E-03	929.1E-03	1.5E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Total Harmonic Distorsion : THD_3VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-90.64	-88.74	-90.65	-89.37	-90.20	-90.40	-90.41	-89.10	-90.25
ON samples									
2	-88.71	-88.31	-89.60	-88.76	-88.00	-88.37	-90.74	-88.90	-89.77
3	-87.09	-86.94	-87.89	-87.74	-86.20	-88.24	-87.90	-88.95	-88.02
4	-88.67	-86.27	-87.71	-89.06	-85.96	-87.90	-86.58	-87.98	-89.10
5	-90.05	-89.67	-91.23	-89.43	-89.67	-91.24	-90.20	-89.56	-89.80
6	-86.98	-88.25	-85.77	-87.33	-86.23	-88.14	-87.04	-86.81	-87.48
Statistics									
Min	-90.05	-89.67	-91.23	-89.43	-89.67	-91.24	-90.74	-89.56	-89.80
Max	-86.98	-86.27	-85.77	-87.33	-85.96	-87.90	-86.58	-86.81	-87.48
Average	-88.30	-87.89	-88.44	-88.46	-87.21	-88.78	-88.49	-88.44	-88.83
Sigma	1.15	1.18	1.85	0.80	1.43	1.24	1.68	0.96	0.94

Drift Calculation

THD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	400.0E-03	-897.0E-03	-49.0E-03	712.0E-03	333.0E-03	-2.0E+00	-193.0E-03	-1.1E+00
3	-	152.0E-03	-796.0E-03	-642.0E-03	897.0E-03	-1.1E+00	-804.0E-03	-1.9E+00	-923.0E-03
4	-	2.4E+00	962.0E-03	-389.0E-03	2.7E+00	774.0E-03	2.1E+00	686.0E-03	-425.0E-03
5	-	379.0E-03	-1.2E+00	627.0E-03	387.0E-03	-1.2E+00	-146.0E-03	494.0E-03	249.0E-03
6	-	-1.3E+00	1.2E+00	-352.0E-03	748.0E-03	-1.2E+00	-66.0E-03	169.0E-03	-509.0E-03
Average	-	410.4E-03	-140.6E-03	-161.0E-03	1.1E+00	-478.0E-03	-192.2E-03	-140.8E-03	-535.0E-03
Sigma	-	1.2E+00	1.0E+00	436.6E-03	827.3E-03	853.8E-03	1.3E+00	910.0E-03	460.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

THD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-90.64	-88.74	-90.65	-89.37	-90.20	-90.40	-90.41	-89.10	-90.25
OFF samples									
7	-86.88	-86.96	-86.57	-87.49	-86.04	-86.77	-85.27	-85.97	-86.55
8	-89.06	-86.23	-87.98	-87.32	-86.33	-88.45	-87.47	-88.80	-87.36
9	-89.13	-88.83	-86.79	-87.56	-86.37	-88.31	-90.32	-87.34	-88.53
10	-87.68	-87.96	-88.58	-87.47	-87.01	-88.89	-86.28	-88.82	-87.51
11	-88.40	-89.69	-88.70	-91.06	-89.50	-87.56	-87.85	-87.34	-89.19
Statistics									
Min	-89.13	-89.69	-88.70	-91.06	-89.50	-88.89	-90.32	-88.82	-89.19
Max	-86.88	-86.23	-86.57	-87.32	-86.04	-86.77	-85.27	-85.97	-86.55
Average	-88.23	-87.93	-87.72	-88.18	-87.05	-87.99	-87.44	-87.65	-87.83
Sigma	0.85	1.24	0.89	1.44	1.27	0.75	1.70	1.07	0.93

Drift Calculation

THD_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-76.0E-03	316.0E-03	-602.0E-03	841.0E-03	112.0E-03	1.6E+00	913.0E-03	334.0E-03
8	-	2.8E+00	1.1E+00	1.7E+00	2.7E+00	617.0E-03	1.6E+00	266.0E-03	1.7E+00
9	-	299.0E-03	2.3E+00	1.6E+00	2.8E+00	821.0E-03	-1.2E+00	1.8E+00	592.0E-03
10	-	-282.0E-03	-902.0E-03	212.0E-03	666.0E-03	-1.2E+00	1.4E+00	-1.1E+00	173.0E-03
11	-	-1.3E+00	-300.0E-03	-2.7E+00	-1.1E+00	837.0E-03	545.0E-03	1.1E+00	-790.0E-03
Average	-	294.6E-03	507.4E-03	50.6E-03	1.2E+00	234.8E-03	791.4E-03	575.2E-03	401.8E-03
Sigma	-	1.4E+00	1.1E+00	1.6E+00	1.4E+00	769.9E-03	1.1E+00	986.2E-03	799.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

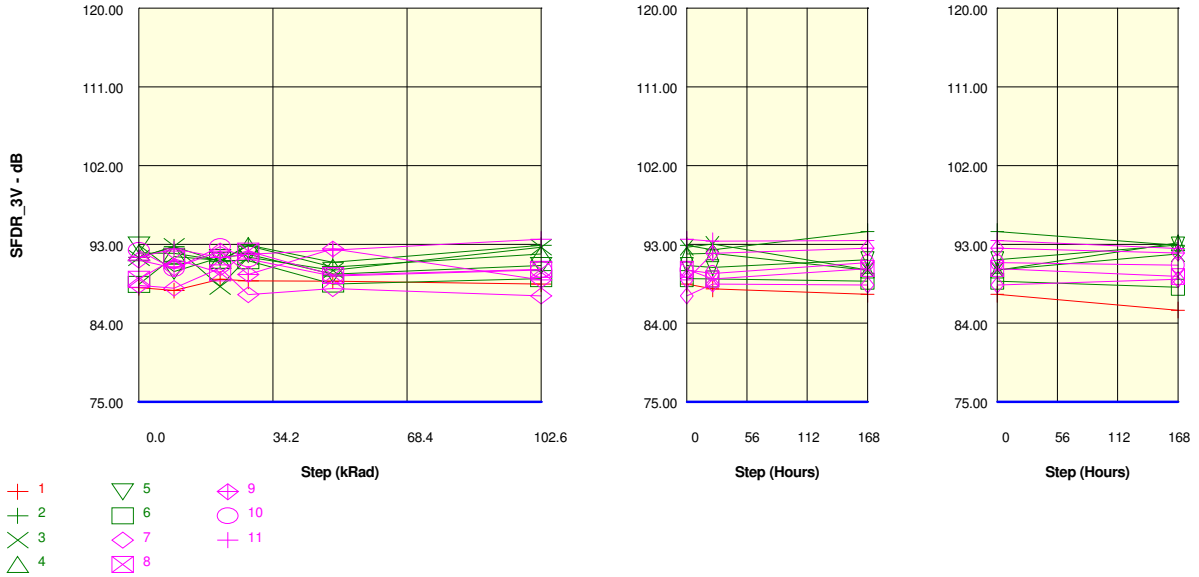
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN0

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	88.08	87.72	89.05	88.82	88.81	88.46	87.91	87.30	85.49
ON samples									
2	91.49	92.75	91.02	92.93	90.97	92.89	92.41	94.47	92.92
3	91.47	92.80	88.20	91.54	90.02	92.69	93.03	90.10	91.92
4	92.04	91.98	91.18	92.86	90.40	91.90	91.97	90.05	93.18
5	92.95	89.92	91.53	91.88	89.60	90.60	90.35	91.27	92.95
6	88.44	91.64	91.18	91.14	88.48	89.10	89.06	88.81	88.10
Statistics									
Min	88.44	89.92	88.20	91.14	88.48	89.10	89.06	88.81	88.10
Max	92.95	92.80	91.53	92.93	90.97	92.89	93.03	94.47	93.18
Average	91.28	91.82	90.62	92.07	89.89	91.44	91.36	90.94	91.81
Sigma	1.52	1.05	1.23	0.72	0.84	1.42	1.45	1.93	1.91

Drift Calculation

SFDR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	1.3E+00	-471.0E-03	1.4E+00	-520.0E-03	1.4E+00	914.0E-03	3.0E+00	1.4E+00
3	-	1.3E+00	-3.3E+00	72.0E-03	-1.4E+00	1.2E+00	1.6E+00	-1.4E+00	457.0E-03
4	-	-65.0E-03	-858.0E-03	823.0E-03	-1.6E+00	-145.0E-03	-75.0E-03	-2.0E+00	1.1E+00
5	-	-3.0E+00	-1.4E+00	-1.1E+00	-3.4E+00	-2.4E+00	-2.6E+00	-1.7E+00	-3.0E-03
6	-	3.2E+00	2.7E+00	2.7E+00	43.0E-03	667.0E-03	628.0E-03	369.0E-03	-335.0E-03
Average	-	539.6E-03	-654.2E-03	791.8E-03	-1.4E+00	158.4E-03	86.0E-03	-338.8E-03	537.8E-03
Sigma	-	2.1E+00	2.0E+00	1.3E+00	1.2E+00	1.4E+00	1.4E+00	1.8E+00	666.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	88.08	87.72	89.05	88.82	88.81	88.46	87.91	87.30	85.49
OFF samples									
7	88.32	87.98	90.32	87.25	87.96	87.11	88.46	88.37	89.01
8	89.02	91.35	89.75	92.24	89.48	90.15	89.06	90.25	89.33
9	91.22	90.32	92.24	89.58	92.49	88.93	92.00	92.60	92.01
10	92.34	90.20	92.76	91.32	89.39	90.10	89.69	90.92	90.63
11	91.53	92.51	91.51	91.86	92.34	93.61	93.40	93.47	92.53
Statistics									
Min	88.32	87.98	89.75	87.25	87.96	87.11	88.46	88.37	89.01
Max	92.34	92.51	92.76	92.24	92.49	93.61	93.40	93.47	92.53
Average	90.49	90.47	91.32	90.45	90.33	89.98	90.52	91.12	90.70
Sigma	1.54	1.50	1.13	1.84	1.78	2.12	1.87	1.79	1.40

Drift Calculation

SFDR_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-334.0E-03	2.0E+00	-1.1E+00	-359.0E-03	-1.2E+00	139.0E-03	50.0E-03	690.0E-03
8	-	2.3E+00	733.0E-03	3.2E+00	457.0E-03	1.1E+00	44.0E-03	1.2E+00	312.0E-03
9	-	-902.0E-03	1.0E+00	-1.6E+00	1.3E+00	-2.3E+00	774.0E-03	1.4E+00	783.0E-03
10	-	-2.1E+00	420.0E-03	-1.0E+00	-2.9E+00	-2.2E+00	-2.6E+00	-1.4E+00	-1.7E+00
11	-	981.0E-03	-20.0E-03	331.0E-03	806.0E-03	2.1E+00	1.9E+00	1.9E+00	1.0E+00
Average	-	-11.8E-03	832.2E-03	-34.4E-03	-155.6E-03	-504.4E-03	34.2E-03	634.6E-03	216.4E-03
Sigma	-	1.5E+00	681.4E-03	1.8E+00	1.5E+00	1.8E+00	1.5E+00	1.2E+00	985.1E-03

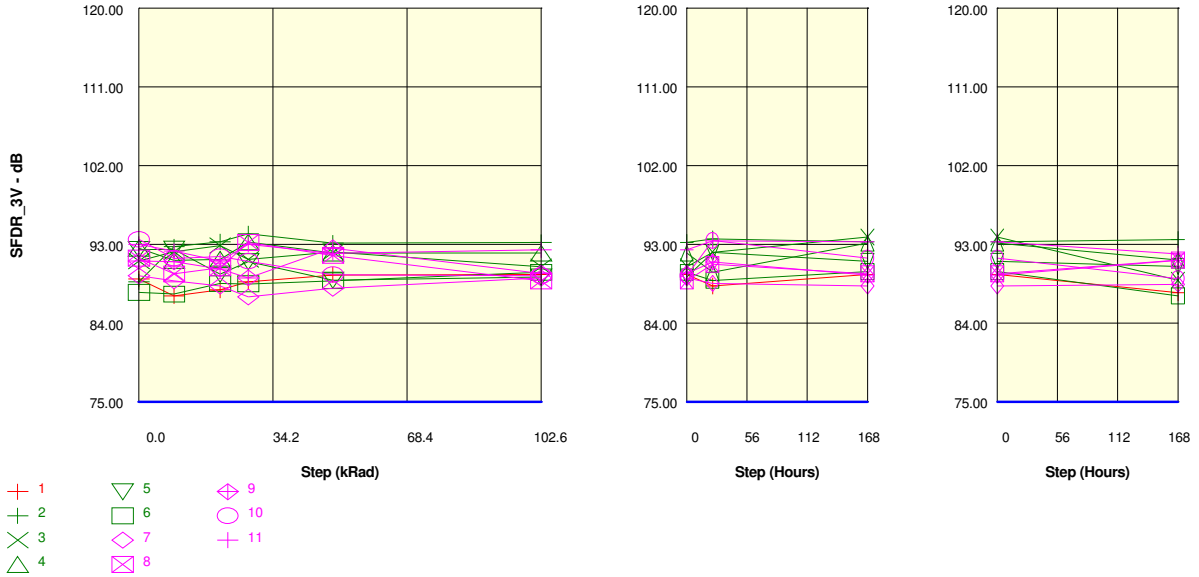
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN1

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	89.06	87.13	87.80	88.73	89.52	89.55	88.26	89.55	87.49
ON samples									
2	88.72	92.75	93.31	94.23	93.16	93.23	93.63	93.29	93.56
3	91.11	92.18	92.87	91.29	92.13	90.45	92.12	93.85	88.91
4	92.58	91.18	91.30	93.28	92.02	92.01	89.81	93.15	91.22
5	92.44	92.45	89.61	91.03	88.91	89.28	92.09	91.07	90.48
6	87.51	87.33	88.53	88.50	88.85	89.82	88.89	89.89	87.13
Statistics									
Min	87.51	87.33	88.53	88.50	88.85	89.28	88.89	89.89	87.13
Max	92.58	92.75	93.31	94.23	93.16	93.23	93.63	93.85	93.56
Average	90.47	91.17	91.12	91.67	91.01	90.96	91.31	92.25	90.26
Sigma	2.03	2.00	1.84	1.99	1.79	1.46	1.72	1.51	2.17

Drift Calculation

SFDR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	4.0E+00	4.6E+00	5.5E+00	4.4E+00	4.5E+00	4.9E+00	4.6E+00	4.8E+00
3	-	1.1E+00	1.8E+00	180.0E-03	1.0E+00	-660.0E-03	1.0E+00	2.7E+00	-2.2E+00
4	-	-1.4E+00	-1.3E+00	701.0E-03	-557.0E-03	-573.0E-03	-2.8E+00	569.0E-03	-1.4E+00
5	-	12.0E-03	-2.8E+00	-1.4E+00	-3.5E+00	-3.2E+00	-347.0E-03	-1.4E+00	-2.0E+00
6	-	-185.0E-03	1.0E+00	992.0E-03	1.3E+00	2.3E+00	1.4E+00	2.4E+00	-383.0E-03
Average	-	704.2E-03	653.8E-03	1.2E+00	543.2E-03	485.4E-03	836.6E-03	1.8E+00	-212.6E-03
Sigma	-	1.8E+00	2.6E+00	2.3E+00	2.6E+00	2.7E+00	2.5E+00	2.0E+00	2.6E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	89.06	87.13	87.80	88.73	89.52	89.55	88.26	89.55	87.49
OFF samples									
7	89.42	88.84	88.25	87.00	88.00	89.16	88.54	88.26	88.45
8	91.43	89.63	90.35	93.23	91.74	88.83	90.73	89.64	91.22
9	91.11	91.04	90.20	89.18	92.59	89.70	91.00	89.48	91.20
10	93.57	91.40	91.62	91.08	89.53	89.41	93.45	91.43	89.10
11	93.01	92.23	91.10	93.01	91.99	92.39	93.42	93.32	91.91
Statistics									
Min	89.42	88.84	88.25	87.00	88.00	88.83	88.54	88.26	88.45
Max	93.57	92.23	91.62	93.23	92.59	92.39	93.45	93.32	91.91
Average	91.71	90.63	90.30	90.70	90.77	89.90	91.43	90.43	90.38
Sigma	1.47	1.23	1.15	2.36	1.73	1.28	1.85	1.77	1.35

Drift Calculation

SFDR_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-573.0E-03	-1.2E+00	-2.4E+00	-1.4E+00	-251.0E-03	-875.0E-03	-1.2E+00	-964.0E-03
8	-	-1.8E+00	-1.1E+00	1.8E+00	304.0E-03	-2.6E+00	-703.0E-03	-1.8E+00	-214.0E-03
9	-	-70.0E-03	-904.0E-03	-1.9E+00	1.5E+00	-1.4E+00	-109.0E-03	-1.6E+00	90.0E-03
10	-	-2.2E+00	-2.0E+00	-2.5E+00	-4.0E+00	-4.2E+00	-125.0E-03	-2.1E+00	-4.5E+00
11	-	-782.0E-03	-1.9E+00	-4.0E-03	-1.0E+00	-619.0E-03	412.0E-03	312.0E-03	-1.1E+00
Average	-	-1.1E+00	-1.4E+00	-1.0E+00	-937.0E-03	-1.8E+00	-280.0E-03	-1.3E+00	-1.3E+00
Sigma	-	785.5E-03	440.3E-03	1.7E+00	1.9E+00	1.4E+00	461.5E-03	857.3E-03	1.6E+00

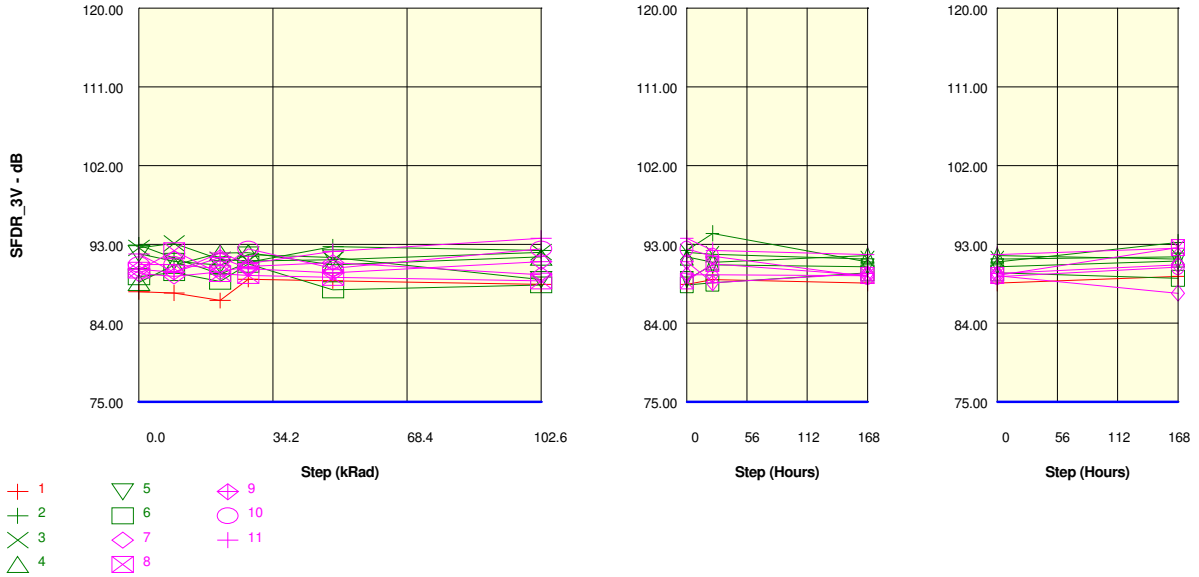
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN2

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	87.59	87.44	86.60	89.02	88.83	88.45	88.98	88.59	89.35
ON samples									
2	92.95	91.45	89.59	90.97	92.75	92.29	94.26	91.00	93.23
3	92.61	93.12	91.27	91.12	91.25	92.12	91.89	91.32	91.59
4	88.66	90.64	92.04	92.06	90.67	91.56	90.98	91.73	91.33
5	91.96	91.07	90.65	91.82	91.49	88.99	90.67	90.45	91.11
6	89.31	89.80	88.78	90.75	87.81	88.38	88.61	89.75	89.14
Statistics									
Min	88.66	89.80	88.78	90.75	87.81	88.38	88.61	89.75	89.14
Max	92.95	93.12	92.04	92.06	92.75	92.29	94.26	91.73	93.23
Average	91.10	91.22	90.47	91.35	90.79	90.67	91.28	90.85	91.28
Sigma	1.77	1.10	1.16	0.50	1.64	1.65	1.84	0.69	1.30

Drift Calculation

SFDR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-1.5E+00	-3.4E+00	-2.0E+00	-197.0E-03	-659.0E-03	1.3E+00	-1.9E+00	278.0E-03
3	-	514.0E-03	-1.3E+00	-1.5E+00	-1.4E+00	-490.0E-03	-724.0E-03	-1.3E+00	-1.0E+00
4	-	2.0E+00	3.4E+00	3.4E+00	2.0E+00	2.9E+00	2.3E+00	3.1E+00	2.7E+00
5	-	-887.0E-03	-1.3E+00	-134.0E-03	-464.0E-03	-3.0E+00	-1.3E+00	-1.5E+00	-850.0E-03
6	-	489.0E-03	-524.0E-03	1.4E+00	-1.5E+00	-926.0E-03	-701.0E-03	446.0E-03	-171.0E-03
Average	-	120.4E-03	-627.4E-03	250.0E-03	-302.4E-03	-427.0E-03	185.8E-03	-242.8E-03	181.0E-03
Sigma	-	1.2E+00	2.2E+00	2.0E+00	1.3E+00	1.9E+00	1.4E+00	1.8E+00	1.3E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	87.59	87.44	86.60	89.02	88.83	88.45	88.98	88.59	89.35
OFF samples									
7	89.67	89.37	89.86	90.49	90.93	89.52	89.52	89.41	87.44
8	90.06	92.28	89.65	89.47	89.23	88.82	90.79	89.45	92.64
9	90.14	89.85	91.49	90.25	89.77	91.04	88.62	89.67	90.68
10	90.68	90.70	90.22	92.48	90.27	92.49	91.66	89.31	90.42
11	91.89	89.83	92.04	90.82	92.22	93.72	92.33	91.86	92.58
Statistics									
Min	89.67	89.37	89.65	89.47	89.23	88.82	88.62	89.31	87.44
Max	91.89	92.28	92.04	92.48	92.22	93.72	92.33	91.86	92.64
Average	90.49	90.41	90.65	90.70	90.48	91.12	90.58	89.94	90.75
Sigma	0.77	1.03	0.94	1.00	1.03	1.81	1.36	0.96	1.90

Drift Calculation

SFDR_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-306.0E-03	188.0E-03	820.0E-03	1.3E+00	-149.0E-03	-150.0E-03	-259.0E-03	-2.2E+00
8	-	2.2E+00	-403.0E-03	-585.0E-03	-832.0E-03	-1.2E+00	735.0E-03	-607.0E-03	2.6E+00
9	-	-294.0E-03	1.4E+00	106.0E-03	-376.0E-03	895.0E-03	-1.5E+00	-471.0E-03	536.0E-03
10	-	18.0E-03	-463.0E-03	1.8E+00	-412.0E-03	1.8E+00	982.0E-03	-1.4E+00	-264.0E-03
11	-	-2.1E+00	152.0E-03	-1.1E+00	328.0E-03	1.8E+00	441.0E-03	-32.0E-03	694.0E-03
Average	-	-81.8E-03	164.8E-03	215.6E-03	-6.4E-03	629.8E-03	96.2E-03	-547.8E-03	263.0E-03
Sigma	-	1.4E+00	651.4E-03	1.0E+00	734.6E-03	1.2E+00	895.2E-03	454.9E-03	1.6E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

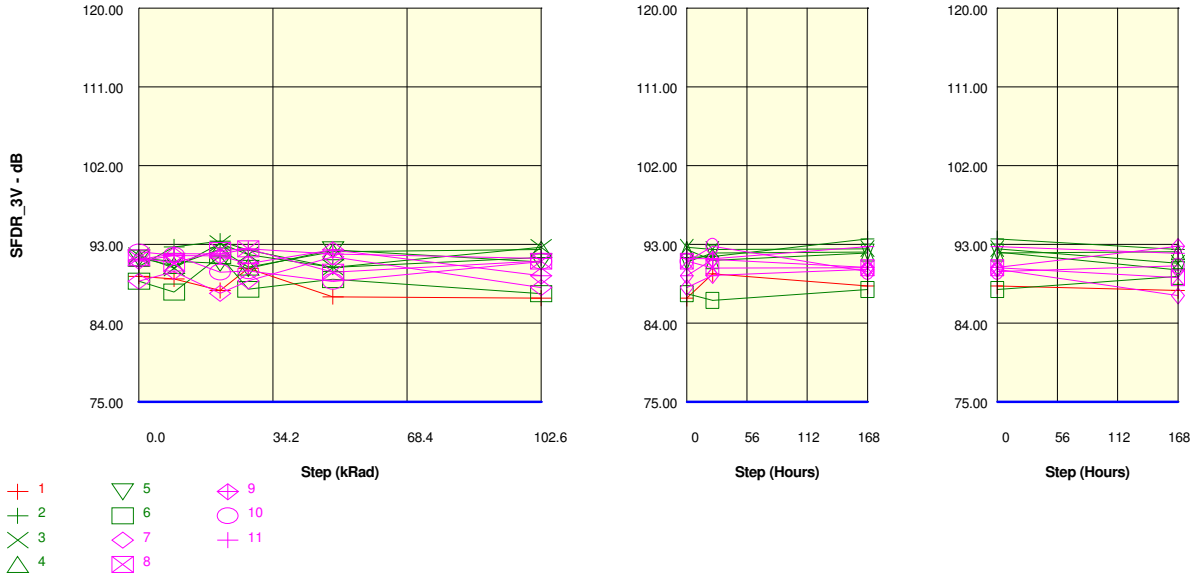
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN3

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	89.37	89.05	87.75	90.26	87.02	86.87	89.66	88.26	87.75
ON samples									
2	90.49	92.72	93.38	92.34	90.39	91.48	91.61	93.64	92.44
3	91.75	90.29	93.11	91.83	90.37	92.68	92.44	92.52	90.84
4	91.48	90.58	92.47	90.42	92.16	92.44	91.16	92.01	92.17
5	91.44	91.07	90.84	90.26	92.40	91.00	92.04	92.13	90.11
6	88.81	87.56	91.71	87.88	89.00	87.37	86.61	87.86	89.34
Statistics									
Min	88.81	87.56	90.84	87.88	89.00	87.37	86.61	87.86	89.34
Max	91.75	92.72	93.38	92.34	92.40	92.68	92.44	93.64	92.44
Average	90.79	90.45	92.30	90.55	90.86	90.99	90.77	91.63	90.98
Sigma	1.08	1.67	0.93	1.56	1.26	1.91	2.12	1.97	1.18

Drift Calculation

SFDR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	2.2E+00	2.9E+00	1.9E+00	-96.0E-03	999.0E-03	1.1E+00	3.2E+00	2.0E+00
3	-	-1.5E+00	1.4E+00	86.0E-03	-1.4E+00	927.0E-03	691.0E-03	773.0E-03	-910.0E-03
4	-	-905.0E-03	988.0E-03	-1.1E+00	676.0E-03	954.0E-03	-323.0E-03	531.0E-03	683.0E-03
5	-	-361.0E-03	-593.0E-03	-1.2E+00	965.0E-03	-433.0E-03	606.0E-03	693.0E-03	-1.3E+00
6	-	-1.2E+00	2.9E+00	-933.0E-03	195.0E-03	-1.4E+00	-2.2E+00	-954.0E-03	530.0E-03
Average	-	-346.6E-03	1.5E+00	-246.4E-03	71.8E-03	202.2E-03	-20.0E-03	839.2E-03	187.4E-03
Sigma	-	1.3E+00	1.3E+00	1.1E+00	814.5E-03	981.1E-03	1.2E+00	1.3E+00	1.2E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	89.37	89.05	87.75	90.26	87.02	86.87	89.66	88.26	87.75
OFF samples									
7	88.80	89.90	87.42	88.83	91.57	88.07	89.46	90.15	87.14
8	91.48	90.89	92.33	92.51	89.82	91.09	90.31	90.34	89.19
9	91.09	91.73	91.67	90.80	92.37	89.40	91.30	90.35	92.77
10	92.15	91.77	89.82	89.96	88.76	91.06	92.78	89.89	90.55
11	91.27	91.96	91.89	92.51	91.89	91.40	91.37	92.75	91.99
Statistics									
Min	88.80	89.90	87.42	88.83	88.76	88.07	89.46	89.89	87.14
Max	92.15	91.96	92.33	92.51	92.37	91.40	92.78	92.75	92.77
Average	90.96	91.25	90.63	90.92	90.88	90.21	91.04	90.70	90.33
Sigma	1.14	0.77	1.82	1.44	1.37	1.28	1.12	1.04	2.01

Drift Calculation

SFDR_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	1.1E+00	-1.4E+00	38.0E-03	2.8E+00	-727.0E-03	665.0E-03	1.3E+00	-1.7E+00
8	-	-595.0E-03	851.0E-03	1.0E+00	-1.7E+00	-388.0E-03	-1.2E+00	-1.1E+00	-2.3E+00
9	-	638.0E-03	586.0E-03	-285.0E-03	1.3E+00	-1.7E+00	210.0E-03	-739.0E-03	1.7E+00
10	-	-380.0E-03	-2.3E+00	-2.2E+00	-3.4E+00	-1.1E+00	631.0E-03	-2.3E+00	-1.6E+00
11	-	686.0E-03	620.0E-03	1.2E+00	623.0E-03	134.0E-03	103.0E-03	1.5E+00	720.0E-03
Average	-	290.2E-03	-329.2E-03	-33.6E-03	-73.2E-03	-751.0E-03	87.4E-03	-260.8E-03	-629.8E-03
Sigma	-	658.7E-03	1.3E+00	1.2E+00	2.2E+00	616.4E-03	667.9E-03	1.5E+00	1.5E+00

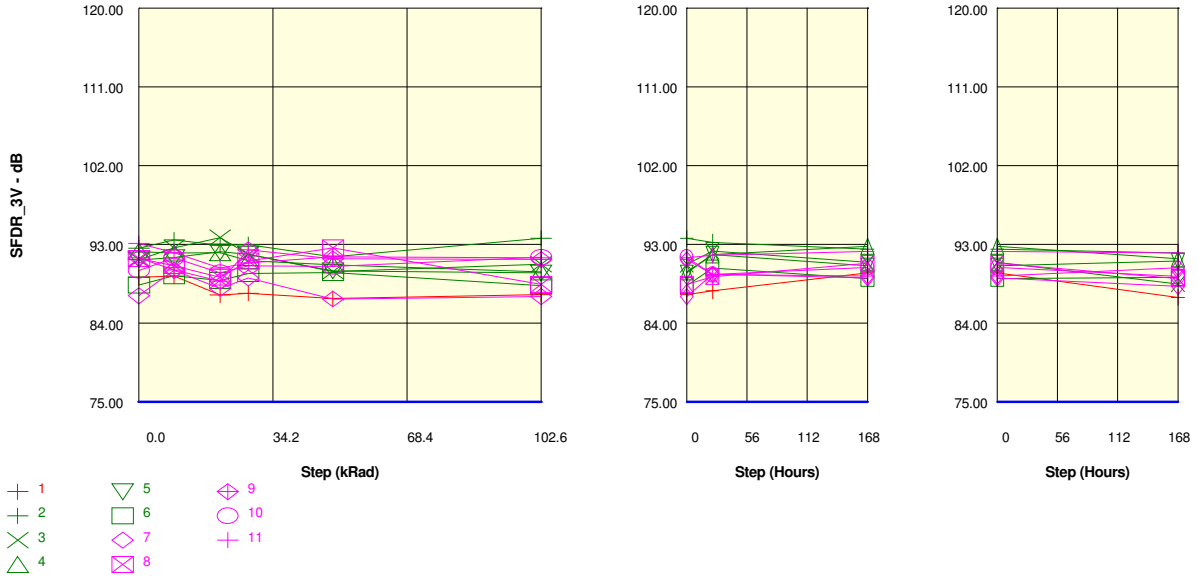
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN4

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	89.23	89.39	87.23	87.43	86.81	87.29	87.70	89.73	86.95
ON samples									
2	92.59	93.51	92.90	92.98	91.59	93.69	93.26	92.47	92.02
3	91.26	92.60	93.79	91.87	89.91	90.75	92.24	90.94	88.49
4	92.19	92.02	92.05	91.15	90.66	89.86	91.82	92.79	91.36
5	91.24	91.49	92.15	91.88	89.98	89.74	91.85	90.55	91.09
6	88.36	89.42	88.89	89.69	89.79	88.30	90.32	89.12	89.22
Statistics									
Min	88.36	89.42	88.89	89.69	89.79	88.30	90.32	89.12	88.49
Max	92.59	93.51	93.79	92.98	91.59	93.69	93.26	92.79	92.02
Average	91.13	91.81	91.96	91.51	90.39	90.47	91.90	91.17	90.44
Sigma	1.48	1.37	1.66	1.08	0.67	1.79	0.95	1.34	1.34

Drift Calculation

SFDR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	919.0E-03	314.0E-03	389.0E-03	-997.0E-03	1.1E+00	669.0E-03	-121.0E-03	-567.0E-03
3	-	1.3E+00	2.5E+00	612.0E-03	-1.3E+00	-514.0E-03	974.0E-03	-320.0E-03	-2.8E+00
4	-	-172.0E-03	-138.0E-03	-1.0E+00	-1.5E+00	-2.3E+00	-368.0E-03	599.0E-03	-833.0E-03
5	-	248.0E-03	915.0E-03	639.0E-03	-1.3E+00	-1.5E+00	616.0E-03	-690.0E-03	-149.0E-03
6	-	1.1E+00	530.0E-03	1.3E+00	1.4E+00	-60.0E-03	2.0E+00	757.0E-03	865.0E-03
Average	-	679.0E-03	829.4E-03	386.6E-03	-740.8E-03	-659.6E-03	769.8E-03	45.0E-03	-690.8E-03
Sigma	-	556.3E-03	914.0E-03	781.6E-03	1.1E+00	1.2E+00	745.9E-03	550.4E-03	1.2E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	89.23	89.39	87.23	87.43	86.81	87.29	87.70	89.73	86.95
OFF samples									
7	87.14	90.05	87.97	89.17	86.76	87.04	89.59	89.17	88.20
8	91.41	90.57	89.25	91.11	92.61	88.43	89.33	90.82	89.12
9	91.48	90.07	88.81	92.40	91.35	91.28	89.58	89.39	90.34
10	90.01	91.48	89.75	90.56	90.47	91.54	89.55	90.37	89.34
11	93.11	92.06	90.29	90.90	91.57	91.47	91.77	92.21	92.04
Statistics									
Min	87.14	90.05	87.97	89.17	86.76	87.04	89.33	89.17	88.20
Max	93.11	92.06	90.29	92.40	92.61	91.54	91.77	92.21	92.04
Average	90.63	90.84	89.21	90.83	90.55	89.95	89.96	90.39	89.81
Sigma	2.00	0.80	0.79	1.04	2.01	1.86	0.91	1.09	1.31

Drift Calculation

SFDR_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	2.9E+00	835.0E-03	2.0E+00	-375.0E-03	-95.0E-03	2.5E+00	2.0E+00	1.1E+00
8	-	-837.0E-03	-2.2E+00	-298.0E-03	1.2E+00	-3.0E+00	-2.1E+00	-586.0E-03	-2.3E+00
9	-	-1.4E+00	-2.7E+00	922.0E-03	-132.0E-03	-203.0E-03	-1.9E+00	-2.1E+00	-1.1E+00
10	-	1.5E+00	-258.0E-03	556.0E-03	464.0E-03	1.5E+00	-460.0E-03	364.0E-03	-664.0E-03
11	-	-1.1E+00	-2.8E+00	-2.2E+00	-1.5E+00	-1.6E+00	-1.3E+00	-900.0E-03	-1.1E+00
Average	-	217.2E-03	-1.4E+00	200.8E-03	-76.6E-03	-676.8E-03	-663.0E-03	-235.6E-03	-819.4E-03
Sigma	-	1.7E+00	1.4E+00	1.4E+00	911.1E-03	1.5E+00	1.7E+00	1.4E+00	1.1E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

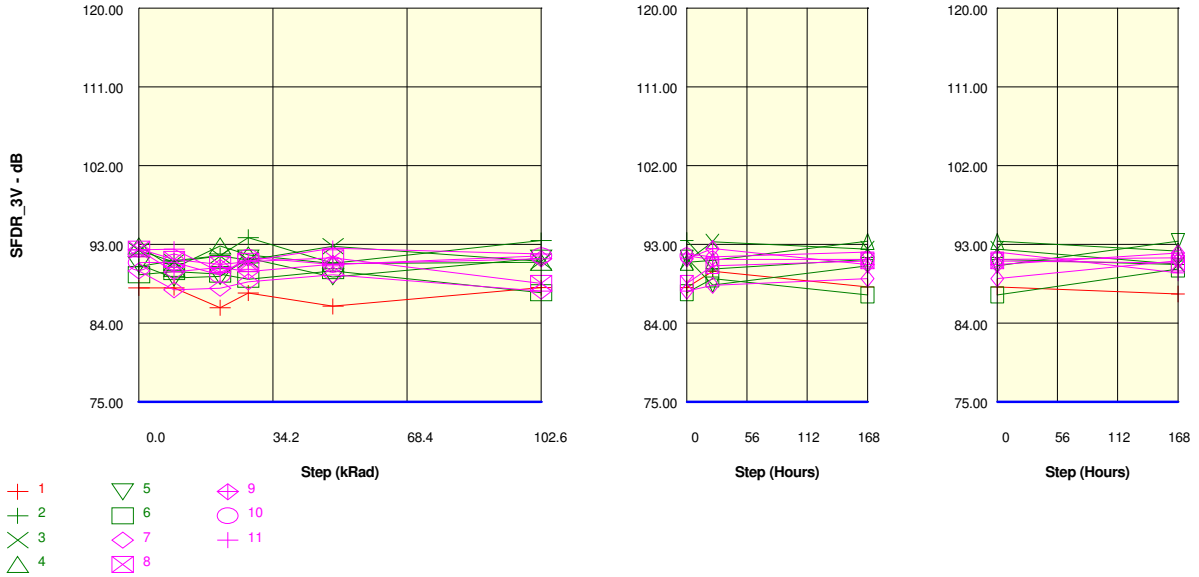
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN5

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	88.02	88.04	85.76	87.46	85.93	88.06	89.94	88.13	87.35
ON samples									
2	90.48	91.13	91.72	93.80	90.84	93.44	90.20	91.31	90.72
3	92.33	91.00	91.68	91.23	92.78	91.07	93.29	92.47	90.74
4	92.83	90.29	92.83	91.81	90.82	90.97	91.16	93.36	92.25
5	90.70	89.16	89.33	91.44	89.30	91.44	88.37	90.58	93.36
6	89.54	89.90	89.60	89.01	89.98	87.48	89.08	87.22	90.19
Statistics									
Min	89.54	89.16	89.33	89.01	89.30	87.48	88.37	87.22	90.19
Max	92.83	91.13	92.83	93.80	92.78	93.44	93.29	93.36	93.36
Average	91.18	90.29	91.03	91.46	90.74	90.88	90.42	90.99	91.45
Sigma	1.22	0.73	1.35	1.52	1.17	1.92	1.72	2.11	1.18

Drift Calculation

SFDR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	649.0E-03	1.2E+00	3.3E+00	352.0E-03	3.0E+00	-283.0E-03	831.0E-03	232.0E-03
3	-	-1.3E+00	-653.0E-03	-1.1E+00	445.0E-03	-1.3E+00	962.0E-03	143.0E-03	-1.6E+00
4	-	-2.5E+00	3.0E-03	-1.0E+00	-2.0E+00	-1.9E+00	-1.7E+00	530.0E-03	-580.0E-03
5	-	-1.5E+00	-1.4E+00	740.0E-03	-1.4E+00	745.0E-03	-2.3E+00	-114.0E-03	2.7E+00
6	-	359.0E-03	62.0E-03	-529.0E-03	442.0E-03	-2.1E+00	-463.0E-03	-2.3E+00	646.0E-03
Average	-	-882.8E-03	-142.2E-03	280.2E-03	-433.0E-03	-297.4E-03	-756.2E-03	-185.6E-03	275.0E-03
Sigma	-	1.2E+00	863.7E-03	1.7E+00	1.1E+00	1.9E+00	1.1E+00	1.1E+00	1.4E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

SFDR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	88.02	88.04	85.76	87.46	85.93	88.06	89.94	88.13	87.35
OFF samples									
7	89.97	87.82	87.99	88.72	89.54	87.67	88.33	89.09	91.14
8	92.49	91.29	90.71	91.05	91.47	88.56	90.57	91.12	90.88
9	92.40	89.86	90.39	89.92	90.75	91.36	92.55	90.68	92.05
10	90.92	90.97	89.49	91.54	90.70	91.70	91.29	91.27	91.47
11	92.38	92.47	89.83	91.11	92.56	91.93	91.57	92.13	89.74
Statistics									
Min	89.97	87.82	87.99	88.72	89.54	87.67	88.33	89.09	89.74
Max	92.49	92.47	90.71	91.54	92.56	91.93	92.55	92.13	92.05
Average	91.63	90.48	89.68	90.47	91.00	90.24	90.86	90.86	91.06
Sigma	1.01	1.57	0.95	1.02	0.99	1.77	1.41	1.00	0.77

Drift Calculation

SFDR_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-2.2E+00	-2.0E+00	-1.3E+00	-435.0E-03	-2.3E+00	-1.6E+00	-886.0E-03	1.2E+00
8	-	-1.2E+00	-1.8E+00	-1.4E+00	-1.0E+00	-3.9E+00	-1.9E+00	-1.4E+00	-1.6E+00
9	-	-2.5E+00	-2.0E+00	-2.5E+00	-1.6E+00	-1.0E+00	150.0E-03	-1.7E+00	-347.0E-03
10	-	47.0E-03	-1.4E+00	616.0E-03	-224.0E-03	784.0E-03	372.0E-03	354.0E-03	552.0E-03
11	-	83.0E-03	-2.6E+00	-1.3E+00	177.0E-03	-458.0E-03	-817.0E-03	-258.0E-03	-2.6E+00
Average	-	-1.2E+00	-2.0E+00	-1.2E+00	-629.6E-03	-1.4E+00	-770.8E-03	-775.0E-03	-577.0E-03
Sigma	-	1.1E+00	365.3E-03	999.8E-03	638.7E-03	1.6E+00	919.7E-03	747.2E-03	1.4E+00

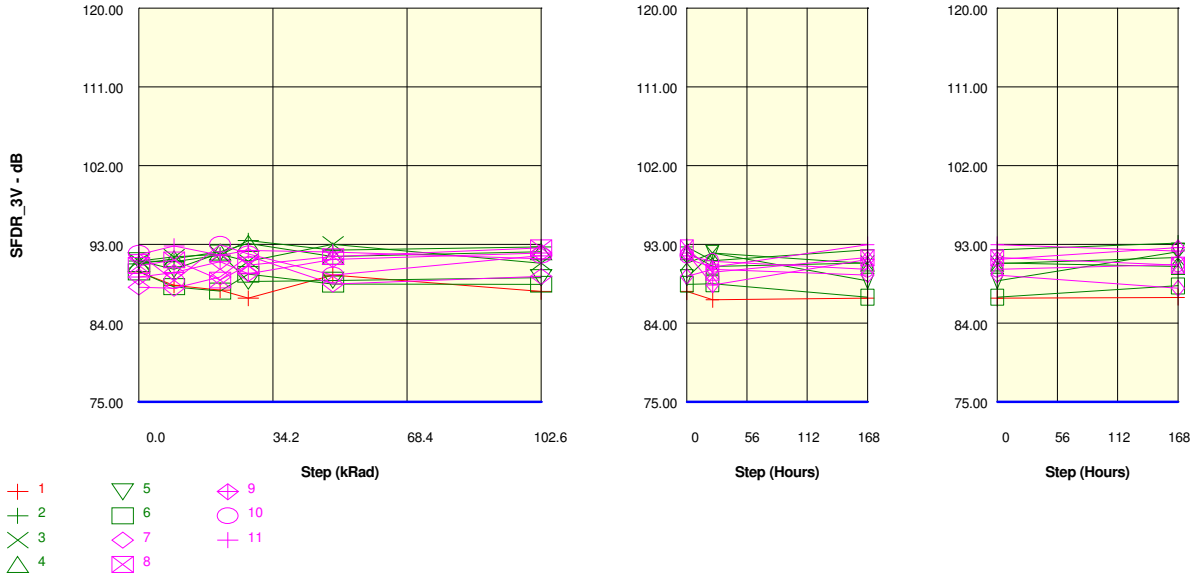
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN6

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	89.85	88.34	87.79	86.85	89.51	87.61	86.70	86.86	86.96
ON samples									
2	91.12	91.04	91.78	93.43	92.35	92.73	91.14	92.40	93.15
3	91.10	91.56	91.87	91.08	93.01	90.86	92.01	90.81	91.49
4	90.78	91.37	92.15	93.12	91.64	92.17	90.51	90.87	90.48
5	91.15	90.15	92.03	88.78	88.90	89.21	92.01	88.82	92.19
6	89.88	88.17	87.68	89.60	88.47	88.45	88.51	86.98	88.27
Statistics									
Min	89.88	88.17	87.68	88.78	88.47	88.45	88.51	86.98	88.27
Max	91.15	91.56	92.15	93.43	93.01	92.73	92.01	92.40	93.15
Average	90.81	90.46	91.10	91.20	90.87	90.68	90.83	89.98	91.12
Sigma	0.48	1.24	1.72	1.85	1.84	1.65	1.29	1.88	1.67

Drift Calculation

SFDR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-86.0E-03	654.0E-03	2.3E+00	1.2E+00	1.6E+00	12.0E-03	1.3E+00	2.0E+00
3	-	454.0E-03	771.0E-03	-25.0E-03	1.9E+00	-248.0E-03	910.0E-03	-289.0E-03	389.0E-03
4	-	584.0E-03	1.4E+00	2.3E+00	860.0E-03	1.4E+00	-279.0E-03	87.0E-03	-307.0E-03
5	-	-997.0E-03	883.0E-03	-2.4E+00	-2.2E+00	-1.9E+00	860.0E-03	-2.3E+00	1.0E+00
6	-	-1.7E+00	-2.2E+00	-273.0E-03	-1.4E+00	-1.4E+00	-1.4E+00	-2.9E+00	-1.6E+00
Average	-	-351.0E-03	296.4E-03	396.4E-03	66.6E-03	-124.6E-03	27.2E-03	-830.0E-03	308.8E-03
Sigma	-	878.3E-03	1.3E+00	1.8E+00	1.6E+00	1.4E+00	837.9E-03	1.6E+00	1.2E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

SFDR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	89.85	88.34	87.79	86.85	89.51	87.61	86.70	86.86	86.96
OFF samples									
7	88.12	88.00	89.29	91.69	88.49	89.34	90.16	89.52	88.00
8	90.58	91.24	88.94	90.63	91.60	92.61	89.83	91.49	90.64
9	89.29	89.80	91.02	89.66	91.28	92.05	88.37	91.31	92.62
10	91.99	88.83	92.99	91.91	89.51	91.73	91.08	90.15	90.72
11	91.85	92.82	91.75	92.30	92.13	91.38	90.41	92.97	92.26
Statistics									
Min	88.12	88.00	88.94	89.66	88.49	89.34	88.37	89.52	88.00
Max	91.99	92.82	92.99	92.30	92.13	92.61	91.08	92.97	92.62
Average	90.36	90.14	90.80	91.24	90.60	91.42	89.97	91.09	90.85
Sigma	1.49	1.72	1.52	0.96	1.37	1.11	0.90	1.19	1.63

Drift Calculation

SFDR_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-117.0E-03	1.2E+00	3.6E+00	371.0E-03	1.2E+00	2.0E+00	1.4E+00	-115.0E-03
8	-	656.0E-03	-1.6E+00	53.0E-03	1.0E+00	2.0E+00	-747.0E-03	910.0E-03	56.0E-03
9	-	509.0E-03	1.7E+00	373.0E-03	2.0E+00	2.8E+00	-918.0E-03	2.0E+00	3.3E+00
10	-	-3.2E+00	1.0E+00	-79.0E-03	-2.5E+00	-256.0E-03	-914.0E-03	-1.8E+00	-1.3E+00
11	-	969.0E-03	-92.0E-03	449.0E-03	280.0E-03	-470.0E-03	-1.4E+00	1.1E+00	411.0E-03
Average	-	-228.0E-03	435.4E-03	873.2E-03	236.4E-03	1.1E+00	-395.2E-03	721.6E-03	483.6E-03
Sigma	-	1.5E+00	1.2E+00	1.4E+00	1.5E+00	1.3E+00	1.2E+00	1.3E+00	1.5E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

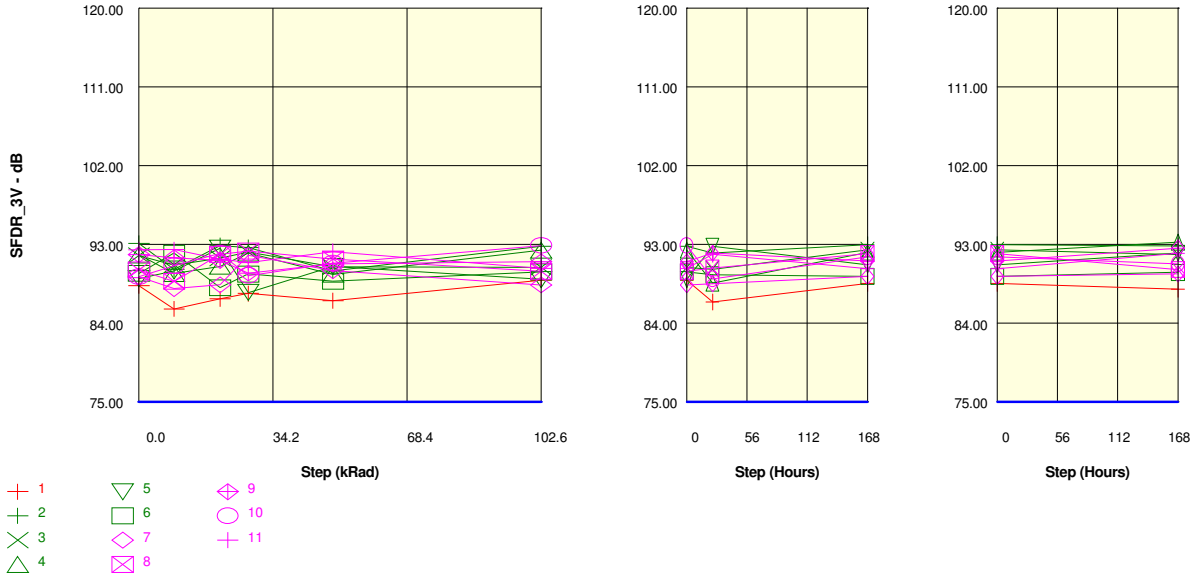
Parameter : Peak Harmonic or spurious noise : SFDR_3VIN7

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	88.29	85.63	86.78	87.40	86.57	88.92	86.42	88.54	87.88
ON samples									
2	93.13	90.16	92.87	92.65	89.96	92.78	92.05	92.98	92.84
3	91.74	90.66	91.43	92.13	90.45	90.38	90.18	92.36	91.84
4	91.82	89.68	90.51	92.02	89.58	92.34	88.58	92.12	93.26
5	89.09	89.96	92.58	87.50	90.50	89.00	92.78	90.67	92.01
6	89.70	92.01	88.06	89.62	88.80	89.85	89.54	89.36	89.81
Statistics									
Min	89.09	89.68	88.06	87.50	88.80	89.00	88.58	89.36	89.81
Max	93.13	92.01	92.87	92.65	90.50	92.78	92.78	92.98	93.26
Average	91.09	90.49	91.09	90.78	89.86	90.87	90.63	91.50	91.95
Sigma	1.49	0.82	1.73	1.95	0.63	1.45	1.56	1.31	1.19

Drift Calculation

SFDR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-3.0E+00	-255.0E-03	-472.0E-03	-3.2E+00	-349.0E-03	-1.1E+00	-141.0E-03	-287.0E-03
3	-	-1.1E+00	-307.0E-03	384.0E-03	-1.3E+00	-1.4E+00	-1.6E+00	622.0E-03	94.0E-03
4	-	-2.1E+00	-1.3E+00	197.0E-03	-2.2E+00	525.0E-03	-3.2E+00	299.0E-03	1.4E+00
5	-	867.0E-03	3.5E+00	-1.6E+00	1.4E+00	-86.0E-03	3.7E+00	1.6E+00	2.9E+00
6	-	2.3E+00	-1.6E+00	-76.0E-03	-894.0E-03	158.0E-03	-161.0E-03	-337.0E-03	114.0E-03
Average	-	-601.8E-03	-5.0E-03	-311.0E-03	-1.2E+00	-222.2E-03	-469.2E-03	403.6E-03	857.2E-03
Sigma	-	1.9E+00	1.8E+00	700.4E-03	1.5E+00	637.2E-03	2.3E+00	674.7E-03	1.2E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

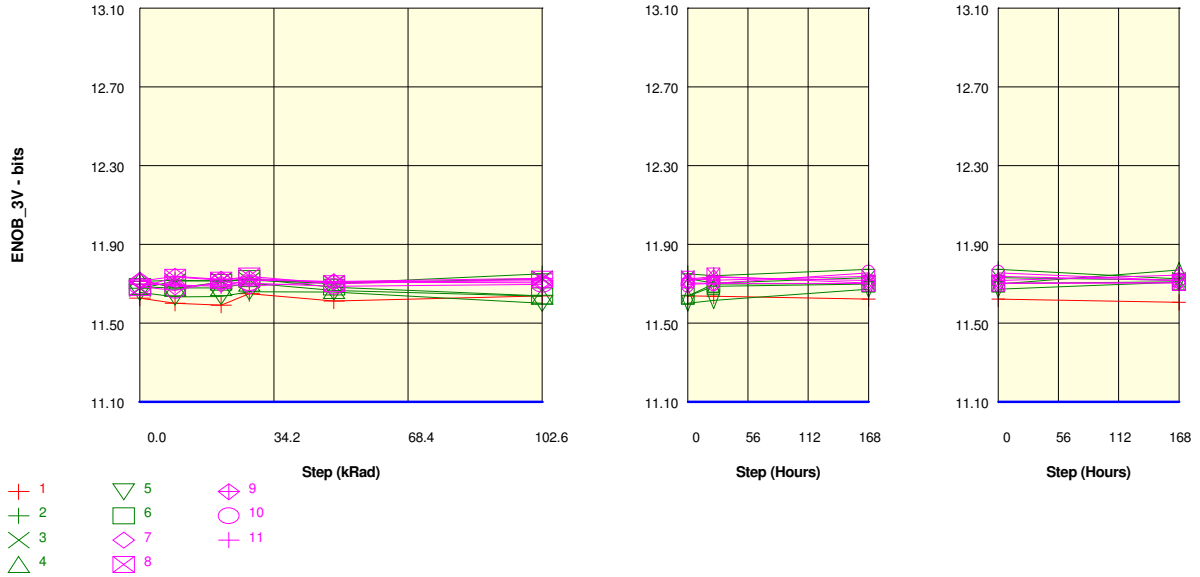
Measurements

SFDR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	88.29	85.63	86.78	87.40	86.57	88.92	86.42	88.54	87.88
OFF samples									
7	89.31	87.96	88.39	91.76	90.01	88.38	88.51	89.34	89.63
8	90.10	88.78	91.87	92.24	91.34	89.94	90.32	91.95	90.13
9	91.84	91.47	91.18	89.73	90.77	91.02	92.01	91.10	92.59
10	89.31	90.57	91.98	89.44	90.84	92.87	89.05	91.56	90.78
11	92.39	92.42	91.34	90.93	92.19	90.27	91.87	90.22	92.00
Statistics									
Min	89.31	87.96	88.39	89.44	90.01	88.38	88.51	89.34	89.63
Max	92.39	92.42	91.98	92.24	92.19	92.87	92.01	91.95	92.59
Average	90.59	90.24	90.95	90.82	91.03	90.50	90.35	90.83	91.03
Sigma	1.29	1.65	1.32	1.09	0.72	1.47	1.43	0.94	1.12

Drift Calculation

SFDR_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.3E+00	-918.0E-03	2.4E+00	704.0E-03	-925.0E-03	-799.0E-03	30.0E-03	321.0E-03
8	-	-1.3E+00	1.8E+00	2.1E+00	1.2E+00	-163.0E-03	220.0E-03	1.8E+00	26.0E-03
9	-	-370.0E-03	-651.0E-03	-2.1E+00	-1.1E+00	-818.0E-03	173.0E-03	-732.0E-03	756.0E-03
10	-	1.3E+00	2.7E+00	134.0E-03	1.5E+00	3.6E+00	-262.0E-03	2.2E+00	1.5E+00
11	-	25.0E-03	-1.1E+00	-1.5E+00	-207.0E-03	-2.1E+00	-522.0E-03	-2.2E+00	-391.0E-03
Average	-	-349.2E-03	363.8E-03	229.4E-03	441.4E-03	-93.2E-03	-238.0E-03	243.2E-03	436.6E-03
Sigma	-	967.2E-03	1.5E+00	1.8E+00	958.8E-03	1.9E+00	393.6E-03	1.6E+00	638.6E-03

Parameter : Effective Number of bit : ENOB_3VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.63	11.60	11.59	11.65	11.61	11.64	11.64	11.62	11.61
ON samples									
2	11.71	11.72	11.71	11.72	11.70	11.75	11.74	11.77	11.73
3	11.68	11.71	11.72	11.72	11.70	11.73	11.70	11.73	11.72
4	11.72	11.68	11.68	11.70	11.67	11.64	11.69	11.70	11.77
5	11.66	11.63	11.64	11.66	11.66	11.60	11.62	11.67	11.71
6	11.69	11.68	11.71	11.73	11.68	11.64	11.70	11.70	11.71
Statistics									
Min	11.66	11.63	11.64	11.66	11.66	11.60	11.62	11.67	11.71
Max	11.72	11.72	11.72	11.73	11.70	11.75	11.74	11.77	11.77
Average	11.69	11.68	11.69	11.71	11.68	11.67	11.69	11.72	11.73
Sigma	0.02	0.03	0.03	0.02	0.02	0.06	0.04	0.03	0.02

Drift Calculation

ENOB_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	7.0E-03	2.0E-03	13.0E-03	-8.0E-03	40.0E-03	31.0E-03	62.0E-03	14.0E-03
3	-	37.0E-03	41.0E-03	43.0E-03	27.0E-03	51.0E-03	28.0E-03	55.0E-03	43.0E-03
4	-	-39.0E-03	-38.0E-03	-14.0E-03	-52.0E-03	-81.0E-03	-31.0E-03	-19.0E-03	52.0E-03
5	-	-23.0E-03	-21.0E-03	4.0E-03	2.0E-03	-55.0E-03	-41.0E-03	16.0E-03	53.0E-03
6	-	-8.0E-03	22.0E-03	40.0E-03	-3.0E-03	-47.0E-03	13.0E-03	16.0E-03	24.0E-03
Average	-	-5.2E-03	1.2E-03	17.2E-03	-6.8E-03	-18.4E-03	0.0E+00	26.0E-03	37.2E-03
Sigma	-	26.1E-03	28.4E-03	21.7E-03	25.6E-03	53.5E-03	30.2E-03	29.5E-03	15.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

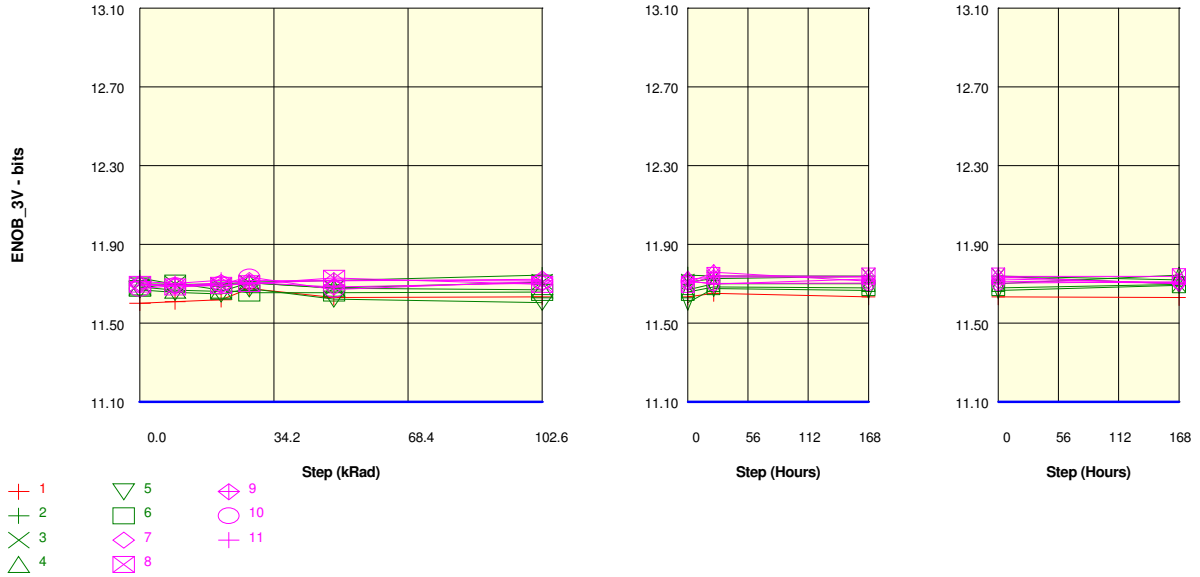
Measurements

ENOB_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.63	11.60	11.59	11.65	11.61	11.64	11.64	11.62	11.61
OFF samples									
7	11.72	11.68	11.70	11.69	11.71	11.71	11.70	11.70	11.71
8	11.68	11.73	11.72	11.74	11.70	11.72	11.74	11.70	11.71
9	11.71	11.74	11.72	11.73	11.71	11.71	11.73	11.72	11.75
10	11.69	11.67	11.71	11.70	11.69	11.70	11.70	11.76	11.72
11	11.70	11.69	11.69	11.72	11.71	11.73	11.72	11.74	11.72
Statistics									
Min	11.68	11.67	11.69	11.69	11.69	11.70	11.70	11.70	11.71
Max	11.72	11.74	11.72	11.74	11.71	11.73	11.74	11.76	11.75
Average	11.70	11.70	11.71	11.72	11.70	11.71	11.72	11.72	11.72
Sigma	0.02	0.03	0.01	0.02	0.01	0.01	0.01	0.02	0.01

Drift Calculation

ENOB_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-35.0E-03	-20.0E-03	-30.0E-03	-11.0E-03	-14.0E-03	-16.0E-03	-16.0E-03	-13.0E-03
8	-	54.0E-03	38.0E-03	59.0E-03	21.0E-03	43.0E-03	59.0E-03	24.0E-03	26.0E-03
9	-	25.0E-03	10.0E-03	14.0E-03	-3.0E-03	1.0E-03	19.0E-03	4.0E-03	32.0E-03
10	-	-20.0E-03	25.0E-03	18.0E-03	1000.0E-06	10.0E-03	17.0E-03	69.0E-03	30.0E-03
11	-	-7.0E-03	-12.0E-03	18.0E-03	11.0E-03	28.0E-03	19.0E-03	38.0E-03	17.0E-03
Average	-	3.4E-03	8.2E-03	15.8E-03	3.8E-03	13.6E-03	19.6E-03	23.8E-03	18.4E-03
Sigma	-	32.1E-03	21.8E-03	28.2E-03	11.1E-03	20.0E-03	23.8E-03	29.1E-03	16.5E-03

Parameter : Effective Number of bit : ENOB_3VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.60	11.61	11.62	11.68	11.63	11.63	11.65	11.63	11.63
ON samples									
2	11.73	11.70	11.70	11.71	11.72	11.74	11.74	11.74	11.72
3	11.70	11.70	11.69	11.71	11.68	11.71	11.73	11.74	11.70
4	11.68	11.67	11.66	11.71	11.68	11.67	11.70	11.70	11.74
5	11.67	11.66	11.65	11.68	11.62	11.61	11.68	11.67	11.69
6	11.68	11.70	11.67	11.65	11.65	11.66	11.69	11.68	11.70
Statistics									
Min	11.67	11.66	11.65	11.65	11.62	11.61	11.68	11.67	11.69
Max	11.73	11.70	11.70	11.71	11.72	11.74	11.74	11.74	11.74
Average	11.69	11.68	11.67	11.69	11.67	11.68	11.71	11.71	11.71
Sigma	0.02	0.02	0.02	0.02	0.03	0.05	0.02	0.03	0.02

Drift Calculation

ENOB_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-34.0E-03	-31.0E-03	-22.0E-03	-13.0E-03	14.0E-03	10.0E-03	10.0E-03	-10.0E-03
3	-	1000.0E-06	-8.0E-03	7.0E-03	-19.0E-03	11.0E-03	28.0E-03	41.0E-03	0.0E+00
4	-	-16.0E-03	-22.0E-03	22.0E-03	-7.0E-03	-14.0E-03	17.0E-03	17.0E-03	60.0E-03
5	-	-14.0E-03	-22.0E-03	5.0E-03	-48.0E-03	-65.0E-03	6.0E-03	-4.0E-03	22.0E-03
6	-	27.0E-03	-9.0E-03	-23.0E-03	-23.0E-03	-20.0E-03	8.0E-03	3.0E-03	19.0E-03
Average	-	-7.2E-03	-18.4E-03	-2.2E-03	-22.0E-03	-14.8E-03	13.8E-03	13.4E-03	18.2E-03
Sigma	-	20.4E-03	8.7E-03	17.6E-03	14.1E-03	28.4E-03	8.0E-03	15.5E-03	24.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

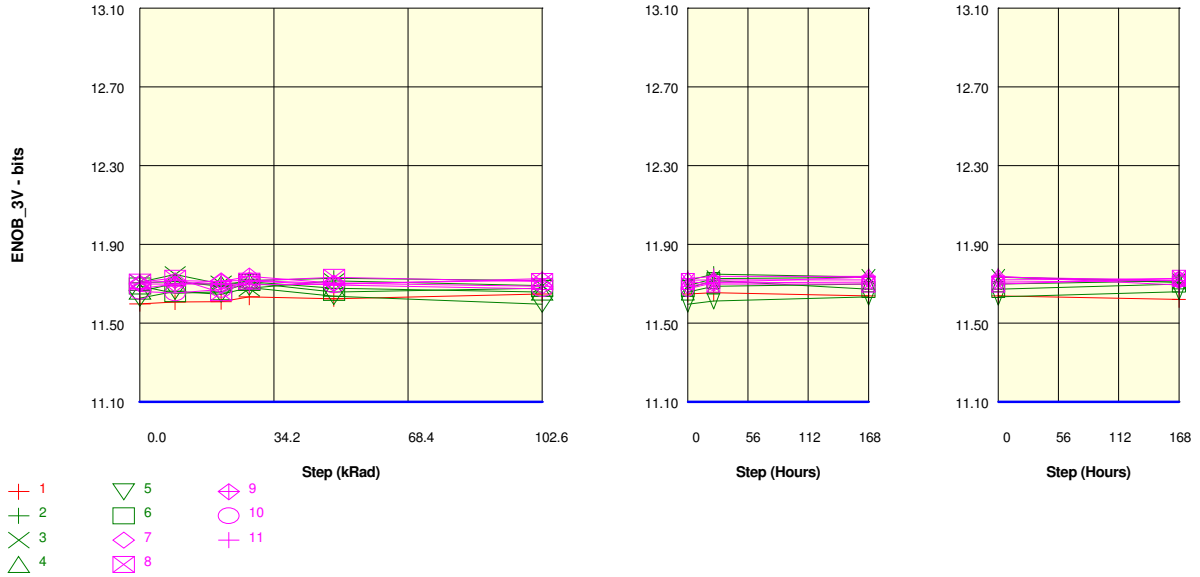
Measurements

ENOB_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.60	11.61	11.62	11.68	11.63	11.63	11.65	11.63	11.63
OFF samples									
7	11.70	11.69	11.71	11.72	11.72	11.72	11.73	11.74	11.70
8	11.70	11.68	11.69	11.70	11.73	11.70	11.74	11.74	11.74
9	11.69	11.69	11.69	11.71	11.68	11.70	11.76	11.71	11.70
10	11.68	11.69	11.70	11.74	11.67	11.71	11.70	11.70	11.71
11	11.71	11.70	11.72	11.70	11.72	11.72	11.70	11.73	11.71
Statistics									
Min	11.68	11.68	11.69	11.70	11.67	11.70	11.70	11.70	11.70
Max	11.71	11.70	11.72	11.74	11.73	11.72	11.76	11.74	11.74
Average	11.70	11.69	11.70	11.71	11.70	11.71	11.73	11.72	11.71
Sigma	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01

Drift Calculation

ENOB_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-11.0E-03	5.0E-03	16.0E-03	14.0E-03	23.0E-03	33.0E-03	34.0E-03	0.0E+00
8	-	-14.0E-03	-6.0E-03	3.0E-03	31.0E-03	-1.0E-03	44.0E-03	41.0E-03	39.0E-03
9	-	-1.0E-03	-3.0E-03	13.0E-03	-10.0E-03	10.0E-03	64.0E-03	19.0E-03	10.0E-03
10	-	16.0E-03	24.0E-03	60.0E-03	-4.0E-03	36.0E-03	28.0E-03	29.0E-03	35.0E-03
11	-	-8.0E-03	8.0E-03	-8.0E-03	8.0E-03	4.0E-03	-13.0E-03	14.0E-03	-5.0E-03
Average	-	-3.6E-03	5.6E-03	16.8E-03	7.8E-03	14.4E-03	31.2E-03	27.4E-03	15.8E-03
Sigma	-	10.7E-03	10.5E-03	23.2E-03	14.4E-03	13.5E-03	25.3E-03	9.8E-03	18.0E-03

Parameter : Effective Number of bit : ENOB_3VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.60	11.61	11.61	11.63	11.62	11.65	11.66	11.64	11.62
ON samples									
2	11.71	11.71	11.69	11.72	11.73	11.72	11.75	11.74	11.71
3	11.71	11.75	11.70	11.68	11.71	11.69	11.73	11.73	11.71
4	11.66	11.70	11.70	11.71	11.68	11.66	11.69	11.70	11.72
5	11.63	11.66	11.65	11.68	11.64	11.60	11.61	11.63	11.66
6	11.69	11.65	11.66	11.71	11.66	11.68	11.72	11.67	11.70
Statistics									
Min	11.63	11.65	11.65	11.68	11.64	11.60	11.61	11.63	11.66
Max	11.71	11.75	11.70	11.72	11.73	11.72	11.75	11.74	11.72
Average	11.68	11.69	11.68	11.70	11.68	11.67	11.70	11.69	11.70
Sigma	0.03	0.03	0.02	0.02	0.03	0.04	0.05	0.04	0.02

Drift Calculation

ENOB_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	5.0E-03	-18.0E-03	11.0E-03	22.0E-03	11.0E-03	43.0E-03	29.0E-03	1.0E-03
3	-	38.0E-03	-9.0E-03	-32.0E-03	5.0E-03	-18.0E-03	18.0E-03	24.0E-03	5.0E-03
4	-	41.0E-03	37.0E-03	48.0E-03	15.0E-03	-4.0E-03	26.0E-03	38.0E-03	53.0E-03
5	-	34.0E-03	20.0E-03	55.0E-03	9.0E-03	-30.0E-03	-14.0E-03	6.0E-03	33.0E-03
6	-	-38.0E-03	-29.0E-03	17.0E-03	-32.0E-03	-11.0E-03	28.0E-03	-17.0E-03	10.0E-03
Average	-	16.0E-03	200.0E-06	19.8E-03	3.8E-03	-10.4E-03	20.2E-03	16.0E-03	20.4E-03
Sigma	-	29.9E-03	24.6E-03	31.0E-03	18.8E-03	13.7E-03	18.9E-03	19.5E-03	19.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

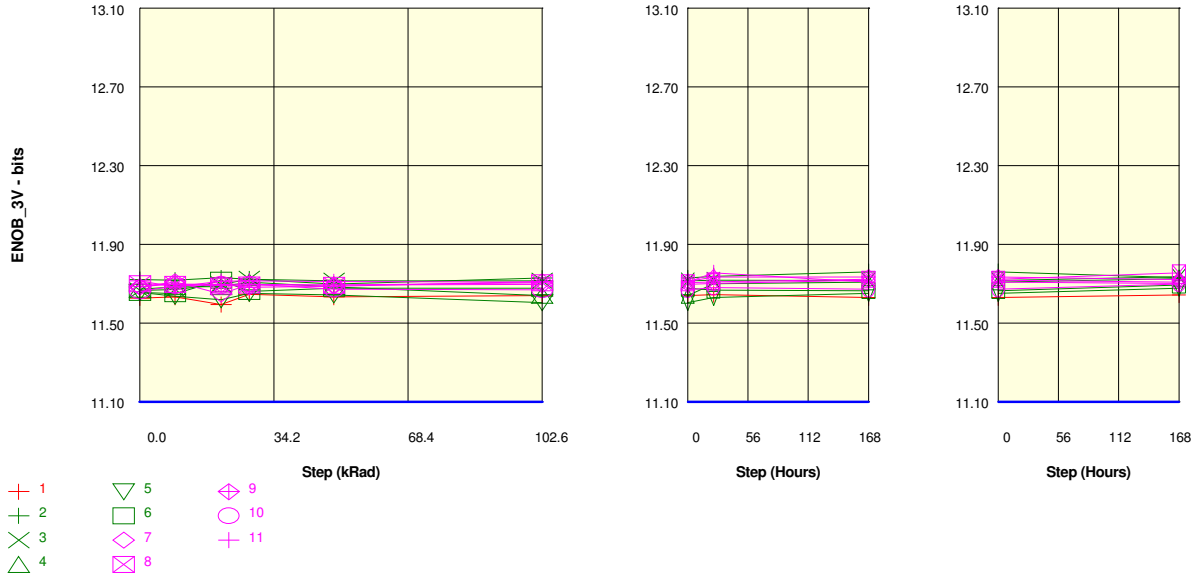
Measurements

ENOB_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.60	11.61	11.61	11.63	11.62	11.65	11.66	11.64	11.62
OFF samples									
7	11.70	11.70	11.72	11.72	11.70	11.72	11.72	11.72	11.73
8	11.71	11.73	11.66	11.71	11.73	11.71	11.70	11.70	11.73
9	11.70	11.72	11.71	11.74	11.70	11.69	11.71	11.73	11.72
10	11.66	11.65	11.67	11.71	11.69	11.67	11.71	11.71	11.72
11	11.68	11.70	11.70	11.70	11.70	11.73	11.74	11.74	11.69
Statistics									
Min	11.66	11.65	11.66	11.70	11.69	11.67	11.70	11.70	11.69
Max	11.71	11.73	11.72	11.74	11.73	11.73	11.74	11.74	11.73
Average	11.69	11.70	11.69	11.72	11.71	11.70	11.71	11.72	11.72
Sigma	0.02	0.03	0.02	0.01	0.01	0.02	0.01	0.01	0.01

Drift Calculation

ENOB_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	1000.0E-06	17.0E-03	19.0E-03	4.0E-03	20.0E-03	23.0E-03	22.0E-03	28.0E-03
8	-	20.0E-03	-54.0E-03	5.0E-03	24.0E-03	3.0E-03	-11.0E-03	-10.0E-03	19.0E-03
9	-	12.0E-03	7.0E-03	35.0E-03	0.0E+00	-16.0E-03	3.0E-03	30.0E-03	13.0E-03
10	-	-8.0E-03	10.0E-03	53.0E-03	32.0E-03	13.0E-03	44.0E-03	48.0E-03	58.0E-03
11	-	23.0E-03	25.0E-03	19.0E-03	20.0E-03	50.0E-03	61.0E-03	63.0E-03	17.0E-03
Average	-	9.6E-03	1000.0E-06	26.2E-03	16.0E-03	14.0E-03	24.0E-03	30.6E-03	27.0E-03
Sigma	-	11.6E-03	28.2E-03	16.4E-03	12.1E-03	21.7E-03	26.2E-03	24.8E-03	16.3E-03

Parameter : Effective Number of bit : ENOB_3VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.63	11.63	11.60	11.65	11.63	11.64	11.65	11.63	11.64
ON samples									
2	11.72	11.72	11.73	11.72	11.70	11.73	11.74	11.76	11.73
3	11.67	11.67	11.70	11.72	11.72	11.72	11.72	11.72	11.74
4	11.67	11.69	11.69	11.71	11.69	11.64	11.70	11.71	11.73
5	11.66	11.64	11.62	11.65	11.64	11.60	11.63	11.65	11.68
6	11.66	11.65	11.72	11.66	11.68	11.68	11.67	11.67	11.69
Statistics									
Min	11.66	11.64	11.62	11.65	11.64	11.60	11.63	11.65	11.68
Max	11.72	11.72	11.73	11.72	11.72	11.73	11.74	11.76	11.74
Average	11.67	11.67	11.69	11.69	11.68	11.67	11.69	11.70	11.71
Sigma	0.02	0.03	0.04	0.03	0.02	0.05	0.04	0.04	0.02

Drift Calculation

ENOB_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-3.0E-03	9.0E-03	2.0E-03	-23.0E-03	7.0E-03	17.0E-03	39.0E-03	9.0E-03
3	-	4.0E-03	30.0E-03	57.0E-03	48.0E-03	48.0E-03	51.0E-03	49.0E-03	69.0E-03
4	-	12.0E-03	13.0E-03	36.0E-03	12.0E-03	-32.0E-03	28.0E-03	36.0E-03	53.0E-03
5	-	-19.0E-03	-37.0E-03	-4.0E-03	-13.0E-03	-52.0E-03	-25.0E-03	-5.0E-03	22.0E-03
6	-	-6.0E-03	62.0E-03	5.0E-03	22.0E-03	21.0E-03	12.0E-03	9.0E-03	38.0E-03
Average	-	-2.4E-03	15.4E-03	19.2E-03	9.2E-03	-1.6E-03	16.6E-03	25.6E-03	38.2E-03
Sigma	-	10.4E-03	32.2E-03	23.4E-03	25.3E-03	36.1E-03	24.8E-03	20.2E-03	21.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

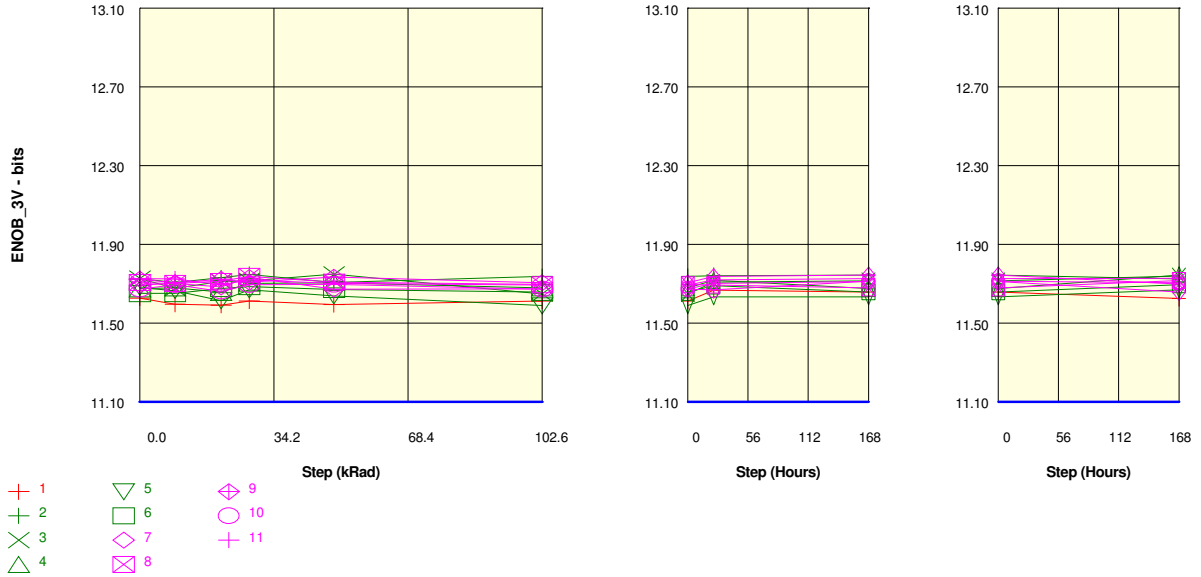
Measurements

ENOB_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.63	11.63	11.60	11.65	11.63	11.64	11.65	11.63	11.64
OFF samples									
7	11.68	11.71	11.65	11.70	11.69	11.70	11.70	11.72	11.71
8	11.70	11.70	11.69	11.69	11.69	11.71	11.71	11.72	11.76
9	11.69	11.70	11.70	11.68	11.69	11.71	11.73	11.73	11.72
10	11.66	11.69	11.70	11.70	11.67	11.67	11.68	11.67	11.70
11	11.72	11.69	11.71	11.71	11.71	11.71	11.76	11.71	11.70
Statistics									
Min	11.66	11.69	11.65	11.68	11.67	11.67	11.68	11.67	11.70
Max	11.72	11.71	11.71	11.71	11.71	11.71	11.76	11.73	11.76
Average	11.69	11.70	11.69	11.70	11.69	11.70	11.72	11.71	11.72
Sigma	0.02	0.01	0.02	0.01	0.01	0.02	0.03	0.02	0.02

Drift Calculation

ENOB_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	27.0E-03	-35.0E-03	14.0E-03	10.0E-03	13.0E-03	20.0E-03	36.0E-03	26.0E-03
8	-	-3.0E-03	-10.0E-03	-6.0E-03	-7.0E-03	5.0E-03	10.0E-03	23.0E-03	56.0E-03
9	-	14.0E-03	11.0E-03	-3.0E-03	2.0E-03	25.0E-03	48.0E-03	48.0E-03	36.0E-03
10	-	27.0E-03	35.0E-03	36.0E-03	11.0E-03	7.0E-03	20.0E-03	10.0E-03	37.0E-03
11	-	-30.0E-03	-2.0E-03	-1000.0E-06	-4.0E-03	-6.0E-03	40.0E-03	-6.0E-03	-13.0E-03
Average	-	7.0E-03	-200.0E-06	8.0E-03	2.4E-03	8.8E-03	27.6E-03	22.2E-03	28.4E-03
Sigma	-	21.5E-03	23.1E-03	15.6E-03	7.2E-03	10.2E-03	14.1E-03	19.0E-03	22.9E-03

Parameter : Effective Number of bit : ENOB_3VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.63	11.60	11.59	11.61	11.60	11.61	11.67	11.66	11.63
ON samples									
2	11.73	11.71	11.73	11.75	11.71	11.74	11.74	11.74	11.73
3	11.73	11.68	11.71	11.72	11.75	11.65	11.71	11.72	11.74
4	11.68	11.68	11.66	11.70	11.71	11.68	11.72	11.68	11.75
5	11.68	11.67	11.61	11.67	11.64	11.59	11.63	11.63	11.67
6	11.65	11.65	11.68	11.69	11.67	11.66	11.69	11.66	11.70
Statistics									
Min	11.65	11.65	11.61	11.67	11.64	11.59	11.63	11.63	11.67
Max	11.73	11.71	11.73	11.75	11.75	11.74	11.74	11.74	11.75
Average	11.69	11.68	11.68	11.70	11.69	11.66	11.70	11.69	11.72
Sigma	0.03	0.02	0.04	0.03	0.04	0.05	0.04	0.04	0.03

Drift Calculation

ENOB_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-19.0E-03	5.0E-03	22.0E-03	-19.0E-03	11.0E-03	15.0E-03	18.0E-03	-1.0E-03
3	-	-50.0E-03	-15.0E-03	-12.0E-03	22.0E-03	-78.0E-03	-19.0E-03	-12.0E-03	13.0E-03
4	-	4.0E-03	-18.0E-03	28.0E-03	31.0E-03	4.0E-03	43.0E-03	1000.0E-06	70.0E-03
5	-	-17.0E-03	-68.0E-03	-13.0E-03	-43.0E-03	-93.0E-03	-48.0E-03	-48.0E-03	-12.0E-03
6	-	0.0E+00	25.0E-03	35.0E-03	20.0E-03	6.0E-03	39.0E-03	8.0E-03	44.0E-03
Average	-	-16.4E-03	-14.2E-03	12.0E-03	2.2E-03	-30.0E-03	6.0E-03	-6.6E-03	22.8E-03
Sigma	-	19.1E-03	31.0E-03	20.4E-03	28.4E-03	45.6E-03	34.9E-03	22.9E-03	30.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

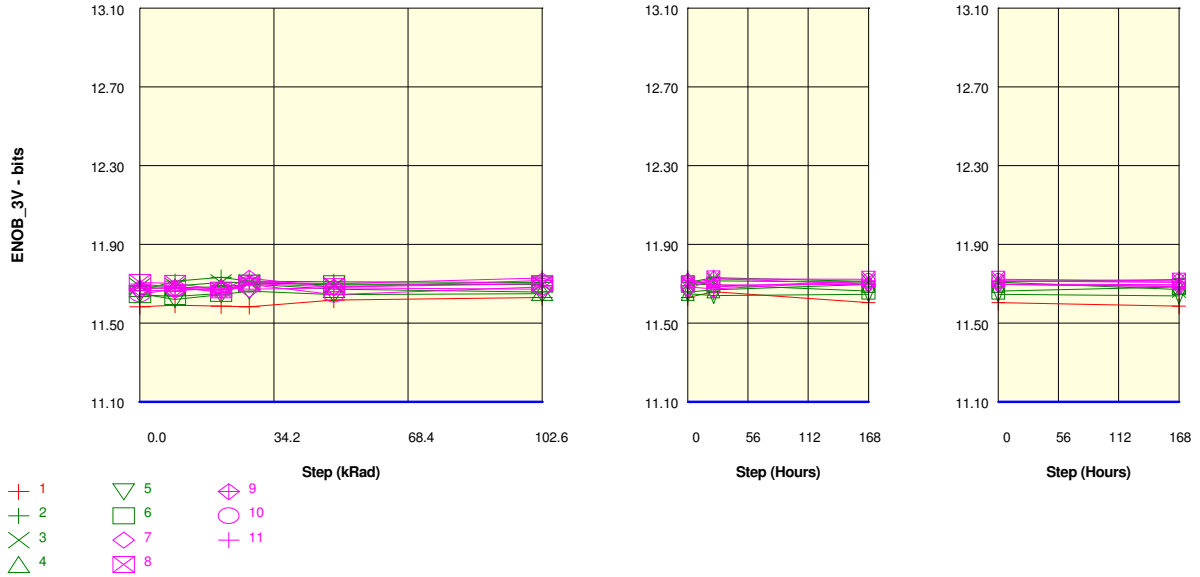
Measurements

ENOB_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.63	11.60	11.59	11.61	11.60	11.61	11.67	11.66	11.63
OFF samples									
7	11.69	11.70	11.68	11.73	11.67	11.67	11.70	11.71	11.66
8	11.71	11.70	11.71	11.74	11.71	11.70	11.69	11.68	11.72
9	11.72	11.71	11.72	11.71	11.73	11.71	11.74	11.74	11.70
10	11.67	11.70	11.66	11.70	11.70	11.67	11.67	11.71	11.71
11	11.73	11.73	11.70	11.72	11.70	11.69	11.72	11.73	11.73
Statistics									
Min	11.67	11.70	11.66	11.70	11.67	11.67	11.67	11.68	11.66
Max	11.73	11.73	11.72	11.74	11.73	11.71	11.74	11.74	11.73
Average	11.70	11.71	11.70	11.72	11.70	11.69	11.70	11.71	11.70
Sigma	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.02	0.02

Drift Calculation

ENOB_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	10.0E-03	-9.0E-03	39.0E-03	-20.0E-03	-19.0E-03	9.0E-03	18.0E-03	-36.0E-03
8	-	-4.0E-03	7.0E-03	32.0E-03	3.0E-03	-10.0E-03	-12.0E-03	-27.0E-03	11.0E-03
9	-	-18.0E-03	0.0E+00	-15.0E-03	11.0E-03	-18.0E-03	14.0E-03	21.0E-03	-23.0E-03
10	-	23.0E-03	-10.0E-03	23.0E-03	24.0E-03	1000.0E-06	-2.0E-03	41.0E-03	34.0E-03
11	-	-2.0E-03	-32.0E-03	-6.0E-03	-24.0E-03	-33.0E-03	-7.0E-03	0.0E+00	1000.0E-06
Average	-	1.8E-03	-8.8E-03	14.6E-03	-1.2E-03	-15.8E-03	400.0E-06	10.6E-03	-2.6E-03
Sigma	-	13.8E-03	13.2E-03	21.3E-03	18.3E-03	11.2E-03	9.7E-03	22.9E-03	24.8E-03

Parameter : Effective Number of bit : ENOB_3VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.58	11.59	11.59	11.58	11.62	11.63	11.66	11.61	11.59
ON samples									
2	11.67	11.71	11.73	11.71	11.71	11.71	11.73	11.71	11.72
3	11.69	11.69	11.71	11.71	11.69	11.70	11.71	11.71	11.67
4	11.68	11.68	11.68	11.70	11.67	11.66	11.67	11.70	11.69
5	11.65	11.62	11.65	11.66	11.65	11.65	11.64	11.65	11.64
6	11.65	11.64	11.65	11.70	11.70	11.70	11.70	11.66	11.69
Statistics									
Min	11.65	11.62	11.65	11.66	11.65	11.65	11.64	11.65	11.64
Max	11.69	11.71	11.73	11.71	11.71	11.71	11.73	11.71	11.72
Average	11.67	11.67	11.68	11.70	11.68	11.68	11.69	11.69	11.68
Sigma	0.02	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.03

Drift Calculation

ENOB_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	48.0E-03	67.0E-03	48.0E-03	45.0E-03	42.0E-03	66.0E-03	46.0E-03	57.0E-03
3	-	0.0E+00	18.0E-03	18.0E-03	4.0E-03	8.0E-03	25.0E-03	20.0E-03	-18.0E-03
4	-	6.0E-03	8.0E-03	24.0E-03	-4.0E-03	-19.0E-03	-6.0E-03	21.0E-03	12.0E-03
5	-	-29.0E-03	-4.0E-03	13.0E-03	-4.0E-03	0.0E+00	-10.0E-03	-3.0E-03	-11.0E-03
6	-	-10.0E-03	7.0E-03	59.0E-03	55.0E-03	54.0E-03	50.0E-03	18.0E-03	40.0E-03
Average	-	3.0E-03	19.2E-03	32.4E-03	19.2E-03	17.0E-03	25.0E-03	20.4E-03	16.0E-03
Sigma	-	25.4E-03	24.9E-03	17.9E-03	25.5E-03	27.1E-03	30.0E-03	15.6E-03	28.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

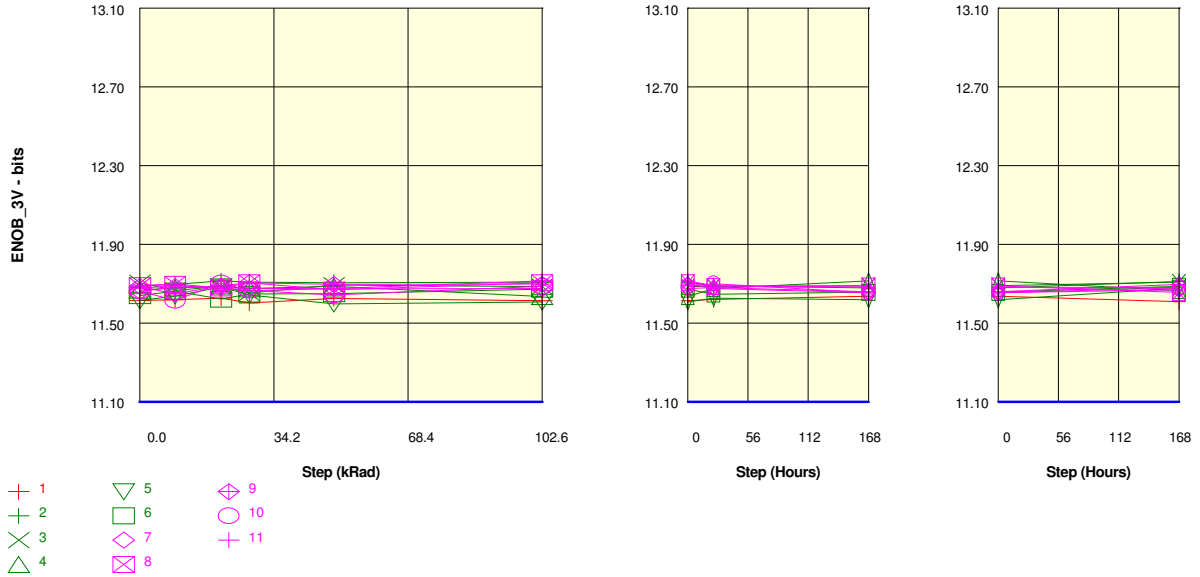
Measurements

ENOB_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.58	11.59	11.59	11.58	11.62	11.63	11.66	11.61	11.59
OFF samples									
7	11.67	11.67	11.68	11.67	11.68	11.67	11.73	11.70	11.70
8	11.71	11.70	11.67	11.70	11.69	11.70	11.73	11.72	11.71
9	11.68	11.68	11.67	11.73	11.68	11.72	11.69	11.70	11.69
10	11.65	11.67	11.67	11.70	11.65	11.69	11.67	11.71	11.71
11	11.70	11.69	11.66	11.71	11.70	11.73	11.69	11.72	11.71
Statistics									
Min	11.65	11.67	11.66	11.67	11.65	11.67	11.67	11.70	11.69
Max	11.71	11.70	11.68	11.73	11.70	11.73	11.73	11.72	11.71
Average	11.68	11.68	11.67	11.70	11.68	11.70	11.70	11.71	11.70
Sigma	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01

Drift Calculation

ENOB_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.0E-03	14.0E-03	6.0E-03	13.0E-03	7.0E-03	60.0E-03	32.0E-03	29.0E-03
8	-	-5.0E-03	-38.0E-03	-5.0E-03	-22.0E-03	-6.0E-03	18.0E-03	16.0E-03	7.0E-03
9	-	-1.0E-03	-7.0E-03	50.0E-03	5.0E-03	38.0E-03	16.0E-03	19.0E-03	8.0E-03
10	-	27.0E-03	20.0E-03	50.0E-03	-1000.0E-06	38.0E-03	27.0E-03	66.0E-03	62.0E-03
11	-	-13.0E-03	-42.0E-03	12.0E-03	3.0E-03	31.0E-03	-13.0E-03	17.0E-03	10.0E-03
Average	-	1.4E-03	-10.6E-03	22.6E-03	-400.0E-06	21.6E-03	21.6E-03	30.0E-03	23.2E-03
Sigma	-	13.5E-03	25.7E-03	23.0E-03	11.7E-03	17.9E-03	23.4E-03	18.9E-03	21.0E-03

Parameter : Effective Number of bit : ENOB_3VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.62	11.62	11.63	11.60	11.63	11.61	11.62	11.64	11.61
ON samples									
2	11.69	11.70	11.72	11.71	11.71	11.71	11.69	11.68	11.71
3	11.71	11.67	11.69	11.65	11.69	11.69	11.69	11.69	11.71
4	11.67	11.68	11.69	11.68	11.69	11.64	11.68	11.72	11.67
5	11.62	11.64	11.68	11.64	11.60	11.61	11.63	11.62	11.68
6	11.64	11.66	11.62	11.65	11.65	11.67	11.65	11.66	11.69
Statistics									
Min	11.62	11.64	11.62	11.64	11.60	11.61	11.63	11.62	11.67
Max	11.71	11.70	11.72	11.71	11.71	11.71	11.69	11.72	11.71
Average	11.66	11.67	11.68	11.67	11.67	11.66	11.67	11.67	11.69
Sigma	0.03	0.02	0.03	0.02	0.04	0.04	0.02	0.03	0.02

Drift Calculation

ENOB_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	8.0E-03	26.0E-03	19.0E-03	17.0E-03	19.0E-03	0.0E+00	-9.0E-03	22.0E-03
3	-	-38.0E-03	-18.0E-03	-52.0E-03	-12.0E-03	-19.0E-03	-17.0E-03	-14.0E-03	4.0E-03
4	-	11.0E-03	20.0E-03	7.0E-03	20.0E-03	-33.0E-03	8.0E-03	47.0E-03	-3.0E-03
5	-	23.0E-03	69.0E-03	28.0E-03	-17.0E-03	-8.0E-03	12.0E-03	4.0E-03	63.0E-03
6	-	23.0E-03	-18.0E-03	8.0E-03	10.0E-03	33.0E-03	7.0E-03	17.0E-03	48.0E-03
Average	-	5.4E-03	15.8E-03	2.0E-03	3.6E-03	-1.6E-03	2.0E-03	9.0E-03	26.8E-03
Sigma	-	22.5E-03	32.4E-03	28.1E-03	15.2E-03	24.3E-03	10.3E-03	21.8E-03	25.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

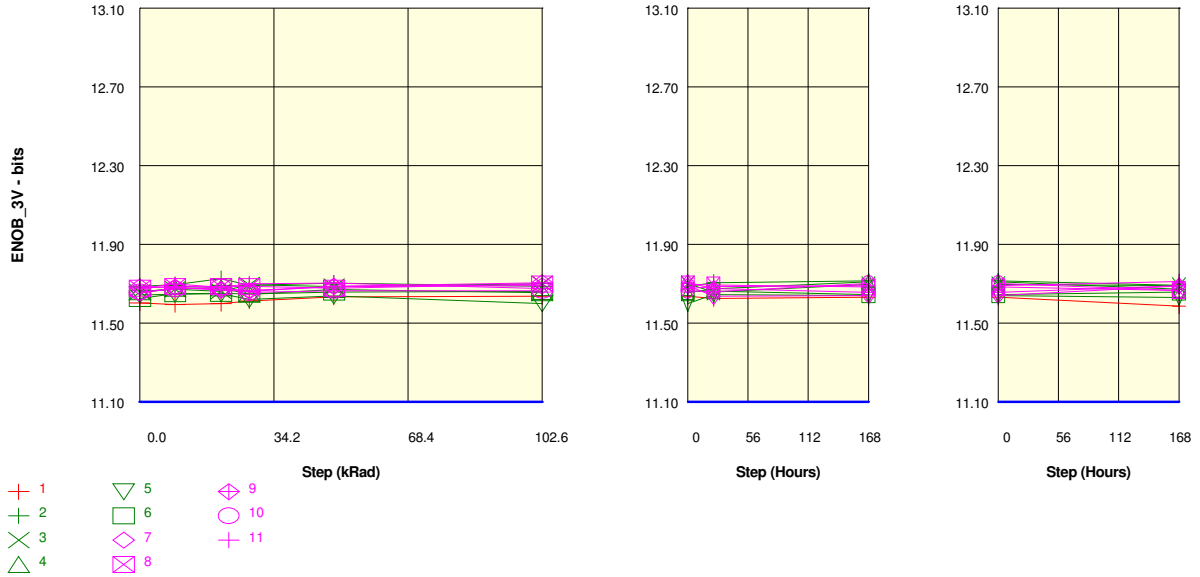
Measurements

ENOB_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.62	11.62	11.63	11.60	11.63	11.61	11.62	11.64	11.61
OFF samples									
7	11.66	11.69	11.68	11.68	11.67	11.68	11.68	11.66	11.70
8	11.69	11.70	11.68	11.71	11.67	11.71	11.69	11.69	11.66
9	11.69	11.65	11.69	11.71	11.70	11.70	11.68	11.66	11.67
10	11.66	11.62	11.70	11.67	11.64	11.69	11.70	11.66	11.68
11	11.68	11.69	11.68	11.67	11.68	11.71	11.69	11.68	11.68
Statistics									
Min	11.66	11.62	11.68	11.67	11.64	11.68	11.68	11.66	11.66
Max	11.69	11.70	11.70	11.71	11.70	11.71	11.70	11.69	11.70
Average	11.68	11.67	11.69	11.68	11.67	11.70	11.69	11.67	11.68
Sigma	0.01	0.03	0.01	0.02	0.02	0.01	0.01	0.01	0.01

Drift Calculation

ENOB_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	24.0E-03	18.0E-03	16.0E-03	13.0E-03	14.0E-03	20.0E-03	-1000.0E-06	36.0E-03
8	-	7.0E-03	-12.0E-03	14.0E-03	-22.0E-03	14.0E-03	-6.0E-03	-2.0E-03	-35.0E-03
9	-	-39.0E-03	3.0E-03	18.0E-03	10.0E-03	11.0E-03	-11.0E-03	-32.0E-03	-18.0E-03
10	-	-48.0E-03	41.0E-03	4.0E-03	-20.0E-03	24.0E-03	38.0E-03	-8.0E-03	16.0E-03
11	-	14.0E-03	3.0E-03	-12.0E-03	-2.0E-03	37.0E-03	14.0E-03	6.0E-03	5.0E-03
Average	-	-8.4E-03	10.6E-03	8.0E-03	-4.2E-03	20.0E-03	11.0E-03	-7.4E-03	800.0E-06
Sigma	-	29.3E-03	17.9E-03	11.1E-03	14.6E-03	9.6E-03	17.8E-03	13.1E-03	25.0E-03

Parameter : Effective Number of bit : ENOB_3VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.60	11.60	11.60	11.61	11.63	11.64	11.63	11.63	11.59
ON samples									
2	11.69	11.70	11.73	11.69	11.70	11.69	11.71	11.71	11.69
3	11.66	11.67	11.66	11.70	11.69	11.70	11.66	11.70	11.69
4	11.66	11.68	11.68	11.65	11.67	11.66	11.67	11.71	11.67
5	11.64	11.65	11.65	11.62	11.64	11.60	11.65	11.64	11.63
6	11.63	11.65	11.65	11.65	11.66	11.66	11.66	11.65	11.66
Statistics									
Min	11.63	11.65	11.65	11.62	11.64	11.60	11.65	11.64	11.63
Max	11.69	11.70	11.73	11.70	11.70	11.70	11.71	11.71	11.69
Average	11.65	11.67	11.67	11.66	11.67	11.66	11.67	11.68	11.67
Sigma	0.02	0.02	0.03	0.03	0.02	0.03	0.02	0.03	0.02

Drift Calculation

ENOB_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	7.0E-03	38.0E-03	4.0E-03	16.0E-03	0.0E+00	18.0E-03	26.0E-03	4.0E-03
3	-	15.0E-03	4.0E-03	37.0E-03	28.0E-03	43.0E-03	0.0E+00	38.0E-03	33.0E-03
4	-	18.0E-03	20.0E-03	-12.0E-03	12.0E-03	-4.0E-03	15.0E-03	51.0E-03	14.0E-03
5	-	4.0E-03	7.0E-03	-22.0E-03	-4.0E-03	-43.0E-03	2.0E-03	-2.0E-03	-12.0E-03
6	-	25.0E-03	27.0E-03	23.0E-03	33.0E-03	36.0E-03	39.0E-03	20.0E-03	33.0E-03
Average	-	13.8E-03	19.2E-03	6.0E-03	17.0E-03	6.4E-03	14.8E-03	26.6E-03	14.4E-03
Sigma	-	7.6E-03	12.6E-03	21.7E-03	13.0E-03	31.0E-03	14.0E-03	17.8E-03	17.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

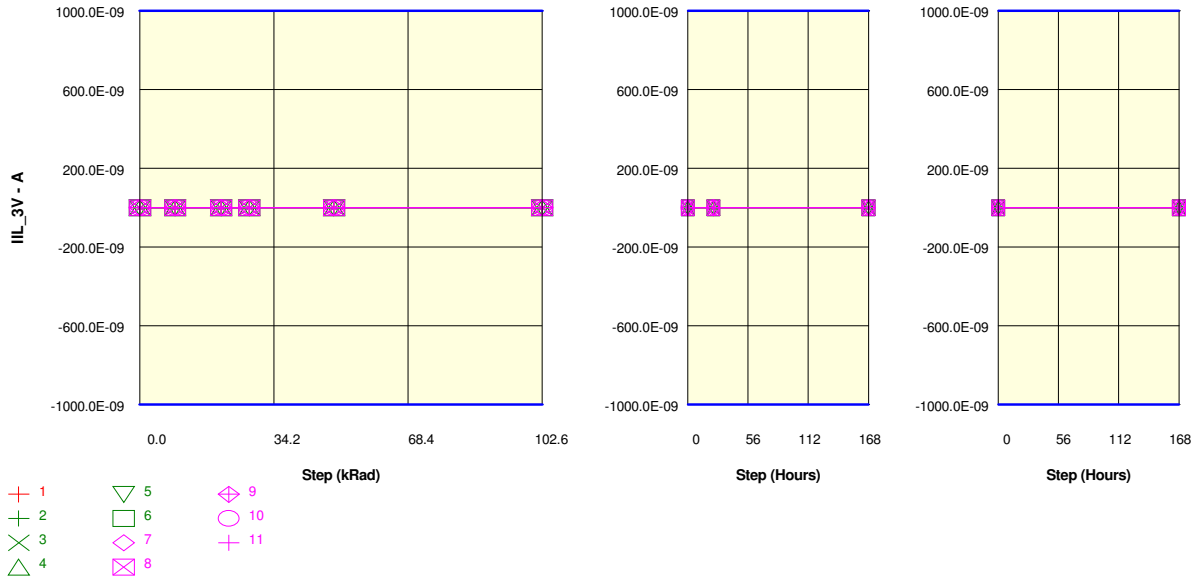
Measurements

ENOB_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.60	11.60	11.60	11.61	11.63	11.64	11.63	11.63	11.59
OFF samples									
7	11.65	11.68	11.67	11.67	11.69	11.69	11.64	11.64	11.69
8	11.68	11.69	11.69	11.69	11.68	11.70	11.69	11.68	11.67
9	11.68	11.68	11.67	11.66	11.69	11.71	11.68	11.66	11.69
10	11.66	11.67	11.68	11.66	11.67	11.67	11.66	11.70	11.67
11	11.68	11.70	11.68	11.70	11.70	11.68	11.69	11.69	11.71
Statistics									
Min	11.65	11.67	11.67	11.66	11.67	11.67	11.64	11.64	11.67
Max	11.68	11.70	11.69	11.70	11.70	11.71	11.69	11.70	11.71
Average	11.67	11.68	11.68	11.67	11.68	11.69	11.67	11.67	11.68
Sigma	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.02

Drift Calculation

ENOB_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	30.0E-03	20.0E-03	15.0E-03	34.0E-03	38.0E-03	-16.0E-03	-12.0E-03	37.0E-03
8	-	9.0E-03	7.0E-03	9.0E-03	0.0E+00	21.0E-03	16.0E-03	6.0E-03	-12.0E-03
9	-	-2.0E-03	-16.0E-03	-22.0E-03	4.0E-03	21.0E-03	-8.0E-03	-28.0E-03	6.0E-03
10	-	14.0E-03	24.0E-03	-3.0E-03	6.0E-03	6.0E-03	1000.0E-06	43.0E-03	8.0E-03
11	-	20.0E-03	5.0E-03	23.0E-03	26.0E-03	-3.0E-03	8.0E-03	12.0E-03	33.0E-03
Average	-	14.2E-03	8.0E-03	4.4E-03	14.0E-03	16.6E-03	200.0E-06	4.2E-03	14.4E-03
Sigma	-	10.7E-03	14.0E-03	15.7E-03	13.4E-03	14.1E-03	11.3E-03	24.0E-03	18.2E-03

Parameter : Input Leakage Current Low : IIL_3VCS/
 Test conditions : Vin=0V
 Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



- 1 +
- 2 +
- 3 X
- 4 Δ
- 5 ∇
- 6 □
- 7 ◇
- 8 ⊠
- 9 ⊕
- 10 ○
- 11 +

Measurements

IIL_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
ON samples									
2	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	0.0E+00
3	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
4	0.0E+00	0.0E+00	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
5	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
6	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
Statistics									
Min	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-50.0E-12
Max	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00
Average	-40.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-110.0E-12	-60.0E-12	-60.0E-12	-40.0E-12
Sigma	20.0E-12	31.6E-12	0.0E+00	31.6E-12	0.0E+00	37.4E-12	20.0E-12	20.0E-12	20.0E-12

Drift Calculation

IIL_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	-100.0E-12	0.0E+00	0.0E+00	50.0E-12
3	-	0.0E+00	0.0E+00	50.0E-12	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	0.0E+00
4	-	0.0E+00	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
5	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	0.0E+00
6	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-100.0E-12	0.0E+00	-50.0E-12	0.0E+00
Average	-	-10.0E-12	-10.0E-12	-10.0E-12	-10.0E-12	-70.0E-12	-20.0E-12	-20.0E-12	0.0E+00
Sigma	-	20.0E-12	20.0E-12	49.0E-12	20.0E-12	24.5E-12	40.0E-12	24.5E-12	31.6E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

IIL_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
OFF samples									
7	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
8	0.0E+00	0.0E+00	-100.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
9	-50.0E-12	0.0E+00	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
10	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
11	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Statistics									
Min	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Max	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Average	-40.0E-12	-20.0E-12	-50.0E-12	-50.0E-12	-20.0E-12	-60.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Sigma	20.0E-12	24.5E-12	31.6E-12	31.6E-12	24.5E-12	20.0E-12	0.0E+00	0.0E+00	0.0E+00

Drift Calculation

IIL_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	50.0E-12	0.0E+00	50.0E-12	50.0E-12	-50.0E-12	0.0E+00	0.0E+00	0.0E+00
8	-	0.0E+00	-100.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
9	-	50.0E-12	50.0E-12	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
10	-	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
11	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Average	-	20.0E-12	-10.0E-12	-10.0E-12	20.0E-12	-20.0E-12	-10.0E-12	-10.0E-12	-10.0E-12
Sigma	-	24.5E-12	49.0E-12	37.4E-12	24.5E-12	24.5E-12	20.0E-12	20.0E-12	20.0E-12

Parameter : Input Leakage Current Low : IIL_3VDIN

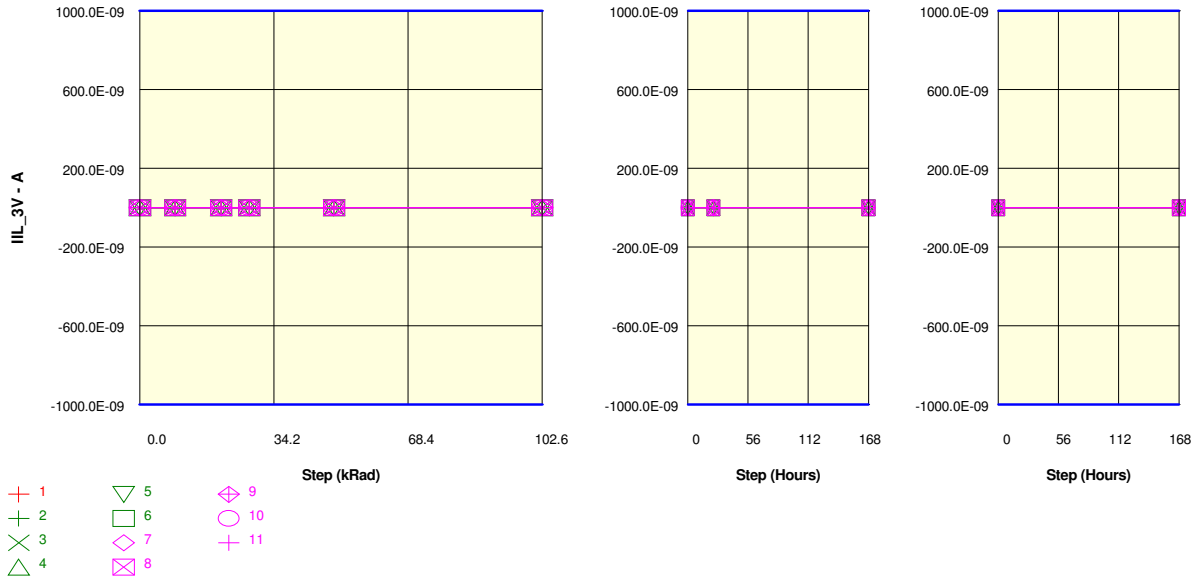
Test conditions : Vin=0V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIL_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
ON samples									
2	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
3	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	0.0E+00	0.0E+00
4	0.0E+00	-100.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
5	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
6	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
Statistics									
Min	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-50.0E-12
Max	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00
Average	-20.0E-12	-70.0E-12	-40.0E-12	-60.0E-12	-50.0E-12	-100.0E-12	-60.0E-12	-60.0E-12	-40.0E-12
Sigma	24.5E-12	40.0E-12	20.0E-12	20.0E-12	0.0E+00	31.6E-12	20.0E-12	37.4E-12	20.0E-12

Drift Calculation

IIL_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00
3	-	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	0.0E+00	0.0E+00
4	-	-100.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
5	-	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
6	-	50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	0.0E+00
Average	-	-50.0E-12	-20.0E-12	-40.0E-12	-30.0E-12	-80.0E-12	-40.0E-12	-40.0E-12	-20.0E-12
Sigma	-	63.2E-12	24.5E-12	20.0E-12	24.5E-12	51.0E-12	20.0E-12	37.4E-12	24.5E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

IIL_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
OFF samples									
7	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	0.0E+00	-50.0E-12
8	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12
9	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	0.0E+00
10	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12
11	-100.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Statistics									
Min	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-100.0E-12
Max	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	0.0E+00
Average	-50.0E-12	-30.0E-12	-40.0E-12	-40.0E-12	-80.0E-12	-90.0E-12	-60.0E-12	-40.0E-12	-50.0E-12
Sigma	44.7E-12	24.5E-12	37.4E-12	20.0E-12	24.5E-12	49.0E-12	20.0E-12	20.0E-12	31.6E-12

Drift Calculation

IIL_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	0.0E+00	50.0E-12	0.0E+00
8	-	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12
9	-	50.0E-12	0.0E+00	50.0E-12	50.0E-12	0.0E+00	50.0E-12	50.0E-12	100.0E-12
10	-	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12
11	-	100.0E-12	50.0E-12	50.0E-12	0.0E+00	-50.0E-12	50.0E-12	50.0E-12	50.0E-12
Average	-	20.0E-12	10.0E-12	10.0E-12	-30.0E-12	-40.0E-12	-10.0E-12	10.0E-12	0.0E+00
Sigma	-	51.0E-12	37.4E-12	37.4E-12	51.0E-12	37.4E-12	58.3E-12	49.0E-12	70.7E-12

Parameter : Input Leakage Current Low : IIL_3VSCLK

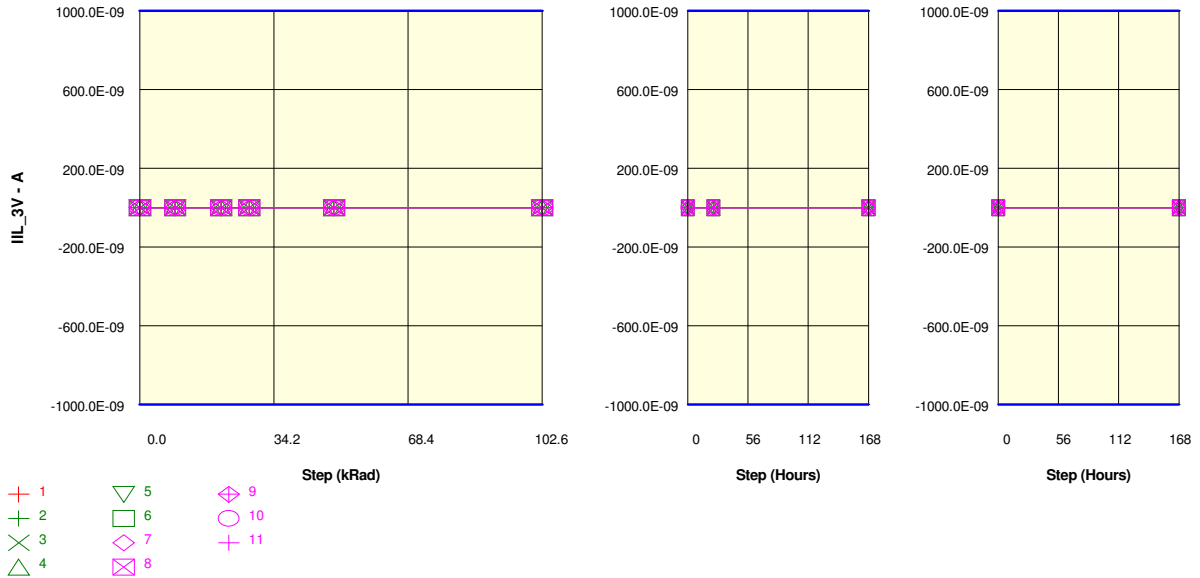
Test conditions : Vin=0V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIL_3VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-150.0E-12	-50.0E-12
ON samples									
2	-50.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
3	-50.0E-12	-100.0E-12	0.0E+00	-50.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12
4	0.0E+00	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-150.0E-12	-50.0E-12
5	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
6	-100.0E-12	0.0E+00	-150.0E-12	-50.0E-12	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Statistics									
Min	-100.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
Max	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Average	-50.0E-12	-60.0E-12	-90.0E-12	-50.0E-12	-60.0E-12	-90.0E-12	-60.0E-12	-70.0E-12	-60.0E-12
Sigma	31.6E-12	37.4E-12	58.3E-12	0.0E+00	49.0E-12	20.0E-12	20.0E-12	40.0E-12	20.0E-12

Drift Calculation

IIL_3VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-50.0E-12	-100.0E-12	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00
3	-	-50.0E-12	50.0E-12	0.0E+00	-100.0E-12	-50.0E-12	0.0E+00	0.0E+00	-50.0E-12
4	-	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-150.0E-12	-50.0E-12
5	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
6	-	100.0E-12	-50.0E-12	50.0E-12	100.0E-12	0.0E+00	50.0E-12	50.0E-12	50.0E-12
Average	-	-10.0E-12	-40.0E-12	0.0E+00	-10.0E-12	-40.0E-12	-10.0E-12	-20.0E-12	-10.0E-12
Sigma	-	58.3E-12	58.3E-12	31.6E-12	66.3E-12	37.4E-12	37.4E-12	67.8E-12	37.4E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

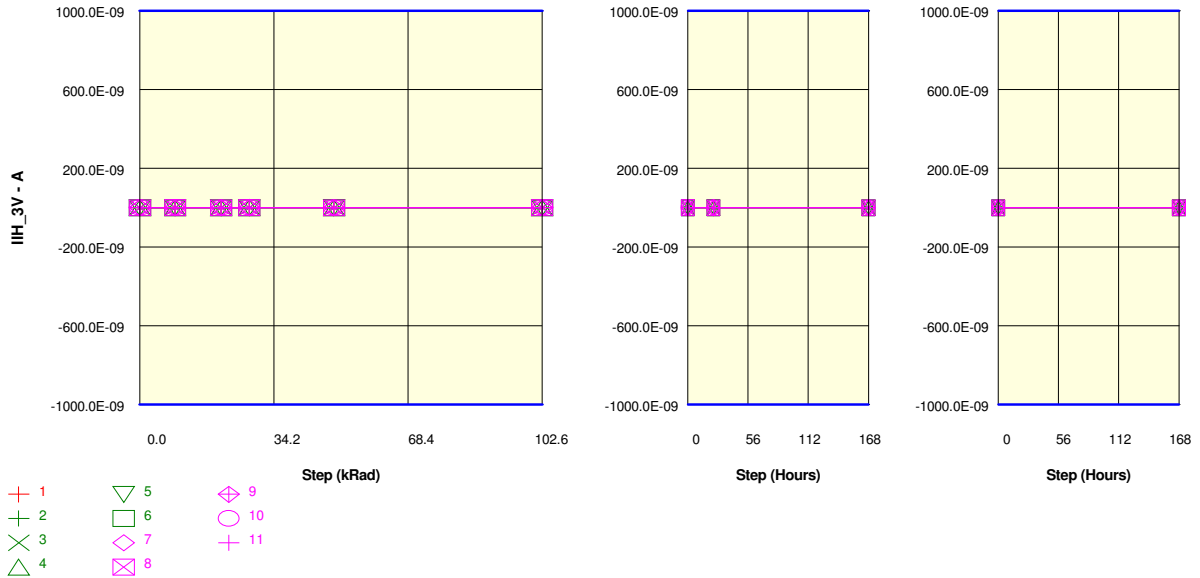
Measurements

IIL_3VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-150.0E-12	-50.0E-12	-150.0E-12	-50.0E-12
OFF samples									
7	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
8	-50.0E-12	-150.0E-12	0.0E+00	-150.0E-12	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
9	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
10	-100.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12
11	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-100.0E-12	-100.0E-12	-50.0E-12	0.0E+00
Statistics									
Min	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
Max	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00
Average	-60.0E-12	-90.0E-12	-50.0E-12	-80.0E-12	-20.0E-12	-80.0E-12	-60.0E-12	-50.0E-12	-40.0E-12
Sigma	20.0E-12	37.4E-12	54.8E-12	40.0E-12	24.5E-12	24.5E-12	37.4E-12	0.0E+00	20.0E-12

Drift Calculation

IIL_3VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	50.0E-12	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00
8	-	-100.0E-12	50.0E-12	-100.0E-12	50.0E-12	-50.0E-12	0.0E+00	0.0E+00	0.0E+00
9	-	0.0E+00	0.0E+00	-50.0E-12	50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
10	-	0.0E+00	-50.0E-12	50.0E-12	50.0E-12	50.0E-12	100.0E-12	50.0E-12	50.0E-12
11	-	-50.0E-12	0.0E+00	0.0E+00	50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	50.0E-12
Average	-	-30.0E-12	10.0E-12	-20.0E-12	40.0E-12	-20.0E-12	0.0E+00	10.0E-12	20.0E-12
Sigma	-	40.0E-12	37.4E-12	51.0E-12	20.0E-12	40.0E-12	54.8E-12	20.0E-12	24.5E-12

Parameter : Input Leakage Current High : IIH_3VCS/
 Test conditions : Vin=3V
 Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

IIH_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	300.0E-12	300.0E-12	300.0E-12	300.0E-12	250.0E-12	250.0E-12	300.0E-12	200.0E-12	400.0E-12
ON samples									
2	250.0E-12	300.0E-12	350.0E-12	350.0E-12	300.0E-12	400.0E-12	200.0E-12	300.0E-12	350.0E-12
3	300.0E-12	200.0E-12	350.0E-12	300.0E-12	300.0E-12	400.0E-12	300.0E-12	300.0E-12	300.0E-12
4	250.0E-12	300.0E-12	300.0E-12	400.0E-12	300.0E-12	300.0E-12	300.0E-12	250.0E-12	350.0E-12
5	300.0E-12	200.0E-12	300.0E-12	300.0E-12	400.0E-12	250.0E-12	400.0E-12	250.0E-12	300.0E-12
6	300.0E-12	300.0E-12	300.0E-12	350.0E-12	200.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12
Statistics									
Min	250.0E-12	200.0E-12	300.0E-12	300.0E-12	200.0E-12	250.0E-12	200.0E-12	250.0E-12	300.0E-12
Max	300.0E-12	300.0E-12	350.0E-12	400.0E-12	400.0E-12	400.0E-12	400.0E-12	300.0E-12	350.0E-12
Average	280.0E-12	260.0E-12	320.0E-12	340.0E-12	300.0E-12	330.0E-12	300.0E-12	280.0E-12	320.0E-12
Sigma	24.5E-12	49.0E-12	24.5E-12	37.4E-12	63.2E-12	60.0E-12	63.2E-12	24.5E-12	24.5E-12

Drift Calculation

IIH_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	50.0E-12	100.0E-12	100.0E-12	50.0E-12	150.0E-12	-50.0E-12	50.0E-12	100.0E-12
3	-	-100.0E-12	50.0E-12	0.0E+00	0.0E+00	100.0E-12	0.0E+00	0.0E+00	0.0E+00
4	-	50.0E-12	50.0E-12	150.0E-12	50.0E-12	50.0E-12	50.0E-12	0.0E+00	100.0E-12
5	-	-100.0E-12	0.0E+00	0.0E+00	100.0E-12	-50.0E-12	100.0E-12	-50.0E-12	0.0E+00
6	-	0.0E+00	0.0E+00	50.0E-12	-100.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Average	-	-20.0E-12	40.0E-12	60.0E-12	20.0E-12	50.0E-12	20.0E-12	0.0E+00	40.0E-12
Sigma	-	67.8E-12	37.4E-12	58.3E-12	67.8E-12	70.7E-12	51.0E-12	31.6E-12	49.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

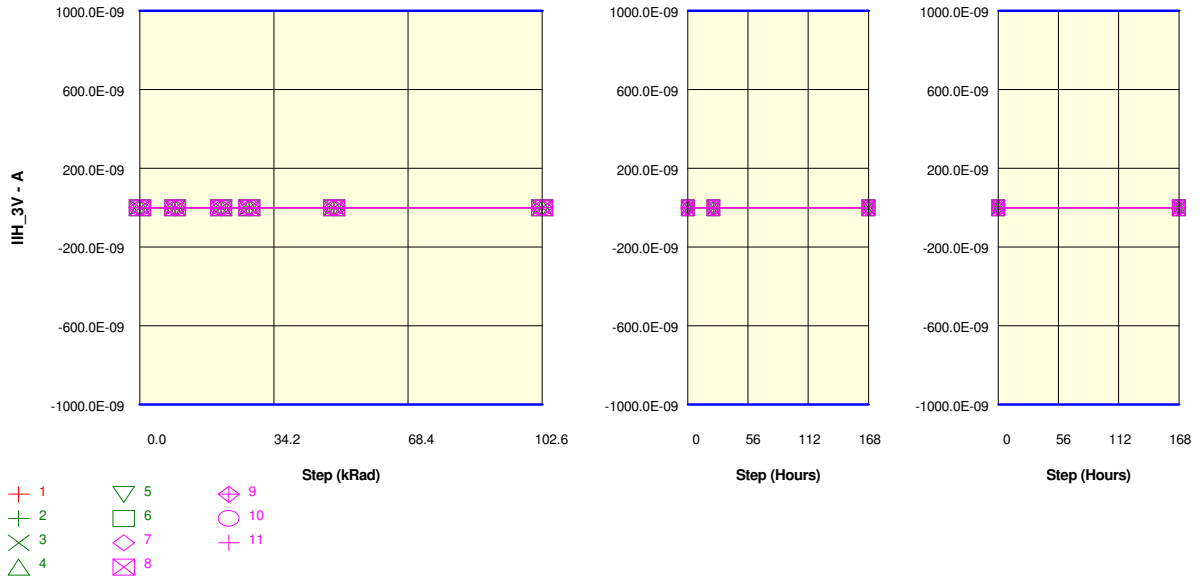
Measurements

IIH_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	300.0E-12	300.0E-12	300.0E-12	300.0E-12	250.0E-12	250.0E-12	300.0E-12	200.0E-12	400.0E-12
OFF samples									
7	200.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12
8	250.0E-12	350.0E-12	300.0E-12	350.0E-12	250.0E-12	400.0E-12	250.0E-12	200.0E-12	300.0E-12
9	300.0E-12	250.0E-12	300.0E-12	300.0E-12	300.0E-12	350.0E-12	400.0E-12	350.0E-12	250.0E-12
10	350.0E-12	350.0E-12	250.0E-12	400.0E-12	250.0E-12	300.0E-12	300.0E-12	250.0E-12	300.0E-12
11	300.0E-12	250.0E-12	250.0E-12	250.0E-12	300.0E-12	400.0E-12	250.0E-12	300.0E-12	250.0E-12
Statistics									
Min	200.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	200.0E-12	250.0E-12
Max	350.0E-12	350.0E-12	300.0E-12	400.0E-12	300.0E-12	400.0E-12	400.0E-12	350.0E-12	300.0E-12
Average	280.0E-12	300.0E-12	280.0E-12	320.0E-12	280.0E-12	350.0E-12	300.0E-12	280.0E-12	280.0E-12
Sigma	51.0E-12	44.7E-12	24.5E-12	51.0E-12	24.5E-12	44.7E-12	54.8E-12	51.0E-12	24.5E-12

Drift Calculation

IIH_3VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	100.0E-12	100.0E-12	100.0E-12	100.0E-12	100.0E-12	100.0E-12	100.0E-12	100.0E-12
8	-	100.0E-12	50.0E-12	100.0E-12	0.0E+00	150.0E-12	0.0E+00	-50.0E-12	50.0E-12
9	-	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	50.0E-12	100.0E-12	50.0E-12	-50.0E-12
10	-	0.0E+00	-100.0E-12	50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
11	-	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	100.0E-12	-50.0E-12	0.0E+00	-50.0E-12
Average	-	20.0E-12	5.2E-27	40.0E-12	5.2E-27	70.0E-12	20.0E-12	0.0E+00	5.2E-27
Sigma	-	67.8E-12	70.7E-12	58.3E-12	63.2E-12	67.8E-12	67.8E-12	70.7E-12	63.2E-12

Parameter : Input Leakage Current High : IIH_3VDIN
 Test conditions : Vin=3V
 Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

IIH_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	200.0E-12	200.0E-12	200.0E-12	150.0E-12	200.0E-12	200.0E-12	150.0E-12	200.0E-12	250.0E-12
ON samples									
2	200.0E-12	200.0E-12	200.0E-12	200.0E-12	250.0E-12	200.0E-12	200.0E-12	250.0E-12	300.0E-12
3	200.0E-12	150.0E-12	150.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	200.0E-12	300.0E-12
4	200.0E-12	250.0E-12	200.0E-12	200.0E-12	200.0E-12	250.0E-12	200.0E-12	200.0E-12	250.0E-12
5	150.0E-12	150.0E-12	150.0E-12	300.0E-12	200.0E-12	150.0E-12	150.0E-12	150.0E-12	250.0E-12
6	250.0E-12	200.0E-12	250.0E-12	250.0E-12	200.0E-12	250.0E-12	150.0E-12	200.0E-12	150.0E-12
Statistics									
Min	150.0E-12	150.0E-12	150.0E-12	200.0E-12	200.0E-12	150.0E-12	150.0E-12	150.0E-12	150.0E-12
Max	250.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	300.0E-12
Average	200.0E-12	190.0E-12	190.0E-12	240.0E-12	220.0E-12	220.0E-12	190.0E-12	200.0E-12	250.0E-12
Sigma	31.6E-12	37.4E-12	37.4E-12	37.4E-12	24.5E-12	40.0E-12	37.4E-12	31.6E-12	54.8E-12

Drift Calculation

IIH_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00	0.0E+00	50.0E-12	100.0E-12
3	-	-50.0E-12	-50.0E-12	50.0E-12	50.0E-12	50.0E-12	50.0E-12	0.0E+00	100.0E-12
4	-	50.0E-12	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00	0.0E+00	50.0E-12
5	-	0.0E+00	0.0E+00	150.0E-12	50.0E-12	0.0E+00	0.0E+00	0.0E+00	100.0E-12
6	-	-50.0E-12	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	-100.0E-12	-50.0E-12	-100.0E-12
Average	-	-10.0E-12	-10.0E-12	40.0E-12	20.0E-12	20.0E-12	-10.0E-12	0.0E+00	50.0E-12
Sigma	-	37.4E-12	20.0E-12	58.3E-12	40.0E-12	24.5E-12	49.0E-12	31.6E-12	77.5E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

IIH_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	200.0E-12	200.0E-12	200.0E-12	150.0E-12	200.0E-12	200.0E-12	150.0E-12	200.0E-12	250.0E-12
OFF samples									
7	200.0E-12	200.0E-12	200.0E-12	200.0E-12	250.0E-12	200.0E-12	200.0E-12	200.0E-12	150.0E-12
8	200.0E-12	300.0E-12	200.0E-12	200.0E-12	250.0E-12	250.0E-12	200.0E-12	200.0E-12	200.0E-12
9	150.0E-12	250.0E-12	300.0E-12	200.0E-12	250.0E-12	150.0E-12	150.0E-12	250.0E-12	200.0E-12
10	150.0E-12	250.0E-12	250.0E-12	200.0E-12	150.0E-12	300.0E-12	200.0E-12	200.0E-12	250.0E-12
11	250.0E-12	200.0E-12	200.0E-12	150.0E-12	150.0E-12	250.0E-12	100.0E-12	150.0E-12	200.0E-12
Statistics									
Min	150.0E-12	200.0E-12	200.0E-12	150.0E-12	150.0E-12	150.0E-12	100.0E-12	150.0E-12	150.0E-12
Max	250.0E-12	300.0E-12	300.0E-12	200.0E-12	250.0E-12	300.0E-12	200.0E-12	250.0E-12	250.0E-12
Average	190.0E-12	240.0E-12	230.0E-12	190.0E-12	210.0E-12	230.0E-12	170.0E-12	200.0E-12	200.0E-12
Sigma	37.4E-12	37.4E-12	40.0E-12	20.0E-12	49.0E-12	51.0E-12	40.0E-12	31.6E-12	31.6E-12

Drift Calculation

IIH_3VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00	0.0E+00	0.0E+00	-50.0E-12
8	-	100.0E-12	0.0E+00	0.0E+00	50.0E-12	50.0E-12	0.0E+00	0.0E+00	0.0E+00
9	-	100.0E-12	150.0E-12	50.0E-12	100.0E-12	0.0E+00	0.0E+00	100.0E-12	50.0E-12
10	-	100.0E-12	100.0E-12	50.0E-12	0.0E+00	150.0E-12	50.0E-12	50.0E-12	100.0E-12
11	-	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	0.0E+00	-150.0E-12	-100.0E-12	-50.0E-12
Average	-	50.0E-12	40.0E-12	0.0E+00	20.0E-12	40.0E-12	-20.0E-12	10.0E-12	10.0E-12
Sigma	-	63.2E-12	73.5E-12	54.8E-12	67.8E-12	58.3E-12	67.8E-12	66.3E-12	58.3E-12

Parameter : Input Leakage Current High : IIH_3VSCLK

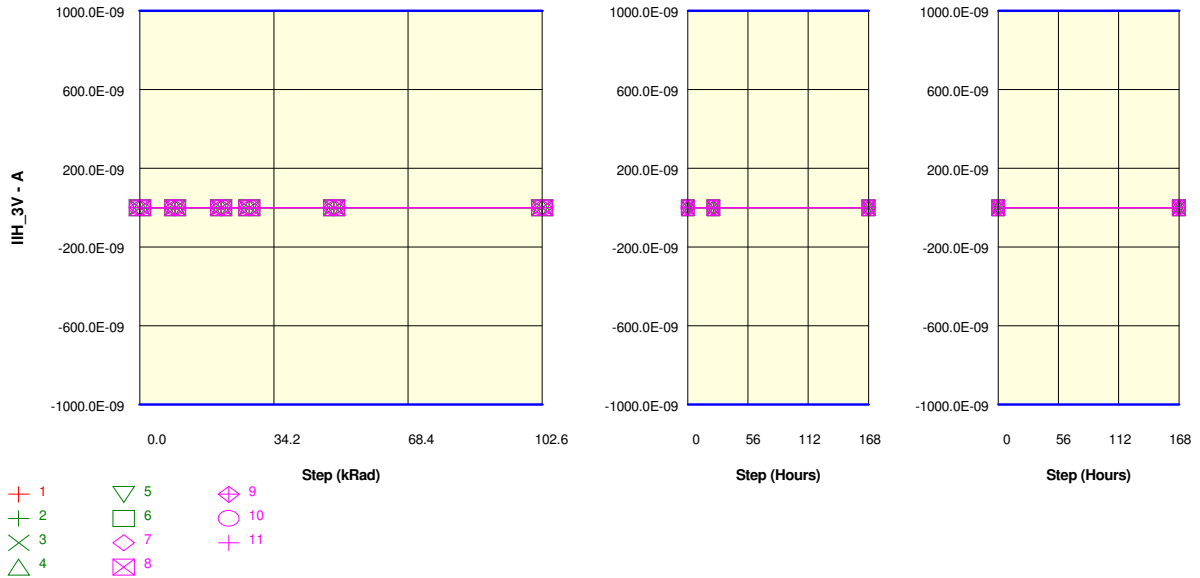
Test conditions : Vin=3V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIH_3VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	150.0E-12	250.0E-12	200.0E-12	200.0E-12	100.0E-12	250.0E-12	150.0E-12	250.0E-12	150.0E-12
ON samples									
2	200.0E-12	250.0E-12	150.0E-12	150.0E-12	250.0E-12	200.0E-12	150.0E-12	150.0E-12	200.0E-12
3	200.0E-12	100.0E-12	250.0E-12	100.0E-12	200.0E-12	150.0E-12	250.0E-12	200.0E-12	250.0E-12
4	250.0E-12	200.0E-12	200.0E-12	250.0E-12	200.0E-12	250.0E-12	200.0E-12	150.0E-12	200.0E-12
5	100.0E-12	150.0E-12	150.0E-12	250.0E-12	250.0E-12	200.0E-12	200.0E-12	200.0E-12	200.0E-12
6	200.0E-12	150.0E-12	150.0E-12	200.0E-12	100.0E-12	150.0E-12	200.0E-12	200.0E-12	250.0E-12
Statistics									
Min	100.0E-12	100.0E-12	150.0E-12	100.0E-12	100.0E-12	150.0E-12	150.0E-12	150.0E-12	200.0E-12
Max	250.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	200.0E-12	250.0E-12
Average	190.0E-12	170.0E-12	180.0E-12	190.0E-12	200.0E-12	190.0E-12	200.0E-12	180.0E-12	220.0E-12
Sigma	49.0E-12	51.0E-12	40.0E-12	58.3E-12	54.8E-12	37.4E-12	31.6E-12	24.5E-12	24.5E-12

Drift Calculation

IIH_3VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	50.0E-12	-50.0E-12	-50.0E-12	50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	0.0E+00
3	-	-100.0E-12	50.0E-12	-100.0E-12	0.0E+00	-50.0E-12	50.0E-12	0.0E+00	50.0E-12
4	-	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-50.0E-12
5	-	50.0E-12	50.0E-12	150.0E-12	150.0E-12	100.0E-12	100.0E-12	100.0E-12	100.0E-12
6	-	-50.0E-12	-50.0E-12	0.0E+00	-100.0E-12	-50.0E-12	0.0E+00	0.0E+00	50.0E-12
Average	-	-20.0E-12	-10.0E-12	0.0E+00	10.0E-12	-2.6E-27	10.0E-12	-10.0E-12	30.0E-12
Sigma	-	60.0E-12	49.0E-12	83.7E-12	86.0E-12	54.8E-12	58.3E-12	66.3E-12	51.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

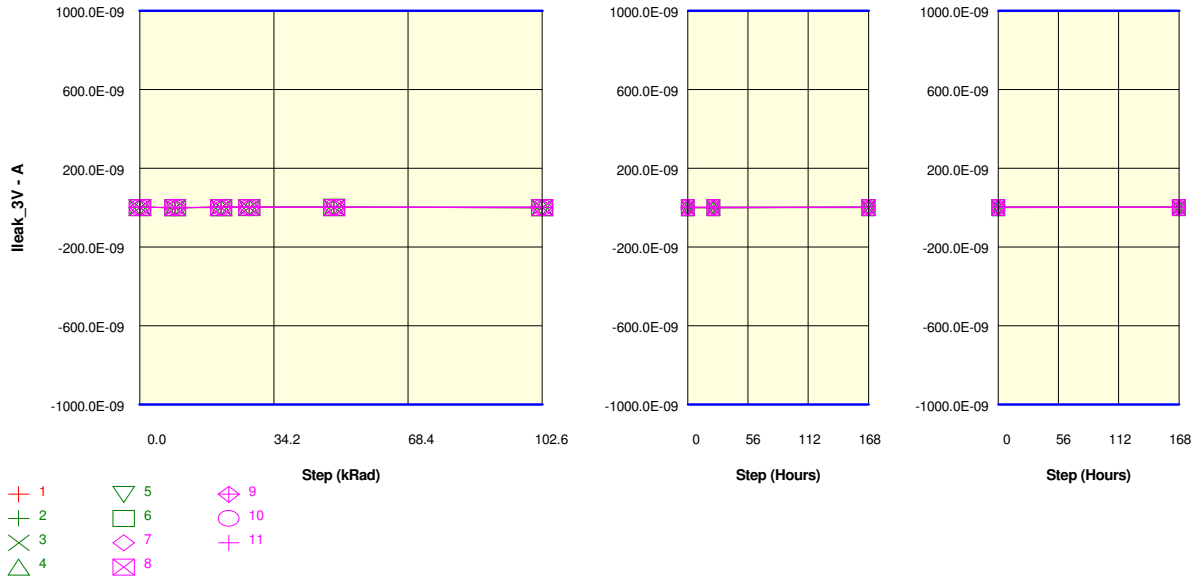
IIH_3VCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	150.0E-12	250.0E-12	200.0E-12	200.0E-12	100.0E-12	250.0E-12	150.0E-12	250.0E-12	150.0E-12
OFF samples									
7	200.0E-12	150.0E-12	200.0E-12	200.0E-12	150.0E-12	150.0E-12	200.0E-12	200.0E-12	250.0E-12
8	250.0E-12	200.0E-12	200.0E-12	200.0E-12	250.0E-12	200.0E-12	150.0E-12	150.0E-12	150.0E-12
9	150.0E-12	50.0E-12	150.0E-12	150.0E-12	150.0E-12	150.0E-12	200.0E-12	150.0E-12	200.0E-12
10	200.0E-12	250.0E-12	200.0E-12	200.0E-12	150.0E-12	200.0E-12	250.0E-12	200.0E-12	150.0E-12
11	150.0E-12	150.0E-12	200.0E-12	200.0E-12	200.0E-12	250.0E-12	100.0E-12	200.0E-12	200.0E-12
Statistics									
Min	150.0E-12	50.0E-12	150.0E-12	150.0E-12	150.0E-12	150.0E-12	100.0E-12	150.0E-12	150.0E-12
Max	250.0E-12	250.0E-12	200.0E-12	200.0E-12	250.0E-12	250.0E-12	250.0E-12	200.0E-12	250.0E-12
Average	190.0E-12	160.0E-12	190.0E-12	190.0E-12	180.0E-12	190.0E-12	180.0E-12	180.0E-12	190.0E-12
Sigma	37.4E-12	66.3E-12	20.0E-12	20.0E-12	40.0E-12	37.4E-12	51.0E-12	24.5E-12	37.4E-12

Drift Calculation

IIH_3VCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-50.0E-12	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00	50.0E-12
8	-	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
9	-	-100.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00	50.0E-12
10	-	50.0E-12	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	50.0E-12	0.0E+00	-50.0E-12
11	-	0.0E+00	50.0E-12	50.0E-12	50.0E-12	100.0E-12	-50.0E-12	50.0E-12	50.0E-12
Average	-	-30.0E-12	0.0E+00	0.0E+00	-10.0E-12	0.0E+00	-10.0E-12	-10.0E-12	0.0E+00
Sigma	-	51.0E-12	31.6E-12	31.6E-12	37.4E-12	54.8E-12	58.3E-12	49.0E-12	63.2E-12

Parameter : Input Leakage Current Low : Ileak_3VIN7
 Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	950.0E-12	700.0E-12	850.0E-12	850.0E-12	1.1E-09	700.0E-12	650.0E-12	800.0E-12	1.3E-09
ON samples									
2	1.1E-09	650.0E-12	1.1E-09	1.2E-09	1.1E-09	650.0E-12	700.0E-12	1.3E-09	1.1E-09
3	1.2E-09	600.0E-12	600.0E-12	900.0E-12	1.1E-09	800.0E-12	750.0E-12	1.0E-09	1.0E-09
4	1.3E-09	600.0E-12	900.0E-12	850.0E-12	1.1E-09	650.0E-12	1.2E-09	800.0E-12	1.2E-09
5	1.2E-09	600.0E-12	950.0E-12	900.0E-12	1.4E-09	650.0E-12	700.0E-12	800.0E-12	1.3E-09
6	900.0E-12	500.0E-12	1.0E-09	1.2E-09	1.4E-09	800.0E-12	650.0E-12	700.0E-12	850.0E-12
Statistics									
Min	900.0E-12	500.0E-12	600.0E-12	850.0E-12	1.1E-09	650.0E-12	650.0E-12	700.0E-12	850.0E-12
Max	1.3E-09	650.0E-12	1.1E-09	1.2E-09	1.4E-09	800.0E-12	1.2E-09	1.3E-09	1.3E-09
Average	1.1E-09	590.0E-12	900.0E-12	1.0E-09	1.2E-09	710.0E-12	800.0E-12	920.0E-12	1.1E-09
Sigma	128.8E-12	49.0E-12	158.1E-12	156.2E-12	156.2E-12	73.5E-12	202.5E-12	213.5E-12	156.2E-12

Drift Calculation

Ileak_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-400.0E-12	0.0E+00	150.0E-12	0.0E+00	-400.0E-12	-350.0E-12	250.0E-12	50.0E-12
3	-	-600.0E-12	-600.0E-12	-300.0E-12	-100.0E-12	-400.0E-12	-450.0E-12	-200.0E-12	-200.0E-12
4	-	-650.0E-12	-350.0E-12	-400.0E-12	-150.0E-12	-600.0E-12	-50.0E-12	-450.0E-12	-50.0E-12
5	-	-600.0E-12	-250.0E-12	-300.0E-12	200.0E-12	-550.0E-12	-500.0E-12	-400.0E-12	100.0E-12
6	-	-400.0E-12	100.0E-12	300.0E-12	500.0E-12	-100.0E-12	-250.0E-12	-200.0E-12	-50.0E-12
Average	-	-530.0E-12	-220.0E-12	-110.0E-12	90.0E-12	-410.0E-12	-320.0E-12	-200.0E-12	-30.0E-12
Sigma	-	107.7E-12	250.2E-12	280.0E-12	237.5E-12	174.4E-12	160.0E-12	247.0E-12	103.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Ileak_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	950.0E-12	700.0E-12	850.0E-12	850.0E-12	1.1E-09	700.0E-12	650.0E-12	800.0E-12	1.3E-09
OFF samples									
7	1.0E-09	600.0E-12	750.0E-12	1.0E-09	1.1E-09	850.0E-12	750.0E-12	800.0E-12	1.2E-09
8	950.0E-12	700.0E-12	950.0E-12	1.2E-09	1.1E-09	600.0E-12	850.0E-12	1.3E-09	1.3E-09
9	1.0E-09	700.0E-12	850.0E-12	850.0E-12	1.1E-09	800.0E-12	600.0E-12	900.0E-12	850.0E-12
10	1.2E-09	550.0E-12	900.0E-12	900.0E-12	1.2E-09	800.0E-12	750.0E-12	850.0E-12	900.0E-12
11	800.0E-12	900.0E-12	850.0E-12	1.0E-09	1.0E-09	800.0E-12	700.0E-12	1.1E-09	1.2E-09
Statistics									
Min	800.0E-12	550.0E-12	750.0E-12	850.0E-12	1.0E-09	600.0E-12	600.0E-12	800.0E-12	850.0E-12
Max	1.2E-09	900.0E-12	950.0E-12	1.2E-09	1.2E-09	850.0E-12	850.0E-12	1.3E-09	1.3E-09
Average	990.0E-12	690.0E-12	860.0E-12	990.0E-12	1.1E-09	770.0E-12	730.0E-12	990.0E-12	1.1E-09
Sigma	128.1E-12	120.0E-12	66.3E-12	120.0E-12	63.2E-12	87.2E-12	81.2E-12	185.5E-12	163.1E-12

Drift Calculation

Ileak_3VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-400.0E-12	-250.0E-12	0.0E+00	100.0E-12	-150.0E-12	-250.0E-12	-200.0E-12	150.0E-12
8	-	-250.0E-12	0.0E+00	250.0E-12	150.0E-12	-350.0E-12	-100.0E-12	350.0E-12	300.0E-12
9	-	-300.0E-12	-150.0E-12	-150.0E-12	100.0E-12	-200.0E-12	-400.0E-12	-100.0E-12	-150.0E-12
10	-	-650.0E-12	-300.0E-12	-300.0E-12	0.0E+00	-400.0E-12	-450.0E-12	-350.0E-12	-300.0E-12
11	-	100.0E-12	50.0E-12	200.0E-12	200.0E-12	0.0E+00	-100.0E-12	300.0E-12	400.0E-12
Average	-	-300.0E-12	-130.0E-12	-20.7E-27	110.0E-12	-220.0E-12	-260.0E-12	-41.4E-27	80.0E-12
Sigma	-	242.9E-12	136.4E-12	207.4E-12	66.3E-12	143.5E-12	146.3E-12	277.5E-12	265.7E-12

Parameter : Input Leakage Current Low : Ileak_3VIN6

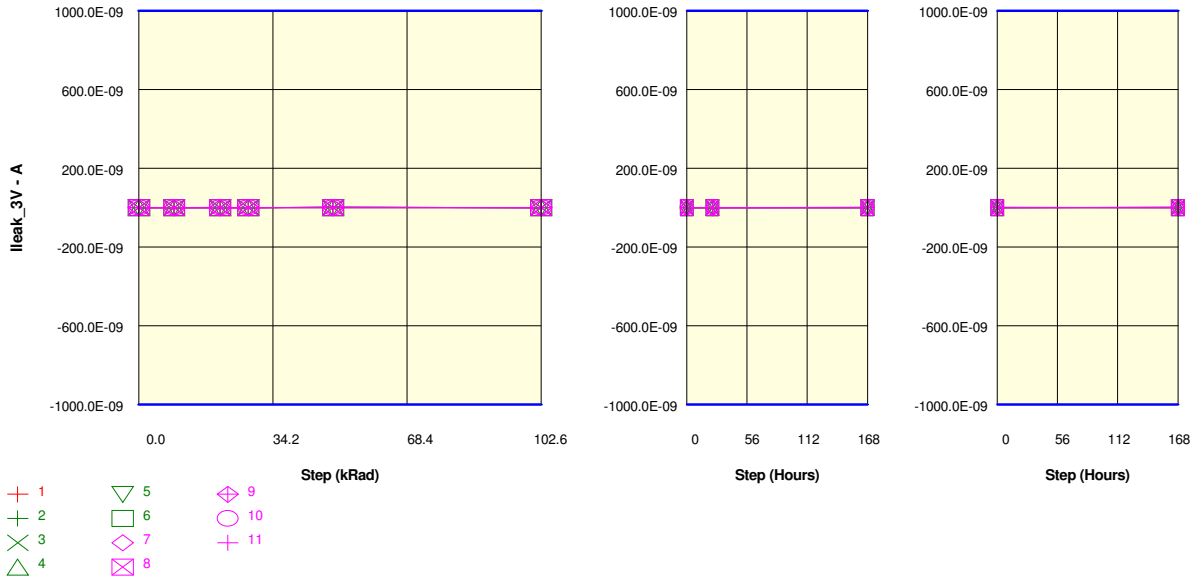
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	650.0E-12	450.0E-12	500.0E-12	550.0E-12	650.0E-12	400.0E-12	500.0E-12	450.0E-12	700.0E-12
ON samples									
2	600.0E-12	450.0E-12	800.0E-12	650.0E-12	750.0E-12	650.0E-12	500.0E-12	950.0E-12	650.0E-12
3	750.0E-12	350.0E-12	500.0E-12	500.0E-12	850.0E-12	650.0E-12	500.0E-12	600.0E-12	750.0E-12
4	700.0E-12	450.0E-12	500.0E-12	500.0E-12	700.0E-12	400.0E-12	550.0E-12	450.0E-12	700.0E-12
5	700.0E-12	450.0E-12	500.0E-12	550.0E-12	850.0E-12	500.0E-12	450.0E-12	550.0E-12	750.0E-12
6	600.0E-12	500.0E-12	500.0E-12	550.0E-12	850.0E-12	650.0E-12	550.0E-12	600.0E-12	600.0E-12
Statistics									
Min	600.0E-12	350.0E-12	500.0E-12	500.0E-12	700.0E-12	400.0E-12	450.0E-12	450.0E-12	600.0E-12
Max	750.0E-12	500.0E-12	800.0E-12	650.0E-12	850.0E-12	650.0E-12	550.0E-12	950.0E-12	750.0E-12
Average	670.0E-12	440.0E-12	560.0E-12	550.0E-12	800.0E-12	570.0E-12	510.0E-12	630.0E-12	690.0E-12
Sigma	60.0E-12	49.0E-12	120.0E-12	54.8E-12	63.2E-12	103.0E-12	37.4E-12	169.1E-12	58.3E-12

Drift Calculation

Ileak_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-150.0E-12	200.0E-12	50.0E-12	150.0E-12	50.0E-12	-100.0E-12	350.0E-12	50.0E-12
3	-	-400.0E-12	-250.0E-12	-250.0E-12	100.0E-12	-100.0E-12	-250.0E-12	-150.0E-12	0.0E+00
4	-	-250.0E-12	-200.0E-12	-200.0E-12	0.0E+00	-300.0E-12	-150.0E-12	-250.0E-12	0.0E+00
5	-	-250.0E-12	-200.0E-12	-150.0E-12	150.0E-12	-200.0E-12	-250.0E-12	-150.0E-12	50.0E-12
6	-	-100.0E-12	-100.0E-12	-50.0E-12	250.0E-12	50.0E-12	-50.0E-12	0.0E+00	0.0E+00
Average	-	-230.0E-12	-110.0E-12	-120.0E-12	130.0E-12	-100.0E-12	-160.0E-12	-40.0E-12	20.0E-12
Sigma	-	103.0E-12	162.5E-12	107.7E-12	81.2E-12	137.8E-12	80.0E-12	210.7E-12	24.5E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

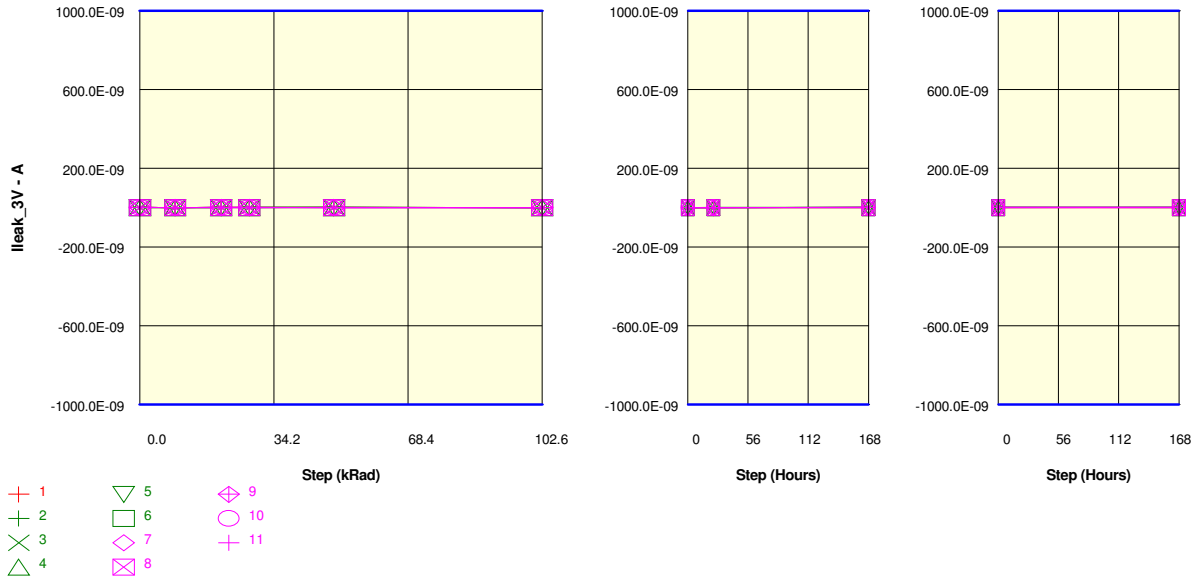
Ileak_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	650.0E-12	450.0E-12	500.0E-12	550.0E-12	650.0E-12	400.0E-12	500.0E-12	450.0E-12	700.0E-12
OFF samples									
7	650.0E-12	500.0E-12	450.0E-12	550.0E-12	750.0E-12	600.0E-12	450.0E-12	500.0E-12	850.0E-12
8	650.0E-12	450.0E-12	550.0E-12	600.0E-12	600.0E-12	400.0E-12	500.0E-12	600.0E-12	800.0E-12
9	600.0E-12	450.0E-12	550.0E-12	600.0E-12	800.0E-12	400.0E-12	450.0E-12	550.0E-12	600.0E-12
10	700.0E-12	400.0E-12	600.0E-12	500.0E-12	800.0E-12	450.0E-12	450.0E-12	600.0E-12	650.0E-12
11	700.0E-12	600.0E-12	450.0E-12	600.0E-12	550.0E-12	500.0E-12	450.0E-12	800.0E-12	650.0E-12
Statistics									
Min	600.0E-12	400.0E-12	450.0E-12	500.0E-12	550.0E-12	400.0E-12	450.0E-12	500.0E-12	600.0E-12
Max	700.0E-12	600.0E-12	600.0E-12	600.0E-12	800.0E-12	600.0E-12	500.0E-12	800.0E-12	850.0E-12
Average	660.0E-12	480.0E-12	520.0E-12	570.0E-12	700.0E-12	470.0E-12	460.0E-12	610.0E-12	710.0E-12
Sigma	37.4E-12	67.8E-12	60.0E-12	40.0E-12	104.9E-12	74.8E-12	20.0E-12	102.0E-12	97.0E-12

Drift Calculation

Ileak_3VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-150.0E-12	-200.0E-12	-100.0E-12	100.0E-12	-50.0E-12	-200.0E-12	-150.0E-12	200.0E-12
8	-	-200.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-250.0E-12	-150.0E-12	-50.0E-12	150.0E-12
9	-	-150.0E-12	-50.0E-12	0.0E+00	200.0E-12	-200.0E-12	-150.0E-12	-50.0E-12	0.0E+00
10	-	-300.0E-12	-100.0E-12	-200.0E-12	100.0E-12	-250.0E-12	-250.0E-12	-100.0E-12	-50.0E-12
11	-	-100.0E-12	-250.0E-12	-100.0E-12	-150.0E-12	-200.0E-12	-250.0E-12	100.0E-12	-50.0E-12
Average	-	-180.0E-12	-140.0E-12	-90.0E-12	40.0E-12	-190.0E-12	-200.0E-12	-50.0E-12	50.0E-12
Sigma	-	67.8E-12	73.5E-12	66.3E-12	124.1E-12	73.5E-12	44.7E-12	83.7E-12	104.9E-12

Parameter : Input Leakage Current Low : Ileak_3VIN5
 Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	800.0E-12	400.0E-12	900.0E-12	800.0E-12	850.0E-12	400.0E-12	500.0E-12	600.0E-12	700.0E-12
ON samples									
2	800.0E-12	500.0E-12	750.0E-12	650.0E-12	800.0E-12	600.0E-12	550.0E-12	850.0E-12	800.0E-12
3	800.0E-12	350.0E-12	600.0E-12	800.0E-12	800.0E-12	450.0E-12	500.0E-12	800.0E-12	650.0E-12
4	850.0E-12	500.0E-12	500.0E-12	650.0E-12	550.0E-12	400.0E-12	650.0E-12	700.0E-12	800.0E-12
5	650.0E-12	450.0E-12	700.0E-12	800.0E-12	800.0E-12	500.0E-12	450.0E-12	900.0E-12	800.0E-12
6	700.0E-12	450.0E-12	900.0E-12	900.0E-12	800.0E-12	600.0E-12	800.0E-12	900.0E-12	800.0E-12
Statistics									
Min	650.0E-12	350.0E-12	500.0E-12	650.0E-12	550.0E-12	400.0E-12	450.0E-12	700.0E-12	650.0E-12
Max	850.0E-12	500.0E-12	900.0E-12	900.0E-12	800.0E-12	600.0E-12	800.0E-12	900.0E-12	800.0E-12
Average	760.0E-12	450.0E-12	690.0E-12	760.0E-12	750.0E-12	510.0E-12	590.0E-12	830.0E-12	770.0E-12
Sigma	73.5E-12	54.8E-12	135.6E-12	97.0E-12	100.0E-12	80.0E-12	124.1E-12	74.8E-12	60.0E-12

Drift Calculation

Ileak_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-300.0E-12	-50.0E-12	-150.0E-12	0.0E+00	-200.0E-12	-250.0E-12	50.0E-12	0.0E+00
3	-	-450.0E-12	-200.0E-12	0.0E+00	0.0E+00	-350.0E-12	-300.0E-12	0.0E+00	-150.0E-12
4	-	-350.0E-12	-350.0E-12	-200.0E-12	-300.0E-12	-450.0E-12	-200.0E-12	-150.0E-12	-50.0E-12
5	-	-200.0E-12	50.0E-12	150.0E-12	150.0E-12	-150.0E-12	-200.0E-12	250.0E-12	150.0E-12
6	-	-250.0E-12	200.0E-12	200.0E-12	100.0E-12	-100.0E-12	100.0E-12	200.0E-12	100.0E-12
Average	-	-310.0E-12	-70.0E-12	20.7E-27	-10.0E-12	-250.0E-12	-170.0E-12	70.0E-12	10.0E-12
Sigma	-	86.0E-12	191.3E-12	158.1E-12	156.2E-12	130.4E-12	140.0E-12	143.5E-12	106.8E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

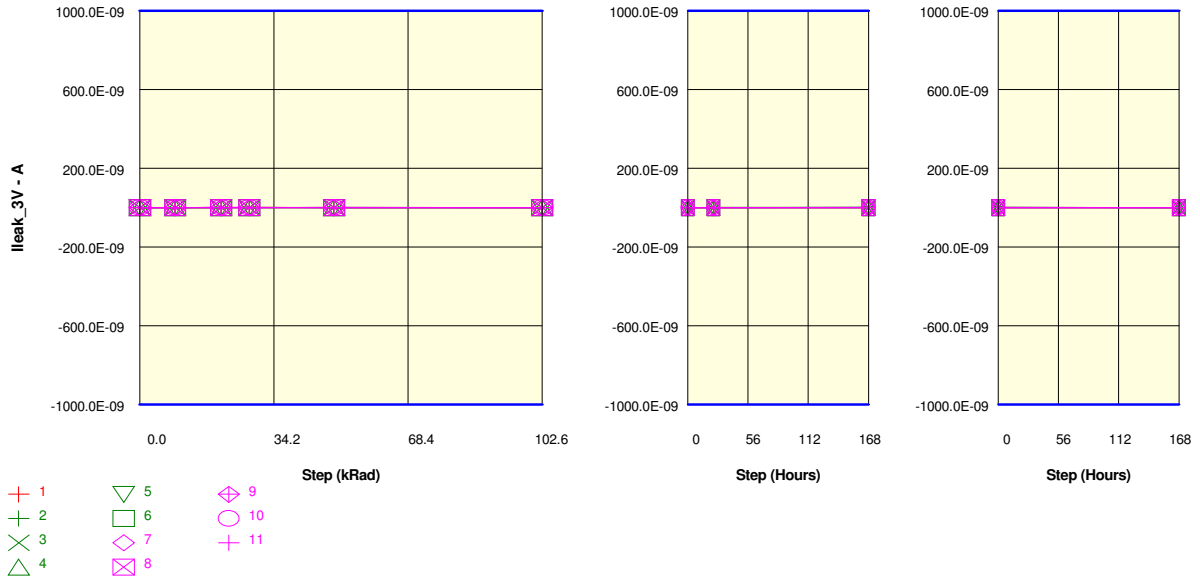
Ileak_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	800.0E-12	400.0E-12	900.0E-12	800.0E-12	850.0E-12	400.0E-12	500.0E-12	600.0E-12	700.0E-12
OFF samples									
7	800.0E-12	350.0E-12	850.0E-12	750.0E-12	700.0E-12	550.0E-12	550.0E-12	850.0E-12	800.0E-12
8	850.0E-12	500.0E-12	850.0E-12	600.0E-12	700.0E-12	600.0E-12	400.0E-12	700.0E-12	700.0E-12
9	750.0E-12	450.0E-12	600.0E-12	700.0E-12	700.0E-12	450.0E-12	650.0E-12	900.0E-12	800.0E-12
10	800.0E-12	400.0E-12	950.0E-12	750.0E-12	700.0E-12	600.0E-12	500.0E-12	700.0E-12	700.0E-12
11	700.0E-12	650.0E-12	600.0E-12	650.0E-12	800.0E-12	450.0E-12	450.0E-12	800.0E-12	800.0E-12
Statistics									
Min	700.0E-12	350.0E-12	600.0E-12	600.0E-12	700.0E-12	450.0E-12	400.0E-12	700.0E-12	700.0E-12
Max	850.0E-12	650.0E-12	950.0E-12	750.0E-12	800.0E-12	600.0E-12	650.0E-12	900.0E-12	800.0E-12
Average	780.0E-12	470.0E-12	770.0E-12	690.0E-12	720.0E-12	530.0E-12	510.0E-12	790.0E-12	760.0E-12
Sigma	51.0E-12	103.0E-12	143.5E-12	58.3E-12	40.0E-12	67.8E-12	86.0E-12	80.0E-12	49.0E-12

Drift Calculation

Ileak_3VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-450.0E-12	50.0E-12	-50.0E-12	-100.0E-12	-250.0E-12	-250.0E-12	50.0E-12	0.0E+00
8	-	-350.0E-12	0.0E+00	-250.0E-12	-150.0E-12	-250.0E-12	-450.0E-12	-150.0E-12	-150.0E-12
9	-	-300.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	-300.0E-12	-100.0E-12	150.0E-12	50.0E-12
10	-	-400.0E-12	150.0E-12	-50.0E-12	-100.0E-12	-200.0E-12	-300.0E-12	-100.0E-12	-100.0E-12
11	-	-50.0E-12	-100.0E-12	-50.0E-12	100.0E-12	-250.0E-12	-250.0E-12	100.0E-12	100.0E-12
Average	-	-310.0E-12	-10.0E-12	-90.0E-12	-60.0E-12	-250.0E-12	-270.0E-12	10.0E-12	-20.0E-12
Sigma	-	139.3E-12	106.8E-12	80.0E-12	86.0E-12	31.6E-12	112.2E-12	115.8E-12	92.7E-12

Parameter : Input Leakage Current Low : Ileak_3VIN4
 Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	700.0E-12	400.0E-12	650.0E-12	800.0E-12	700.0E-12	300.0E-12	500.0E-12	700.0E-12	600.0E-12
ON samples									
2	800.0E-12	300.0E-12	550.0E-12	650.0E-12	700.0E-12	500.0E-12	800.0E-12	850.0E-12	650.0E-12
3	650.0E-12	350.0E-12	650.0E-12	700.0E-12	850.0E-12	500.0E-12	500.0E-12	600.0E-12	600.0E-12
4	700.0E-12	450.0E-12	850.0E-12	600.0E-12	700.0E-12	500.0E-12	500.0E-12	600.0E-12	600.0E-12
5	600.0E-12	300.0E-12	700.0E-12	550.0E-12	700.0E-12	600.0E-12	450.0E-12	600.0E-12	700.0E-12
6	700.0E-12	400.0E-12	550.0E-12	800.0E-12	650.0E-12	500.0E-12	500.0E-12	800.0E-12	550.0E-12
Statistics									
Min	600.0E-12	300.0E-12	550.0E-12	550.0E-12	650.0E-12	500.0E-12	450.0E-12	600.0E-12	550.0E-12
Max	800.0E-12	450.0E-12	850.0E-12	800.0E-12	850.0E-12	600.0E-12	800.0E-12	850.0E-12	700.0E-12
Average	690.0E-12	360.0E-12	660.0E-12	660.0E-12	720.0E-12	520.0E-12	550.0E-12	690.0E-12	620.0E-12
Sigma	66.3E-12	58.3E-12	111.4E-12	86.0E-12	67.8E-12	40.0E-12	126.5E-12	111.4E-12	51.0E-12

Drift Calculation

Ileak_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-500.0E-12	-250.0E-12	-150.0E-12	-100.0E-12	-300.0E-12	0.0E+00	50.0E-12	-150.0E-12
3	-	-300.0E-12	0.0E+00	50.0E-12	200.0E-12	-150.0E-12	-150.0E-12	-50.0E-12	-50.0E-12
4	-	-250.0E-12	150.0E-12	-100.0E-12	0.0E+00	-200.0E-12	-200.0E-12	-100.0E-12	-100.0E-12
5	-	-300.0E-12	100.0E-12	-50.0E-12	100.0E-12	0.0E+00	-150.0E-12	0.0E+00	100.0E-12
6	-	-300.0E-12	-150.0E-12	100.0E-12	-50.0E-12	-200.0E-12	-200.0E-12	100.0E-12	-150.0E-12
Average	-	-330.0E-12	-30.0E-12	-30.0E-12	30.0E-12	-170.0E-12	-140.0E-12	0.0E+00	-70.0E-12
Sigma	-	87.2E-12	150.3E-12	92.7E-12	107.7E-12	98.0E-12	73.5E-12	70.7E-12	92.7E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Ileak_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	700.0E-12	400.0E-12	650.0E-12	800.0E-12	700.0E-12	300.0E-12	500.0E-12	700.0E-12	600.0E-12
OFF samples									
7	650.0E-12	350.0E-12	450.0E-12	650.0E-12	800.0E-12	500.0E-12	500.0E-12	500.0E-12	650.0E-12
8	600.0E-12	400.0E-12	750.0E-12	750.0E-12	700.0E-12	400.0E-12	500.0E-12	700.0E-12	700.0E-12
9	650.0E-12	350.0E-12	500.0E-12	650.0E-12	550.0E-12	550.0E-12	400.0E-12	550.0E-12	650.0E-12
10	700.0E-12	300.0E-12	800.0E-12	650.0E-12	600.0E-12	450.0E-12	250.0E-12	600.0E-12	700.0E-12
11	600.0E-12	500.0E-12	600.0E-12	700.0E-12	650.0E-12	400.0E-12	500.0E-12	800.0E-12	650.0E-12
Statistics									
Min	600.0E-12	300.0E-12	450.0E-12	650.0E-12	550.0E-12	400.0E-12	250.0E-12	500.0E-12	650.0E-12
Max	700.0E-12	500.0E-12	800.0E-12	750.0E-12	800.0E-12	550.0E-12	500.0E-12	800.0E-12	700.0E-12
Average	640.0E-12	380.0E-12	620.0E-12	680.0E-12	660.0E-12	460.0E-12	430.0E-12	630.0E-12	670.0E-12
Sigma	37.4E-12	67.8E-12	136.4E-12	40.0E-12	86.0E-12	58.3E-12	98.0E-12	107.7E-12	24.5E-12

Drift Calculation

Ileak_3VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-300.0E-12	-200.0E-12	0.0E+00	150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	0.0E+00
8	-	-200.0E-12	150.0E-12	150.0E-12	100.0E-12	-200.0E-12	-100.0E-12	100.0E-12	100.0E-12
9	-	-300.0E-12	-150.0E-12	0.0E+00	-100.0E-12	-100.0E-12	-250.0E-12	-100.0E-12	0.0E+00
10	-	-400.0E-12	100.0E-12	-50.0E-12	-100.0E-12	-250.0E-12	-450.0E-12	-100.0E-12	0.0E+00
11	-	-100.0E-12	0.0E+00	100.0E-12	50.0E-12	-200.0E-12	-100.0E-12	200.0E-12	50.0E-12
Average	-	-260.0E-12	-20.0E-12	40.0E-12	20.0E-12	-180.0E-12	-210.0E-12	-10.0E-12	30.0E-12
Sigma	-	102.0E-12	136.4E-12	73.5E-12	103.0E-12	51.0E-12	131.9E-12	135.6E-12	40.0E-12

Parameter : Input Leakage Current Low : Ileak_3VIN3

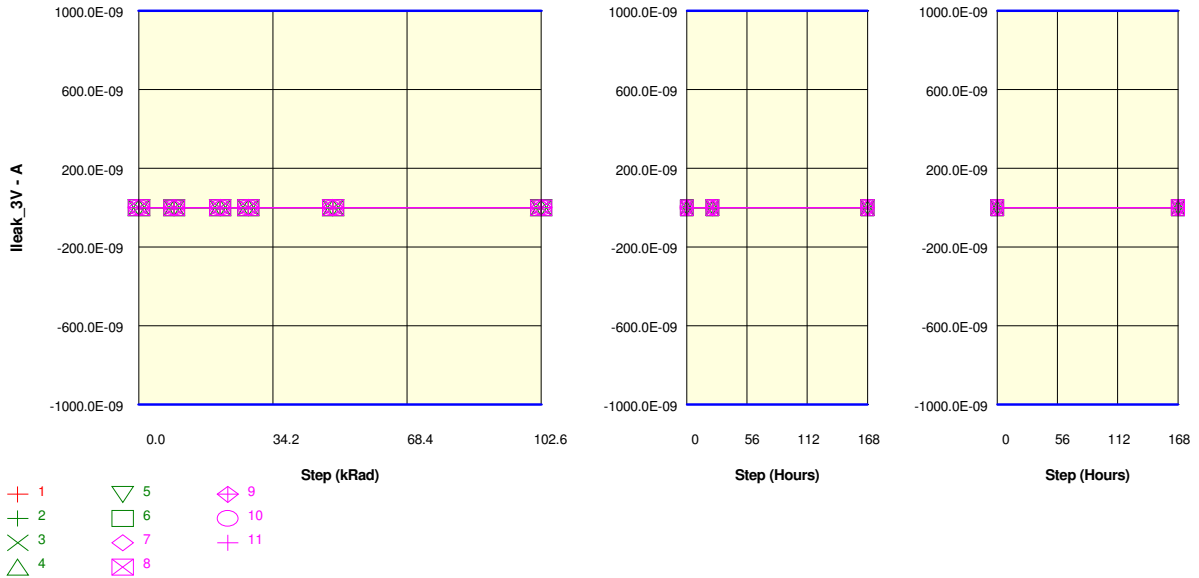
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	600.0E-12	400.0E-12	450.0E-12	350.0E-12	600.0E-12	300.0E-12	200.0E-12	400.0E-12	450.0E-12
ON samples									
2	500.0E-12	400.0E-12	350.0E-12	400.0E-12	400.0E-12	500.0E-12	350.0E-12	450.0E-12	500.0E-12
3	500.0E-12	300.0E-12	350.0E-12	450.0E-12	500.0E-12	300.0E-12	400.0E-12	350.0E-12	450.0E-12
4	600.0E-12	300.0E-12	450.0E-12	500.0E-12	500.0E-12	300.0E-12	350.0E-12	300.0E-12	550.0E-12
5	450.0E-12	250.0E-12	450.0E-12	450.0E-12	500.0E-12	400.0E-12	350.0E-12	350.0E-12	500.0E-12
6	450.0E-12	300.0E-12	400.0E-12	450.0E-12	450.0E-12	300.0E-12	450.0E-12	450.0E-12	500.0E-12
Statistics									
Min	450.0E-12	250.0E-12	350.0E-12	400.0E-12	400.0E-12	300.0E-12	350.0E-12	300.0E-12	450.0E-12
Max	600.0E-12	400.0E-12	450.0E-12	500.0E-12	500.0E-12	500.0E-12	450.0E-12	450.0E-12	550.0E-12
Average	500.0E-12	310.0E-12	400.0E-12	450.0E-12	470.0E-12	360.0E-12	380.0E-12	380.0E-12	500.0E-12
Sigma	54.8E-12	49.0E-12	44.7E-12	31.6E-12	40.0E-12	80.0E-12	40.0E-12	60.0E-12	31.6E-12

Drift Calculation

Ileak_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	0.0E+00	-150.0E-12	-50.0E-12	0.0E+00
3	-	-200.0E-12	-150.0E-12	-50.0E-12	0.0E+00	-200.0E-12	-100.0E-12	-150.0E-12	-50.0E-12
4	-	-300.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-300.0E-12	-250.0E-12	-300.0E-12	-50.0E-12
5	-	-200.0E-12	0.0E+00	0.0E+00	50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	50.0E-12
6	-	-150.0E-12	-50.0E-12	0.0E+00	0.0E+00	-150.0E-12	0.0E+00	0.0E+00	50.0E-12
Average	-	-190.0E-12	-100.0E-12	-50.0E-12	-30.0E-12	-140.0E-12	-120.0E-12	-120.0E-12	0.0E+00
Sigma	-	66.3E-12	63.2E-12	44.7E-12	60.0E-12	106.8E-12	81.2E-12	103.0E-12	44.7E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Ileak_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	600.0E-12	400.0E-12	450.0E-12	350.0E-12	600.0E-12	300.0E-12	200.0E-12	400.0E-12	450.0E-12
OFF samples									
7	500.0E-12	250.0E-12	400.0E-12	400.0E-12	600.0E-12	450.0E-12	300.0E-12	400.0E-12	500.0E-12
8	400.0E-12	250.0E-12	500.0E-12	400.0E-12	450.0E-12	300.0E-12	500.0E-12	350.0E-12	500.0E-12
9	450.0E-12	250.0E-12	350.0E-12	500.0E-12	500.0E-12	300.0E-12	350.0E-12	400.0E-12	400.0E-12
10	450.0E-12	250.0E-12	600.0E-12	500.0E-12	500.0E-12	300.0E-12	400.0E-12	350.0E-12	500.0E-12
11	500.0E-12	300.0E-12	400.0E-12	400.0E-12	450.0E-12	400.0E-12	500.0E-12	500.0E-12	600.0E-12
Statistics									
Min	400.0E-12	250.0E-12	350.0E-12	400.0E-12	450.0E-12	300.0E-12	300.0E-12	350.0E-12	400.0E-12
Max	500.0E-12	300.0E-12	600.0E-12	500.0E-12	600.0E-12	450.0E-12	500.0E-12	500.0E-12	600.0E-12
Average	460.0E-12	260.0E-12	450.0E-12	440.0E-12	500.0E-12	350.0E-12	410.0E-12	400.0E-12	500.0E-12
Sigma	37.4E-12	20.0E-12	89.4E-12	49.0E-12	54.8E-12	63.2E-12	80.0E-12	54.8E-12	63.2E-12

Drift Calculation

Ileak_3VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-250.0E-12	-100.0E-12	-100.0E-12	100.0E-12	-50.0E-12	-200.0E-12	-100.0E-12	0.0E+00
8	-	-150.0E-12	100.0E-12	0.0E+00	50.0E-12	-100.0E-12	100.0E-12	-50.0E-12	100.0E-12
9	-	-200.0E-12	-100.0E-12	50.0E-12	50.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
10	-	-200.0E-12	150.0E-12	50.0E-12	50.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	50.0E-12
11	-	-200.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	0.0E+00	0.0E+00	100.0E-12
Average	-	-200.0E-12	-10.0E-12	-20.0E-12	40.0E-12	-110.0E-12	-50.0E-12	-60.0E-12	40.0E-12
Sigma	-	31.6E-12	111.4E-12	67.8E-12	49.0E-12	37.4E-12	100.0E-12	37.4E-12	58.3E-12

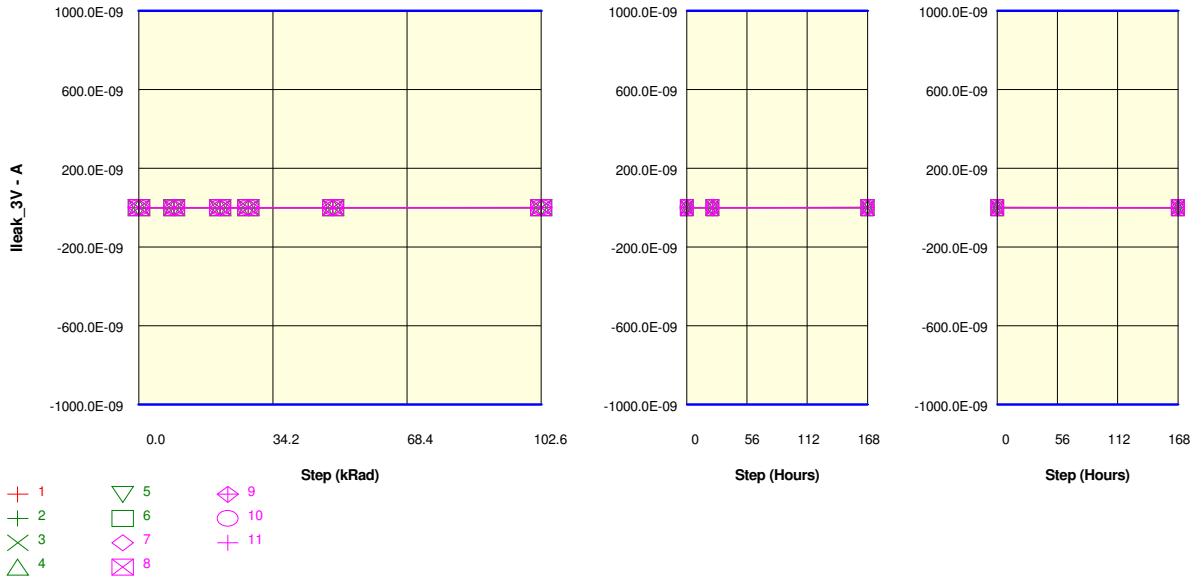
Parameter : Input Leakage Current Low : I_{leak_3VIN2}
 Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

I _{leak_3VIN2}	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	550.0E-12	250.0E-12	600.0E-12	550.0E-12	600.0E-12	400.0E-12	350.0E-12	550.0E-12	450.0E-12
ON samples									
2	550.0E-12	250.0E-12	450.0E-12	550.0E-12	500.0E-12	800.0E-12	450.0E-12	1.0E-09	500.0E-12
3	500.0E-12	250.0E-12	450.0E-12	550.0E-12	550.0E-12	500.0E-12	700.0E-12	600.0E-12	500.0E-12
4	550.0E-12	400.0E-12	500.0E-12	550.0E-12	500.0E-12	400.0E-12	400.0E-12	600.0E-12	500.0E-12
5	550.0E-12	350.0E-12	400.0E-12	550.0E-12	650.0E-12	350.0E-12	400.0E-12	500.0E-12	500.0E-12
6	550.0E-12	300.0E-12	550.0E-12	500.0E-12	600.0E-12	600.0E-12	500.0E-12	800.0E-12	500.0E-12
Statistics									
Min	500.0E-12	250.0E-12	400.0E-12	500.0E-12	500.0E-12	350.0E-12	400.0E-12	500.0E-12	500.0E-12
Max	550.0E-12	400.0E-12	550.0E-12	550.0E-12	650.0E-12	800.0E-12	700.0E-12	1.0E-09	500.0E-12
Average	540.0E-12	310.0E-12	470.0E-12	540.0E-12	560.0E-12	530.0E-12	490.0E-12	700.0E-12	500.0E-12
Sigma	20.0E-12	58.3E-12	51.0E-12	20.0E-12	58.3E-12	160.0E-12	111.4E-12	178.9E-12	0.0E+00

Drift Calculation

I _{leak_3VIN2}	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-300.0E-12	-100.0E-12	0.0E+00	-50.0E-12	250.0E-12	-100.0E-12	450.0E-12	-50.0E-12
3	-	-250.0E-12	-50.0E-12	50.0E-12	50.0E-12	0.0E+00	200.0E-12	100.0E-12	0.0E+00
4	-	-150.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-150.0E-12	-150.0E-12	50.0E-12	-50.0E-12
5	-	-200.0E-12	-150.0E-12	0.0E+00	100.0E-12	-200.0E-12	-150.0E-12	-50.0E-12	-50.0E-12
6	-	-250.0E-12	0.0E+00	-50.0E-12	50.0E-12	50.0E-12	-50.0E-12	250.0E-12	-50.0E-12
Average	-	-230.0E-12	-70.0E-12	0.0E+00	20.0E-12	-10.0E-12	-50.0E-12	160.0E-12	-40.0E-12
Sigma	-	51.0E-12	51.0E-12	31.6E-12	60.0E-12	159.4E-12	130.4E-12	174.4E-12	20.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Ileak_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	550.0E-12	250.0E-12	600.0E-12	550.0E-12	600.0E-12	400.0E-12	350.0E-12	550.0E-12	450.0E-12
OFF samples									
7	450.0E-12	250.0E-12	600.0E-12	500.0E-12	550.0E-12	400.0E-12	450.0E-12	400.0E-12	600.0E-12
8	500.0E-12	200.0E-12	600.0E-12	450.0E-12	400.0E-12	500.0E-12	500.0E-12	600.0E-12	600.0E-12
9	550.0E-12	300.0E-12	450.0E-12	550.0E-12	450.0E-12	300.0E-12	400.0E-12	600.0E-12	550.0E-12
10	500.0E-12	300.0E-12	650.0E-12	500.0E-12	500.0E-12	500.0E-12	550.0E-12	500.0E-12	550.0E-12
11	650.0E-12	550.0E-12	450.0E-12	450.0E-12	450.0E-12	500.0E-12	350.0E-12	650.0E-12	500.0E-12
Statistics									
Min	450.0E-12	200.0E-12	450.0E-12	450.0E-12	400.0E-12	300.0E-12	350.0E-12	400.0E-12	500.0E-12
Max	650.0E-12	550.0E-12	650.0E-12	550.0E-12	550.0E-12	500.0E-12	550.0E-12	650.0E-12	600.0E-12
Average	530.0E-12	320.0E-12	550.0E-12	490.0E-12	470.0E-12	440.0E-12	450.0E-12	550.0E-12	560.0E-12
Sigma	67.8E-12	120.8E-12	83.7E-12	37.4E-12	51.0E-12	80.0E-12	70.7E-12	89.4E-12	37.4E-12

Drift Calculation

Ileak_3VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-200.0E-12	150.0E-12	50.0E-12	100.0E-12	-50.0E-12	0.0E+00	-50.0E-12	150.0E-12
8	-	-300.0E-12	100.0E-12	-50.0E-12	-100.0E-12	0.0E+00	0.0E+00	100.0E-12	100.0E-12
9	-	-250.0E-12	-100.0E-12	0.0E+00	-100.0E-12	-250.0E-12	-150.0E-12	50.0E-12	0.0E+00
10	-	-200.0E-12	150.0E-12	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00	50.0E-12
11	-	-100.0E-12	-200.0E-12	-200.0E-12	-200.0E-12	-150.0E-12	-300.0E-12	0.0E+00	-150.0E-12
Average	-	-210.0E-12	20.0E-12	-40.0E-12	-60.0E-12	-90.0E-12	-80.0E-12	20.0E-12	30.0E-12
Sigma	-	66.3E-12	143.5E-12	86.0E-12	102.0E-12	97.0E-12	128.8E-12	51.0E-12	103.0E-12

Parameter : Input Leakage Current Low : Ileak_3VIN1

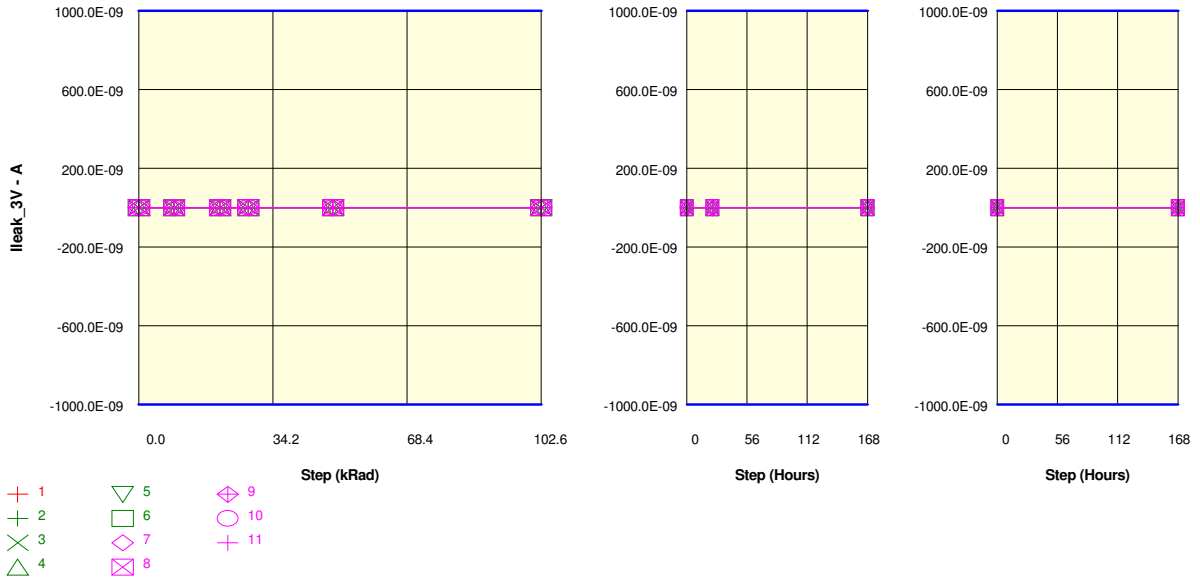
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	400.0E-12	200.0E-12	400.0E-12	350.0E-12	500.0E-12	300.0E-12	350.0E-12	450.0E-12	450.0E-12
ON samples									
2	400.0E-12	250.0E-12	350.0E-12	350.0E-12	450.0E-12	550.0E-12	350.0E-12	450.0E-12	400.0E-12
3	400.0E-12	200.0E-12	400.0E-12	400.0E-12	450.0E-12	400.0E-12	350.0E-12	400.0E-12	500.0E-12
4	450.0E-12	250.0E-12	400.0E-12	400.0E-12	450.0E-12	450.0E-12	300.0E-12	300.0E-12	500.0E-12
5	350.0E-12	200.0E-12	300.0E-12	400.0E-12	450.0E-12	300.0E-12	350.0E-12	200.0E-12	400.0E-12
6	300.0E-12	300.0E-12	300.0E-12	450.0E-12	400.0E-12	500.0E-12	350.0E-12	350.0E-12	400.0E-12
Statistics									
Min	300.0E-12	200.0E-12	300.0E-12	350.0E-12	400.0E-12	300.0E-12	300.0E-12	200.0E-12	400.0E-12
Max	450.0E-12	300.0E-12	400.0E-12	450.0E-12	450.0E-12	550.0E-12	350.0E-12	450.0E-12	500.0E-12
Average	380.0E-12	240.0E-12	350.0E-12	400.0E-12	440.0E-12	440.0E-12	340.0E-12	340.0E-12	440.0E-12
Sigma	51.0E-12	37.4E-12	44.7E-12	31.6E-12	20.0E-12	86.0E-12	20.0E-12	86.0E-12	49.0E-12

Drift Calculation

Ileak_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-150.0E-12	-50.0E-12	-50.0E-12	50.0E-12	150.0E-12	-50.0E-12	50.0E-12	0.0E+00
3	-	-200.0E-12	0.0E+00	0.0E+00	50.0E-12	0.0E+00	-50.0E-12	0.0E+00	100.0E-12
4	-	-200.0E-12	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00	-150.0E-12	-150.0E-12	50.0E-12
5	-	-150.0E-12	-50.0E-12	50.0E-12	100.0E-12	-50.0E-12	0.0E+00	-150.0E-12	50.0E-12
6	-	0.0E+00	0.0E+00	150.0E-12	100.0E-12	200.0E-12	50.0E-12	50.0E-12	100.0E-12
Average	-	-140.0E-12	-30.0E-12	20.0E-12	60.0E-12	60.0E-12	-40.0E-12	-40.0E-12	60.0E-12
Sigma	-	73.5E-12	24.5E-12	74.8E-12	37.4E-12	97.0E-12	66.3E-12	91.7E-12	37.4E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Ileak_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	400.0E-12	200.0E-12	400.0E-12	350.0E-12	500.0E-12	300.0E-12	350.0E-12	450.0E-12	450.0E-12
OFF samples									
7	350.0E-12	200.0E-12	400.0E-12	350.0E-12	400.0E-12	350.0E-12	300.0E-12	400.0E-12	500.0E-12
8	450.0E-12	300.0E-12	350.0E-12	450.0E-12	450.0E-12	250.0E-12	350.0E-12	400.0E-12	600.0E-12
9	400.0E-12	300.0E-12	350.0E-12	450.0E-12	400.0E-12	300.0E-12	400.0E-12	400.0E-12	500.0E-12
10	450.0E-12	300.0E-12	300.0E-12	400.0E-12	500.0E-12	300.0E-12	400.0E-12	350.0E-12	400.0E-12
11	500.0E-12	350.0E-12	400.0E-12	450.0E-12	500.0E-12	350.0E-12	300.0E-12	450.0E-12	400.0E-12
Statistics									
Min	350.0E-12	200.0E-12	300.0E-12	350.0E-12	400.0E-12	250.0E-12	300.0E-12	350.0E-12	400.0E-12
Max	500.0E-12	350.0E-12	400.0E-12	450.0E-12	500.0E-12	350.0E-12	400.0E-12	450.0E-12	600.0E-12
Average	430.0E-12	290.0E-12	360.0E-12	420.0E-12	450.0E-12	310.0E-12	350.0E-12	400.0E-12	480.0E-12
Sigma	51.0E-12	49.0E-12	37.4E-12	40.0E-12	44.7E-12	37.4E-12	44.7E-12	31.6E-12	74.8E-12

Drift Calculation

Ileak_3VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-150.0E-12	50.0E-12	0.0E+00	50.0E-12	0.0E+00	-50.0E-12	50.0E-12	150.0E-12
8	-	-150.0E-12	-100.0E-12	0.0E+00	0.0E+00	-200.0E-12	-100.0E-12	-50.0E-12	150.0E-12
9	-	-100.0E-12	-50.0E-12	50.0E-12	0.0E+00	-100.0E-12	0.0E+00	0.0E+00	100.0E-12
10	-	-150.0E-12	-150.0E-12	-50.0E-12	50.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
11	-	-150.0E-12	-100.0E-12	-50.0E-12	0.0E+00	-150.0E-12	-200.0E-12	-50.0E-12	-100.0E-12
Average	-	-140.0E-12	-70.0E-12	-10.0E-12	20.0E-12	-120.0E-12	-80.0E-12	-30.0E-12	50.0E-12
Sigma	-	20.0E-12	67.8E-12	37.4E-12	24.5E-12	67.8E-12	67.8E-12	51.0E-12	104.9E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Input Leakage Current Low : Ileak_3VIN0

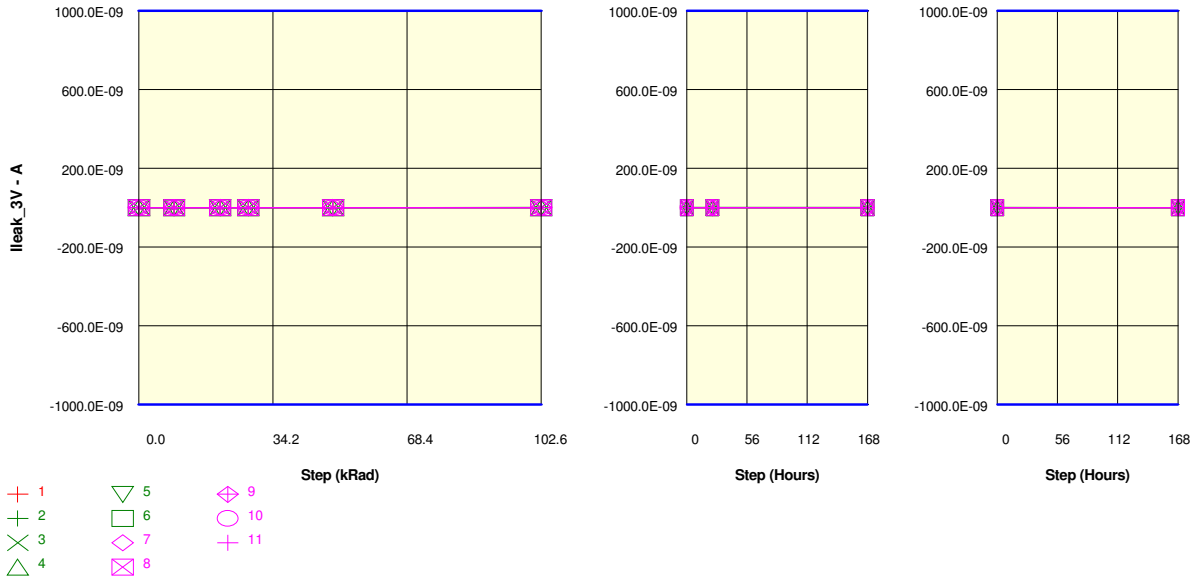
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	500.0E-12	250.0E-12	400.0E-12	500.0E-12	500.0E-12	250.0E-12	300.0E-12	450.0E-12	500.0E-12
ON samples									
2	450.0E-12	150.0E-12	550.0E-12	450.0E-12	350.0E-12	1.2E-09	850.0E-12	1.4E-09	500.0E-12
3	450.0E-12	250.0E-12	500.0E-12	350.0E-12	500.0E-12	550.0E-12	650.0E-12	650.0E-12	400.0E-12
4	550.0E-12	250.0E-12	400.0E-12	450.0E-12	350.0E-12	350.0E-12	400.0E-12	450.0E-12	400.0E-12
5	500.0E-12	400.0E-12	600.0E-12	500.0E-12	500.0E-12	400.0E-12	400.0E-12	350.0E-12	500.0E-12
6	450.0E-12	150.0E-12	500.0E-12	450.0E-12	350.0E-12	650.0E-12	500.0E-12	550.0E-12	500.0E-12
Statistics									
Min	450.0E-12	150.0E-12	400.0E-12	350.0E-12	350.0E-12	350.0E-12	400.0E-12	350.0E-12	400.0E-12
Max	550.0E-12	400.0E-12	600.0E-12	500.0E-12	500.0E-12	1.2E-09	850.0E-12	1.4E-09	500.0E-12
Average	480.0E-12	240.0E-12	510.0E-12	440.0E-12	410.0E-12	620.0E-12	560.0E-12	680.0E-12	460.0E-12
Sigma	40.0E-12	91.7E-12	66.3E-12	49.0E-12	73.5E-12	285.7E-12	171.5E-12	373.6E-12	49.0E-12

Drift Calculation

Ileak_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-300.0E-12	100.0E-12	0.0E+00	-100.0E-12	700.0E-12	400.0E-12	950.0E-12	50.0E-12
3	-	-200.0E-12	50.0E-12	-100.0E-12	50.0E-12	100.0E-12	200.0E-12	200.0E-12	-50.0E-12
4	-	-300.0E-12	-150.0E-12	-100.0E-12	-200.0E-12	-200.0E-12	-150.0E-12	-100.0E-12	-150.0E-12
5	-	-100.0E-12	100.0E-12	0.0E+00	0.0E+00	-100.0E-12	-100.0E-12	-150.0E-12	0.0E+00
6	-	-300.0E-12	50.0E-12	0.0E+00	-100.0E-12	200.0E-12	50.0E-12	100.0E-12	50.0E-12
Average	-	-240.0E-12	30.0E-12	-40.0E-12	-70.0E-12	140.0E-12	80.0E-12	200.0E-12	-20.0E-12
Sigma	-	80.0E-12	92.7E-12	49.0E-12	87.2E-12	313.7E-12	201.5E-12	396.2E-12	74.8E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

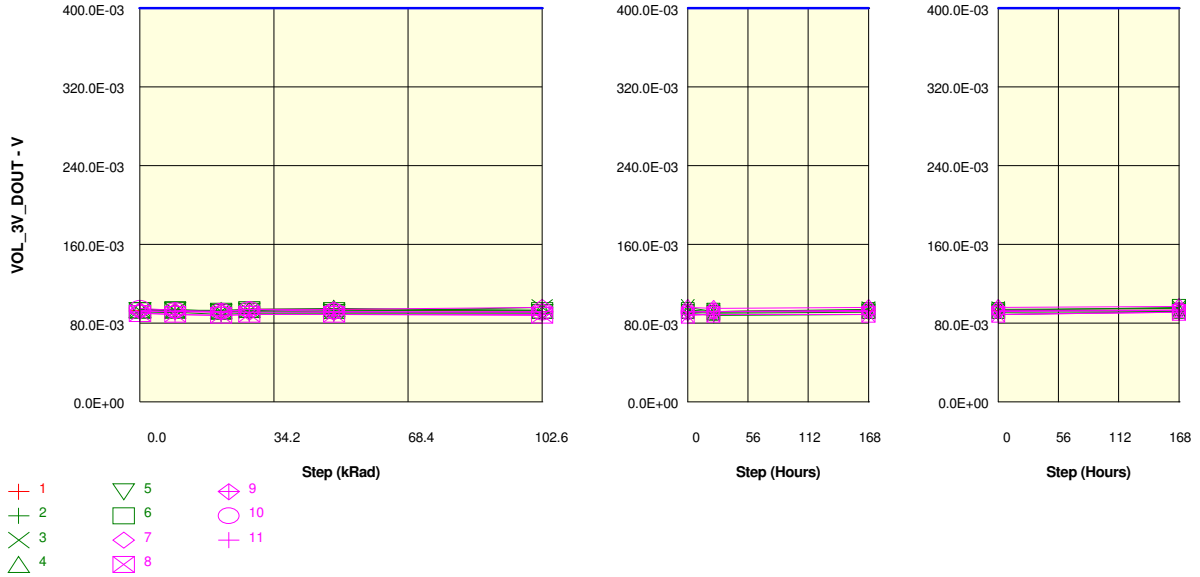
Measurements

Ileak_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	500.0E-12	250.0E-12	400.0E-12	500.0E-12	500.0E-12	250.0E-12	300.0E-12	450.0E-12	500.0E-12
OFF samples									
7	500.0E-12	250.0E-12	600.0E-12	350.0E-12	500.0E-12	300.0E-12	350.0E-12	500.0E-12	400.0E-12
8	400.0E-12	400.0E-12	500.0E-12	500.0E-12	400.0E-12	500.0E-12	400.0E-12	600.0E-12	450.0E-12
9	500.0E-12	400.0E-12	450.0E-12	450.0E-12	450.0E-12	500.0E-12	600.0E-12	350.0E-12	450.0E-12
10	600.0E-12	250.0E-12	350.0E-12	550.0E-12	500.0E-12	300.0E-12	400.0E-12	450.0E-12	450.0E-12
11	500.0E-12	500.0E-12	450.0E-12	350.0E-12	450.0E-12	400.0E-12	400.0E-12	550.0E-12	500.0E-12
Statistics									
Min	400.0E-12	250.0E-12	350.0E-12	350.0E-12	400.0E-12	300.0E-12	350.0E-12	350.0E-12	400.0E-12
Max	600.0E-12	500.0E-12	600.0E-12	550.0E-12	500.0E-12	500.0E-12	600.0E-12	600.0E-12	500.0E-12
Average	500.0E-12	360.0E-12	470.0E-12	440.0E-12	460.0E-12	400.0E-12	430.0E-12	490.0E-12	450.0E-12
Sigma	63.2E-12	97.0E-12	81.2E-12	80.0E-12	37.4E-12	89.4E-12	87.2E-12	86.0E-12	31.6E-12

Drift Calculation

Ileak_3VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-250.0E-12	100.0E-12	-150.0E-12	0.0E+00	-200.0E-12	-150.0E-12	0.0E+00	-100.0E-12
8	-	0.0E+00	100.0E-12	100.0E-12	0.0E+00	100.0E-12	0.0E+00	200.0E-12	50.0E-12
9	-	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	100.0E-12	-150.0E-12	-50.0E-12
10	-	-350.0E-12	-250.0E-12	-50.0E-12	-100.0E-12	-300.0E-12	-200.0E-12	-150.0E-12	-150.0E-12
11	-	0.0E+00	-50.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	50.0E-12	0.0E+00
Average	-	-140.0E-12	-30.0E-12	-60.0E-12	-40.0E-12	-100.0E-12	-70.0E-12	-10.0E-12	-50.0E-12
Sigma	-	139.3E-12	128.8E-12	91.7E-12	37.4E-12	141.4E-12	107.7E-12	131.9E-12	70.7E-12

Parameter : Output Low Voltage : VOL_3V_DOUT
 Test conditions : Isink=1mA
 Unit : V
 Spec Limit Max : 400.0E-03
 Spec limits are represented in bold lines on the graphic.



Measurements

VOL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	93.0E-03	92.0E-03	92.0E-03	94.0E-03	94.0E-03	92.0E-03	92.0E-03	93.0E-03	93.0E-03
ON samples									
2	90.0E-03	91.0E-03	89.0E-03	90.0E-03	90.0E-03	90.0E-03	88.0E-03	89.0E-03	92.0E-03
3	93.0E-03	93.0E-03	92.0E-03	93.0E-03	92.0E-03	96.0E-03	92.0E-03	94.0E-03	95.0E-03
4	94.0E-03	93.0E-03	93.0E-03	94.0E-03	95.0E-03	93.0E-03	91.0E-03	93.0E-03	93.0E-03
5	93.0E-03	93.0E-03	91.0E-03	92.0E-03	91.0E-03	91.0E-03	90.0E-03	91.0E-03	92.0E-03
6	93.0E-03	94.0E-03	92.0E-03	94.0E-03	93.0E-03	93.0E-03	92.0E-03	93.0E-03	96.0E-03
Statistics									
Min	90.0E-03	91.0E-03	89.0E-03	90.0E-03	90.0E-03	88.0E-03	89.0E-03	92.0E-03	92.0E-03
Max	94.0E-03	94.0E-03	93.0E-03	94.0E-03	95.0E-03	96.0E-03	92.0E-03	94.0E-03	96.0E-03
Average	92.6E-03	92.8E-03	91.4E-03	92.6E-03	92.2E-03	92.6E-03	90.6E-03	92.0E-03	93.6E-03
Sigma	1.4E-03	979.8E-06	1.4E-03	1.5E-03	1.7E-03	2.1E-03	1.5E-03	1.8E-03	1.6E-03

Drift Calculation

VOL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	1.0E-03	-1.0E-03	0.0E+00	0.0E+00	0.0E+00	-2.0E-03	-1.0E-03	2.0E-03
3	-	0.0E+00	-1.0E-03	0.0E+00	-1.0E-03	3.0E-03	-1.0E-03	1.0E-03	2.0E-03
4	-	-1.0E-03	-1.0E-03	0.0E+00	1.0E-03	-1.0E-03	-3.0E-03	-1.0E-03	-1.0E-03
5	-	0.0E+00	-2.0E-03	-1.0E-03	-2.0E-03	-2.0E-03	-3.0E-03	-2.0E-03	-1.0E-03
6	-	1.0E-03	-1.0E-03	1.0E-03	0.0E+00	0.0E+00	-1.0E-03	0.0E+00	3.0E-03
Average	-	200.0E-06	-1.2E-03	0.0E+00	-400.0E-06	0.0E+00	-2.0E-03	-600.0E-06	1.0E-03
Sigma	-	748.3E-06	400.0E-06	632.5E-06	1.0E-03	1.7E-03	894.4E-06	1.0E-03	1.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

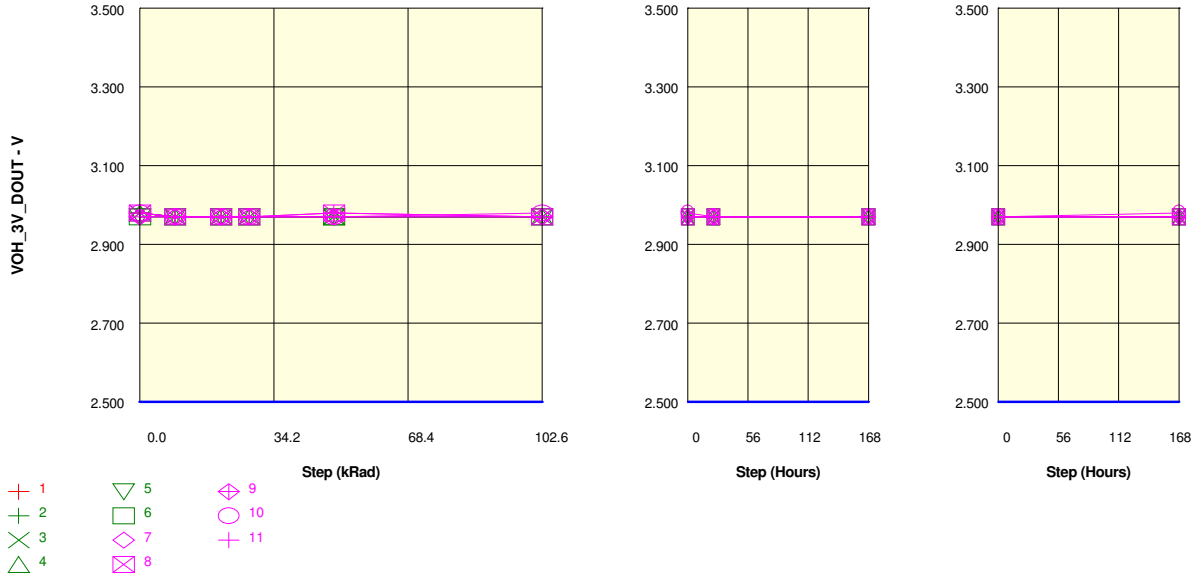
Measurements

VOL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	93.0E-03	92.0E-03	92.0E-03	94.0E-03	94.0E-03	92.0E-03	92.0E-03	93.0E-03	93.0E-03
OFF samples									
7	93.0E-03	92.0E-03	92.0E-03	94.0E-03	94.0E-03	96.0E-03	95.0E-03	96.0E-03	97.0E-03
8	90.0E-03	89.0E-03	88.0E-03	89.0E-03	89.0E-03	88.0E-03	89.0E-03	89.0E-03	91.0E-03
9	92.0E-03	92.0E-03	91.0E-03	91.0E-03	91.0E-03	92.0E-03	92.0E-03	92.0E-03	93.0E-03
10	95.0E-03	93.0E-03	92.0E-03	94.0E-03	92.0E-03	91.0E-03	92.0E-03	93.0E-03	93.0E-03
11	90.0E-03	89.0E-03	88.0E-03	89.0E-03	89.0E-03	89.0E-03	89.0E-03	89.0E-03	91.0E-03
Statistics									
Min	90.0E-03	89.0E-03	88.0E-03	89.0E-03	89.0E-03	88.0E-03	89.0E-03	89.0E-03	91.0E-03
Max	95.0E-03	93.0E-03	92.0E-03	94.0E-03	94.0E-03	96.0E-03	95.0E-03	96.0E-03	97.0E-03
Average	92.0E-03	91.0E-03	90.2E-03	91.4E-03	91.0E-03	91.2E-03	91.4E-03	91.8E-03	93.0E-03
Sigma	1.9E-03	1.7E-03	1.8E-03	2.2E-03	1.9E-03	2.8E-03	2.2E-03	2.6E-03	2.2E-03

Drift Calculation

VOL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.0E-03	-1.0E-03	1.0E-03	1.0E-03	3.0E-03	2.0E-03	3.0E-03	4.0E-03
8	-	-1.0E-03	-2.0E-03	-1.0E-03	-1.0E-03	-2.0E-03	-1.0E-03	-1.0E-03	1.0E-03
9	-	0.0E+00	-1.0E-03	-1.0E-03	-1.0E-03	0.0E+00	0.0E+00	0.0E+00	1.0E-03
10	-	-2.0E-03	-3.0E-03	-1.0E-03	-3.0E-03	-4.0E-03	-3.0E-03	-2.0E-03	-2.0E-03
11	-	-1.0E-03	-2.0E-03	-1.0E-03	-1.0E-03	-1.0E-03	-1.0E-03	-1.0E-03	1.0E-03
Average	-	-1.0E-03	-1.8E-03	-600.0E-06	-1.0E-03	-800.0E-06	-600.0E-06	-200.0E-06	1.0E-03
Sigma	-	632.5E-06	748.3E-06	800.0E-06	1.3E-03	2.3E-03	1.6E-03	1.7E-03	1.9E-03

Parameter : Output High Voltage : VOH_3V_DOUT
 Test conditions : Isource=200µA
 Unit : V
 Spec Limit Min : 2.500
 Spec limits are represented in bold lines on the graphic.



Measurements

VOH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	2.980	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
ON samples									
2	2.980	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
3	2.980	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
4	2.980	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
5	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
6	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
Statistics									
Min	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
Max	2.980	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
Average	2.976	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
Sigma	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Drift Calculation

VOH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03
3	-	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03
4	-	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03
5	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
6	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
Average	-	-6.0E-03	-6.0E-03	-6.0E-03	-6.0E-03	-6.0E-03	-6.0E-03	-6.0E-03	-6.0E-03
Sigma	-	4.9E-03	4.9E-03	4.9E-03	4.9E-03	4.9E-03	4.9E-03	4.9E-03	4.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

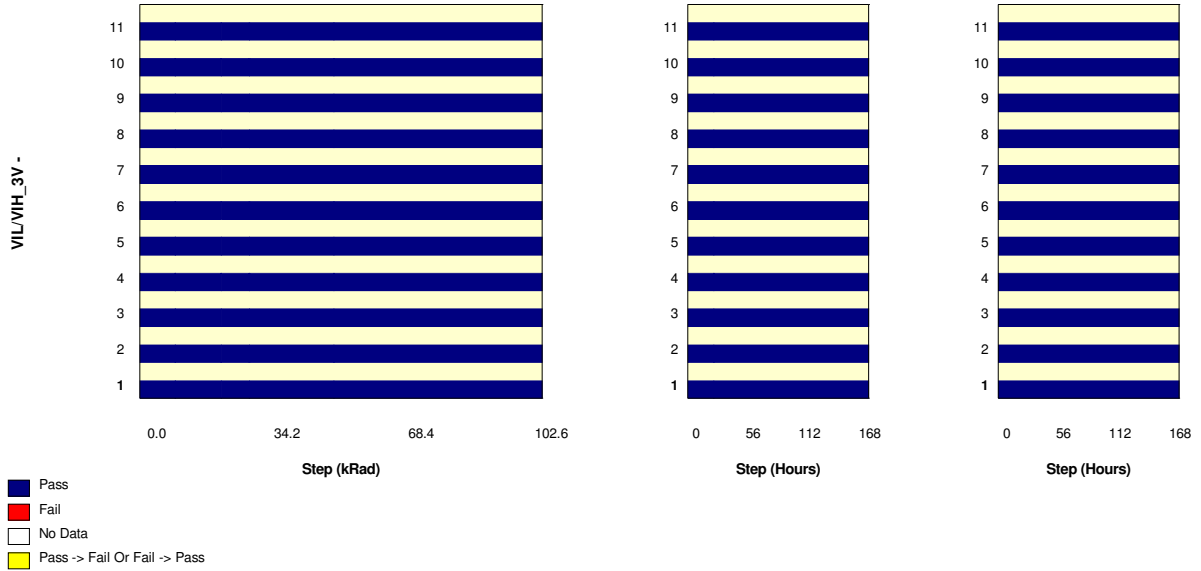
Measurements

VOH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	2.980	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
OFF samples									
7	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
8	2.980	2.970	2.970	2.970	2.980	2.970	2.970	2.970	2.970
9	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
10	2.980	2.970	2.970	2.970	2.970	2.980	2.970	2.970	2.980
11	2.980	2.970	2.970	2.970	2.980	2.970	2.970	2.970	2.970
Statistics									
Min	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970	2.970
Max	2.980	2.970	2.970	2.970	2.980	2.980	2.970	2.970	2.980
Average	2.976	2.970	2.970	2.970	2.974	2.972	2.970	2.970	2.972
Sigma	0.005	0.000	0.000	0.000	0.005	0.004	0.000	0.000	0.004

Drift Calculation

VOH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
8	-	-10.0E-03	-10.0E-03	-10.0E-03	0.0E+00	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03
9	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
10	-	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03	0.0E+00	-10.0E-03	-10.0E-03	0.0E+00
11	-	-10.0E-03	-10.0E-03	-10.0E-03	0.0E+00	-10.0E-03	-10.0E-03	-10.0E-03	-10.0E-03
Average	-	-6.0E-03	-6.0E-03	-6.0E-03	-2.0E-03	-4.0E-03	-6.0E-03	-6.0E-03	-4.0E-03
Sigma	-	4.9E-03	4.9E-03	4.9E-03	4.0E-03	4.9E-03	4.9E-03	4.9E-03	4.9E-03

Parameter : Input Low /High Voltage : VIL/VIH_3V
 Test conditions : GO NOGO Test. VIL=0.8V. VIH=2.1V
 Unit :
 No spec limit specified.



Measurements

VIL/VIH_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
ON samples									
2	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
3	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
4	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
5	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
6	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Measurements

VIL/VIH_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
OFF samples									
7	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
8	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
9	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
10	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
11	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Ouptut Leakage Current Z : IOZL_3V_DOUT

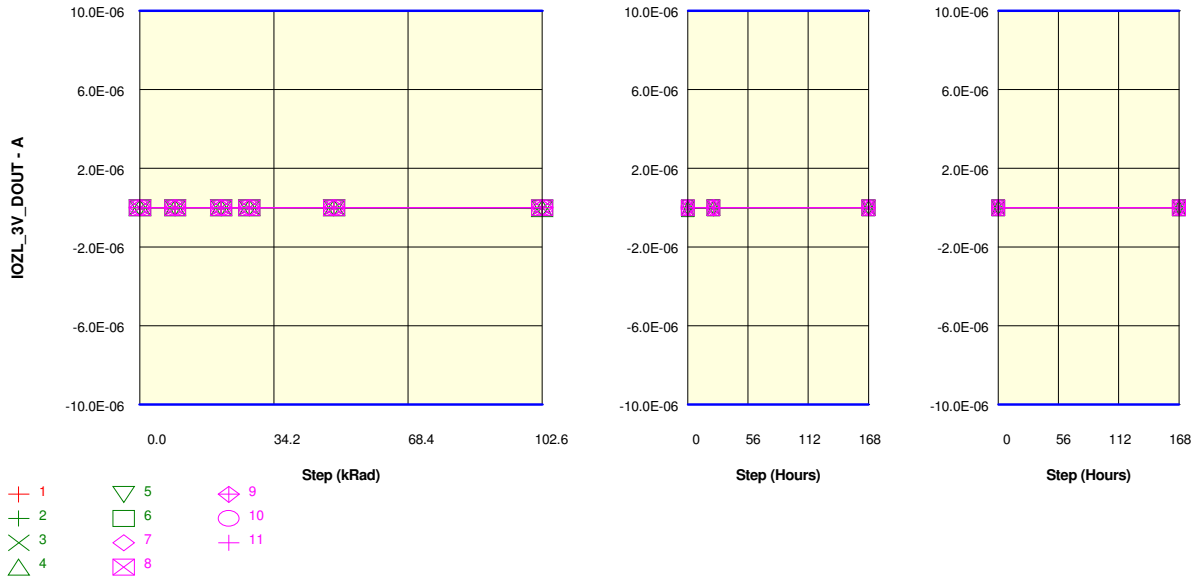
Test conditions :

Unit : A

Spec Limit Min : -10.0E-06

Spec Limit Max : 10.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IOZL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-150.0E-12	-250.0E-12	-250.0E-12	-150.0E-12	-250.0E-12	-200.0E-12	-150.0E-12	-100.0E-12	-100.0E-12
ON samples									
2	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-6.4E-09	2.7E-09	-11.2E-09	1.2E-09	-150.0E-12
3	-150.0E-12	-200.0E-12	-200.0E-12	-450.0E-12	-4.9E-09	-11.7E-09	-9.2E-09	200.0E-12	-150.0E-12
4	-150.0E-12	-150.0E-12	-150.0E-12	-950.0E-12	1.9E-09	-41.0E-09	5.9E-09	4.2E-09	100.0E-12
5	-150.0E-12	-150.0E-12	-200.0E-12	0.0E+00	1.4E-09	-31.4E-09	4.3E-09	2.5E-09	-50.0E-12
6	-150.0E-12	-100.0E-12	-200.0E-12	-200.0E-12	-650.0E-12	-200.0E-12	-150.0E-12	-150.0E-12	-200.0E-12
Statistics									
Min	-150.0E-12	-200.0E-12	-200.0E-12	-950.0E-12	-6.4E-09	-41.0E-09	-11.2E-09	-150.0E-12	-200.0E-12
Max	-150.0E-12	-100.0E-12	-150.0E-12	0.0E+00	1.9E-09	2.7E-09	5.9E-09	4.2E-09	100.0E-12
Average	-150.0E-12	-150.0E-12	-180.0E-12	-350.0E-12	-1.7E-09	-16.3E-09	-2.1E-09	1.6E-09	-90.0E-12
Sigma	0.0E+00	31.6E-12	24.5E-12	333.2E-12	3.3E-09	17.2E-09	6.9E-09	1.6E-09	106.8E-12

Drift Calculation

IOZL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	0.0E+00	0.0E+00	-6.3E-09	2.9E-09	-11.0E-09	1.3E-09	0.0E+00
3	-	-50.0E-12	-50.0E-12	-300.0E-12	-4.7E-09	-11.5E-09	-9.1E-09	350.0E-12	0.0E+00
4	-	0.0E+00	0.0E+00	-800.0E-12	2.0E-09	-40.9E-09	6.1E-09	4.4E-09	250.0E-12
5	-	0.0E+00	-50.0E-12	150.0E-12	1.6E-09	-31.3E-09	4.5E-09	2.7E-09	100.0E-12
6	-	50.0E-12	-50.0E-12	-50.0E-12	-500.0E-12	-50.0E-12	0.0E+00	0.0E+00	-50.0E-12
Average	-	-2.6E-27	-30.0E-12	-200.0E-12	-1.6E-09	-16.2E-09	-1.9E-09	1.7E-09	60.0E-12
Sigma	-	31.6E-12	24.5E-12	333.2E-12	3.3E-09	17.2E-09	6.9E-09	1.6E-09	106.8E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

IOZL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-150.0E-12	-250.0E-12	-250.0E-12	-150.0E-12	-250.0E-12	-200.0E-12	-150.0E-12	-100.0E-12	-100.0E-12
OFF samples									
7	-150.0E-12	-150.0E-12	-150.0E-12	-200.0E-12	-250.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12
8	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-250.0E-12	-200.0E-12	-150.0E-12	-100.0E-12	-250.0E-12
9	-150.0E-12	-200.0E-12	-200.0E-12	-200.0E-12	-200.0E-12	-200.0E-12	-200.0E-12	-200.0E-12	-150.0E-12
10	-150.0E-12	-200.0E-12	-250.0E-12	-150.0E-12	-200.0E-12	-250.0E-12	-200.0E-12	-150.0E-12	-150.0E-12
11	-100.0E-12	-200.0E-12	-200.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-200.0E-12	-150.0E-12	-150.0E-12
Statistics									
Min	-150.0E-12	-200.0E-12	-250.0E-12	-200.0E-12	-250.0E-12	-250.0E-12	-200.0E-12	-200.0E-12	-250.0E-12
Max	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12
Average	-140.0E-12	-180.0E-12	-190.0E-12	-170.0E-12	-210.0E-12	-190.0E-12	-180.0E-12	-150.0E-12	-170.0E-12
Sigma	20.0E-12	24.5E-12	37.4E-12	24.5E-12	37.4E-12	37.4E-12	24.5E-12	31.6E-12	40.0E-12

Drift Calculation

IOZL_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	0.0E+00	-50.0E-12	-100.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
8	-	0.0E+00	0.0E+00	0.0E+00	-100.0E-12	-50.0E-12	0.0E+00	50.0E-12	-100.0E-12
9	-	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00
10	-	-50.0E-12	-100.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-50.0E-12	0.0E+00	0.0E+00
11	-	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
Average	-	-40.0E-12	-50.0E-12	-30.0E-12	-70.0E-12	-50.0E-12	-40.0E-12	-10.0E-12	-30.0E-12
Sigma	-	37.4E-12	44.7E-12	24.5E-12	24.5E-12	31.6E-12	37.4E-12	37.4E-12	40.0E-12

Parameter : Ouptut Leakage Current Z : IOZH_3V_DOUT

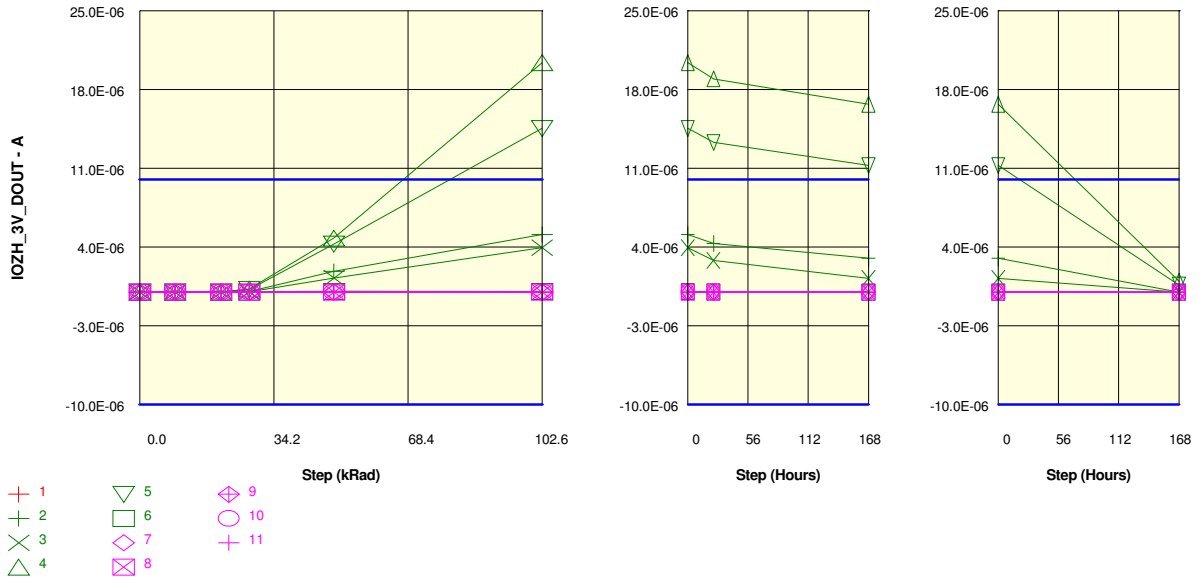
Test conditions :

Unit : A

Spec Limit Min : -10.0E-06

Spec Limit Max : 10.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IOZH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	300.0E-12	300.0E-12	250.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	200.0E-12	300.0E-12
ON samples									
2	250.0E-12	250.0E-12	1.4E-09	46.9E-09	1.8E-06	5.1E-06	4.3E-06	3.0E-06	300.0E-12
3	250.0E-12	250.0E-12	1.3E-09	34.7E-09	1.2E-06	4.0E-06	2.8E-06	1.2E-06	300.0E-12
4	150.0E-12	250.0E-12	9.0E-09	271.5E-09	4.8E-06	20.4E-06	19.0E-06	16.7E-06	960.0E-09
5	250.0E-12	250.0E-12	3.3E-09	225.5E-09	4.3E-06	14.6E-06	13.3E-06	11.3E-06	623.5E-09
6	300.0E-12	250.0E-12	450.0E-12	5.2E-09	62.2E-09	50.2E-09	19.4E-09	5.0E-09	200.0E-12
Statistics									
Min	150.0E-12	250.0E-12	450.0E-12	5.2E-09	62.2E-09	50.2E-09	19.4E-09	5.0E-09	200.0E-12
Max	300.0E-12	250.0E-12	9.0E-09	271.5E-09	4.8E-06	20.4E-06	19.0E-06	16.7E-06	960.0E-09
Average	240.0E-12	250.0E-12	3.1E-09	116.8E-09	2.4E-06	8.8E-06	7.9E-06	6.4E-06	316.9E-09
Sigma	49.0E-12	0.0E+00	3.1E-09	109.4E-09	1.8E-06	7.5E-06	7.1E-06	6.5E-06	402.1E-09

Drift Calculation

IOZH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	1.2E-09	46.7E-09	1.8E-06	5.1E-06	4.3E-06	3.0E-06	50.0E-12
3	-	0.0E+00	1.0E-09	34.5E-09	1.2E-06	4.0E-06	2.8E-06	1.2E-06	50.0E-12
4	-	100.0E-12	8.9E-09	271.4E-09	4.8E-06	20.4E-06	18.9E-06	16.7E-06	959.9E-09
5	-	0.0E+00	3.0E-09	225.3E-09	4.3E-06	14.5E-06	13.3E-06	11.2E-06	623.3E-09
6	-	-50.0E-12	150.0E-12	4.9E-09	61.9E-09	49.9E-09	19.1E-09	4.7E-09	-100.0E-12
Average	-	10.0E-12	2.8E-09	116.5E-09	2.4E-06	8.8E-06	7.9E-06	6.4E-06	316.6E-09
Sigma	-	49.0E-12	3.2E-09	109.4E-09	1.8E-06	7.5E-06	7.1E-06	6.5E-06	402.1E-09

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

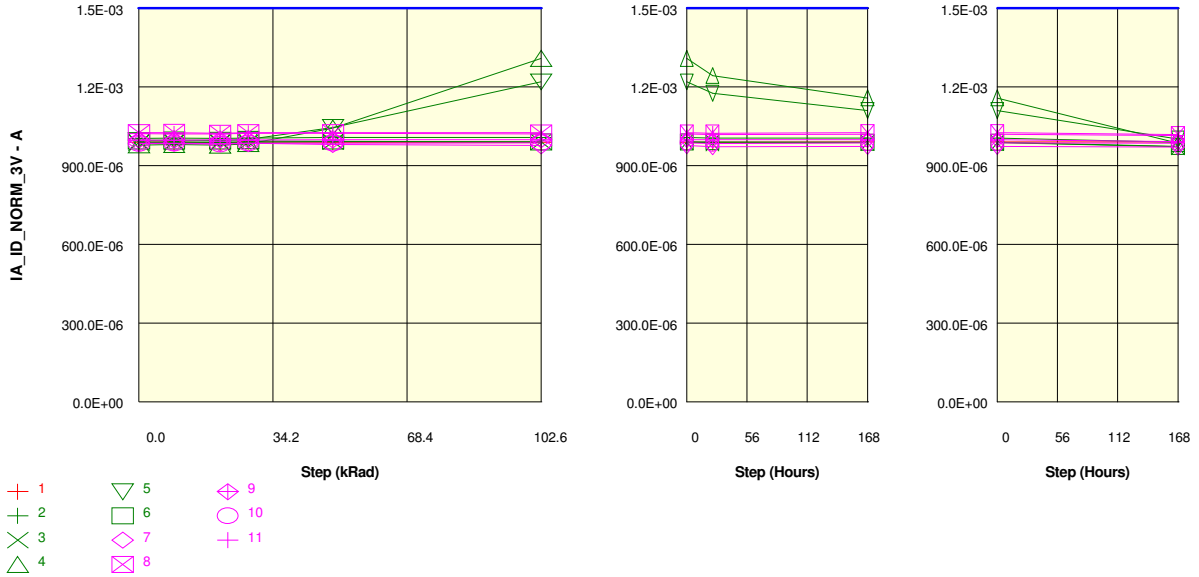
IOZH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	300.0E-12	300.0E-12	250.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	200.0E-12	300.0E-12
OFF samples									
7	250.0E-12	250.0E-12	300.0E-12	300.0E-12	300.0E-12	200.0E-12	250.0E-12	250.0E-12	300.0E-12
8	200.0E-12	300.0E-12	200.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	300.0E-12	300.0E-12
9	300.0E-12	250.0E-12	300.0E-12	250.0E-12	300.0E-12	200.0E-12	250.0E-12	250.0E-12	200.0E-12
10	250.0E-12	300.0E-12	250.0E-12	200.0E-12	250.0E-12	300.0E-12	250.0E-12	200.0E-12	200.0E-12
11	300.0E-12	200.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	200.0E-12	200.0E-12	250.0E-12
Statistics									
Min	200.0E-12	200.0E-12	200.0E-12	200.0E-12	250.0E-12	200.0E-12	200.0E-12	200.0E-12	200.0E-12
Max	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	250.0E-12	300.0E-12	300.0E-12
Average	260.0E-12	260.0E-12	260.0E-12	250.0E-12	280.0E-12	240.0E-12	240.0E-12	240.0E-12	250.0E-12
Sigma	37.4E-12	37.4E-12	37.4E-12	31.6E-12	24.5E-12	37.4E-12	20.0E-12	37.4E-12	44.7E-12

Drift Calculation

IOZH_3V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	50.0E-12	50.0E-12	50.0E-12	-50.0E-12	0.0E+00	0.0E+00	50.0E-12
8	-	100.0E-12	0.0E+00	50.0E-12	50.0E-12	50.0E-12	50.0E-12	100.0E-12	100.0E-12
9	-	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12
10	-	50.0E-12	0.0E+00	-50.0E-12	0.0E+00	50.0E-12	0.0E+00	-50.0E-12	-50.0E-12
11	-	-100.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12
Average	-	0.0E+00	0.0E+00	-10.0E-12	20.0E-12	-20.0E-12	-20.0E-12	-20.0E-12	-10.0E-12
Sigma	-	70.7E-12	31.6E-12	49.0E-12	24.5E-12	60.0E-12	51.0E-12	67.8E-12	73.5E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Total supply Current Normal : IA_ID_NORM_3V
 Test conditions : fSample=1MSPS. fIN=40kHz VIL=0V VIH=3V
 Unit : A
 Spec Limit Max : 1.5E-03
 Spec limits are represented in bold lines on the graphic.



Measurements

IA_ID_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	989.3E-06	989.7E-06	987.1E-06	990.9E-06	989.0E-06	989.1E-06	989.3E-06	989.8E-06	990.0E-06
ON samples									
2	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	989.0E-06
3	987.9E-06	988.4E-06	988.3E-06	988.9E-06	991.2E-06	990.1E-06	986.5E-06	987.6E-06	971.9E-06
4	979.1E-06	980.2E-06	978.2E-06	984.0E-06	1.0E-03	1.3E-03	1.2E-03	1.2E-03	984.9E-06
5	996.0E-06	997.5E-06	997.1E-06	1.0E-03	1.0E-03	1.2E-03	1.2E-03	1.1E-03	1.0E-03
6	993.8E-06	993.6E-06	993.8E-06	995.0E-06	993.2E-06	990.6E-06	990.8E-06	989.5E-06	973.3E-06
Statistics									
Min	979.1E-06	980.2E-06	978.2E-06	984.0E-06	991.2E-06	990.1E-06	986.5E-06	987.6E-06	971.9E-06
Max	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.3E-03	1.2E-03	1.2E-03	1.0E-03
Average	992.2E-06	993.0E-06	992.3E-06	994.8E-06	1.0E-03	1.1E-03	1.1E-03	1.1E-03	984.1E-06
Sigma	8.4E-06	8.5E-06	8.8E-06	7.8E-06	23.6E-06	134.4E-06	107.7E-06	70.6E-06	10.8E-06

Drift Calculation

IA_ID_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	1.3E-06	200.0E-09	1.7E-06	3.7E-06	3.3E-06	1.0E-06	1.2E-06	-15.1E-06
3	-	520.0E-09	420.0E-09	1000.0E-09	3.3E-06	2.2E-06	-1.4E-06	-340.0E-09	-16.0E-06
4	-	1.1E-06	-860.0E-09	4.9E-06	63.9E-06	329.6E-06	264.0E-06	179.2E-06	5.8E-06
5	-	1.5E-06	1.0E-06	4.3E-06	49.4E-06	223.5E-06	179.7E-06	114.1E-06	5.3E-06
6	-	-180.0E-09	-60.0E-09	1.2E-06	-640.0E-09	-3.2E-06	-3.1E-06	-4.3E-06	-20.5E-06
Average	-	852.0E-09	148.0E-09	2.6E-06	23.9E-06	111.1E-06	88.0E-06	58.0E-06	-8.1E-06
Sigma	-	611.2E-09	621.6E-09	1.7E-06	27.1E-06	139.2E-06	112.4E-06	75.3E-06	11.3E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

IA_ID_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	989.3E-06	989.7E-06	987.1E-06	990.9E-06	989.0E-06	989.1E-06	989.3E-06	989.8E-06	990.0E-06
OFF samples									
7	985.9E-06	985.3E-06	984.3E-06	984.8E-06	981.0E-06	976.3E-06	971.9E-06	973.7E-06	971.3E-06
8	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
9	997.8E-06	996.9E-06	998.5E-06	998.1E-06	998.3E-06	998.9E-06	998.4E-06	998.7E-06	991.5E-06
10	984.2E-06	984.4E-06	981.9E-06	985.5E-06	985.5E-06	987.1E-06	984.2E-06	986.4E-06	986.2E-06
11	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
Statistics									
Min	984.2E-06	984.4E-06	981.9E-06	984.8E-06	981.0E-06	976.3E-06	971.9E-06	973.7E-06	971.3E-06
Max	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03
Average	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	1.0E-03	999.6E-06	1.0E-03	996.5E-06
Sigma	17.7E-06	17.8E-06	17.7E-06	17.9E-06	18.6E-06	19.0E-06	20.0E-06	19.7E-06	17.8E-06

Drift Calculation

IA_ID_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-580.0E-09	-1.6E-06	-1.0E-06	-4.9E-06	-9.6E-06	-13.9E-06	-12.2E-06	-14.6E-06
8	-	800.0E-09	-2.5E-06	440.0E-09	360.0E-09	-560.0E-09	-1.5E-06	280.0E-09	-7.2E-06
9	-	-860.0E-09	720.0E-09	340.0E-09	560.0E-09	1.1E-06	600.0E-09	920.0E-09	-6.3E-06
10	-	140.0E-09	-2.3E-06	1.3E-06	1.3E-06	2.8E-06	-20.0E-09	2.2E-06	2.0E-06
11	-	-1000.0E-09	-520.0E-09	940.0E-09	480.0E-09	-640.0E-09	-2.8E-06	-2.5E-06	-7.4E-06
Average	-	-300.0E-09	-1.2E-06	392.0E-09	-444.0E-09	-1.4E-06	-3.5E-06	-2.2E-06	-6.7E-06
Sigma	-	676.1E-09	1.2E-06	793.0E-09	2.3E-06	4.3E-06	5.3E-06	5.2E-06	5.3E-06

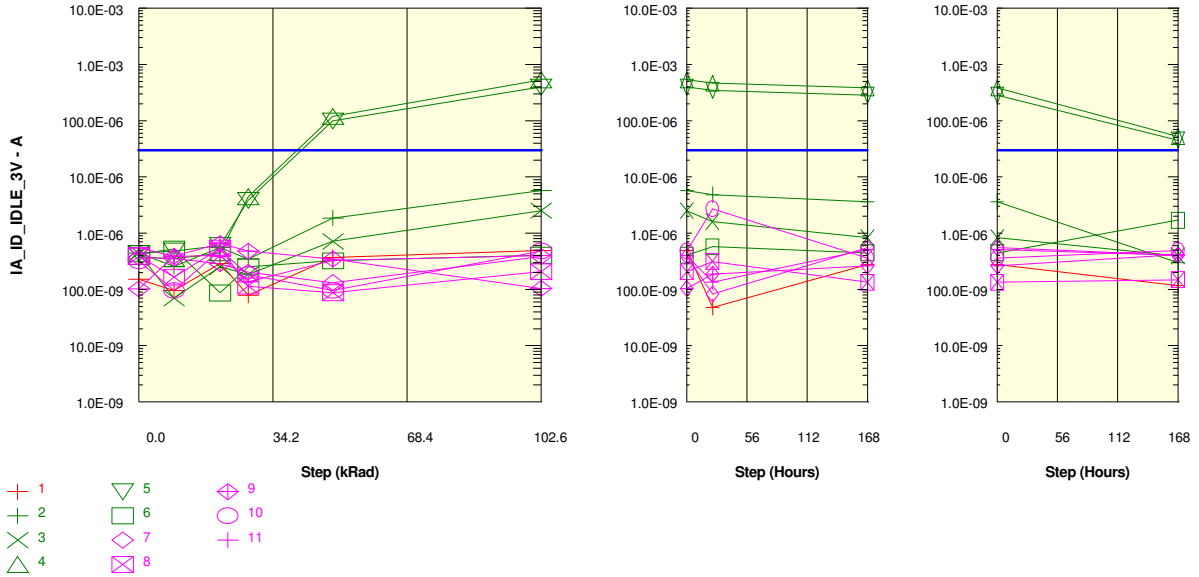
Parameter : Total supply Current Shutdown : IA_ID_IDLE_3V

Test conditions : fSCLK=0kSPS

Unit : A

Spec Limit Max : 30.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IA_ID_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	152.4E-09	96.4E-09	288.2E-09	79.8E-09	372.0E-09	491.2E-09	49.2E-09	278.8E-09	118.2E-09
ON samples									
2	444.0E-09	256.8E-09	554.0E-09	348.0E-09	1.9E-06	5.7E-06	4.8E-06	3.6E-06	301.0E-09
3	442.0E-09	71.4E-09	254.0E-09	186.6E-09	718.0E-09	2.5E-06	1.6E-06	837.0E-09	397.8E-09
4	382.6E-09	352.0E-09	449.8E-09	4.5E-06	118.8E-06	533.0E-06	466.4E-06	383.4E-06	52.2E-06
5	436.0E-09	482.0E-09	603.2E-09	3.8E-06	98.8E-06	396.4E-06	345.9E-06	283.6E-06	45.0E-06
6	434.6E-09	523.0E-09	88.0E-09	254.0E-09	324.0E-09	407.6E-09	577.2E-09	448.8E-09	1.7E-06
Statistics									
Min	382.6E-09	71.4E-09	88.0E-09	186.6E-09	324.0E-09	407.6E-09	577.2E-09	448.8E-09	301.0E-09
Max	444.0E-09	523.0E-09	603.2E-09	4.5E-06	118.8E-06	533.0E-06	466.4E-06	383.4E-06	52.2E-06
Average	427.8E-09	337.0E-09	389.8E-09	1.8E-06	44.1E-06	187.6E-06	163.9E-06	134.4E-06	19.9E-06
Sigma	22.9E-09	163.0E-09	192.7E-09	1.9E-06	53.2E-06	230.3E-06	201.5E-06	165.6E-06	23.5E-06

Drift Calculation

IA_ID_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-187.2E-09	110.0E-09	-96.0E-09	1.4E-06	5.2E-06	4.4E-06	3.2E-06	-143.0E-09
3	-	-370.6E-09	-188.0E-09	-255.4E-09	276.0E-09	2.1E-06	1.2E-06	395.0E-09	-44.2E-09
4	-	-30.6E-09	67.2E-09	4.1E-06	118.4E-06	532.7E-06	466.0E-06	383.0E-06	51.8E-06
5	-	46.0E-09	167.2E-09	3.4E-06	98.4E-06	395.9E-06	345.4E-06	283.2E-06	44.6E-06
6	-	88.4E-09	-346.6E-09	-180.6E-09	-110.6E-09	-27.0E-09	142.6E-09	14.2E-09	1.3E-06
Average	-	-90.8E-09	-38.0E-09	1.4E-06	43.7E-06	187.2E-06	163.4E-06	134.0E-06	19.5E-06
Sigma	-	168.5E-09	196.4E-09	1.9E-06	53.2E-06	230.4E-06	201.5E-06	165.6E-06	23.5E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

IA_ID_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	152.4E-09	96.4E-09	288.2E-09	79.8E-09	372.0E-09	491.2E-09	49.2E-09	278.8E-09	118.2E-09
OFF samples									
7	370.2E-09	358.2E-09	287.2E-09	204.4E-09	133.2E-09	388.0E-09	84.4E-09	553.7E-09	403.6E-09
8	390.2E-09	166.4E-09	542.0E-09	115.6E-09	88.8E-09	208.0E-09	315.4E-09	135.2E-09	150.2E-09
9	103.8E-09	391.0E-09	656.0E-09	478.5E-09	346.4E-09	105.2E-09	188.0E-09	264.0E-09	415.6E-09
10	320.8E-09	96.6E-09	510.0E-09	183.0E-09	96.6E-09	482.4E-09	2.7E-06	362.0E-09	496.0E-09
11	554.0E-09	384.0E-09	409.2E-09	137.0E-09	332.0E-09	400.0E-09	136.6E-09	511.4E-09	406.0E-09
Statistics									
Min	103.8E-09	96.6E-09	287.2E-09	115.6E-09	88.8E-09	105.2E-09	84.4E-09	135.2E-09	150.2E-09
Max	554.0E-09	391.0E-09	656.0E-09	478.5E-09	346.4E-09	482.4E-09	2.7E-06	553.7E-09	496.0E-09
Average	347.8E-09	279.2E-09	480.9E-09	223.7E-09	199.4E-09	316.7E-09	686.1E-09	365.3E-09	374.3E-09
Sigma	145.0E-09	123.1E-09	124.8E-09	131.3E-09	115.2E-09	138.6E-09	1.0E-06	155.0E-09	117.1E-09

Drift Calculation

IA_ID_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-12.0E-09	-83.0E-09	-165.8E-09	-237.0E-09	17.8E-09	-285.8E-09	183.5E-09	33.4E-09
8	-	-223.8E-09	151.8E-09	-274.6E-09	-301.4E-09	-182.2E-09	-74.8E-09	-255.0E-09	-240.0E-09
9	-	287.2E-09	552.2E-09	374.7E-09	242.6E-09	1.4E-09	84.2E-09	160.2E-09	311.8E-09
10	-	-224.2E-09	189.2E-09	-137.8E-09	-224.2E-09	161.6E-09	2.4E-06	41.2E-09	175.2E-09
11	-	-170.0E-09	-144.8E-09	-417.0E-09	-222.0E-09	-154.0E-09	-417.4E-09	-42.6E-09	-148.0E-09
Average	-	-68.6E-09	133.1E-09	-124.1E-09	-148.4E-09	-31.1E-09	338.3E-09	17.5E-09	26.5E-09
Sigma	-	194.1E-09	246.2E-09	268.0E-09	197.6E-09	125.3E-09	1.0E-06	159.0E-09	202.5E-09

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

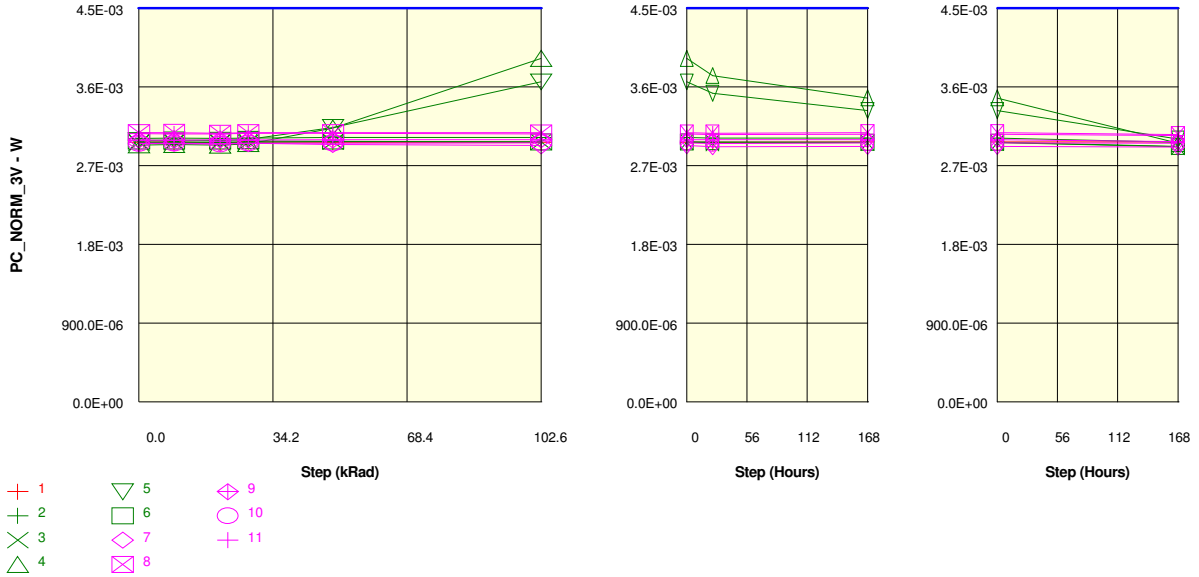
Parameter : Power Consumption Normal : PC_NORM_3V

Test conditions : fSample=1MSPS. fIN=40kHz

Unit : W

Spec Limit Max : 4.5E-03

Spec limits are represented in bold lines on the graphic.



Measurements

PC_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
ON samples									
2	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
3	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	2.9E-03
4	2.9E-03	2.9E-03	2.9E-03	3.0E-03	3.1E-03	3.9E-03	3.7E-03	3.5E-03	3.0E-03
5	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.1E-03	3.7E-03	3.5E-03	3.3E-03	3.0E-03
6	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	2.9E-03
Statistics									
Min	2.9E-03	2.9E-03	2.9E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	2.9E-03
Max	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.1E-03	3.9E-03	3.7E-03	3.5E-03	3.0E-03
Average	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.3E-03	3.2E-03	3.2E-03	3.0E-03
Sigma	25.1E-06	25.5E-06	26.3E-06	23.3E-06	70.9E-06	403.3E-06	323.2E-06	211.7E-06	32.4E-06

Drift Calculation

PC_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	3.9E-06	600.0E-09	5.0E-06	11.0E-06	9.8E-06	3.1E-06	3.6E-06	-45.4E-06
3	-	1.6E-06	1.3E-06	3.0E-06	9.8E-06	6.7E-06	-4.3E-06	-1.0E-06	-47.9E-06
4	-	3.4E-06	-2.6E-06	14.8E-06	191.7E-06	988.7E-06	791.9E-06	537.7E-06	17.5E-06
5	-	4.5E-06	3.1E-06	12.9E-06	148.1E-06	670.4E-06	539.0E-06	342.2E-06	15.8E-06
6	-	-540.0E-09	-180.0E-09	3.5E-06	-1.9E-06	-9.7E-06	-9.2E-06	-13.0E-06	-61.4E-06
Average	-	2.6E-06	444.0E-09	7.8E-06	71.7E-06	333.2E-06	264.1E-06	173.9E-06	-24.3E-06
Sigma	-	1.8E-06	1.9E-06	5.0E-06	81.4E-06	417.7E-06	337.3E-06	225.9E-06	33.9E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

PC_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
OFF samples									
7	3.0E-03	3.0E-03	3.0E-03	3.0E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03
8	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03
9	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
10	3.0E-03	3.0E-03	2.9E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
11	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.0E-03
Statistics									
Min	3.0E-03	3.0E-03	2.9E-03	3.0E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03
Max	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03	3.1E-03
Average	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
Sigma	53.0E-06	53.4E-06	53.2E-06	53.7E-06	55.9E-06	57.1E-06	60.0E-06	59.1E-06	53.4E-06

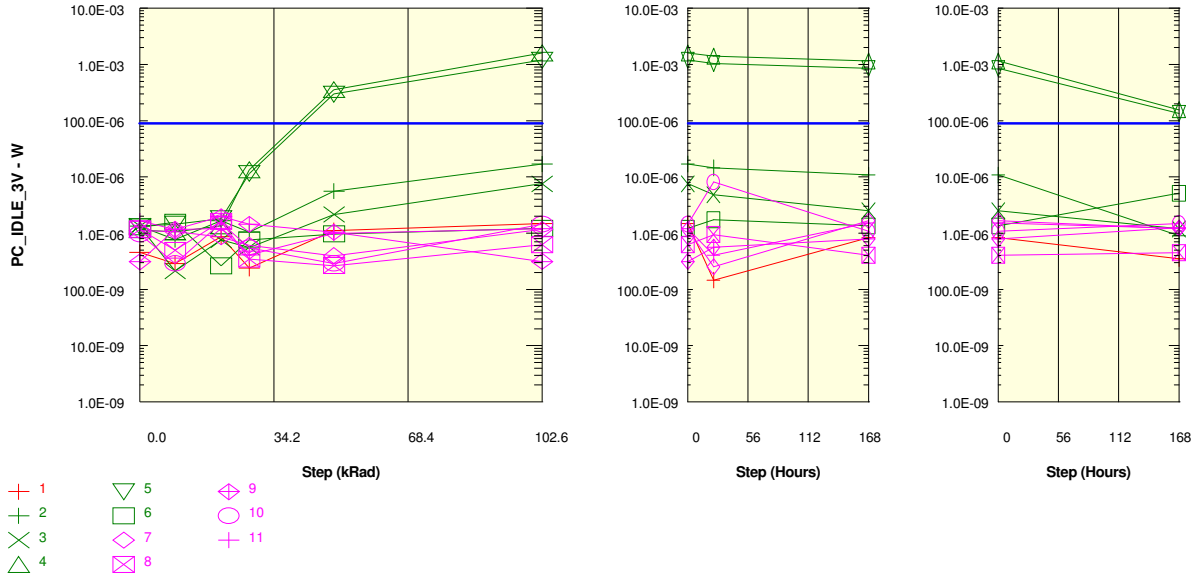
Drift Calculation

PC_NORM_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.7E-06	-4.7E-06	-3.1E-06	-14.7E-06	-28.7E-06	-41.8E-06	-36.5E-06	-43.7E-06
8	-	2.4E-06	-7.4E-06	1.3E-06	1.1E-06	-1.7E-06	-4.6E-06	840.0E-09	-21.7E-06
9	-	-2.6E-06	2.2E-06	1.0E-06	1.7E-06	3.3E-06	1.8E-06	2.8E-06	-18.9E-06
10	-	420.0E-09	-7.0E-06	3.8E-06	3.8E-06	8.5E-06	-60.0E-09	6.6E-06	6.0E-06
11	-	-3.0E-06	-1.6E-06	2.8E-06	1.4E-06	-1.9E-06	-8.3E-06	-7.4E-06	-22.1E-06
Average	-	-900.0E-09	-3.7E-06	1.2E-06	-1.3E-06	-4.1E-06	-10.6E-06	-6.7E-06	-20.1E-06
Sigma	-	2.0E-06	3.6E-06	2.4E-06	6.8E-06	12.9E-06	16.0E-06	15.6E-06	15.8E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Power Consumption Shutdown : PC_IDLE_3V
 Test conditions : fSCLK=0kSPS

Unit : W
 Spec Limit Max : 90.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

PC_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	457.2E-09	289.2E-09	864.6E-09	239.4E-09	1.1E-06	1.5E-06	147.6E-09	836.4E-09	354.6E-09
ON samples									
2	1.3E-06	770.4E-09	1.7E-06	1.0E-06	5.6E-06	17.0E-06	14.5E-06	10.8E-06	903.0E-09
3	1.3E-06	214.2E-09	762.0E-09	559.8E-09	2.2E-06	7.6E-06	4.8E-06	2.5E-06	1.2E-06
4	1.1E-06	1.1E-06	1.3E-06	13.4E-06	356.4E-06	1.6E-03	1.4E-03	1.2E-03	156.5E-06
5	1.3E-06	1.4E-06	1.8E-06	11.5E-06	296.4E-06	1.2E-03	1.0E-03	850.9E-06	135.0E-06
6	1.3E-06	1.6E-06	264.0E-09	762.0E-09	972.0E-09	1.2E-06	1.7E-06	1.3E-06	5.1E-06
Statistics									
Min	1.1E-06	214.2E-09	264.0E-09	559.8E-09	972.0E-09	1.2E-06	1.7E-06	1.3E-06	903.0E-09
Max	1.3E-06	1.6E-06	1.8E-06	13.4E-06	356.4E-06	1.6E-03	1.4E-03	1.2E-03	156.5E-06
Average	1.3E-06	1.0E-06	1.2E-06	5.5E-06	132.3E-06	562.8E-06	491.6E-06	403.2E-06	59.7E-06
Sigma	68.7E-09	489.0E-09	578.0E-09	5.8E-06	159.6E-06	691.0E-06	604.4E-06	496.9E-06	70.6E-06

Drift Calculation

PC_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-561.6E-09	330.0E-09	-288.0E-09	4.3E-06	15.7E-06	13.2E-06	9.5E-06	-429.0E-09
3	-	-1.1E-06	-564.0E-09	-766.2E-09	828.0E-09	6.2E-06	3.5E-06	1.2E-06	-132.6E-09
4	-	-91.8E-09	201.6E-09	12.3E-06	355.3E-06	1.6E-03	1.4E-03	1.1E-03	155.4E-06
5	-	138.0E-09	501.6E-09	10.2E-06	295.1E-06	1.2E-03	1.0E-03	849.6E-06	133.7E-06
6	-	265.2E-09	-1.0E-06	-541.8E-09	-331.8E-09	-81.0E-09	427.8E-09	42.6E-09	3.8E-06
Average	-	-272.4E-09	-114.1E-09	4.2E-06	131.0E-06	561.5E-06	490.3E-06	401.9E-06	58.5E-06
Sigma	-	505.6E-09	589.1E-09	5.8E-06	159.7E-06	691.1E-06	604.4E-06	496.9E-06	70.6E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196	
	ADC128S102			National Semiconductor			Issue:	02	

Measurements

PC_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	457.2E-09	289.2E-09	864.6E-09	239.4E-09	1.1E-06	1.5E-06	147.6E-09	836.4E-09	354.6E-09
OFF samples									
7	1.1E-06	1.1E-06	861.6E-09	613.2E-09	399.6E-09	1.2E-06	253.2E-09	1.7E-06	1.2E-06
8	1.2E-06	499.2E-09	1.6E-06	346.8E-09	266.4E-09	624.0E-09	946.2E-09	405.6E-09	450.6E-09
9	311.4E-09	1.2E-06	2.0E-06	1.4E-06	1.0E-06	315.6E-09	564.0E-09	792.0E-09	1.2E-06
10	962.4E-09	289.8E-09	1.5E-06	549.0E-09	289.8E-09	1.4E-06	8.1E-06	1.1E-06	1.5E-06
11	1.7E-06	1.2E-06	1.2E-06	411.0E-09	996.0E-09	1.2E-06	409.8E-09	1.5E-06	1.2E-06
Statistics									
Min	311.4E-09	289.8E-09	861.6E-09	346.8E-09	266.4E-09	315.6E-09	253.2E-09	405.6E-09	450.6E-09
Max	1.7E-06	1.2E-06	2.0E-06	1.4E-06	1.0E-06	1.4E-06	8.1E-06	1.7E-06	1.5E-06
Average	1.0E-06	837.7E-09	1.4E-06	671.1E-09	598.2E-09	950.2E-09	2.1E-06	1.1E-06	1.1E-06
Sigma	434.9E-09	369.4E-09	374.5E-09	393.8E-09	345.6E-09	415.8E-09	3.0E-06	464.9E-09	351.4E-09

Drift Calculation

PC_IDLE_3V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-36.0E-09	-249.0E-09	-497.4E-09	-711.0E-09	53.4E-09	-857.4E-09	550.5E-09	100.2E-09
8	-	-671.4E-09	455.4E-09	-823.8E-09	-904.2E-09	-546.6E-09	-224.4E-09	-765.0E-09	-720.0E-09
9	-	861.6E-09	1.7E-06	1.1E-06	727.8E-09	4.2E-09	252.6E-09	480.6E-09	935.4E-09
10	-	-672.6E-09	567.6E-09	-413.4E-09	-672.6E-09	484.8E-09	7.2E-06	123.6E-09	525.6E-09
11	-	-510.0E-09	-434.4E-09	-1.3E-06	-666.0E-09	-462.0E-09	-1.3E-06	-127.8E-09	-444.0E-09
Average	-	-205.7E-09	399.2E-09	-372.3E-09	-445.2E-09	-93.2E-09	1.0E-06	52.4E-09	79.4E-09
Sigma	-	582.3E-09	738.6E-09	804.1E-09	592.9E-09	375.9E-09	3.1E-06	476.9E-09	607.5E-09

Parameter : Integral Non linearity : INL+_5VIN0

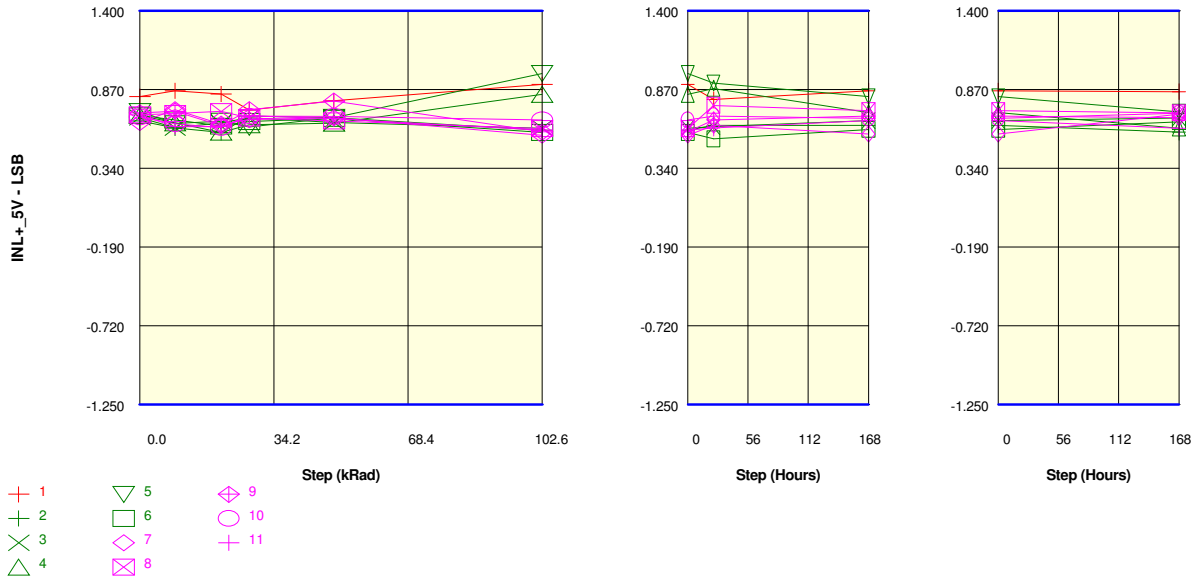
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.824	0.862	0.840	0.731	0.794	0.904	0.802	0.861	0.856
ON samples									
2	0.659	0.612	0.581	0.692	0.680	0.598	0.630	0.630	0.584
3	0.682	0.613	0.647	0.682	0.649	0.611	0.620	0.661	0.679
4	0.696	0.646	0.583	0.633	0.645	0.838	0.878	0.715	0.611
5	0.722	0.641	0.657	0.617	0.682	0.978	0.914	0.822	0.719
6	0.695	0.665	0.624	0.655	0.677	0.582	0.538	0.602	0.654
Statistics									
Min	0.659	0.612	0.581	0.617	0.645	0.582	0.538	0.602	0.584
Max	0.722	0.665	0.657	0.692	0.682	0.978	0.914	0.822	0.719
Average	0.691	0.635	0.618	0.656	0.667	0.721	0.716	0.686	0.649
Sigma	0.021	0.020	0.032	0.028	0.016	0.159	0.151	0.078	0.048

Drift Calculation

INL+_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-47.0E-03	-78.0E-03	33.0E-03	21.0E-03	-61.0E-03	-29.0E-03	-29.0E-03	-75.0E-03
3	-	-69.0E-03	-35.0E-03	0.0E+00	-33.0E-03	-71.0E-03	-62.0E-03	-21.0E-03	-3.0E-03
4	-	-50.0E-03	-113.0E-03	-63.0E-03	-51.0E-03	142.0E-03	182.0E-03	19.0E-03	-85.0E-03
5	-	-81.0E-03	-65.0E-03	-105.0E-03	-40.0E-03	256.0E-03	192.0E-03	100.0E-03	-3.0E-03
6	-	-30.0E-03	-71.0E-03	-40.0E-03	-18.0E-03	-113.0E-03	-157.0E-03	-93.0E-03	-41.0E-03
Average	-	-55.4E-03	-72.4E-03	-35.0E-03	-24.2E-03	30.6E-03	25.2E-03	-4.8E-03	-41.4E-03
Sigma	-	17.8E-03	25.0E-03	48.1E-03	25.0E-03	143.2E-03	138.7E-03	63.5E-03	34.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

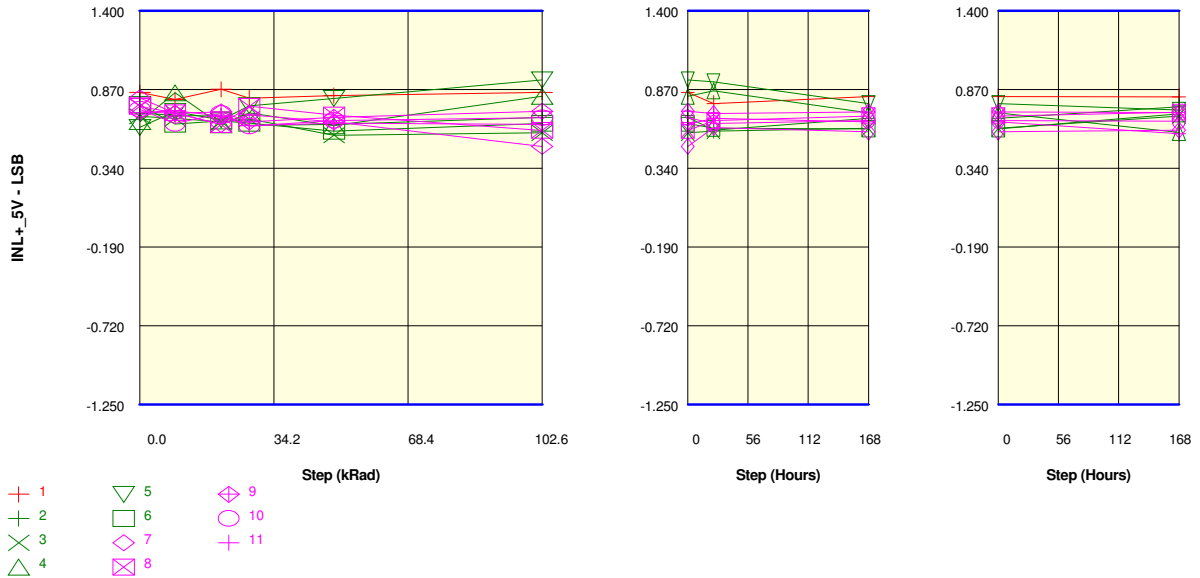
INL+_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.824	0.862	0.840	0.731	0.794	0.904	0.802	0.861	0.856
OFF samples									
7	0.648	0.735	0.638	0.667	0.680	0.563	0.630	0.571	0.704
8	0.700	0.709	0.723	0.678	0.659	0.607	0.764	0.728	0.714
9	0.713	0.725	0.627	0.735	0.793	0.585	0.665	0.693	0.681
10	0.685	0.639	0.613	0.691	0.689	0.665	0.693	0.676	0.711
11	0.701	0.620	0.622	0.694	0.675	0.597	0.612	0.662	0.611
Statistics									
Min	0.648	0.620	0.613	0.667	0.659	0.563	0.612	0.571	0.611
Max	0.713	0.735	0.723	0.735	0.793	0.665	0.764	0.728	0.714
Average	0.689	0.686	0.645	0.693	0.699	0.603	0.673	0.666	0.684
Sigma	0.023	0.047	0.040	0.023	0.048	0.034	0.054	0.052	0.038

Drift Calculation

INL+_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	87.0E-03	-10.0E-03	19.0E-03	32.0E-03	-85.0E-03	-18.0E-03	-77.0E-03	56.0E-03
8	-	9.0E-03	23.0E-03	-22.0E-03	-41.0E-03	-93.0E-03	64.0E-03	28.0E-03	14.0E-03
9	-	12.0E-03	-86.0E-03	22.0E-03	80.0E-03	-128.0E-03	-48.0E-03	-20.0E-03	-32.0E-03
10	-	-46.0E-03	-72.0E-03	6.0E-03	4.0E-03	-20.0E-03	8.0E-03	-9.0E-03	26.0E-03
11	-	-81.0E-03	-79.0E-03	-7.0E-03	-26.0E-03	-104.0E-03	-89.0E-03	-39.0E-03	-90.0E-03
Average	-	-3.8E-03	-44.8E-03	3.6E-03	9.8E-03	-86.0E-03	-16.6E-03	-23.4E-03	-5.2E-03
Sigma	-	57.3E-03	43.4E-03	16.4E-03	43.2E-03	36.0E-03	51.6E-03	34.6E-03	51.0E-03

Parameter : Integral Non linearity : INL+_5VIN1
 Test conditions : INX => X= 0 to 7

Unit : LSB
 Spec Limit Min : -1.250
 Spec Limit Max : 1.400
 Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.850	0.802	0.872	0.813	0.830	0.852	0.776	0.822	0.821
ON samples									
2	0.714	0.697	0.693	0.628	0.635	0.683	0.597	0.676	0.754
3	0.690	0.677	0.653	0.671	0.563	0.579	0.591	0.610	0.693
4	0.654	0.848	0.633	0.713	0.627	0.825	0.862	0.714	0.582
5	0.616	0.722	0.666	0.761	0.810	0.935	0.922	0.776	0.731
6	0.768	0.637	0.659	0.644	0.590	0.643	0.609	0.605	0.707
Statistics									
Min	0.616	0.637	0.633	0.628	0.563	0.579	0.591	0.605	0.582
Max	0.768	0.848	0.693	0.761	0.810	0.935	0.922	0.776	0.754
Average	0.688	0.716	0.661	0.683	0.645	0.733	0.716	0.676	0.693
Sigma	0.052	0.072	0.019	0.048	0.086	0.129	0.145	0.065	0.059

Drift Calculation

INL+_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-17.0E-03	-21.0E-03	-86.0E-03	-79.0E-03	-31.0E-03	-117.0E-03	-38.0E-03	40.0E-03
3	-	-13.0E-03	-37.0E-03	-19.0E-03	-127.0E-03	-111.0E-03	-99.0E-03	-80.0E-03	3.0E-03
4	-	194.0E-03	-21.0E-03	59.0E-03	-27.0E-03	171.0E-03	208.0E-03	60.0E-03	-72.0E-03
5	-	106.0E-03	50.0E-03	145.0E-03	194.0E-03	319.0E-03	306.0E-03	160.0E-03	115.0E-03
6	-	-131.0E-03	-109.0E-03	-124.0E-03	-178.0E-03	-125.0E-03	-159.0E-03	-163.0E-03	-61.0E-03
Average	-	27.8E-03	-27.6E-03	-5.0E-03	-43.4E-03	44.6E-03	27.8E-03	-12.2E-03	5.0E-03
Sigma	-	111.9E-03	50.6E-03	97.5E-03	128.8E-03	173.2E-03	190.7E-03	112.1E-03	68.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+ 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.850	0.802	0.872	0.813	0.830	0.852	0.776	0.822	0.821
OFF samples									
7	0.720	0.711	0.635	0.699	0.652	0.488	0.615	0.585	0.597
8	0.757	0.714	0.635	0.758	0.698	0.595	0.661	0.693	0.718
9	0.814	0.711	0.720	0.653	0.683	0.724	0.708	0.721	0.716
10	0.737	0.641	0.708	0.624	0.662	0.680	0.643	0.661	0.657
11	0.716	0.727	0.692	0.627	0.645	0.636	0.677	0.654	0.573
Statistics									
Min	0.716	0.641	0.635	0.624	0.645	0.488	0.615	0.585	0.573
Max	0.814	0.727	0.720	0.758	0.698	0.724	0.708	0.721	0.718
Average	0.749	0.701	0.678	0.672	0.668	0.625	0.661	0.663	0.652
Sigma	0.036	0.030	0.036	0.051	0.020	0.081	0.031	0.046	0.060

Drift Calculation

INL+ 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-9.0E-03	-85.0E-03	-21.0E-03	-68.0E-03	-232.0E-03	-105.0E-03	-135.0E-03	-123.0E-03
8	-	-43.0E-03	-122.0E-03	1.0E-03	-59.0E-03	-162.0E-03	-96.0E-03	-64.0E-03	-39.0E-03
9	-	-103.0E-03	-94.0E-03	-161.0E-03	-131.0E-03	-90.0E-03	-106.0E-03	-93.0E-03	-98.0E-03
10	-	-96.0E-03	-29.0E-03	-113.0E-03	-75.0E-03	-57.0E-03	-94.0E-03	-76.0E-03	-80.0E-03
11	-	11.0E-03	-24.0E-03	-89.0E-03	-71.0E-03	-80.0E-03	-39.0E-03	-62.0E-03	-143.0E-03
Average	-	-48.0E-03	-70.8E-03	-76.6E-03	-80.8E-03	-124.2E-03	-88.0E-03	-86.0E-03	-96.6E-03
Sigma	-	45.5E-03	38.2E-03	59.5E-03	25.6E-03	64.3E-03	25.0E-03	26.9E-03	35.9E-03

Parameter : Integral Non linearity : INL+_5VIN2

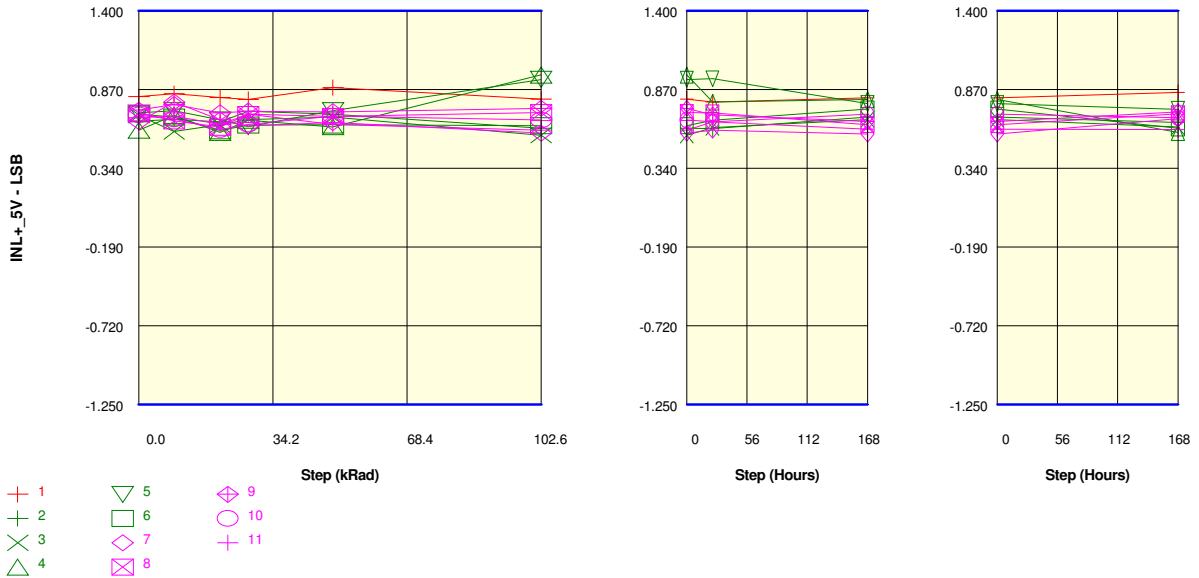
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.822	0.842	0.817	0.803	0.884	0.806	0.786	0.815	0.850
ON samples									
2	0.657	0.670	0.652	0.724	0.704	0.609	0.607	0.686	0.648
3	0.697	0.588	0.632	0.669	0.684	0.563	0.615	0.669	0.618
4	0.597	0.696	0.582	0.663	0.619	0.968	0.786	0.803	0.581
5	0.712	0.728	0.665	0.620	0.728	0.938	0.943	0.775	0.737
6	0.705	0.685	0.593	0.631	0.632	0.627	0.663	0.739	0.611
Statistics									
Min	0.597	0.588	0.582	0.620	0.619	0.563	0.607	0.669	0.581
Max	0.712	0.728	0.665	0.724	0.728	0.968	0.943	0.803	0.737
Average	0.674	0.673	0.625	0.661	0.673	0.741	0.723	0.734	0.639
Sigma	0.043	0.047	0.032	0.036	0.042	0.175	0.127	0.051	0.053

Drift Calculation

INL+_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	13.0E-03	-5.0E-03	67.0E-03	47.0E-03	-48.0E-03	-50.0E-03	29.0E-03	-9.0E-03
3	-	-109.0E-03	-65.0E-03	-28.0E-03	-13.0E-03	-134.0E-03	-82.0E-03	-28.0E-03	-79.0E-03
4	-	99.0E-03	-15.0E-03	66.0E-03	22.0E-03	371.0E-03	189.0E-03	206.0E-03	-16.0E-03
5	-	16.0E-03	-47.0E-03	-92.0E-03	16.0E-03	226.0E-03	231.0E-03	63.0E-03	25.0E-03
6	-	-20.0E-03	-112.0E-03	-74.0E-03	-73.0E-03	-78.0E-03	-42.0E-03	34.0E-03	-94.0E-03
Average	-	-200.0E-06	-48.8E-03	-12.2E-03	-200.0E-06	67.4E-03	49.2E-03	60.8E-03	-34.6E-03
Sigma	-	67.1E-03	38.3E-03	67.6E-03	41.1E-03	196.1E-03	132.6E-03	78.4E-03	44.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.822	0.842	0.817	0.803	0.884	0.806	0.786	0.815	0.850
OFF samples									
7	0.654	0.787	0.665	0.624	0.649	0.577	0.596	0.570	0.674
8	0.712	0.659	0.617	0.703	0.690	0.715	0.713	0.634	0.706
9	0.731	0.769	0.714	0.725	0.721	0.744	0.700	0.655	0.721
10	0.698	0.671	0.600	0.636	0.691	0.664	0.652	0.705	0.680
11	0.682	0.693	0.635	0.705	0.635	0.596	0.652	0.604	0.600
Statistics									
Min	0.654	0.659	0.600	0.624	0.635	0.577	0.596	0.570	0.600
Max	0.731	0.787	0.714	0.725	0.721	0.744	0.713	0.705	0.721
Average	0.695	0.716	0.646	0.679	0.677	0.659	0.663	0.634	0.676
Sigma	0.026	0.052	0.040	0.041	0.031	0.065	0.041	0.046	0.042

Drift Calculation

INL+_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	133.0E-03	11.0E-03	-30.0E-03	-5.0E-03	-77.0E-03	-58.0E-03	-84.0E-03	20.0E-03
8	-	-53.0E-03	-95.0E-03	-9.0E-03	-22.0E-03	3.0E-03	1.0E-03	-78.0E-03	-6.0E-03
9	-	38.0E-03	-17.0E-03	-6.0E-03	-10.0E-03	13.0E-03	-31.0E-03	-76.0E-03	-10.0E-03
10	-	-27.0E-03	-98.0E-03	-62.0E-03	-7.0E-03	-34.0E-03	-46.0E-03	7.0E-03	-18.0E-03
11	-	11.0E-03	-47.0E-03	23.0E-03	-47.0E-03	-86.0E-03	-30.0E-03	-78.0E-03	-82.0E-03
Average	-	20.4E-03	-49.2E-03	-16.8E-03	-18.2E-03	-36.2E-03	-32.8E-03	-61.8E-03	-19.2E-03
Sigma	-	64.4E-03	42.8E-03	28.2E-03	15.6E-03	40.3E-03	19.8E-03	34.5E-03	33.9E-03

Parameter : Integral Non linearity : INL+_5VIN3

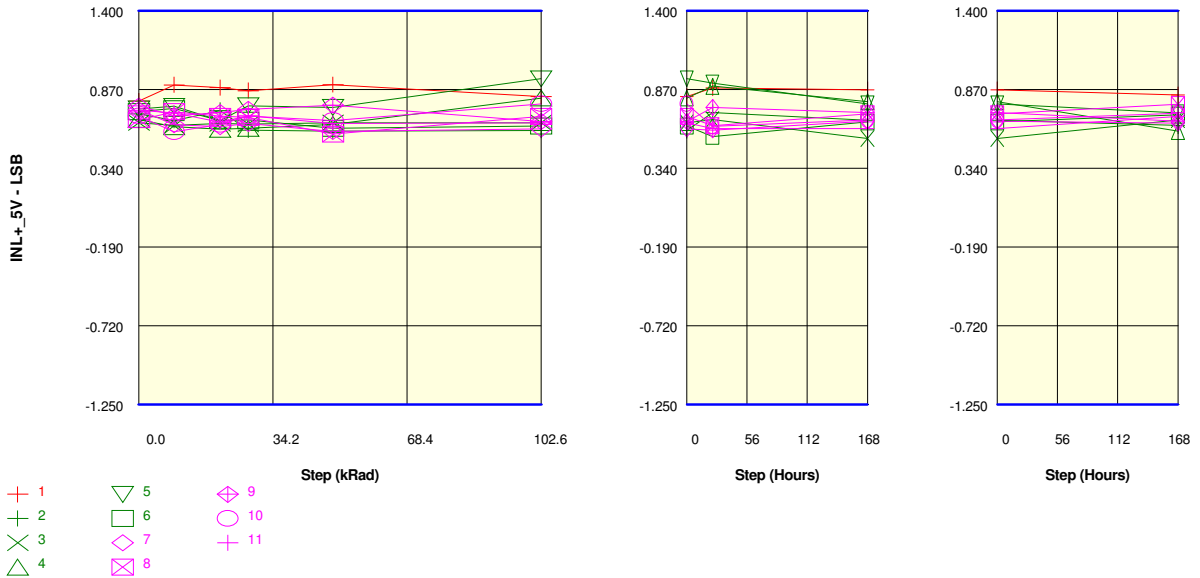
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.793	0.902	0.883	0.863	0.903	0.824	0.882	0.868	0.834
ON samples									
2	0.706	0.662	0.729	0.598	0.591	0.595	0.716	0.663	0.628
3	0.647	0.628	0.642	0.637	0.647	0.647	0.668	0.541	0.666
4	0.669	0.620	0.603	0.609	0.635	0.813	0.893	0.788	0.589
5	0.739	0.758	0.662	0.761	0.750	0.943	0.914	0.774	0.714
6	0.722	0.742	0.662	0.664	0.609	0.625	0.555	0.652	0.699
Statistics									
Min	0.647	0.620	0.603	0.598	0.591	0.595	0.555	0.541	0.589
Max	0.739	0.758	0.729	0.761	0.750	0.943	0.914	0.788	0.714
Average	0.697	0.682	0.660	0.654	0.646	0.725	0.749	0.684	0.659
Sigma	0.034	0.058	0.041	0.058	0.055	0.133	0.137	0.090	0.046

Drift Calculation

INL+_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-44.0E-03	23.0E-03	-108.0E-03	-115.0E-03	-111.0E-03	10.0E-03	-43.0E-03	-78.0E-03
3	-	-19.0E-03	-5.0E-03	-10.0E-03	0.0E+00	0.0E+00	21.0E-03	-106.0E-03	19.0E-03
4	-	-49.0E-03	-66.0E-03	-60.0E-03	-34.0E-03	144.0E-03	224.0E-03	119.0E-03	-80.0E-03
5	-	19.0E-03	-77.0E-03	22.0E-03	11.0E-03	204.0E-03	175.0E-03	35.0E-03	-25.0E-03
6	-	20.0E-03	-60.0E-03	-58.0E-03	-113.0E-03	-97.0E-03	-167.0E-03	-70.0E-03	-23.0E-03
Average	-	-14.6E-03	-37.0E-03	-42.8E-03	-50.2E-03	28.0E-03	52.6E-03	-13.0E-03	-37.4E-03
Sigma	-	29.6E-03	39.0E-03	44.8E-03	54.2E-03	126.6E-03	138.1E-03	80.7E-03	37.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.793	0.902	0.883	0.863	0.903	0.824	0.882	0.868	0.834
OFF samples									
7	0.734	0.633	0.621	0.641	0.588	0.605	0.598	0.657	0.645
8	0.666	0.721	0.691	0.683	0.570	0.689	0.627	0.706	0.770
9	0.759	0.694	0.716	0.737	0.765	0.655	0.749	0.715	0.658
10	0.692	0.586	0.635	0.691	0.661	0.774	0.623	0.665	0.711
11	0.730	0.712	0.651	0.694	0.642	0.647	0.608	0.607	0.689
Statistics									
Min	0.666	0.586	0.621	0.641	0.570	0.605	0.598	0.607	0.645
Max	0.759	0.721	0.716	0.737	0.765	0.774	0.749	0.715	0.770
Average	0.716	0.669	0.663	0.689	0.645	0.674	0.641	0.670	0.695
Sigma	0.033	0.052	0.035	0.031	0.069	0.057	0.055	0.039	0.044

Drift Calculation

INL+ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-101.0E-03	-113.0E-03	-93.0E-03	-146.0E-03	-129.0E-03	-136.0E-03	-77.0E-03	-89.0E-03
8	-	55.0E-03	25.0E-03	17.0E-03	-96.0E-03	23.0E-03	-39.0E-03	40.0E-03	104.0E-03
9	-	-65.0E-03	-43.0E-03	-22.0E-03	6.0E-03	-104.0E-03	-10.0E-03	-44.0E-03	-101.0E-03
10	-	-106.0E-03	-57.0E-03	-1.0E-03	-31.0E-03	82.0E-03	-69.0E-03	-27.0E-03	19.0E-03
11	-	-18.0E-03	-79.0E-03	-36.0E-03	-88.0E-03	-83.0E-03	-122.0E-03	-123.0E-03	-41.0E-03
Average	-	-47.0E-03	-53.4E-03	-27.0E-03	-71.0E-03	-42.2E-03	-75.2E-03	-46.2E-03	-21.6E-03
Sigma	-	59.9E-03	45.8E-03	37.6E-03	53.0E-03	80.9E-03	47.9E-03	54.1E-03	75.7E-03

Parameter : Integral Non linearity : INL+_5VIN4

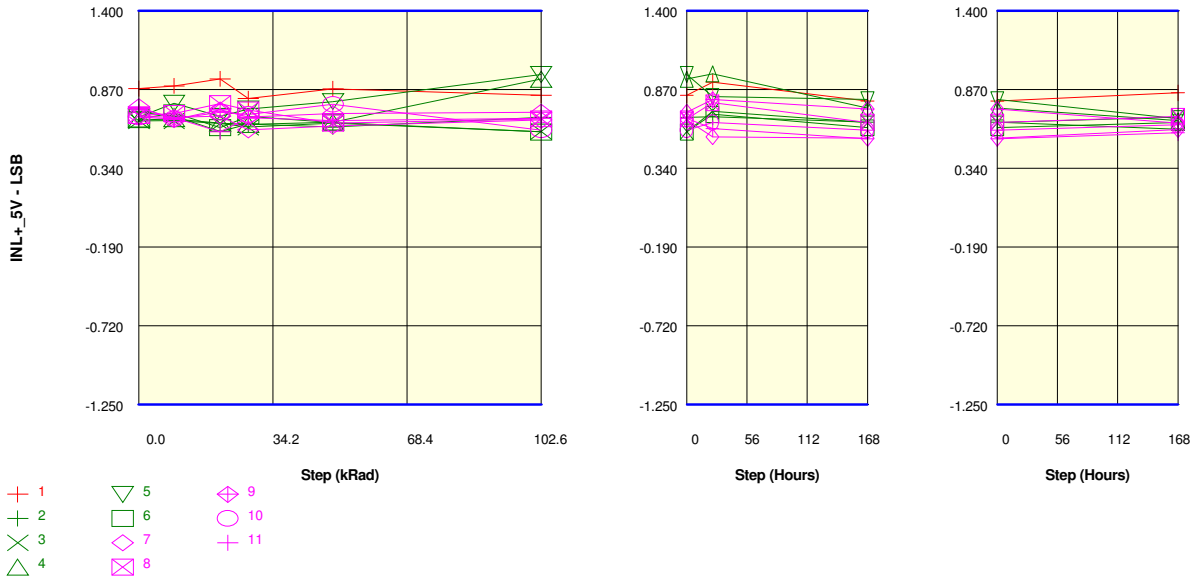
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.877	0.895	0.942	0.809	0.875	0.832	0.919	0.793	0.848
ON samples									
2	0.718	0.693	0.588	0.637	0.619	0.683	0.687	0.651	0.604
3	0.659	0.660	0.641	0.617	0.644	0.587	0.725	0.648	0.685
4	0.666	0.673	0.644	0.635	0.651	0.940	0.976	0.745	0.660
5	0.685	0.778	0.689	0.740	0.789	0.972	0.823	0.802	0.675
6	0.671	0.713	0.614	0.690	0.650	0.585	0.703	0.613	0.648
Statistics									
Min	0.659	0.660	0.588	0.617	0.619	0.585	0.687	0.613	0.604
Max	0.718	0.778	0.689	0.740	0.789	0.972	0.976	0.802	0.685
Average	0.680	0.703	0.635	0.664	0.671	0.753	0.783	0.692	0.654
Sigma	0.021	0.041	0.034	0.045	0.060	0.169	0.108	0.070	0.028

Drift Calculation

INL+_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-25.0E-03	-130.0E-03	-81.0E-03	-99.0E-03	-35.0E-03	-31.0E-03	-67.0E-03	-114.0E-03
3	-	1.0E-03	-18.0E-03	-42.0E-03	-15.0E-03	-72.0E-03	66.0E-03	-11.0E-03	26.0E-03
4	-	7.0E-03	-22.0E-03	-31.0E-03	-15.0E-03	274.0E-03	310.0E-03	79.0E-03	-6.0E-03
5	-	93.0E-03	4.0E-03	55.0E-03	104.0E-03	287.0E-03	138.0E-03	117.0E-03	-10.0E-03
6	-	42.0E-03	-57.0E-03	19.0E-03	-21.0E-03	-86.0E-03	32.0E-03	-58.0E-03	-23.0E-03
Average	-	23.6E-03	-44.6E-03	-16.0E-03	-9.2E-03	73.6E-03	103.0E-03	12.0E-03	-25.4E-03
Sigma	-	40.8E-03	47.0E-03	47.7E-03	64.9E-03	169.8E-03	117.0E-03	73.7E-03	47.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.877	0.895	0.942	0.809	0.875	0.832	0.919	0.793	0.848
OFF samples									
7	0.691	0.683	0.691	0.599	0.625	0.664	0.552	0.543	0.601
8	0.696	0.708	0.775	0.732	0.645	0.673	0.781	0.650	0.690
9	0.754	0.668	0.734	0.685	0.709	0.717	0.802	0.740	0.645
10	0.685	0.673	0.717	0.702	0.770	0.597	0.648	0.597	0.634
11	0.743	0.681	0.587	0.682	0.660	0.676	0.607	0.538	0.580
Statistics									
Min	0.685	0.668	0.587	0.599	0.625	0.597	0.552	0.538	0.580
Max	0.754	0.708	0.775	0.732	0.770	0.717	0.802	0.740	0.690
Average	0.714	0.683	0.701	0.680	0.682	0.665	0.678	0.614	0.630
Sigma	0.029	0.014	0.063	0.044	0.052	0.039	0.098	0.075	0.038

Drift Calculation

INL+ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-8.0E-03	0.0E+00	-92.0E-03	-66.0E-03	-27.0E-03	-139.0E-03	-148.0E-03	-90.0E-03
8	-	-12.0E-03	79.0E-03	36.0E-03	-51.0E-03	-23.0E-03	85.0E-03	-46.0E-03	-6.0E-03
9	-	-86.0E-03	-20.0E-03	-69.0E-03	-45.0E-03	-37.0E-03	48.0E-03	-14.0E-03	-109.0E-03
10	-	-12.0E-03	32.0E-03	17.0E-03	85.0E-03	-88.0E-03	-37.0E-03	-88.0E-03	-51.0E-03
11	-	-62.0E-03	-156.0E-03	-61.0E-03	-83.0E-03	-67.0E-03	-136.0E-03	-205.0E-03	-163.0E-03
Average	-	-31.2E-03	-13.0E-03	-33.8E-03	-32.0E-03	-48.4E-03	-35.8E-03	-100.2E-03	-83.8E-03
Sigma	-	36.7E-03	78.9E-03	50.6E-03	60.0E-03	25.1E-03	92.0E-03	69.0E-03	53.1E-03

Parameter : Integral Non linearity : INL+_5VIN5

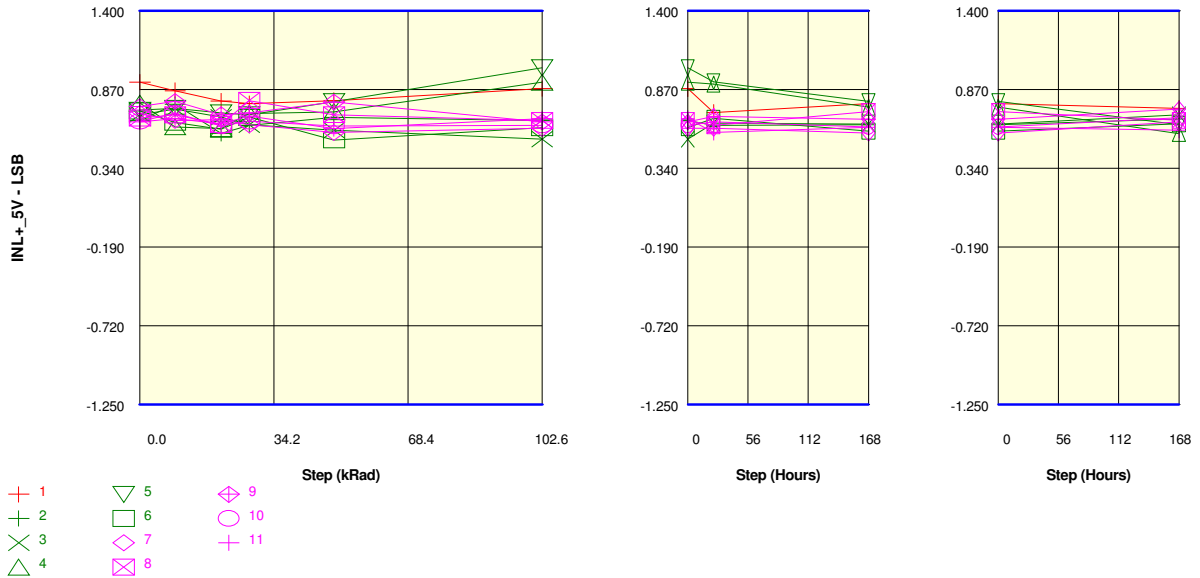
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.920	0.863	0.793	0.776	0.796	0.877	0.716	0.775	0.744
ON samples									
2	0.661	0.770	0.575	0.629	0.683	0.660	0.628	0.634	0.672
3	0.701	0.740	0.684	0.633	0.596	0.536	0.645	0.637	0.700
4	0.779	0.619	0.608	0.708	0.721	0.919	0.907	0.752	0.574
5	0.731	0.744	0.714	0.700	0.788	1.016	0.923	0.790	0.633
6	0.726	0.650	0.604	0.684	0.531	0.613	0.677	0.590	0.639
Statistics									
Min	0.661	0.619	0.575	0.629	0.531	0.536	0.628	0.590	0.574
Max	0.779	0.770	0.714	0.708	0.788	1.016	0.923	0.790	0.700
Average	0.720	0.705	0.637	0.671	0.664	0.749	0.756	0.681	0.644
Sigma	0.039	0.059	0.053	0.033	0.091	0.185	0.131	0.077	0.042

Drift Calculation

INL+_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	109.0E-03	-86.0E-03	-32.0E-03	22.0E-03	-1.0E-03	-33.0E-03	-27.0E-03	11.0E-03
3	-	39.0E-03	-17.0E-03	-68.0E-03	-105.0E-03	-165.0E-03	-56.0E-03	-64.0E-03	-1.0E-03
4	-	-160.0E-03	-171.0E-03	-71.0E-03	-58.0E-03	140.0E-03	128.0E-03	-27.0E-03	-205.0E-03
5	-	13.0E-03	-17.0E-03	-31.0E-03	57.0E-03	285.0E-03	192.0E-03	59.0E-03	-98.0E-03
6	-	-76.0E-03	-122.0E-03	-42.0E-03	-195.0E-03	-113.0E-03	-49.0E-03	-136.0E-03	-87.0E-03
Average	-	-15.0E-03	-82.6E-03	-48.8E-03	-55.8E-03	29.2E-03	36.4E-03	-39.0E-03	-76.0E-03
Sigma	-	93.6E-03	60.0E-03	17.4E-03	90.1E-03	165.3E-03	103.2E-03	63.1E-03	78.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+ 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.920	0.863	0.793	0.776	0.796	0.877	0.716	0.775	0.744
OFF samples									
7	0.709	0.662	0.667	0.633	0.581	0.610	0.609	0.578	0.653
8	0.679	0.700	0.636	0.796	0.701	0.662	0.628	0.722	0.663
9	0.755	0.790	0.700	0.712	0.786	0.652	0.690	0.670	0.738
10	0.655	0.710	0.624	0.656	0.624	0.630	0.654	0.619	0.681
11	0.652	0.675	0.639	0.692	0.607	0.675	0.583	0.616	0.598
Statistics									
Min	0.652	0.662	0.624	0.633	0.581	0.610	0.583	0.578	0.598
Max	0.755	0.790	0.700	0.796	0.786	0.675	0.690	0.722	0.738
Average	0.690	0.707	0.653	0.698	0.660	0.646	0.633	0.641	0.667
Sigma	0.038	0.045	0.027	0.056	0.075	0.023	0.037	0.050	0.045

Drift Calculation

INL+ 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-47.0E-03	-42.0E-03	-76.0E-03	-128.0E-03	-99.0E-03	-100.0E-03	-131.0E-03	-56.0E-03
8	-	21.0E-03	-43.0E-03	117.0E-03	22.0E-03	-17.0E-03	-51.0E-03	43.0E-03	-16.0E-03
9	-	35.0E-03	-55.0E-03	-43.0E-03	31.0E-03	-103.0E-03	-65.0E-03	-85.0E-03	-17.0E-03
10	-	55.0E-03	-31.0E-03	1.0E-03	-31.0E-03	-25.0E-03	-1.0E-03	-36.0E-03	26.0E-03
11	-	23.0E-03	-13.0E-03	40.0E-03	-45.0E-03	23.0E-03	-69.0E-03	-36.0E-03	-54.0E-03
Average	-	17.4E-03	-36.8E-03	7.8E-03	-30.2E-03	-44.2E-03	-57.2E-03	-49.0E-03	-23.4E-03
Sigma	-	34.4E-03	14.1E-03	67.2E-03	57.0E-03	49.2E-03	32.3E-03	58.0E-03	30.1E-03

Parameter : Integral Non linearity : INL+_5VIN6

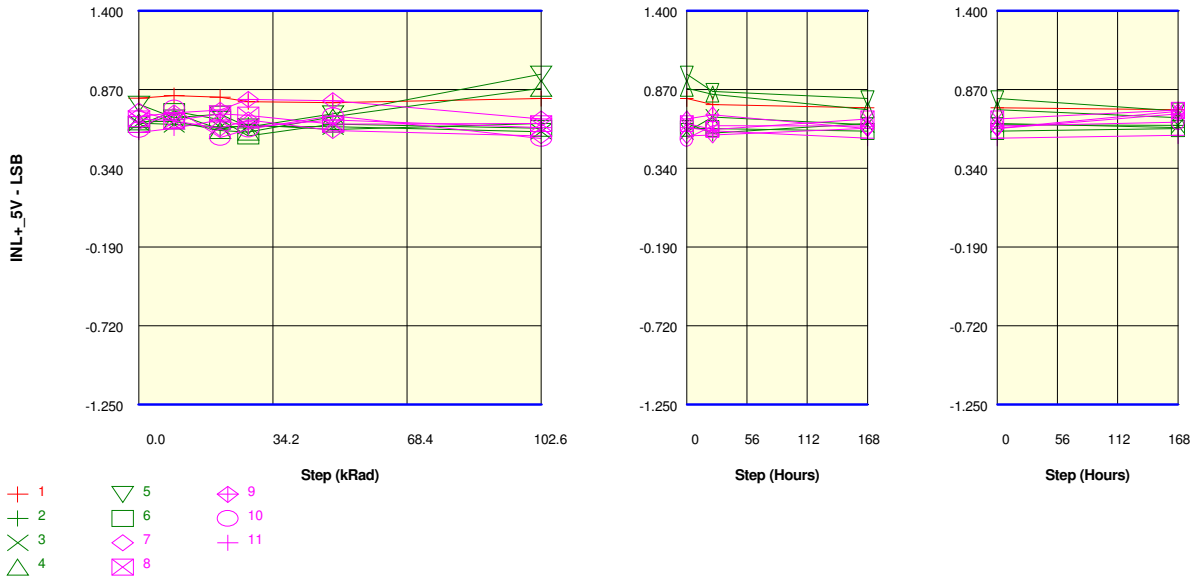
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.813	0.830	0.818	0.788	0.781	0.809	0.769	0.747	0.734
ON samples									
2	0.614	0.710	0.604	0.632	0.600	0.641	0.578	0.642	0.615
3	0.644	0.635	0.618	0.623	0.620	0.587	0.684	0.634	0.629
4	0.653	0.658	0.594	0.584	0.687	0.879	0.839	0.735	0.682
5	0.772	0.680	0.705	0.619	0.706	0.974	0.858	0.809	0.726
6	0.634	0.723	0.669	0.558	0.637	0.609	0.607	0.589	0.607
Statistics									
Min	0.614	0.635	0.594	0.558	0.600	0.587	0.578	0.589	0.607
Max	0.772	0.723	0.705	0.632	0.706	0.974	0.858	0.809	0.726
Average	0.663	0.681	0.638	0.603	0.650	0.738	0.713	0.682	0.652
Sigma	0.056	0.032	0.042	0.028	0.040	0.158	0.116	0.079	0.045

Drift Calculation

INL+_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	96.0E-03	-10.0E-03	18.0E-03	-14.0E-03	27.0E-03	-36.0E-03	28.0E-03	1.0E-03
3	-	-9.0E-03	-26.0E-03	-21.0E-03	-24.0E-03	-57.0E-03	40.0E-03	-10.0E-03	-15.0E-03
4	-	5.0E-03	-59.0E-03	-69.0E-03	34.0E-03	226.0E-03	186.0E-03	82.0E-03	29.0E-03
5	-	-92.0E-03	-67.0E-03	-153.0E-03	-66.0E-03	202.0E-03	86.0E-03	37.0E-03	-46.0E-03
6	-	89.0E-03	35.0E-03	-76.0E-03	3.0E-03	-25.0E-03	-27.0E-03	-45.0E-03	-27.0E-03
Average	-	17.8E-03	-25.4E-03	-60.2E-03	-13.4E-03	74.6E-03	49.8E-03	18.4E-03	-11.6E-03
Sigma	-	69.5E-03	36.7E-03	57.6E-03	32.8E-03	117.2E-03	81.5E-03	43.1E-03	25.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.813	0.830	0.818	0.788	0.781	0.809	0.769	0.747	0.734
OFF samples									
7	0.726	0.659	0.610	0.666	0.594	0.559	0.565	0.610	0.723
8	0.673	0.660	0.707	0.697	0.637	0.641	0.602	0.673	0.731
9	0.689	0.714	0.731	0.804	0.795	0.673	0.700	0.608	0.706
10	0.600	0.746	0.547	0.603	0.694	0.540	0.627	0.626	0.651
11	0.583	0.611	0.666	0.617	0.665	0.614	0.592	0.544	0.561
Statistics									
Min	0.583	0.611	0.547	0.603	0.594	0.540	0.565	0.544	0.561
Max	0.726	0.746	0.731	0.804	0.795	0.673	0.700	0.673	0.731
Average	0.654	0.678	0.652	0.677	0.677	0.605	0.617	0.612	0.674
Sigma	0.054	0.047	0.067	0.072	0.068	0.050	0.046	0.041	0.063

Drift Calculation

INL+_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-67.0E-03	-116.0E-03	-60.0E-03	-132.0E-03	-167.0E-03	-161.0E-03	-116.0E-03	-3.0E-03
8	-	-13.0E-03	34.0E-03	24.0E-03	-36.0E-03	-32.0E-03	-71.0E-03	0.0E+00	58.0E-03
9	-	25.0E-03	42.0E-03	115.0E-03	106.0E-03	-16.0E-03	11.0E-03	-81.0E-03	17.0E-03
10	-	146.0E-03	-53.0E-03	3.0E-03	94.0E-03	-60.0E-03	27.0E-03	26.0E-03	51.0E-03
11	-	28.0E-03	83.0E-03	34.0E-03	82.0E-03	31.0E-03	9.0E-03	-39.0E-03	-22.0E-03
Average	-	23.8E-03	-2.0E-03	23.2E-03	22.8E-03	-48.8E-03	-37.0E-03	-42.0E-03	20.2E-03
Sigma	-	70.1E-03	72.2E-03	56.3E-03	92.6E-03	66.1E-03	70.8E-03	51.8E-03	30.7E-03

Parameter : Integral Non linearity : INL+_5VIN7

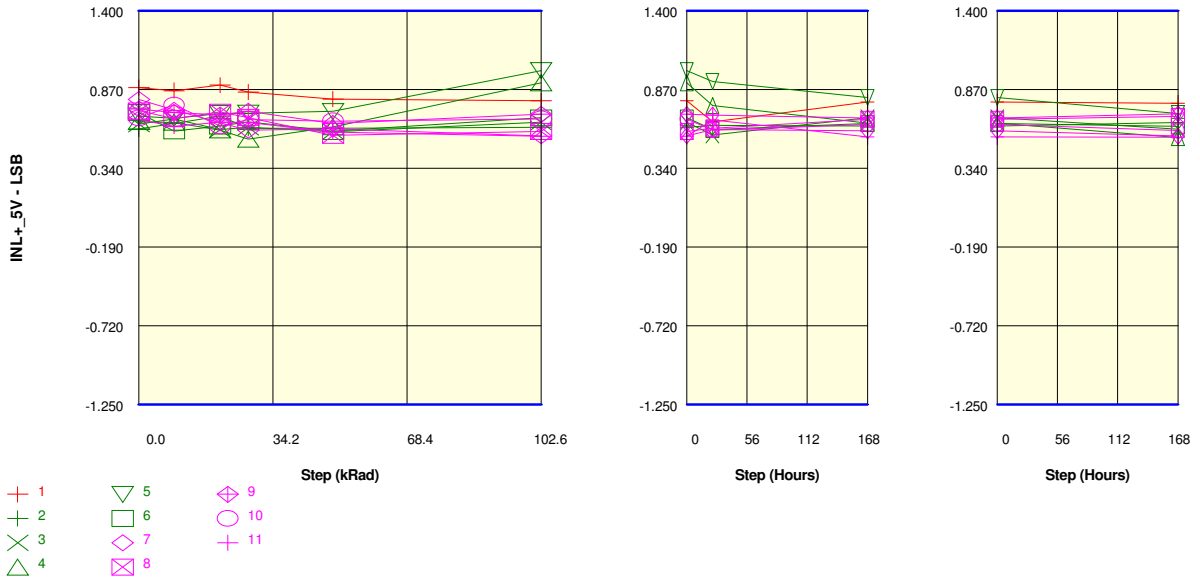
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL+_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.883	0.863	0.900	0.854	0.806	0.794	0.654	0.787	0.778
ON samples									
2	0.605	0.643	0.693	0.610	0.610	0.616	0.628	0.626	0.648
3	0.638	0.673	0.600	0.616	0.587	0.651	0.565	0.681	0.604
4	0.654	0.650	0.598	0.537	0.619	0.916	0.763	0.644	0.547
5	0.692	0.677	0.709	0.711	0.723	0.998	0.924	0.816	0.708
6	0.716	0.591	0.624	0.654	0.589	0.680	0.600	0.641	0.623
Statistics									
Min	0.605	0.591	0.598	0.537	0.587	0.616	0.565	0.626	0.547
Max	0.716	0.677	0.709	0.711	0.723	0.998	0.924	0.816	0.708
Average	0.661	0.647	0.645	0.626	0.626	0.772	0.696	0.682	0.626
Sigma	0.039	0.031	0.047	0.057	0.050	0.154	0.132	0.070	0.053

Drift Calculation

INL+_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	38.0E-03	88.0E-03	5.0E-03	5.0E-03	11.0E-03	23.0E-03	21.0E-03	43.0E-03
3	-	35.0E-03	-38.0E-03	-22.0E-03	-51.0E-03	13.0E-03	-73.0E-03	43.0E-03	-34.0E-03
4	-	-4.0E-03	-56.0E-03	-117.0E-03	-35.0E-03	262.0E-03	109.0E-03	-10.0E-03	-107.0E-03
5	-	-15.0E-03	17.0E-03	19.0E-03	31.0E-03	306.0E-03	232.0E-03	124.0E-03	16.0E-03
6	-	-125.0E-03	-92.0E-03	-62.0E-03	-127.0E-03	-36.0E-03	-116.0E-03	-75.0E-03	-93.0E-03
Average	-	-14.2E-03	-16.2E-03	-35.4E-03	-35.4E-03	111.2E-03	35.0E-03	20.6E-03	-35.0E-03
Sigma	-	59.2E-03	62.9E-03	49.3E-03	54.2E-03	142.9E-03	125.6E-03	65.2E-03	58.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL+_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.883	0.863	0.900	0.854	0.806	0.794	0.654	0.787	0.778
OFF samples									
7	0.804	0.731	0.646	0.596	0.605	0.559	0.602	0.592	0.557
8	0.727	0.675	0.719	0.682	0.562	0.588	0.610	0.670	0.690
9	0.740	0.716	0.699	0.724	0.643	0.703	0.698	0.678	0.706
10	0.678	0.766	0.625	0.669	0.658	0.672	0.598	0.636	0.593
11	0.668	0.623	0.651	0.648	0.584	0.556	0.666	0.552	0.550
Statistics									
Min	0.668	0.623	0.625	0.596	0.562	0.556	0.598	0.552	0.550
Max	0.804	0.766	0.719	0.724	0.658	0.703	0.698	0.678	0.706
Average	0.723	0.702	0.668	0.664	0.610	0.616	0.635	0.626	0.619
Sigma	0.049	0.049	0.035	0.042	0.036	0.061	0.040	0.048	0.066

Drift Calculation

INL+_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-73.0E-03	-158.0E-03	-208.0E-03	-199.0E-03	-245.0E-03	-202.0E-03	-212.0E-03	-247.0E-03
8	-	-52.0E-03	-8.0E-03	-45.0E-03	-165.0E-03	-139.0E-03	-117.0E-03	-57.0E-03	-37.0E-03
9	-	-24.0E-03	-41.0E-03	-16.0E-03	-97.0E-03	-37.0E-03	-42.0E-03	-62.0E-03	-34.0E-03
10	-	88.0E-03	-53.0E-03	-9.0E-03	-20.0E-03	-6.0E-03	-80.0E-03	-42.0E-03	-85.0E-03
11	-	-45.0E-03	-17.0E-03	-20.0E-03	-84.0E-03	-112.0E-03	-2.0E-03	-116.0E-03	-118.0E-03
Average	-	-21.2E-03	-55.4E-03	-59.6E-03	-113.0E-03	-107.8E-03	-88.6E-03	-97.8E-03	-104.2E-03
Sigma	-	56.8E-03	53.8E-03	75.2E-03	63.0E-03	83.9E-03	68.4E-03	62.3E-03	78.0E-03

Parameter : Integral Non linearity : INL_5VIN0

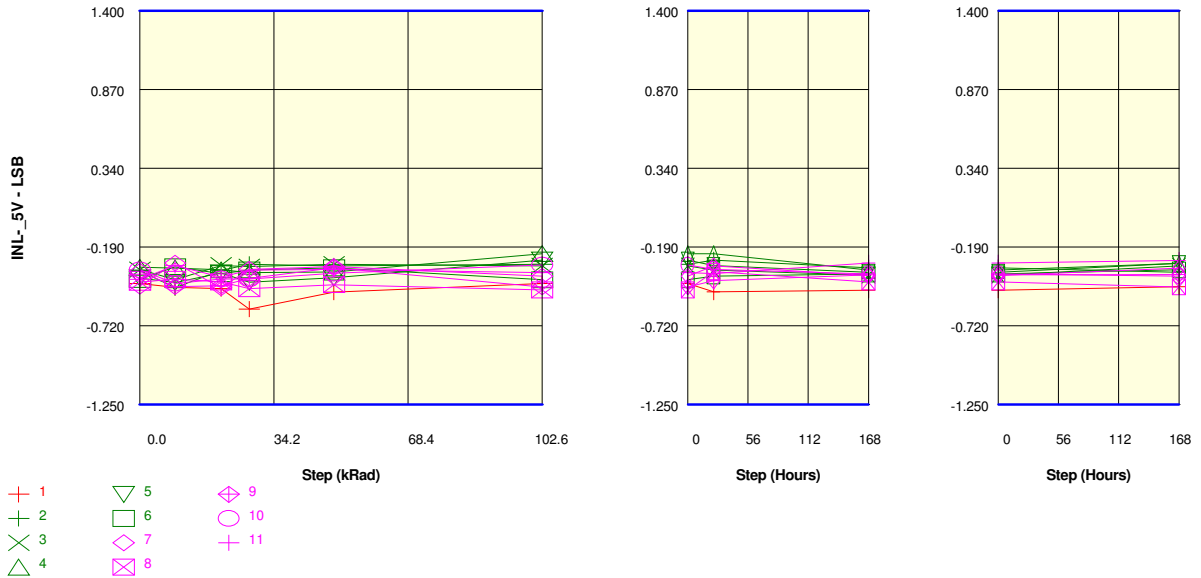
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.434	-0.461	-0.470	-0.608	-0.493	-0.435	-0.491	-0.479	-0.455
ON samples									
2	-0.348	-0.463	-0.347	-0.306	-0.316	-0.306	-0.278	-0.330	-0.360
3	-0.342	-0.409	-0.313	-0.322	-0.305	-0.316	-0.346	-0.379	-0.317
4	-0.326	-0.332	-0.343	-0.361	-0.357	-0.234	-0.235	-0.346	-0.300
5	-0.398	-0.428	-0.363	-0.427	-0.397	-0.277	-0.314	-0.359	-0.300
6	-0.407	-0.323	-0.368	-0.344	-0.330	-0.410	-0.384	-0.371	-0.343
Statistics									
Min	-0.407	-0.463	-0.368	-0.427	-0.397	-0.410	-0.384	-0.379	-0.360
Max	-0.326	-0.323	-0.313	-0.306	-0.305	-0.234	-0.235	-0.330	-0.300
Average	-0.364	-0.391	-0.347	-0.352	-0.341	-0.309	-0.311	-0.357	-0.324
Sigma	0.032	0.055	0.019	0.042	0.033	0.058	0.052	0.018	0.024

Drift Calculation

INL_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-115.0E-03	1.0E-03	42.0E-03	32.0E-03	42.0E-03	70.0E-03	18.0E-03	-12.0E-03
3	-	-67.0E-03	29.0E-03	20.0E-03	37.0E-03	26.0E-03	-4.0E-03	-37.0E-03	25.0E-03
4	-	-6.0E-03	-17.0E-03	-35.0E-03	-31.0E-03	92.0E-03	91.0E-03	-20.0E-03	26.0E-03
5	-	-30.0E-03	35.0E-03	-29.0E-03	1.0E-03	121.0E-03	84.0E-03	39.0E-03	98.0E-03
6	-	84.0E-03	39.0E-03	63.0E-03	77.0E-03	-3.0E-03	23.0E-03	36.0E-03	64.0E-03
Average	-	-26.8E-03	17.4E-03	12.2E-03	23.2E-03	55.6E-03	52.8E-03	7.2E-03	40.2E-03
Sigma	-	66.5E-03	21.7E-03	38.6E-03	36.3E-03	44.9E-03	37.0E-03	30.5E-03	37.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.434	-0.461	-0.470	-0.608	-0.493	-0.435	-0.491	-0.479	-0.455
OFF samples									
7	-0.452	-0.298	-0.464	-0.340	-0.320	-0.386	-0.316	-0.382	-0.332
8	-0.427	-0.406	-0.424	-0.470	-0.443	-0.478	-0.355	-0.424	-0.458
9	-0.353	-0.455	-0.450	-0.401	-0.329	-0.458	-0.417	-0.377	-0.375
10	-0.343	-0.434	-0.405	-0.405	-0.367	-0.311	-0.340	-0.370	-0.384
11	-0.407	-0.315	-0.392	-0.344	-0.342	-0.361	-0.369	-0.297	-0.280
Statistics									
Min	-0.452	-0.455	-0.464	-0.470	-0.443	-0.478	-0.417	-0.424	-0.458
Max	-0.343	-0.298	-0.392	-0.340	-0.320	-0.311	-0.316	-0.297	-0.280
Average	-0.396	-0.382	-0.427	-0.392	-0.360	-0.399	-0.359	-0.370	-0.366
Sigma	0.042	0.063	0.027	0.048	0.044	0.062	0.034	0.041	0.059

Drift Calculation

INL- 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	154.0E-03	-12.0E-03	112.0E-03	132.0E-03	66.0E-03	136.0E-03	70.0E-03	120.0E-03
8	-	21.0E-03	3.0E-03	-43.0E-03	-16.0E-03	-51.0E-03	72.0E-03	3.0E-03	-31.0E-03
9	-	-102.0E-03	-97.0E-03	-48.0E-03	24.0E-03	-105.0E-03	-64.0E-03	-24.0E-03	-22.0E-03
10	-	-91.0E-03	-62.0E-03	-62.0E-03	-24.0E-03	32.0E-03	3.0E-03	-27.0E-03	-41.0E-03
11	-	92.0E-03	15.0E-03	63.0E-03	65.0E-03	46.0E-03	38.0E-03	110.0E-03	127.0E-03
Average	-	14.8E-03	-30.6E-03	4.4E-03	36.2E-03	-2.4E-03	37.0E-03	26.4E-03	30.6E-03
Sigma	-	100.2E-03	42.3E-03	69.9E-03	57.5E-03	65.0E-03	66.9E-03	54.5E-03	76.1E-03

Parameter : Integral Non linearity : INL_5VIN1

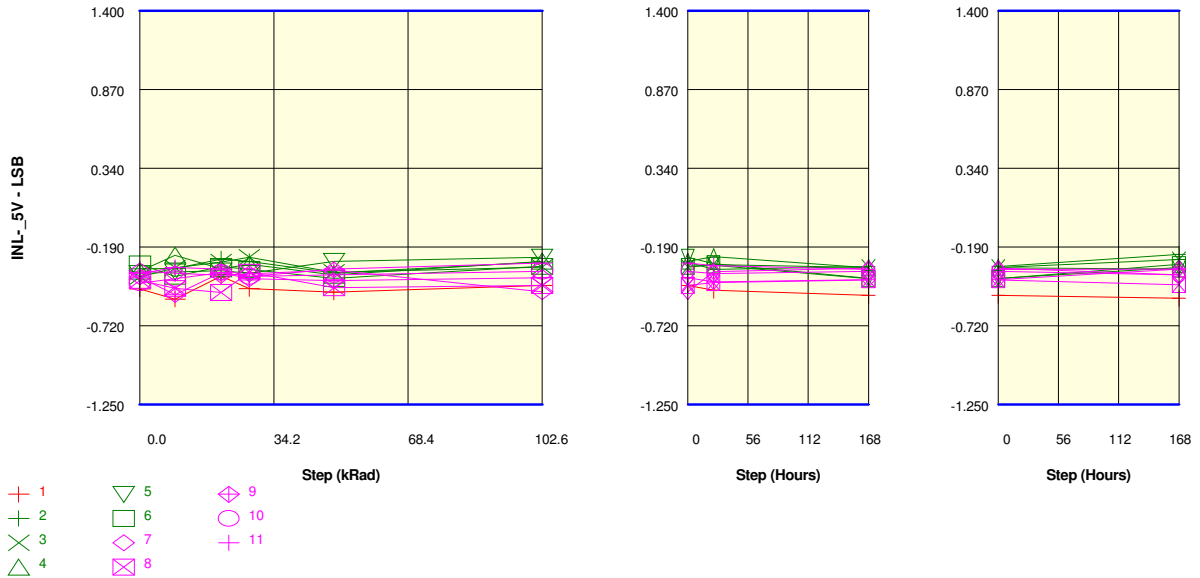
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.472	-0.541	-0.385	-0.469	-0.493	-0.449	-0.480	-0.515	-0.535
ON samples									
2	-0.336	-0.335	-0.270	-0.286	-0.364	-0.290	-0.342	-0.322	-0.239
3	-0.391	-0.329	-0.291	-0.258	-0.360	-0.324	-0.308	-0.327	-0.275
4	-0.352	-0.245	-0.336	-0.307	-0.378	-0.285	-0.253	-0.329	-0.338
5	-0.368	-0.357	-0.350	-0.367	-0.286	-0.258	-0.302	-0.400	-0.327
6	-0.304	-0.387	-0.321	-0.342	-0.401	-0.319	-0.312	-0.403	-0.307
Statistics									
Min	-0.391	-0.387	-0.350	-0.367	-0.401	-0.324	-0.342	-0.403	-0.338
Max	-0.304	-0.245	-0.270	-0.258	-0.286	-0.258	-0.253	-0.322	-0.239
Average	-0.350	-0.331	-0.314	-0.312	-0.358	-0.295	-0.303	-0.356	-0.297
Sigma	0.029	0.047	0.029	0.039	0.039	0.024	0.029	0.037	0.036

Drift Calculation

INL_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	1.0E-03	66.0E-03	50.0E-03	-28.0E-03	46.0E-03	-6.0E-03	14.0E-03	97.0E-03
3	-	62.0E-03	100.0E-03	133.0E-03	31.0E-03	67.0E-03	83.0E-03	64.0E-03	116.0E-03
4	-	107.0E-03	16.0E-03	45.0E-03	-26.0E-03	67.0E-03	99.0E-03	23.0E-03	14.0E-03
5	-	11.0E-03	18.0E-03	1.0E-03	82.0E-03	110.0E-03	66.0E-03	-32.0E-03	41.0E-03
6	-	-83.0E-03	-17.0E-03	-38.0E-03	-97.0E-03	-15.0E-03	-8.0E-03	-99.0E-03	-3.0E-03
Average	-	19.6E-03	36.6E-03	38.2E-03	-7.6E-03	55.0E-03	46.8E-03	-6.0E-03	53.0E-03
Sigma	-	63.8E-03	41.3E-03	57.2E-03	60.4E-03	40.7E-03	45.2E-03	55.6E-03	46.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.472	-0.541	-0.385	-0.469	-0.493	-0.449	-0.480	-0.515	-0.535
OFF samples									
7	-0.350	-0.367	-0.379	-0.370	-0.344	-0.490	-0.355	-0.331	-0.377
8	-0.414	-0.468	-0.495	-0.359	-0.463	-0.448	-0.429	-0.411	-0.443
9	-0.391	-0.510	-0.361	-0.402	-0.417	-0.395	-0.423	-0.408	-0.337
10	-0.432	-0.402	-0.361	-0.388	-0.376	-0.353	-0.368	-0.354	-0.376
11	-0.368	-0.327	-0.338	-0.387	-0.338	-0.297	-0.315	-0.342	-0.337
Statistics									
Min	-0.432	-0.510	-0.495	-0.402	-0.463	-0.490	-0.429	-0.411	-0.443
Max	-0.350	-0.327	-0.338	-0.359	-0.338	-0.297	-0.315	-0.331	-0.337
Average	-0.391	-0.415	-0.387	-0.381	-0.388	-0.397	-0.378	-0.369	-0.374
Sigma	0.030	0.066	0.056	0.015	0.047	0.068	0.043	0.034	0.039

Drift Calculation

INL- 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-17.0E-03	-29.0E-03	-20.0E-03	6.0E-03	-140.0E-03	-5.0E-03	19.0E-03	-27.0E-03
8	-	-54.0E-03	-81.0E-03	55.0E-03	-49.0E-03	-34.0E-03	-15.0E-03	3.0E-03	-29.0E-03
9	-	-119.0E-03	30.0E-03	-11.0E-03	-26.0E-03	-4.0E-03	-32.0E-03	-17.0E-03	54.0E-03
10	-	30.0E-03	71.0E-03	44.0E-03	56.0E-03	79.0E-03	64.0E-03	78.0E-03	56.0E-03
11	-	41.0E-03	30.0E-03	-19.0E-03	30.0E-03	71.0E-03	53.0E-03	26.0E-03	31.0E-03
Average	-	-23.8E-03	4.2E-03	9.8E-03	3.4E-03	-5.6E-03	13.0E-03	21.8E-03	17.0E-03
Sigma	-	58.5E-03	53.2E-03	32.7E-03	37.7E-03	79.9E-03	38.3E-03	31.8E-03	37.8E-03

Parameter : Integral Non linearity : INL_5VIN2

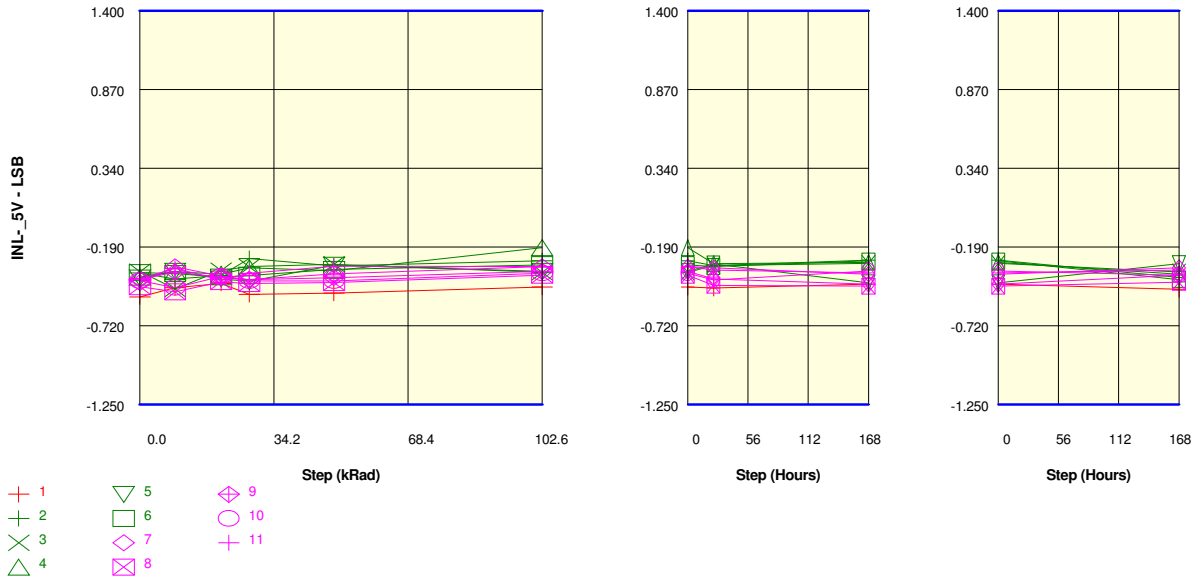
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.525	-0.463	-0.434	-0.509	-0.500	-0.459	-0.466	-0.439	-0.473
ON samples									
2	-0.363	-0.406	-0.381	-0.266	-0.316	-0.282	-0.314	-0.277	-0.394
3	-0.354	-0.472	-0.347	-0.322	-0.305	-0.360	-0.314	-0.299	-0.357
4	-0.393	-0.355	-0.373	-0.329	-0.348	-0.194	-0.301	-0.292	-0.372
5	-0.398	-0.353	-0.404	-0.421	-0.312	-0.353	-0.303	-0.430	-0.302
6	-0.361	-0.369	-0.391	-0.380	-0.340	-0.309	-0.321	-0.283	-0.408
Statistics									
Min	-0.398	-0.472	-0.404	-0.421	-0.348	-0.360	-0.321	-0.430	-0.408
Max	-0.354	-0.353	-0.347	-0.266	-0.305	-0.194	-0.301	-0.277	-0.302
Average	-0.374	-0.391	-0.379	-0.344	-0.324	-0.300	-0.311	-0.316	-0.367
Sigma	0.018	0.045	0.019	0.053	0.017	0.060	0.007	0.057	0.037

Drift Calculation

INL_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-43.0E-03	-18.0E-03	97.0E-03	47.0E-03	81.0E-03	49.0E-03	86.0E-03	-31.0E-03
3	-	-118.0E-03	7.0E-03	32.0E-03	49.0E-03	-6.0E-03	40.0E-03	55.0E-03	-3.0E-03
4	-	38.0E-03	20.0E-03	64.0E-03	45.0E-03	199.0E-03	92.0E-03	101.0E-03	21.0E-03
5	-	45.0E-03	-6.0E-03	-23.0E-03	86.0E-03	45.0E-03	95.0E-03	-32.0E-03	96.0E-03
6	-	-8.0E-03	-30.0E-03	-19.0E-03	21.0E-03	52.0E-03	40.0E-03	78.0E-03	-47.0E-03
Average	-	-17.2E-03	-5.4E-03	30.2E-03	49.6E-03	74.2E-03	63.2E-03	57.6E-03	7.2E-03
Sigma	-	59.7E-03	17.7E-03	46.6E-03	20.8E-03	68.4E-03	25.0E-03	47.2E-03	50.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

INL_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.525	-0.463	-0.434	-0.509	-0.500	-0.459	-0.466	-0.439	-0.473
OFF samples									
7	-0.429	-0.323	-0.385	-0.408	-0.370	-0.322	-0.330	-0.372	-0.329
8	-0.456	-0.491	-0.423	-0.435	-0.429	-0.379	-0.447	-0.453	-0.427
9	-0.408	-0.356	-0.394	-0.409	-0.395	-0.353	-0.404	-0.439	-0.379
10	-0.417	-0.462	-0.388	-0.418	-0.418	-0.366	-0.413	-0.351	-0.379
11	-0.402	-0.333	-0.408	-0.367	-0.319	-0.322	-0.346	-0.364	-0.345
Statistics									
Min	-0.456	-0.491	-0.423	-0.435	-0.429	-0.379	-0.447	-0.453	-0.427
Max	-0.402	-0.323	-0.385	-0.367	-0.319	-0.322	-0.330	-0.351	-0.329
Average	-0.422	-0.393	-0.400	-0.407	-0.386	-0.348	-0.388	-0.396	-0.372
Sigma	0.019	0.070	0.014	0.022	0.039	0.023	0.044	0.042	0.034

Drift Calculation

INL_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	106.0E-03	44.0E-03	21.0E-03	59.0E-03	107.0E-03	99.0E-03	57.0E-03	100.0E-03
8	-	-35.0E-03	33.0E-03	21.0E-03	27.0E-03	77.0E-03	9.0E-03	3.0E-03	29.0E-03
9	-	52.0E-03	14.0E-03	-1.0E-03	13.0E-03	55.0E-03	4.0E-03	-31.0E-03	29.0E-03
10	-	-45.0E-03	29.0E-03	-1.0E-03	-1.0E-03	51.0E-03	4.0E-03	66.0E-03	38.0E-03
11	-	69.0E-03	-6.0E-03	35.0E-03	83.0E-03	80.0E-03	56.0E-03	38.0E-03	57.0E-03
Average	-	29.4E-03	22.8E-03	15.0E-03	36.2E-03	74.0E-03	34.4E-03	26.6E-03	50.6E-03
Sigma	-	59.4E-03	17.3E-03	14.0E-03	30.7E-03	20.1E-03	37.8E-03	36.0E-03	26.7E-03

Parameter : Integral Non linearity : INL_5VIN3

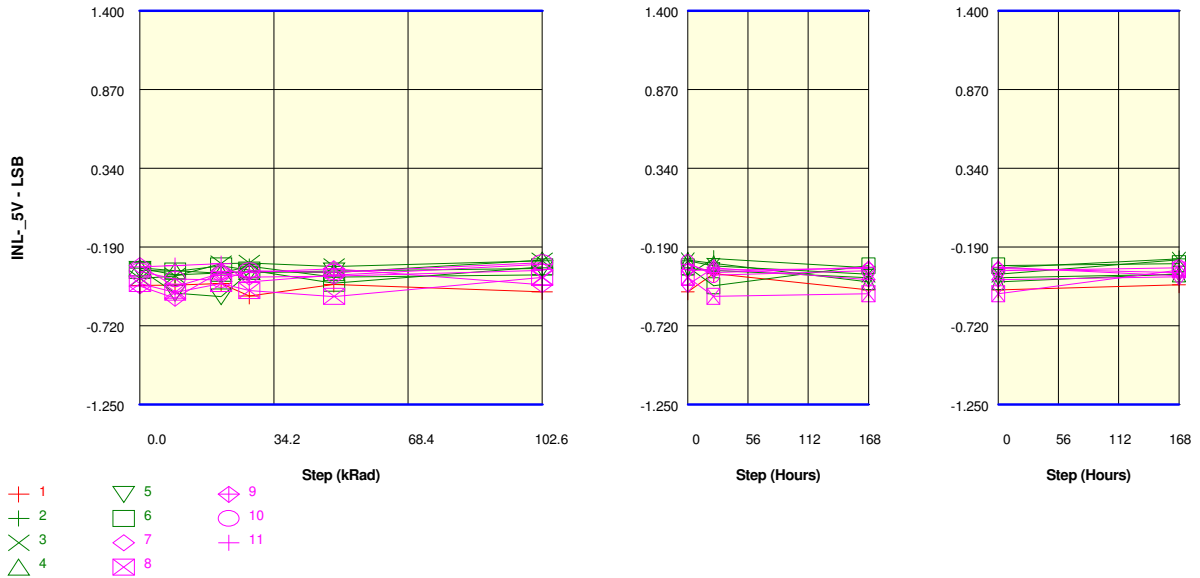
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.448	-0.446	-0.435	-0.520	-0.441	-0.491	-0.368	-0.478	-0.444
ON samples									
2	-0.331	-0.378	-0.365	-0.319	-0.391	-0.378	-0.267	-0.330	-0.269
3	-0.401	-0.384	-0.301	-0.297	-0.321	-0.282	-0.318	-0.373	-0.276
4	-0.329	-0.350	-0.366	-0.353	-0.362	-0.277	-0.300	-0.423	-0.370
5	-0.339	-0.499	-0.524	-0.361	-0.351	-0.335	-0.347	-0.395	-0.373
6	-0.347	-0.352	-0.317	-0.344	-0.433	-0.323	-0.450	-0.315	-0.302
Statistics									
Min	-0.401	-0.499	-0.524	-0.361	-0.433	-0.378	-0.450	-0.423	-0.373
Max	-0.329	-0.350	-0.301	-0.297	-0.321	-0.277	-0.267	-0.315	-0.269
Average	-0.349	-0.393	-0.375	-0.335	-0.372	-0.319	-0.336	-0.367	-0.318
Sigma	0.027	0.055	0.079	0.024	0.038	0.037	0.062	0.040	0.045

Drift Calculation

INL_ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-47.0E-03	-34.0E-03	12.0E-03	-60.0E-03	-47.0E-03	64.0E-03	1.0E-03	62.0E-03
3	-	17.0E-03	100.0E-03	104.0E-03	80.0E-03	119.0E-03	83.0E-03	28.0E-03	125.0E-03
4	-	-21.0E-03	-37.0E-03	-24.0E-03	-33.0E-03	52.0E-03	29.0E-03	-94.0E-03	-41.0E-03
5	-	-160.0E-03	-185.0E-03	-22.0E-03	-12.0E-03	4.0E-03	-8.0E-03	-56.0E-03	-34.0E-03
6	-	-5.0E-03	30.0E-03	3.0E-03	-86.0E-03	24.0E-03	-103.0E-03	32.0E-03	45.0E-03
Average	-	-43.2E-03	-25.2E-03	14.6E-03	-22.2E-03	30.4E-03	13.0E-03	-17.8E-03	31.4E-03
Sigma	-	62.0E-03	94.3E-03	46.8E-03	56.9E-03	54.9E-03	65.8E-03	49.4E-03	62.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL_ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.448	-0.446	-0.435	-0.520	-0.441	-0.491	-0.368	-0.478	-0.444
OFF samples									
7	-0.314	-0.456	-0.366	-0.393	-0.385	-0.347	-0.346	-0.335	-0.361
8	-0.436	-0.494	-0.435	-0.483	-0.522	-0.394	-0.521	-0.504	-0.344
9	-0.451	-0.534	-0.353	-0.360	-0.336	-0.443	-0.330	-0.408	-0.390
10	-0.352	-0.406	-0.411	-0.348	-0.359	-0.295	-0.379	-0.350	-0.329
11	-0.323	-0.314	-0.301	-0.424	-0.379	-0.305	-0.361	-0.324	-0.383
Statistics									
Min	-0.451	-0.534	-0.435	-0.483	-0.522	-0.443	-0.521	-0.504	-0.390
Max	-0.314	-0.314	-0.301	-0.348	-0.336	-0.295	-0.330	-0.324	-0.329
Average	-0.375	-0.441	-0.373	-0.402	-0.396	-0.357	-0.387	-0.384	-0.361
Sigma	0.057	0.076	0.047	0.049	0.065	0.056	0.069	0.067	0.023

Drift Calculation

INL_ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-142.0E-03	-52.0E-03	-79.0E-03	-71.0E-03	-33.0E-03	-32.0E-03	-21.0E-03	-47.0E-03
8	-	-58.0E-03	1.0E-03	-47.0E-03	-86.0E-03	42.0E-03	-85.0E-03	-68.0E-03	92.0E-03
9	-	-83.0E-03	98.0E-03	91.0E-03	115.0E-03	8.0E-03	121.0E-03	43.0E-03	61.0E-03
10	-	-54.0E-03	-59.0E-03	4.0E-03	-7.0E-03	57.0E-03	-27.0E-03	2.0E-03	23.0E-03
11	-	9.0E-03	22.0E-03	-101.0E-03	-56.0E-03	18.0E-03	-38.0E-03	-1.0E-03	-60.0E-03
Average	-	-65.6E-03	2.0E-03	-26.4E-03	-21.0E-03	18.4E-03	-12.2E-03	-9.0E-03	13.8E-03
Sigma	-	48.8E-03	57.0E-03	68.5E-03	73.0E-03	31.0E-03	69.7E-03	36.1E-03	59.3E-03

Parameter : Integral Non linearity : INL_5VIN4

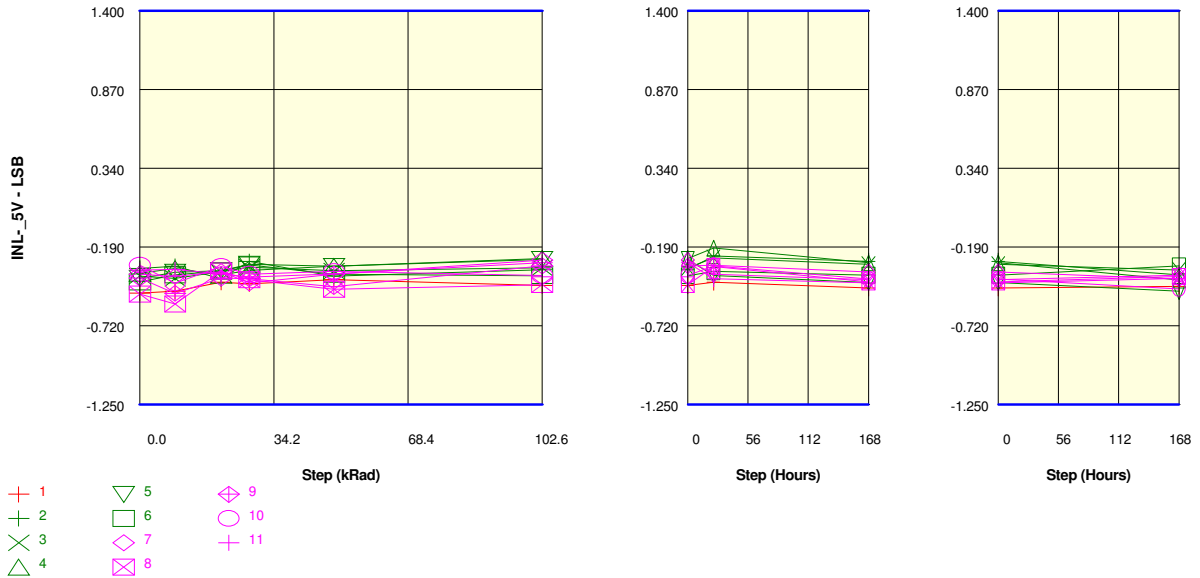
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.500	-0.488	-0.427	-0.437	-0.408	-0.449	-0.427	-0.465	-0.454
ON samples									
2	-0.333	-0.319	-0.402	-0.287	-0.386	-0.343	-0.249	-0.285	-0.378
3	-0.384	-0.401	-0.355	-0.325	-0.350	-0.330	-0.262	-0.307	-0.345
4	-0.366	-0.335	-0.378	-0.347	-0.319	-0.267	-0.197	-0.296	-0.412
5	-0.400	-0.359	-0.348	-0.305	-0.319	-0.273	-0.381	-0.429	-0.488
6	-0.424	-0.377	-0.351	-0.310	-0.373	-0.383	-0.354	-0.379	-0.316
Statistics									
Min	-0.424	-0.401	-0.402	-0.347	-0.386	-0.383	-0.381	-0.429	-0.488
Max	-0.333	-0.319	-0.348	-0.287	-0.319	-0.267	-0.197	-0.285	-0.316
Average	-0.381	-0.358	-0.367	-0.315	-0.349	-0.319	-0.289	-0.339	-0.388
Sigma	0.031	0.029	0.021	0.020	0.027	0.044	0.069	0.056	0.060

Drift Calculation

INL_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	14.0E-03	-69.0E-03	46.0E-03	-53.0E-03	-10.0E-03	84.0E-03	48.0E-03	-45.0E-03
3	-	-17.0E-03	29.0E-03	59.0E-03	34.0E-03	54.0E-03	122.0E-03	77.0E-03	39.0E-03
4	-	31.0E-03	-12.0E-03	19.0E-03	47.0E-03	99.0E-03	169.0E-03	70.0E-03	-46.0E-03
5	-	41.0E-03	52.0E-03	95.0E-03	81.0E-03	127.0E-03	19.0E-03	-29.0E-03	-88.0E-03
6	-	47.0E-03	73.0E-03	114.0E-03	51.0E-03	41.0E-03	70.0E-03	45.0E-03	108.0E-03
Average	-	23.2E-03	14.6E-03	66.6E-03	32.0E-03	62.2E-03	92.8E-03	42.2E-03	-6.4E-03
Sigma	-	23.0E-03	50.4E-03	34.1E-03	45.2E-03	47.5E-03	50.4E-03	37.7E-03	70.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL_ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.500	-0.488	-0.427	-0.437	-0.408	-0.449	-0.427	-0.465	-0.454
OFF samples									
7	-0.374	-0.387	-0.355	-0.431	-0.373	-0.278	-0.374	-0.410	-0.379
8	-0.506	-0.573	-0.352	-0.409	-0.473	-0.443	-0.320	-0.425	-0.388
9	-0.399	-0.501	-0.398	-0.403	-0.455	-0.317	-0.312	-0.356	-0.405
10	-0.312	-0.432	-0.320	-0.372	-0.354	-0.381	-0.317	-0.406	-0.471
11	-0.346	-0.342	-0.370	-0.392	-0.370	-0.295	-0.403	-0.431	-0.401
Statistics									
Min	-0.506	-0.573	-0.398	-0.431	-0.473	-0.443	-0.403	-0.431	-0.471
Max	-0.312	-0.342	-0.320	-0.372	-0.354	-0.278	-0.312	-0.356	-0.379
Average	-0.387	-0.447	-0.359	-0.401	-0.405	-0.343	-0.345	-0.406	-0.409
Sigma	0.066	0.082	0.025	0.019	0.049	0.061	0.037	0.026	0.032

Drift Calculation

INL_ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-13.0E-03	19.0E-03	-57.0E-03	1.0E-03	96.0E-03	0.0E+00	-36.0E-03	-5.0E-03
8	-	-67.0E-03	154.0E-03	97.0E-03	33.0E-03	63.0E-03	186.0E-03	81.0E-03	118.0E-03
9	-	-102.0E-03	1.0E-03	-4.0E-03	-56.0E-03	82.0E-03	87.0E-03	43.0E-03	-6.0E-03
10	-	-120.0E-03	-8.0E-03	-60.0E-03	-42.0E-03	-69.0E-03	-5.0E-03	-94.0E-03	-159.0E-03
11	-	4.0E-03	-24.0E-03	-46.0E-03	-24.0E-03	51.0E-03	-57.0E-03	-85.0E-03	-55.0E-03
Average	-	-59.6E-03	28.4E-03	-14.0E-03	-17.6E-03	44.6E-03	42.2E-03	-18.2E-03	-21.4E-03
Sigma	-	48.4E-03	64.3E-03	59.0E-03	31.7E-03	58.9E-03	85.5E-03	69.4E-03	89.4E-03

Parameter : Integral Non linearity : INL_5VIN5

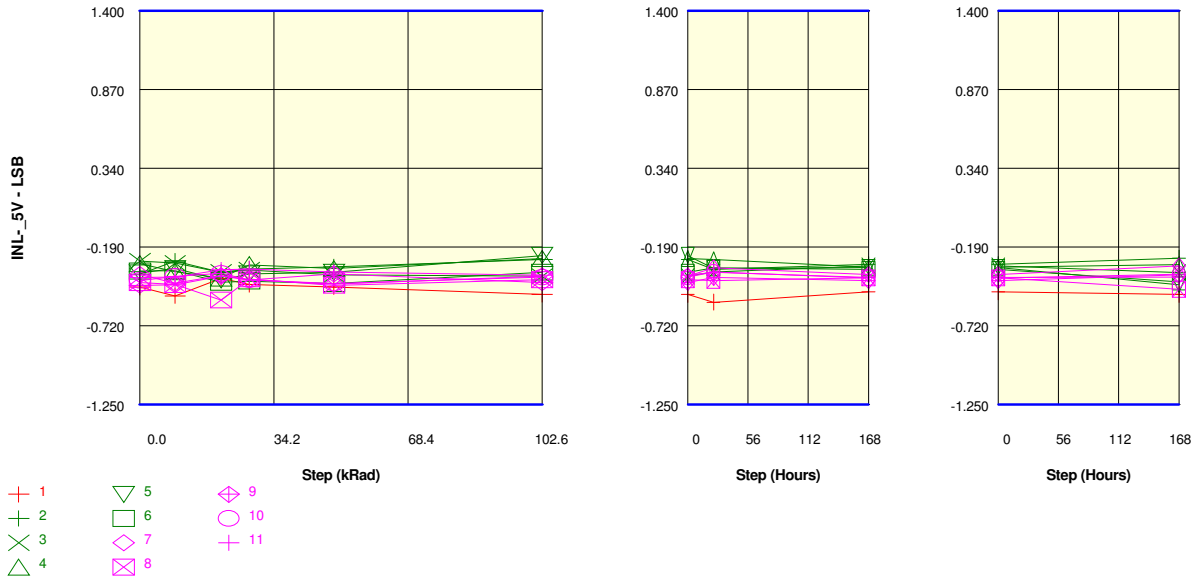
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.460	-0.518	-0.401	-0.441	-0.458	-0.508	-0.561	-0.491	-0.508
ON samples									
2	-0.374	-0.284	-0.360	-0.337	-0.323	-0.275	-0.342	-0.307	-0.265
3	-0.284	-0.298	-0.360	-0.345	-0.376	-0.386	-0.358	-0.317	-0.362
4	-0.302	-0.355	-0.399	-0.309	-0.335	-0.267	-0.275	-0.325	-0.308
5	-0.363	-0.335	-0.412	-0.370	-0.360	-0.246	-0.334	-0.327	-0.443
6	-0.351	-0.348	-0.427	-0.419	-0.435	-0.359	-0.330	-0.340	-0.425
Statistics									
Min	-0.374	-0.355	-0.427	-0.419	-0.435	-0.386	-0.358	-0.340	-0.443
Max	-0.284	-0.284	-0.360	-0.309	-0.323	-0.246	-0.275	-0.307	-0.265
Average	-0.335	-0.324	-0.392	-0.356	-0.366	-0.307	-0.328	-0.323	-0.361
Sigma	0.035	0.028	0.027	0.037	0.039	0.055	0.028	0.011	0.068

Drift Calculation

INL_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	90.0E-03	14.0E-03	37.0E-03	51.0E-03	99.0E-03	32.0E-03	67.0E-03	109.0E-03
3	-	-14.0E-03	-76.0E-03	-61.0E-03	-92.0E-03	-102.0E-03	-74.0E-03	-33.0E-03	-78.0E-03
4	-	-53.0E-03	-97.0E-03	-7.0E-03	-33.0E-03	35.0E-03	27.0E-03	-23.0E-03	-6.0E-03
5	-	28.0E-03	-49.0E-03	-7.0E-03	3.0E-03	117.0E-03	29.0E-03	36.0E-03	-80.0E-03
6	-	3.0E-03	-76.0E-03	-68.0E-03	-84.0E-03	-8.0E-03	21.0E-03	11.0E-03	-74.0E-03
Average	-	10.8E-03	-56.8E-03	-21.2E-03	-31.0E-03	28.2E-03	7.0E-03	11.6E-03	-25.8E-03
Sigma	-	47.6E-03	38.5E-03	38.9E-03	53.7E-03	79.0E-03	40.7E-03	37.0E-03	72.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

INL- 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.460	-0.518	-0.401	-0.441	-0.458	-0.508	-0.561	-0.491	-0.508
OFF samples									
7	-0.375	-0.433	-0.382	-0.409	-0.439	-0.384	-0.330	-0.375	-0.316
8	-0.429	-0.441	-0.546	-0.404	-0.447	-0.409	-0.415	-0.397	-0.473
9	-0.447	-0.444	-0.385	-0.411	-0.370	-0.428	-0.394	-0.416	-0.378
10	-0.415	-0.387	-0.367	-0.411	-0.434	-0.393	-0.358	-0.399	-0.372
11	-0.394	-0.392	-0.343	-0.337	-0.358	-0.379	-0.360	-0.394	-0.393
Statistics									
Min	-0.447	-0.444	-0.546	-0.411	-0.447	-0.428	-0.415	-0.416	-0.473
Max	-0.375	-0.387	-0.343	-0.337	-0.358	-0.379	-0.330	-0.375	-0.316
Average	-0.412	-0.419	-0.405	-0.394	-0.410	-0.399	-0.371	-0.396	-0.386
Sigma	0.025	0.025	0.072	0.029	0.038	0.018	0.030	0.013	0.051

Drift Calculation

INL- 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-58.0E-03	-7.0E-03	-34.0E-03	-64.0E-03	-9.0E-03	45.0E-03	0.0E+00	59.0E-03
8	-	-12.0E-03	-117.0E-03	25.0E-03	-18.0E-03	20.0E-03	14.0E-03	32.0E-03	-44.0E-03
9	-	3.0E-03	62.0E-03	36.0E-03	77.0E-03	19.0E-03	53.0E-03	31.0E-03	69.0E-03
10	-	28.0E-03	48.0E-03	4.0E-03	-19.0E-03	22.0E-03	57.0E-03	16.0E-03	43.0E-03
11	-	2.0E-03	51.0E-03	57.0E-03	36.0E-03	15.0E-03	34.0E-03	0.0E+00	1.0E-03
Average	-	-7.4E-03	7.4E-03	17.6E-03	2.4E-03	13.4E-03	40.6E-03	15.8E-03	25.6E-03
Sigma	-	28.4E-03	66.7E-03	31.0E-03	48.9E-03	11.4E-03	15.4E-03	14.1E-03	41.8E-03

Parameter : Integral Non linearity : INL_5VIN6

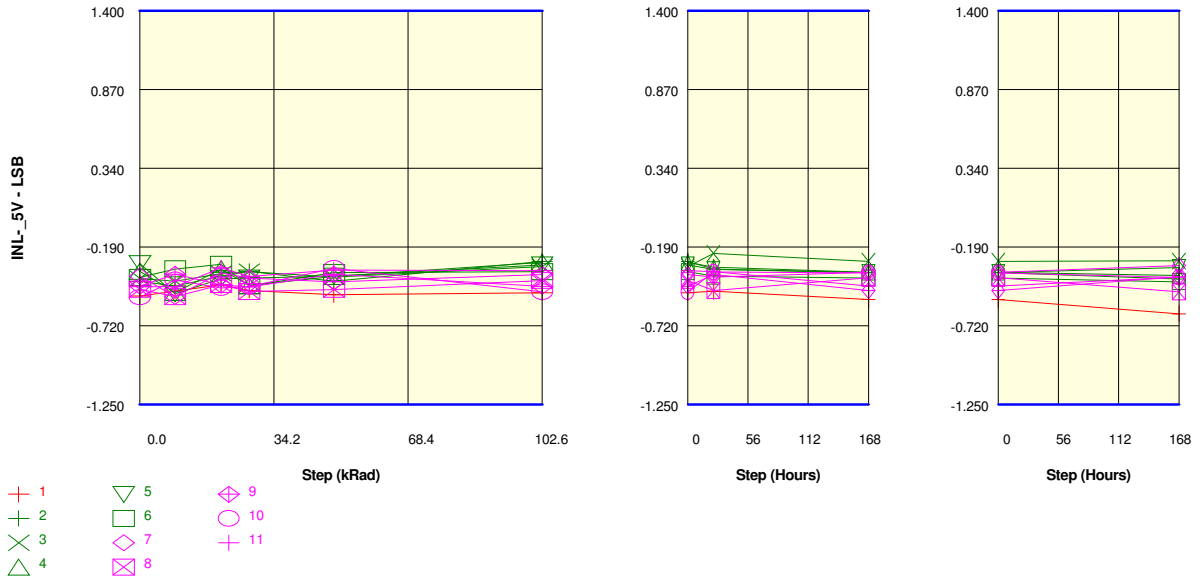
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_ 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.519	-0.487	-0.443	-0.482	-0.511	-0.498	-0.488	-0.544	-0.639
ON samples									
2	-0.420	-0.451	-0.384	-0.353	-0.421	-0.285	-0.338	-0.362	-0.406
3	-0.401	-0.419	-0.369	-0.355	-0.391	-0.322	-0.233	-0.285	-0.283
4	-0.353	-0.496	-0.337	-0.449	-0.388	-0.293	-0.326	-0.359	-0.381
5	-0.302	-0.505	-0.402	-0.398	-0.385	-0.310	-0.342	-0.361	-0.327
6	-0.394	-0.337	-0.306	-0.451	-0.361	-0.355	-0.386	-0.399	-0.423
Statistics									
Min	-0.420	-0.505	-0.402	-0.451	-0.421	-0.355	-0.386	-0.399	-0.423
Max	-0.302	-0.337	-0.306	-0.353	-0.361	-0.285	-0.233	-0.285	-0.283
Average	-0.374	-0.442	-0.360	-0.401	-0.389	-0.313	-0.325	-0.353	-0.364
Sigma	0.042	0.061	0.034	0.043	0.019	0.025	0.050	0.037	0.052

Drift Calculation

INL_ 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-31.0E-03	36.0E-03	67.0E-03	-1.0E-03	135.0E-03	82.0E-03	58.0E-03	14.0E-03
3	-	-18.0E-03	32.0E-03	46.0E-03	10.0E-03	79.0E-03	168.0E-03	116.0E-03	118.0E-03
4	-	-143.0E-03	16.0E-03	-96.0E-03	-35.0E-03	60.0E-03	27.0E-03	-6.0E-03	-28.0E-03
5	-	-203.0E-03	-100.0E-03	-96.0E-03	-83.0E-03	-8.0E-03	-40.0E-03	-59.0E-03	-25.0E-03
6	-	57.0E-03	88.0E-03	-57.0E-03	33.0E-03	39.0E-03	8.0E-03	-5.0E-03	-29.0E-03
Average	-	-67.6E-03	14.4E-03	-27.2E-03	-15.2E-03	61.0E-03	49.0E-03	20.8E-03	10.0E-03
Sigma	-	93.1E-03	62.1E-03	70.1E-03	40.4E-03	47.0E-03	71.2E-03	60.3E-03	56.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

INL- 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.519	-0.487	-0.443	-0.482	-0.511	-0.498	-0.488	-0.544	-0.639
OFF samples									
7	-0.385	-0.522	-0.365	-0.399	-0.425	-0.375	-0.392	-0.360	-0.314
8	-0.473	-0.523	-0.443	-0.489	-0.475	-0.415	-0.483	-0.397	-0.491
9	-0.453	-0.373	-0.445	-0.459	-0.372	-0.454	-0.375	-0.483	-0.390
10	-0.528	-0.411	-0.465	-0.454	-0.334	-0.491	-0.358	-0.363	-0.394
11	-0.455	-0.456	-0.329	-0.389	-0.345	-0.348	-0.355	-0.451	-0.393
Statistics									
Min	-0.528	-0.523	-0.465	-0.489	-0.475	-0.491	-0.483	-0.483	-0.491
Max	-0.385	-0.373	-0.329	-0.389	-0.334	-0.348	-0.355	-0.360	-0.314
Average	-0.459	-0.457	-0.409	-0.438	-0.390	-0.417	-0.393	-0.411	-0.396
Sigma	0.046	0.060	0.053	0.038	0.053	0.052	0.047	0.049	0.056

Drift Calculation

INL- 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-137.0E-03	20.0E-03	-14.0E-03	-40.0E-03	10.0E-03	-7.0E-03	25.0E-03	71.0E-03
8	-	-50.0E-03	30.0E-03	-16.0E-03	-2.0E-03	58.0E-03	-10.0E-03	76.0E-03	-18.0E-03
9	-	80.0E-03	8.0E-03	-6.0E-03	81.0E-03	-1.0E-03	78.0E-03	-30.0E-03	63.0E-03
10	-	117.0E-03	63.0E-03	74.0E-03	194.0E-03	37.0E-03	170.0E-03	165.0E-03	134.0E-03
11	-	-1.0E-03	126.0E-03	66.0E-03	110.0E-03	107.0E-03	100.0E-03	4.0E-03	62.0E-03
Average	-	1.8E-03	49.4E-03	20.8E-03	68.6E-03	42.2E-03	66.2E-03	48.0E-03	62.4E-03
Sigma	-	90.9E-03	42.4E-03	40.4E-03	82.9E-03	38.4E-03	68.1E-03	67.9E-03	48.3E-03

Parameter : Integral Non linearity : INL_5VIN7

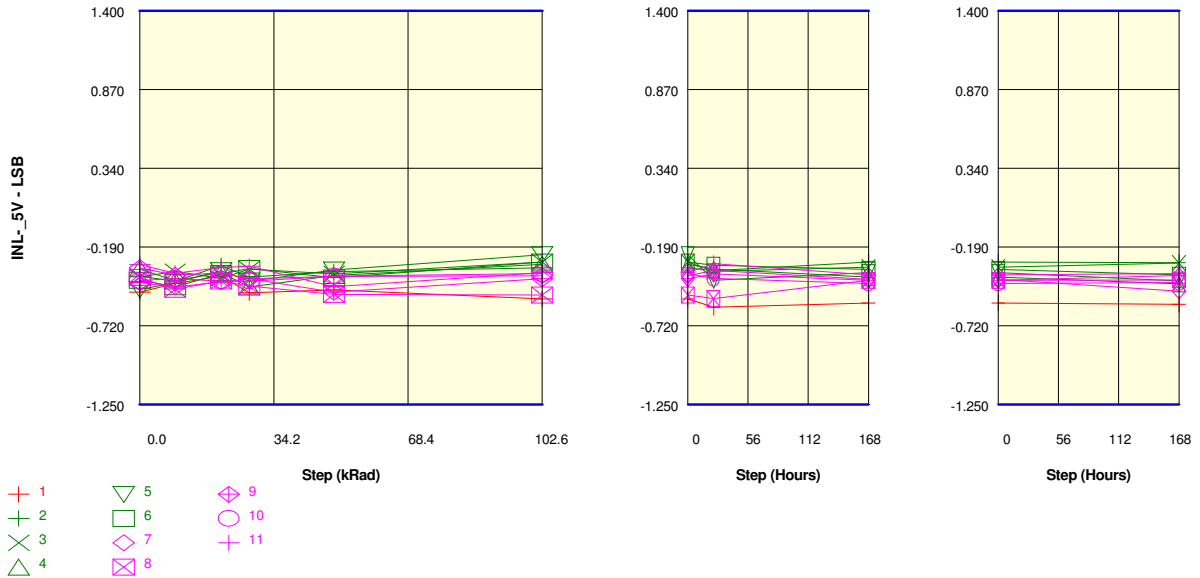
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -1.250

Spec Limit Max : 1.400

Spec limits are represented in bold lines on the graphic.



Measurements

INL_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.493	-0.436	-0.386	-0.497	-0.478	-0.538	-0.595	-0.565	-0.574
ON samples									
2	-0.384	-0.420	-0.314	-0.393	-0.355	-0.329	-0.349	-0.291	-0.294
3	-0.392	-0.354	-0.401	-0.338	-0.370	-0.291	-0.353	-0.326	-0.298
4	-0.337	-0.417	-0.362	-0.459	-0.381	-0.305	-0.338	-0.392	-0.438
5	-0.476	-0.428	-0.348	-0.419	-0.344	-0.241	-0.414	-0.362	-0.418
6	-0.413	-0.456	-0.370	-0.334	-0.397	-0.290	-0.312	-0.341	-0.378
Statistics									
Min	-0.476	-0.456	-0.401	-0.459	-0.397	-0.329	-0.414	-0.392	-0.438
Max	-0.337	-0.354	-0.314	-0.334	-0.344	-0.241	-0.312	-0.291	-0.294
Average	-0.400	-0.415	-0.359	-0.389	-0.369	-0.291	-0.353	-0.342	-0.365
Sigma	0.045	0.033	0.028	0.048	0.019	0.029	0.034	0.034	0.060

Drift Calculation

INL_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-36.0E-03	70.0E-03	-9.0E-03	29.0E-03	55.0E-03	35.0E-03	93.0E-03	90.0E-03
3	-	38.0E-03	-9.0E-03	54.0E-03	22.0E-03	101.0E-03	39.0E-03	66.0E-03	94.0E-03
4	-	-80.0E-03	-25.0E-03	-122.0E-03	-44.0E-03	32.0E-03	-1.0E-03	-55.0E-03	-101.0E-03
5	-	48.0E-03	128.0E-03	57.0E-03	132.0E-03	235.0E-03	62.0E-03	114.0E-03	58.0E-03
6	-	-43.0E-03	43.0E-03	79.0E-03	16.0E-03	123.0E-03	101.0E-03	72.0E-03	35.0E-03
Average	-	-14.6E-03	41.4E-03	11.8E-03	31.0E-03	109.2E-03	47.2E-03	58.0E-03	35.2E-03
Sigma	-	49.5E-03	55.3E-03	73.0E-03	56.8E-03	70.7E-03	33.6E-03	59.0E-03	71.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

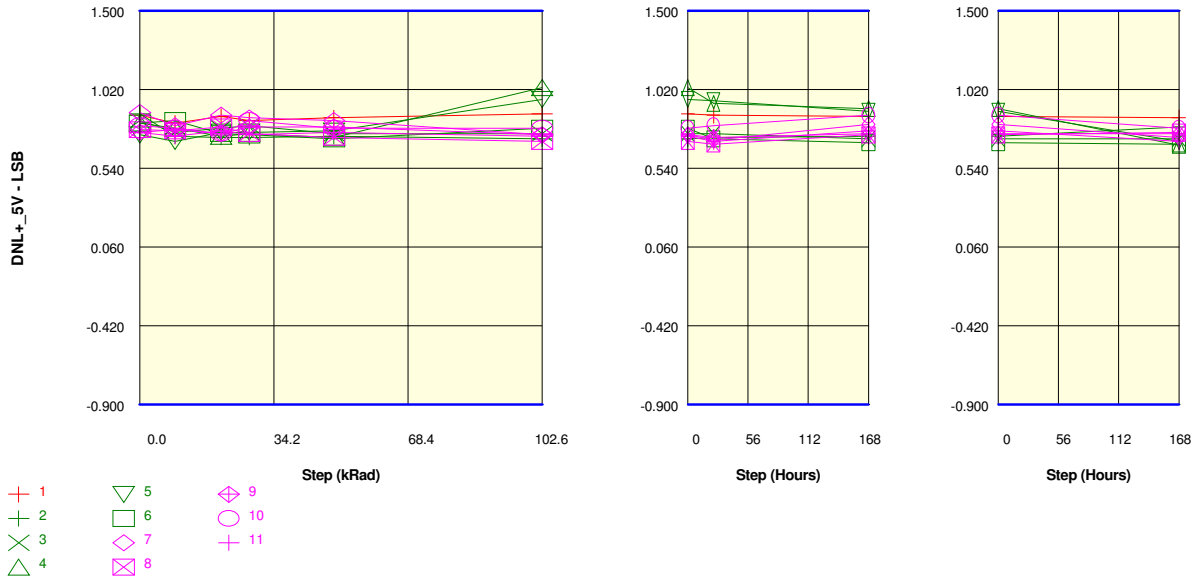
Measurements

INL_ 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.493	-0.436	-0.386	-0.497	-0.478	-0.538	-0.595	-0.565	-0.574
OFF samples									
7	-0.330	-0.379	-0.365	-0.402	-0.389	-0.383	-0.347	-0.407	-0.486
8	-0.395	-0.474	-0.418	-0.453	-0.508	-0.512	-0.536	-0.414	-0.411
9	-0.428	-0.458	-0.423	-0.402	-0.493	-0.402	-0.370	-0.414	-0.381
10	-0.416	-0.401	-0.419	-0.419	-0.385	-0.369	-0.400	-0.434	-0.428
11	-0.308	-0.366	-0.328	-0.319	-0.455	-0.361	-0.301	-0.378	-0.369
Statistics									
Min	-0.428	-0.474	-0.423	-0.453	-0.508	-0.512	-0.536	-0.434	-0.486
Max	-0.308	-0.366	-0.328	-0.319	-0.385	-0.361	-0.301	-0.378	-0.369
Average	-0.375	-0.416	-0.391	-0.399	-0.446	-0.405	-0.391	-0.409	-0.415
Sigma	0.048	0.043	0.038	0.044	0.051	0.055	0.079	0.018	0.041

Drift Calculation

INL_ 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-49.0E-03	-35.0E-03	-72.0E-03	-59.0E-03	-53.0E-03	-17.0E-03	-77.0E-03	-156.0E-03
8	-	-79.0E-03	-23.0E-03	-58.0E-03	-113.0E-03	-117.0E-03	-141.0E-03	-19.0E-03	-16.0E-03
9	-	-30.0E-03	5.0E-03	26.0E-03	-65.0E-03	26.0E-03	58.0E-03	14.0E-03	47.0E-03
10	-	15.0E-03	-3.0E-03	-3.0E-03	31.0E-03	47.0E-03	16.0E-03	-18.0E-03	-12.0E-03
11	-	-58.0E-03	-20.0E-03	-11.0E-03	-147.0E-03	-53.0E-03	7.0E-03	-70.0E-03	-61.0E-03
Average	-	-40.2E-03	-15.2E-03	-23.6E-03	-70.6E-03	-30.0E-03	-15.4E-03	-34.0E-03	-39.6E-03
Sigma	-	31.8E-03	14.4E-03	36.2E-03	60.2E-03	59.5E-03	67.3E-03	34.4E-03	67.6E-03

Parameter : Differential Non linearity : DNL+_5VIN0
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+_ 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.864	0.816	0.856	0.832	0.848	0.872	0.864	0.856	0.848
ON samples									
2	0.872	0.736	0.728	0.728	0.736	0.720	0.728	0.736	0.792
3	0.832	0.760	0.784	0.800	0.752	0.752	0.752	0.720	0.720
4	0.816	0.784	0.736	0.752	0.728	1.032	0.936	0.904	0.680
5	0.744	0.704	0.760	0.760	0.768	0.960	0.952	0.888	0.704
6	0.816	0.832	0.752	0.744	0.720	0.784	0.720	0.696	0.688
Statistics									
Min	0.744	0.704	0.728	0.728	0.720	0.720	0.720	0.696	0.680
Max	0.872	0.832	0.784	0.800	0.768	1.032	0.952	0.904	0.792
Average	0.816	0.763	0.752	0.757	0.741	0.850	0.818	0.789	0.717
Sigma	0.041	0.043	0.020	0.024	0.017	0.123	0.104	0.089	0.040

Drift Calculation

DNL+_ 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-136.0E-03	-144.0E-03	-144.0E-03	-136.0E-03	-152.0E-03	-144.0E-03	-136.0E-03	-80.0E-03
3	-	-72.0E-03	-48.0E-03	-32.0E-03	-80.0E-03	-80.0E-03	-80.0E-03	-112.0E-03	-112.0E-03
4	-	-32.0E-03	-80.0E-03	-64.0E-03	-88.0E-03	216.0E-03	120.0E-03	88.0E-03	-136.0E-03
5	-	-40.0E-03	16.0E-03	16.0E-03	24.0E-03	216.0E-03	208.0E-03	144.0E-03	-40.0E-03
6	-	16.0E-03	-64.0E-03	-72.0E-03	-96.0E-03	-32.0E-03	-96.0E-03	-120.0E-03	-128.0E-03
Average	-	-52.8E-03	-64.0E-03	-59.2E-03	-75.2E-03	33.6E-03	1.6E-03	-27.2E-03	-99.2E-03
Sigma	-	50.2E-03	51.6E-03	52.5E-03	53.2E-03	153.7E-03	137.1E-03	118.5E-03	35.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

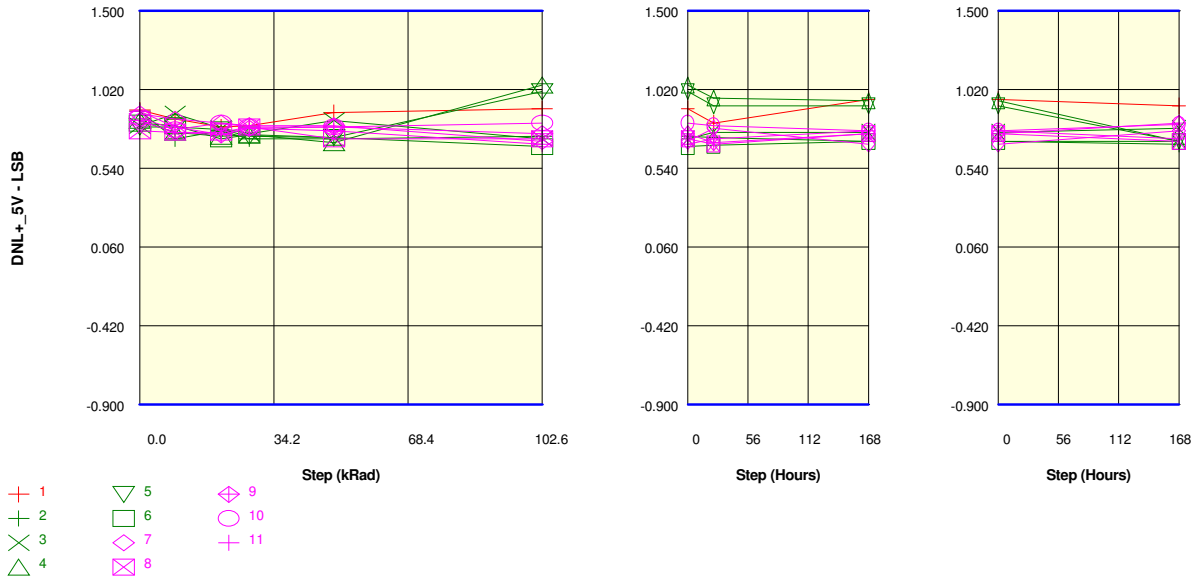
Measurements

DNL+ 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.864	0.816	0.856	0.832	0.848	0.872	0.864	0.856	0.848
OFF samples									
7	0.880	0.800	0.864	0.848	0.832	0.744	0.712	0.808	0.728
8	0.776	0.768	0.792	0.752	0.728	0.704	0.688	0.744	0.760
9	0.760	0.776	0.752	0.792	0.792	0.744	0.728	0.752	0.752
10	0.800	0.784	0.752	0.832	0.784	0.784	0.800	0.864	0.784
11	0.760	0.736	0.768	0.744	0.760	0.736	0.704	0.768	0.704
Statistics									
Min	0.760	0.736	0.752	0.744	0.728	0.704	0.688	0.744	0.704
Max	0.880	0.800	0.864	0.848	0.832	0.784	0.800	0.864	0.784
Average	0.795	0.773	0.786	0.794	0.779	0.742	0.726	0.787	0.746
Sigma	0.045	0.021	0.042	0.042	0.035	0.025	0.039	0.044	0.027

Drift Calculation

DNL+ 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-80.0E-03	-16.0E-03	-32.0E-03	-48.0E-03	-136.0E-03	-168.0E-03	-72.0E-03	-152.0E-03
8	-	-8.0E-03	16.0E-03	-24.0E-03	-48.0E-03	-72.0E-03	-88.0E-03	-32.0E-03	-16.0E-03
9	-	16.0E-03	-8.0E-03	32.0E-03	32.0E-03	-16.0E-03	-32.0E-03	-8.0E-03	-8.0E-03
10	-	-16.0E-03	-48.0E-03	32.0E-03	-16.0E-03	-16.0E-03	0.0E+00	64.0E-03	-16.0E-03
11	-	-24.0E-03	8.0E-03	-16.0E-03	0.0E+00	-24.0E-03	-56.0E-03	8.0E-03	-56.0E-03
Average	-	-22.4E-03	-9.6E-03	-1.6E-03	-16.0E-03	-52.8E-03	-68.8E-03	-8.0E-03	-49.6E-03
Sigma	-	31.8E-03	22.3E-03	27.9E-03	30.4E-03	46.5E-03	57.4E-03	45.0E-03	53.9E-03

Parameter : Differential Non linearity : DNL+_5VIN1
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+_ 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.896	0.840	0.792	0.800	0.880	0.904	0.816	0.960	0.920
ON samples									
2	0.888	0.720	0.768	0.720	0.720	0.736	0.728	0.704	0.688
3	0.800	0.872	0.784	0.752	0.832	0.720	0.760	0.760	0.784
4	0.832	0.760	0.736	0.744	0.696	1.048	0.968	0.952	0.704
5	0.792	0.792	0.776	0.736	0.728	1.008	0.920	0.920	0.704
6	0.816	0.800	0.720	0.744	0.728	0.672	0.680	0.704	0.704
Statistics									
Min	0.792	0.720	0.720	0.720	0.696	0.672	0.680	0.704	0.688
Max	0.888	0.872	0.784	0.752	0.832	1.048	0.968	0.952	0.784
Average	0.826	0.789	0.757	0.739	0.741	0.837	0.811	0.808	0.717
Sigma	0.034	0.050	0.025	0.011	0.047	0.158	0.112	0.107	0.034

Drift Calculation

DNL+_ 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-168.0E-03	-120.0E-03	-168.0E-03	-168.0E-03	-152.0E-03	-160.0E-03	-184.0E-03	-200.0E-03
3	-	72.0E-03	-16.0E-03	-48.0E-03	32.0E-03	-80.0E-03	-40.0E-03	-40.0E-03	-16.0E-03
4	-	-72.0E-03	-96.0E-03	-88.0E-03	-136.0E-03	216.0E-03	136.0E-03	120.0E-03	-128.0E-03
5	-	0.0E+00	-16.0E-03	-56.0E-03	-64.0E-03	216.0E-03	128.0E-03	128.0E-03	-88.0E-03
6	-	-16.0E-03	-96.0E-03	-72.0E-03	-88.0E-03	-144.0E-03	-136.0E-03	-112.0E-03	-112.0E-03
Average	-	-36.8E-03	-68.8E-03	-86.4E-03	-84.8E-03	11.2E-03	-14.4E-03	-17.6E-03	-108.8E-03
Sigma	-	80.1E-03	44.0E-03	43.1E-03	68.7E-03	169.1E-03	126.1E-03	124.3E-03	59.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

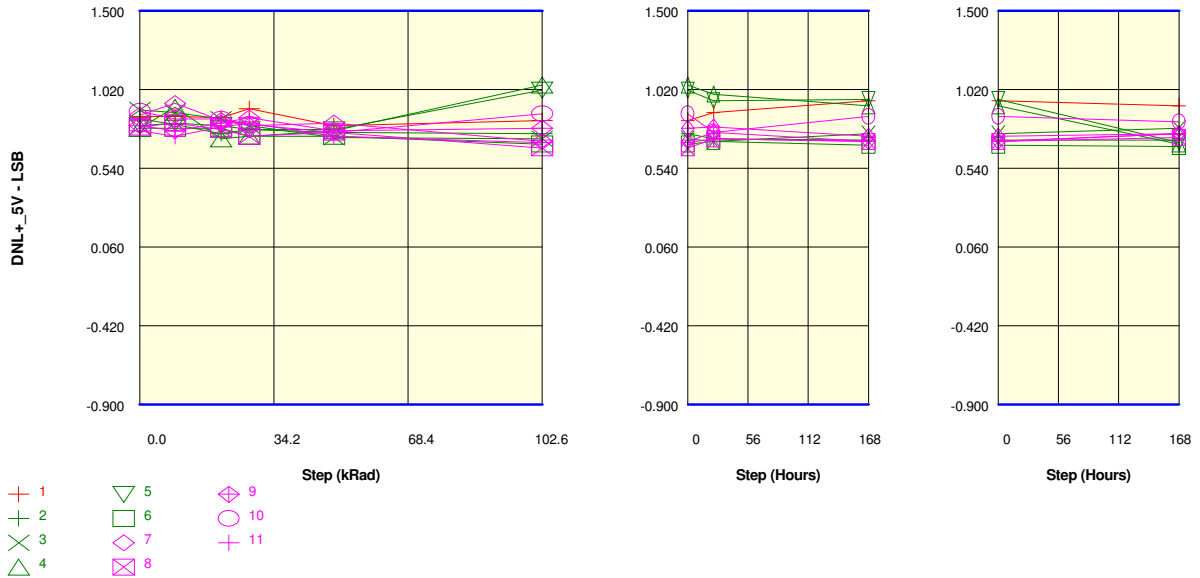
Measurements

DNL+ 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.896	0.840	0.792	0.800	0.880	0.904	0.816	0.960	0.920
OFF samples									
7	0.872	0.840	0.816	0.800	0.800	0.704	0.784	0.688	0.768
8	0.768	0.760	0.760	0.792	0.720	0.720	0.688	0.752	0.704
9	0.832	0.760	0.744	0.784	0.792	0.752	0.696	0.752	0.816
10	0.848	0.776	0.816	0.792	0.792	0.816	0.800	0.768	0.808
11	0.888	0.792	0.744	0.784	0.768	0.688	0.720	0.768	0.720
Statistics									
Min	0.768	0.760	0.744	0.784	0.720	0.688	0.688	0.688	0.704
Max	0.888	0.840	0.816	0.800	0.800	0.816	0.800	0.768	0.816
Average	0.842	0.786	0.776	0.790	0.774	0.736	0.738	0.746	0.763
Sigma	0.042	0.030	0.033	0.006	0.029	0.045	0.046	0.030	0.045

Drift Calculation

DNL+ 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-32.0E-03	-56.0E-03	-72.0E-03	-72.0E-03	-168.0E-03	-88.0E-03	-184.0E-03	-104.0E-03
8	-	-8.0E-03	-8.0E-03	24.0E-03	-48.0E-03	-48.0E-03	-80.0E-03	-16.0E-03	-64.0E-03
9	-	-72.0E-03	-88.0E-03	-48.0E-03	-40.0E-03	-80.0E-03	-136.0E-03	-80.0E-03	-16.0E-03
10	-	-72.0E-03	-32.0E-03	-56.0E-03	-56.0E-03	-32.0E-03	-48.0E-03	-80.0E-03	-40.0E-03
11	-	-96.0E-03	-144.0E-03	-104.0E-03	-120.0E-03	-200.0E-03	-168.0E-03	-120.0E-03	-168.0E-03
Average	-	-56.0E-03	-65.6E-03	-51.2E-03	-67.2E-03	-105.6E-03	-104.0E-03	-96.0E-03	-78.4E-03
Sigma	-	31.6E-03	47.3E-03	42.2E-03	28.4E-03	66.6E-03	42.6E-03	55.2E-03	53.4E-03

Parameter : Differential Non linearity : DNL+_5VIN2
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.856	0.856	0.848	0.904	0.800	0.832	0.880	0.952	0.920
ON samples									
2	0.840	0.808	0.752	0.776	0.760	0.752	0.720	0.712	0.712
3	0.896	0.880	0.840	0.800	0.728	0.720	0.704	0.752	0.784
4	0.784	0.912	0.720	0.736	0.768	1.048	0.992	0.920	0.688
5	0.800	0.816	0.800	0.776	0.776	1.016	0.952	0.960	0.696
6	0.784	0.784	0.784	0.736	0.736	0.688	0.704	0.680	0.672
Statistics									
Min	0.784	0.784	0.720	0.736	0.728	0.688	0.704	0.680	0.672
Max	0.896	0.912	0.840	0.800	0.776	1.048	0.992	0.960	0.784
Average	0.821	0.840	0.779	0.765	0.754	0.845	0.814	0.805	0.710
Sigma	0.043	0.048	0.041	0.025	0.019	0.155	0.129	0.113	0.039

Drift Calculation

DNL+ 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-32.0E-03	-88.0E-03	-64.0E-03	-80.0E-03	-88.0E-03	-120.0E-03	-128.0E-03	-128.0E-03
3	-	-16.0E-03	-56.0E-03	-96.0E-03	-168.0E-03	-176.0E-03	-192.0E-03	-144.0E-03	-112.0E-03
4	-	128.0E-03	-64.0E-03	-48.0E-03	-16.0E-03	264.0E-03	208.0E-03	136.0E-03	-96.0E-03
5	-	16.0E-03	0.0E+00	-24.0E-03	-24.0E-03	216.0E-03	152.0E-03	160.0E-03	-104.0E-03
6	-	0.0E+00	0.0E+00	-48.0E-03	-48.0E-03	-96.0E-03	-80.0E-03	-104.0E-03	-112.0E-03
Average	-	19.2E-03	-41.6E-03	-56.0E-03	-67.2E-03	24.0E-03	-6.4E-03	-16.0E-03	-110.4E-03
Sigma	-	56.7E-03	35.6E-03	23.7E-03	55.1E-03	179.7E-03	157.4E-03	134.7E-03	10.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

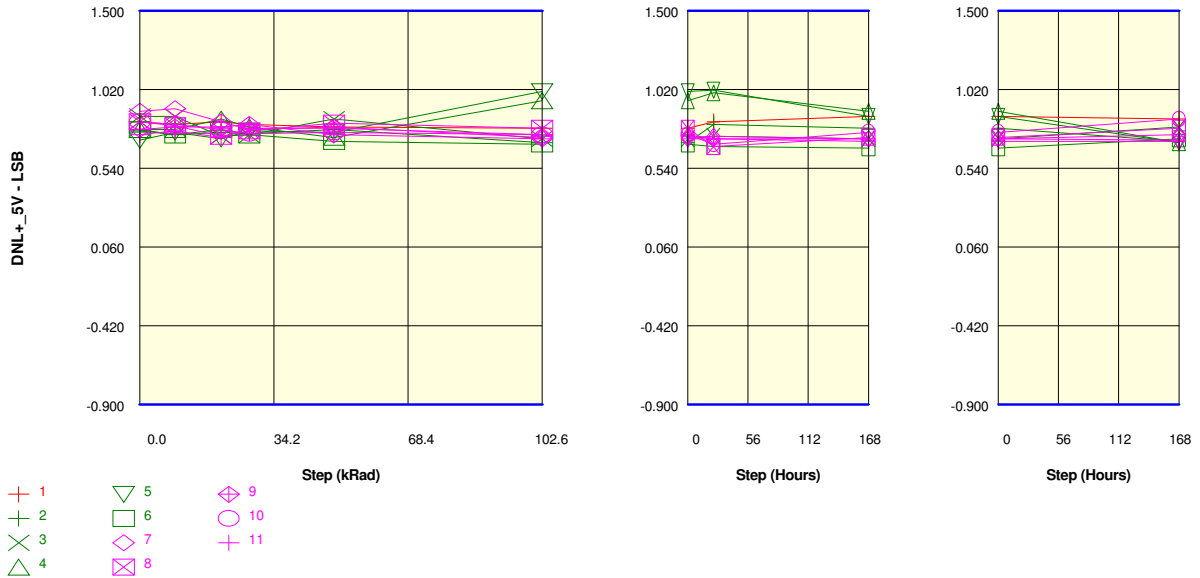
Measurements

DNL+ 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.856	0.856	0.848	0.904	0.800	0.832	0.880	0.952	0.920
OFF samples									
7	0.864	0.936	0.832	0.800	0.816	0.704	0.760	0.704	0.752
8	0.792	0.816	0.776	0.736	0.760	0.664	0.720	0.704	0.728
9	0.800	0.768	0.816	0.848	0.768	0.784	0.792	0.736	0.752
10	0.888	0.840	0.840	0.808	0.760	0.872	0.760	0.856	0.824
11	0.768	0.736	0.792	0.816	0.736	0.696	0.720	0.704	0.752
Statistics									
Min	0.768	0.736	0.776	0.736	0.736	0.664	0.720	0.704	0.728
Max	0.888	0.936	0.840	0.848	0.816	0.872	0.792	0.856	0.824
Average	0.822	0.819	0.811	0.802	0.768	0.744	0.750	0.741	0.762
Sigma	0.046	0.069	0.024	0.037	0.026	0.075	0.027	0.059	0.033

Drift Calculation

DNL+ 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	72.0E-03	-32.0E-03	-64.0E-03	-48.0E-03	-160.0E-03	-104.0E-03	-160.0E-03	-112.0E-03
8	-	24.0E-03	-16.0E-03	-56.0E-03	-32.0E-03	-128.0E-03	-72.0E-03	-88.0E-03	-64.0E-03
9	-	-32.0E-03	16.0E-03	48.0E-03	-32.0E-03	-16.0E-03	-8.0E-03	-64.0E-03	-48.0E-03
10	-	-48.0E-03	-48.0E-03	-80.0E-03	-128.0E-03	-16.0E-03	-128.0E-03	-32.0E-03	-64.0E-03
11	-	-32.0E-03	24.0E-03	48.0E-03	-32.0E-03	-72.0E-03	-48.0E-03	-64.0E-03	-16.0E-03
Average	-	-3.2E-03	-11.2E-03	-20.8E-03	-54.4E-03	-78.4E-03	-72.0E-03	-81.6E-03	-60.8E-03
Sigma	-	44.9E-03	27.5E-03	56.7E-03	37.3E-03	58.2E-03	42.0E-03	43.1E-03	31.0E-03

Parameter : Differential Non linearity : DNL+_5VIN3
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.824	0.808	0.824	0.808	0.792	0.784	0.824	0.856	0.840
ON samples									
2	0.768	0.744	0.760	0.752	0.776	0.696	0.808	0.784	0.704
3	0.856	0.856	0.736	0.744	0.840	0.720	0.736	0.720	0.792
4	0.776	0.776	0.840	0.792	0.728	0.952	1.000	0.888	0.696
5	0.712	0.760	0.720	0.768	0.760	1.008	1.016	0.856	0.696
6	0.776	0.744	0.776	0.744	0.704	0.688	0.672	0.664	0.720
Statistics									
Min	0.712	0.744	0.720	0.744	0.704	0.688	0.672	0.664	0.696
Max	0.856	0.856	0.840	0.792	0.840	1.008	1.016	0.888	0.792
Average	0.778	0.776	0.766	0.760	0.762	0.813	0.846	0.782	0.722
Sigma	0.046	0.042	0.042	0.018	0.046	0.138	0.139	0.083	0.036

Drift Calculation

DNL+ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-24.0E-03	-8.0E-03	-16.0E-03	8.0E-03	-72.0E-03	40.0E-03	16.0E-03	-64.0E-03
3	-	0.0E+00	-120.0E-03	-112.0E-03	-16.0E-03	-136.0E-03	-120.0E-03	-136.0E-03	-64.0E-03
4	-	0.0E+00	64.0E-03	16.0E-03	-48.0E-03	176.0E-03	224.0E-03	112.0E-03	-80.0E-03
5	-	48.0E-03	8.0E-03	56.0E-03	48.0E-03	296.0E-03	304.0E-03	144.0E-03	-16.0E-03
6	-	-32.0E-03	0.0E+00	-32.0E-03	-72.0E-03	-88.0E-03	-104.0E-03	-112.0E-03	-56.0E-03
Average	-	-1.6E-03	-11.2E-03	-17.6E-03	-16.0E-03	35.2E-03	68.8E-03	4.8E-03	-56.0E-03
Sigma	-	27.9E-03	60.0E-03	56.0E-03	42.0E-03	169.6E-03	170.7E-03	113.5E-03	21.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

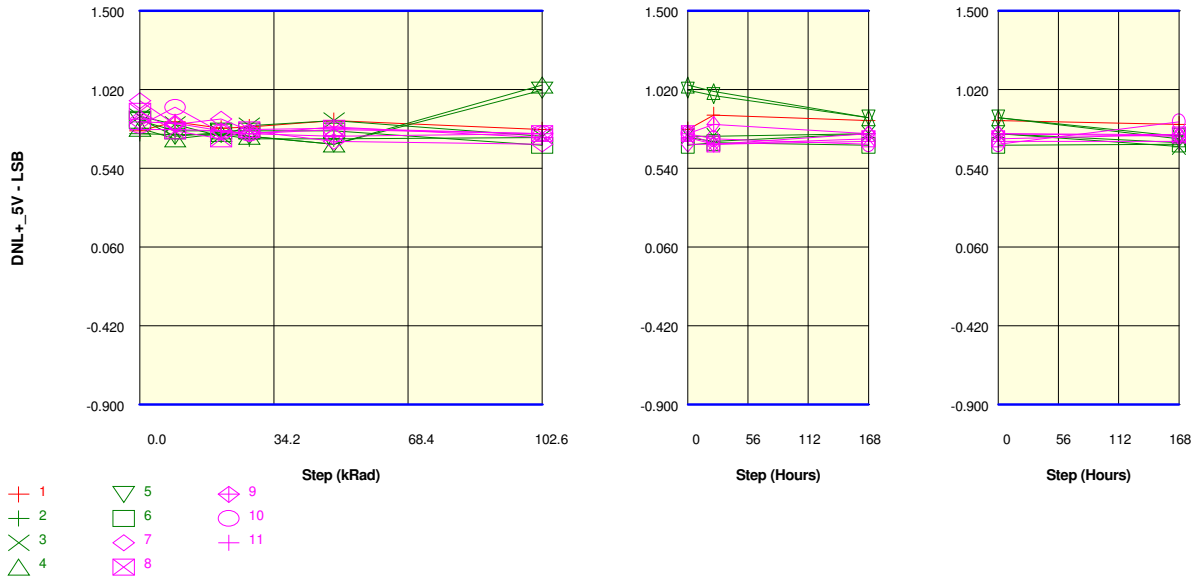
Measurements

DNL+ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.824	0.808	0.824	0.808	0.792	0.784	0.824	0.856	0.840
OFF samples									
7	0.888	0.904	0.824	0.776	0.792	0.728	0.736	0.720	0.744
8	0.824	0.800	0.736	0.768	0.816	0.784	0.672	0.728	0.784
9	0.776	0.792	0.792	0.808	0.744	0.720	0.720	0.720	0.712
10	0.824	0.808	0.776	0.752	0.760	0.744	0.688	0.760	0.840
11	0.744	0.768	0.728	0.784	0.784	0.744	0.720	0.704	0.704
Statistics									
Min	0.744	0.768	0.728	0.752	0.744	0.720	0.672	0.704	0.704
Max	0.888	0.904	0.824	0.808	0.816	0.784	0.736	0.760	0.840
Average	0.811	0.814	0.771	0.778	0.779	0.744	0.707	0.726	0.757
Sigma	0.049	0.047	0.036	0.019	0.025	0.022	0.024	0.019	0.050

Drift Calculation

DNL+ 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	16.0E-03	-64.0E-03	-112.0E-03	-96.0E-03	-160.0E-03	-152.0E-03	-168.0E-03	-144.0E-03
8	-	-24.0E-03	-88.0E-03	-56.0E-03	-8.0E-03	-40.0E-03	-152.0E-03	-96.0E-03	-40.0E-03
9	-	16.0E-03	16.0E-03	32.0E-03	-32.0E-03	-56.0E-03	-56.0E-03	-56.0E-03	-64.0E-03
10	-	-16.0E-03	-48.0E-03	-72.0E-03	-64.0E-03	-80.0E-03	-136.0E-03	-64.0E-03	16.0E-03
11	-	24.0E-03	-16.0E-03	40.0E-03	40.0E-03	0.0E+00	-24.0E-03	-40.0E-03	-40.0E-03
Average	-	3.2E-03	-40.0E-03	-33.6E-03	-32.0E-03	-67.2E-03	-104.0E-03	-84.8E-03	-54.4E-03
Sigma	-	19.3E-03	36.5E-03	59.7E-03	46.6E-03	53.2E-03	53.5E-03	45.4E-03	51.9E-03

Parameter : Differential Non linearity : DNL+_5VIN4
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+_ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.768	0.824	0.784	0.792	0.832	0.776	0.864	0.832	0.808
ON samples									
2	0.752	0.744	0.744	0.720	0.720	0.728	0.704	0.752	0.696
3	0.856	0.808	0.736	0.800	0.832	0.736	0.736	0.752	0.672
4	0.784	0.720	0.752	0.736	0.688	1.048	1.008	0.848	0.720
5	0.840	0.736	0.760	0.736	0.688	1.016	0.984	0.848	0.736
6	0.832	0.768	0.768	0.768	0.768	0.680	0.696	0.680	0.688
Statistics									
Min	0.752	0.720	0.736	0.720	0.688	0.680	0.696	0.680	0.672
Max	0.856	0.808	0.768	0.800	0.832	1.048	1.008	0.848	0.736
Average	0.813	0.755	0.752	0.752	0.739	0.842	0.826	0.776	0.702
Sigma	0.039	0.031	0.011	0.029	0.055	0.157	0.140	0.064	0.023

Drift Calculation

DNL+_ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-8.0E-03	-8.0E-03	-32.0E-03	-32.0E-03	-24.0E-03	-48.0E-03	0.0E+00	-56.0E-03
3	-	-48.0E-03	-120.0E-03	-56.0E-03	-24.0E-03	-120.0E-03	-120.0E-03	-104.0E-03	-184.0E-03
4	-	-64.0E-03	-32.0E-03	-48.0E-03	-96.0E-03	264.0E-03	224.0E-03	64.0E-03	-64.0E-03
5	-	-104.0E-03	-80.0E-03	-104.0E-03	-152.0E-03	176.0E-03	144.0E-03	8.0E-03	-104.0E-03
6	-	-64.0E-03	-64.0E-03	-64.0E-03	-64.0E-03	-152.0E-03	-136.0E-03	-152.0E-03	-144.0E-03
Average	-	-57.6E-03	-60.8E-03	-60.8E-03	-73.6E-03	28.8E-03	12.8E-03	-36.8E-03	-110.4E-03
Sigma	-	30.9E-03	38.7E-03	24.1E-03	46.8E-03	164.1E-03	145.1E-03	79.1E-03	48.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

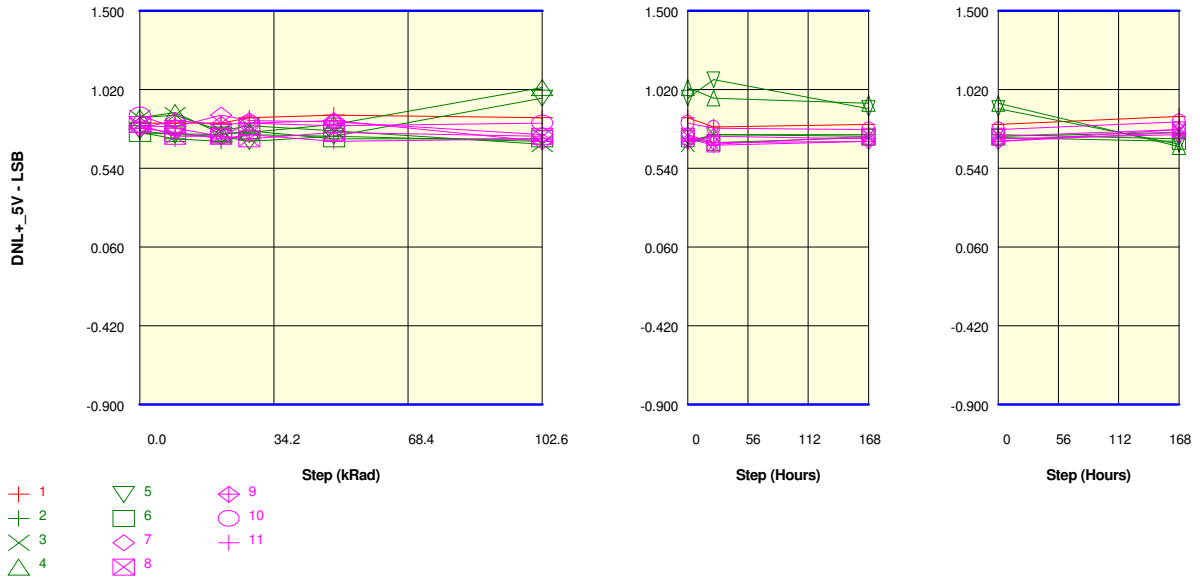
Measurements

DNL+ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.768	0.824	0.784	0.792	0.832	0.776	0.864	0.832	0.808
OFF samples									
7	0.952	0.808	0.840	0.768	0.704	0.688	0.688	0.752	0.736
8	0.888	0.768	0.720	0.776	0.784	0.752	0.688	0.720	0.744
9	0.824	0.816	0.768	0.752	0.736	0.752	0.808	0.752	0.744
10	0.800	0.912	0.760	0.752	0.776	0.752	0.720	0.688	0.824
11	0.776	0.776	0.768	0.752	0.792	0.728	0.688	0.704	0.704
Statistics									
Min	0.776	0.768	0.720	0.752	0.704	0.688	0.688	0.688	0.704
Max	0.952	0.912	0.840	0.776	0.792	0.752	0.808	0.752	0.824
Average	0.848	0.816	0.771	0.760	0.758	0.734	0.718	0.723	0.750
Sigma	0.064	0.051	0.039	0.010	0.033	0.025	0.046	0.026	0.040

Drift Calculation

DNL+ 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-144.0E-03	-112.0E-03	-184.0E-03	-248.0E-03	-264.0E-03	-264.0E-03	-200.0E-03	-216.0E-03
8	-	-120.0E-03	-168.0E-03	-112.0E-03	-104.0E-03	-136.0E-03	-200.0E-03	-168.0E-03	-144.0E-03
9	-	-8.0E-03	-56.0E-03	-72.0E-03	-88.0E-03	-72.0E-03	-16.0E-03	-72.0E-03	-80.0E-03
10	-	112.0E-03	-40.0E-03	-48.0E-03	-24.0E-03	-48.0E-03	-80.0E-03	-112.0E-03	24.0E-03
11	-	0.0E+00	-8.0E-03	-24.0E-03	16.0E-03	-48.0E-03	-88.0E-03	-72.0E-03	-72.0E-03
Average	-	-32.0E-03	-76.8E-03	-88.0E-03	-89.6E-03	-113.6E-03	-129.6E-03	-124.8E-03	-97.6E-03
Sigma	-	92.3E-03	56.7E-03	56.1E-03	90.3E-03	81.8E-03	89.6E-03	51.5E-03	79.9E-03

Parameter : Differential Non linearity : DNL+_5VIN5
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.816	0.816	0.816	0.848	0.864	0.848	0.792	0.808	0.856
ON samples									
2	0.760	0.720	0.704	0.744	0.736	0.704	0.744	0.744	0.720
3	0.848	0.864	0.768	0.800	0.768	0.688	0.744	0.736	0.760
4	0.848	0.880	0.752	0.760	0.808	1.032	0.968	0.936	0.672
5	0.768	0.744	0.736	0.704	0.736	0.968	1.080	0.904	0.688
6	0.752	0.752	0.744	0.768	0.720	0.720	0.696	0.728	0.704
Statistics									
Min	0.752	0.720	0.704	0.704	0.720	0.688	0.696	0.728	0.672
Max	0.848	0.880	0.768	0.800	0.808	1.032	1.080	0.936	0.760
Average	0.795	0.792	0.741	0.755	0.754	0.822	0.846	0.810	0.709
Sigma	0.043	0.066	0.021	0.031	0.031	0.147	0.150	0.091	0.030

Drift Calculation

DNL+ 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-40.0E-03	-56.0E-03	-16.0E-03	-24.0E-03	-56.0E-03	-16.0E-03	-16.0E-03	-40.0E-03
3	-	16.0E-03	-80.0E-03	-48.0E-03	-80.0E-03	-160.0E-03	-104.0E-03	-112.0E-03	-88.0E-03
4	-	32.0E-03	-96.0E-03	-88.0E-03	-40.0E-03	184.0E-03	120.0E-03	88.0E-03	-176.0E-03
5	-	-24.0E-03	-32.0E-03	-64.0E-03	-32.0E-03	200.0E-03	312.0E-03	136.0E-03	-80.0E-03
6	-	0.0E+00	-8.0E-03	16.0E-03	-32.0E-03	-32.0E-03	-56.0E-03	-24.0E-03	-48.0E-03
Average	-	-3.2E-03	-54.4E-03	-40.0E-03	-41.6E-03	27.2E-03	51.2E-03	14.4E-03	-86.4E-03
Sigma	-	26.1E-03	31.8E-03	36.5E-03	19.9E-03	141.4E-03	150.2E-03	87.8E-03	48.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

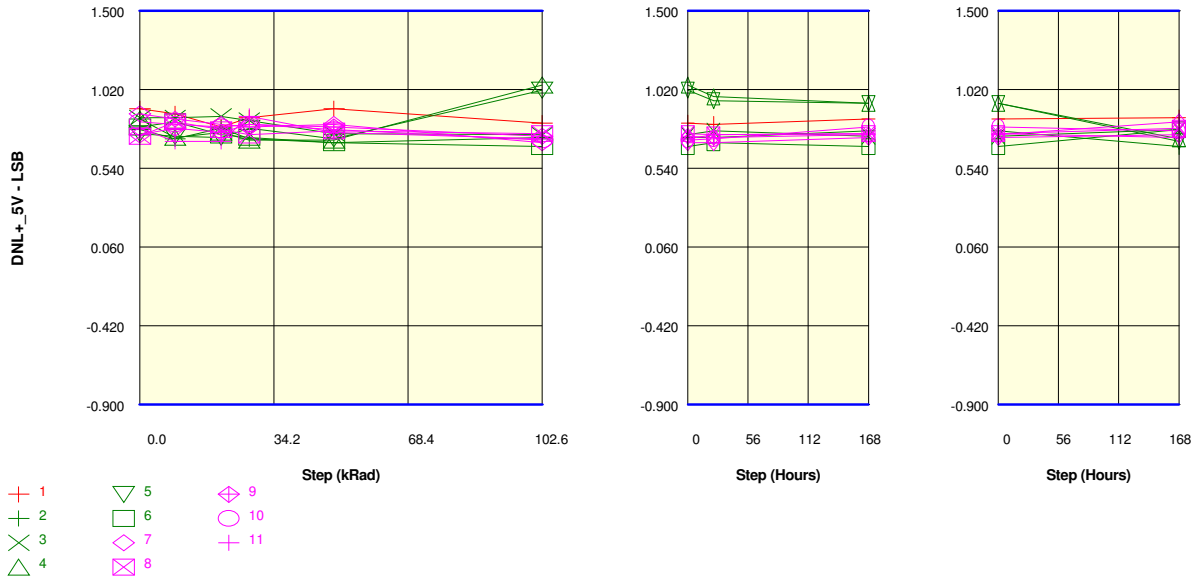
Measurements

DNL+ 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.816	0.816	0.816	0.848	0.864	0.848	0.792	0.808	0.856
OFF samples									
7	0.800	0.792	0.864	0.832	0.824	0.744	0.696	0.704	0.776
8	0.808	0.736	0.736	0.720	0.760	0.736	0.688	0.736	0.776
9	0.784	0.832	0.808	0.816	0.832	0.704	0.736	0.720	0.744
10	0.864	0.784	0.736	0.816	0.800	0.816	0.784	0.776	0.824
11	0.784	0.760	0.720	0.744	0.704	0.720	0.680	0.704	0.760
Statistics									
Min	0.784	0.736	0.720	0.720	0.704	0.704	0.680	0.704	0.744
Max	0.864	0.832	0.864	0.832	0.832	0.816	0.784	0.776	0.824
Average	0.808	0.781	0.773	0.786	0.784	0.744	0.717	0.728	0.776
Sigma	0.030	0.032	0.055	0.045	0.047	0.039	0.039	0.027	0.027

Drift Calculation

DNL+ 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-8.0E-03	64.0E-03	32.0E-03	24.0E-03	-56.0E-03	-104.0E-03	-96.0E-03	-24.0E-03
8	-	-72.0E-03	-72.0E-03	-88.0E-03	-48.0E-03	-72.0E-03	-120.0E-03	-72.0E-03	-32.0E-03
9	-	48.0E-03	24.0E-03	32.0E-03	48.0E-03	-80.0E-03	-48.0E-03	-64.0E-03	-40.0E-03
10	-	-80.0E-03	-128.0E-03	-48.0E-03	-64.0E-03	-48.0E-03	-80.0E-03	-88.0E-03	-40.0E-03
11	-	-24.0E-03	-64.0E-03	-40.0E-03	-80.0E-03	-64.0E-03	-104.0E-03	-80.0E-03	-24.0E-03
Average	-	-27.2E-03	-35.2E-03	-22.4E-03	-24.0E-03	-64.0E-03	-91.2E-03	-80.0E-03	-32.0E-03
Sigma	-	46.5E-03	69.5E-03	47.3E-03	50.6E-03	11.3E-03	25.1E-03	11.3E-03	7.2E-03

Parameter : Differential Non linearity : DNL+_5VIN6
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+_ 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.904	0.872	0.792	0.848	0.904	0.816	0.808	0.840	0.848
ON samples									
2	0.776	0.720	0.784	0.720	0.696	0.728	0.728	0.768	0.672
3	0.848	0.848	0.856	0.832	0.752	0.744	0.768	0.736	0.776
4	0.840	0.728	0.760	0.712	0.712	1.048	0.976	0.936	0.720
5	0.752	0.736	0.728	0.784	0.720	1.016	0.952	0.936	0.704
6	0.792	0.824	0.744	0.728	0.696	0.672	0.696	0.672	0.776
Statistics									
Min	0.752	0.720	0.728	0.712	0.696	0.672	0.696	0.672	0.672
Max	0.848	0.848	0.856	0.832	0.752	1.048	0.976	0.936	0.776
Average	0.802	0.771	0.774	0.755	0.715	0.842	0.824	0.810	0.730
Sigma	0.037	0.054	0.045	0.046	0.021	0.158	0.117	0.108	0.041

Drift Calculation

DNL+_ 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-56.0E-03	8.0E-03	-56.0E-03	-80.0E-03	-48.0E-03	-48.0E-03	-8.0E-03	-104.0E-03
3	-	0.0E+00	8.0E-03	-16.0E-03	-96.0E-03	-104.0E-03	-80.0E-03	-112.0E-03	-72.0E-03
4	-	-112.0E-03	-80.0E-03	-128.0E-03	-128.0E-03	208.0E-03	136.0E-03	96.0E-03	-120.0E-03
5	-	-16.0E-03	-24.0E-03	32.0E-03	-32.0E-03	264.0E-03	200.0E-03	184.0E-03	-48.0E-03
6	-	32.0E-03	-48.0E-03	-64.0E-03	-96.0E-03	-120.0E-03	-96.0E-03	-120.0E-03	-16.0E-03
Average	-	-30.4E-03	-27.2E-03	-46.4E-03	-86.4E-03	40.0E-03	22.4E-03	8.0E-03	-72.0E-03
Sigma	-	49.7E-03	33.8E-03	53.2E-03	31.4E-03	162.8E-03	121.6E-03	118.1E-03	37.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

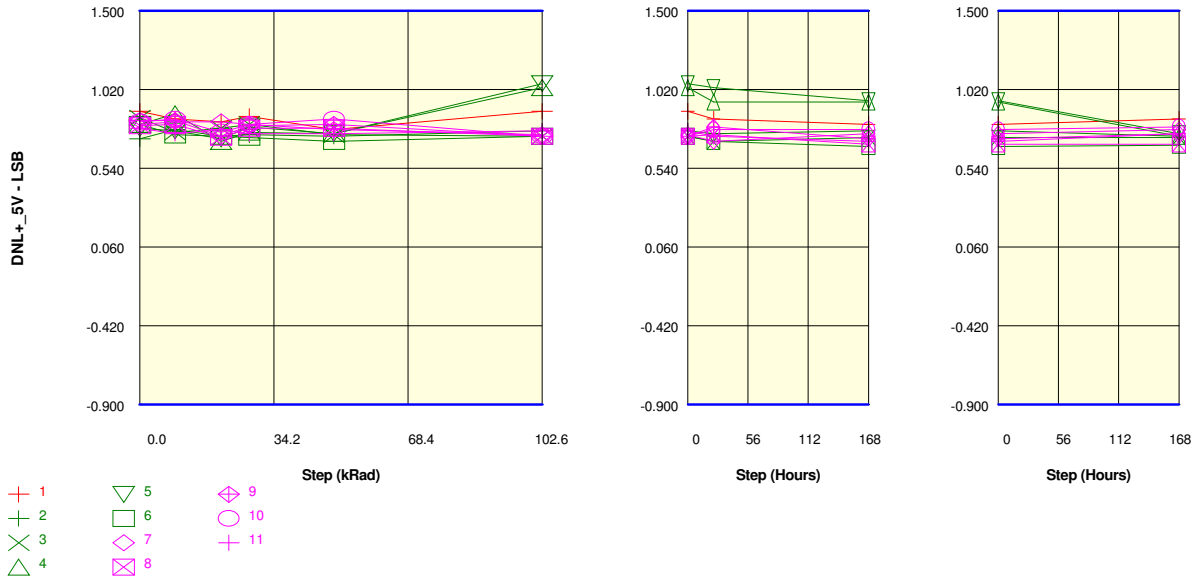
Measurements

DNL+ 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.904	0.872	0.792	0.848	0.904	0.816	0.808	0.840	0.848
OFF samples									
7	0.872	0.840	0.808	0.792	0.808	0.696	0.696	0.728	0.744
8	0.736	0.824	0.776	0.744	0.768	0.752	0.744	0.752	0.784
9	0.744	0.784	0.760	0.808	0.792	0.736	0.728	0.744	0.824
10	0.824	0.808	0.792	0.808	0.776	0.712	0.720	0.792	0.768
11	0.784	0.704	0.704	0.856	0.760	0.720	0.744	0.752	0.728
Statistics									
Min	0.736	0.704	0.704	0.744	0.760	0.696	0.696	0.728	0.728
Max	0.872	0.840	0.808	0.856	0.808	0.752	0.744	0.792	0.824
Average	0.792	0.792	0.768	0.802	0.781	0.723	0.726	0.754	0.770
Sigma	0.051	0.048	0.036	0.036	0.017	0.019	0.018	0.021	0.033

Drift Calculation

DNL+ 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-32.0E-03	-64.0E-03	-80.0E-03	-64.0E-03	-176.0E-03	-176.0E-03	-144.0E-03	-128.0E-03
8	-	88.0E-03	40.0E-03	8.0E-03	32.0E-03	16.0E-03	8.0E-03	16.0E-03	48.0E-03
9	-	40.0E-03	16.0E-03	64.0E-03	48.0E-03	-8.0E-03	-16.0E-03	0.0E+00	80.0E-03
10	-	-16.0E-03	-32.0E-03	-16.0E-03	-48.0E-03	-112.0E-03	-104.0E-03	-32.0E-03	-56.0E-03
11	-	-80.0E-03	-80.0E-03	72.0E-03	-24.0E-03	-64.0E-03	-40.0E-03	-32.0E-03	-56.0E-03
Average	-	0.0E+00	-24.0E-03	9.6E-03	-11.2E-03	-68.8E-03	-65.6E-03	-38.4E-03	-22.4E-03
Sigma	-	58.4E-03	45.8E-03	55.7E-03	44.0E-03	69.7E-03	66.6E-03	56.0E-03	76.0E-03

Parameter : Differential Non linearity : DNL+_5VIN7
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL+ 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.888	0.840	0.824	0.856	0.776	0.888	0.840	0.808	0.840
ON samples									
2	0.720	0.776	0.736	0.744	0.736	0.768	0.752	0.768	0.736
3	0.848	0.760	0.784	0.808	0.744	0.736	0.704	0.728	0.728
4	0.808	0.872	0.704	0.760	0.752	1.032	0.944	0.944	0.736
5	0.784	0.768	0.720	0.792	0.752	1.056	1.032	0.952	0.752
6	0.808	0.744	0.736	0.728	0.704	0.736	0.704	0.672	0.680
Statistics									
Min	0.720	0.744	0.704	0.728	0.704	0.736	0.704	0.672	0.680
Max	0.848	0.872	0.784	0.808	0.752	1.056	1.032	0.952	0.752
Average	0.794	0.784	0.736	0.766	0.738	0.866	0.827	0.813	0.726
Sigma	0.042	0.045	0.027	0.030	0.018	0.146	0.135	0.115	0.024

Drift Calculation

DNL+ 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	56.0E-03	16.0E-03	24.0E-03	16.0E-03	48.0E-03	32.0E-03	48.0E-03	16.0E-03
3	-	-88.0E-03	-64.0E-03	-40.0E-03	-104.0E-03	-112.0E-03	-144.0E-03	-120.0E-03	-120.0E-03
4	-	64.0E-03	-104.0E-03	-48.0E-03	-56.0E-03	224.0E-03	136.0E-03	136.0E-03	-72.0E-03
5	-	-16.0E-03	-64.0E-03	8.0E-03	-32.0E-03	272.0E-03	248.0E-03	168.0E-03	-32.0E-03
6	-	-64.0E-03	-72.0E-03	-80.0E-03	-104.0E-03	-72.0E-03	-104.0E-03	-136.0E-03	-128.0E-03
Average	-	-9.6E-03	-57.6E-03	-27.2E-03	-56.0E-03	72.0E-03	33.6E-03	19.2E-03	-67.2E-03
Sigma	-	61.4E-03	39.6E-03	38.1E-03	45.5E-03	153.8E-03	146.2E-03	126.6E-03	54.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

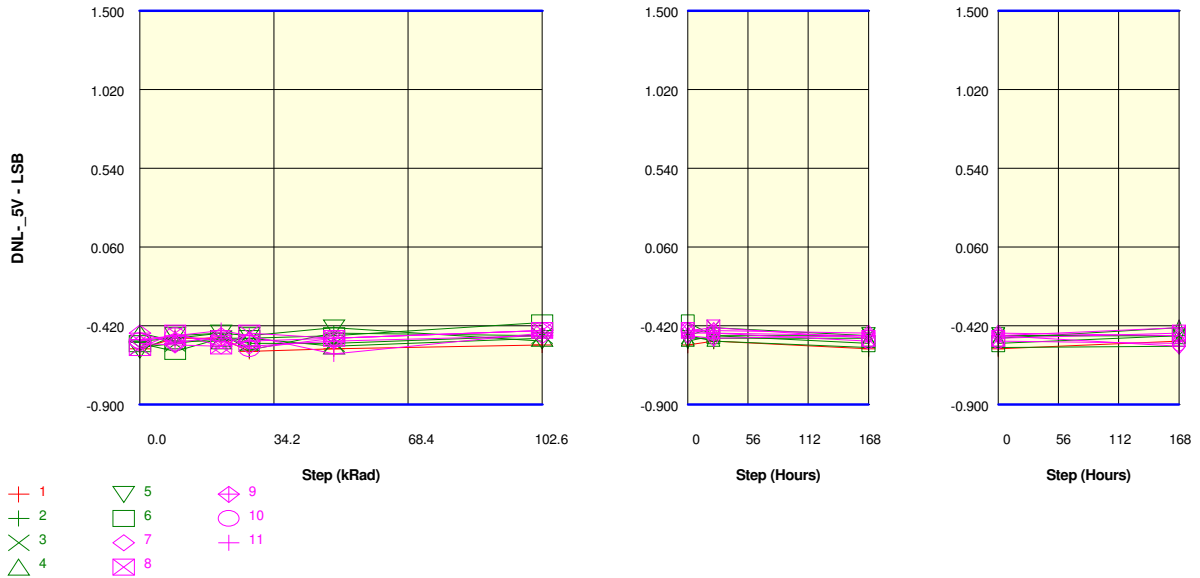
Measurements

DNL+ 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.888	0.840	0.824	0.856	0.776	0.888	0.840	0.808	0.840
OFF samples									
7	0.808	0.824	0.824	0.808	0.776	0.744	0.704	0.752	0.776
8	0.800	0.808	0.728	0.784	0.784	0.736	0.744	0.688	0.688
9	0.832	0.832	0.736	0.800	0.808	0.736	0.792	0.720	0.752
10	0.824	0.840	0.760	0.808	0.840	0.736	0.776	0.776	0.792
11	0.784	0.752	0.776	0.752	0.752	0.768	0.736	0.704	0.752
Statistics									
Min	0.784	0.752	0.728	0.752	0.752	0.736	0.704	0.688	0.688
Max	0.832	0.840	0.824	0.808	0.840	0.768	0.792	0.776	0.792
Average	0.810	0.811	0.765	0.790	0.792	0.744	0.750	0.728	0.752
Sigma	0.017	0.031	0.034	0.021	0.030	0.012	0.031	0.032	0.035

Drift Calculation

DNL+ 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	16.0E-03	16.0E-03	0.0E+00	-32.0E-03	-64.0E-03	-104.0E-03	-56.0E-03	-32.0E-03
8	-	8.0E-03	-72.0E-03	-16.0E-03	-16.0E-03	-64.0E-03	-56.0E-03	-112.0E-03	-112.0E-03
9	-	0.0E+00	-96.0E-03	-32.0E-03	-24.0E-03	-96.0E-03	-40.0E-03	-112.0E-03	-80.0E-03
10	-	16.0E-03	-64.0E-03	-16.0E-03	16.0E-03	-88.0E-03	-48.0E-03	-48.0E-03	-32.0E-03
11	-	-32.0E-03	-8.0E-03	-32.0E-03	-32.0E-03	-16.0E-03	-48.0E-03	-80.0E-03	-32.0E-03
Average	-	1.6E-03	-44.8E-03	-19.2E-03	-17.6E-03	-65.6E-03	-59.2E-03	-81.6E-03	-57.6E-03
Sigma	-	17.8E-03	41.9E-03	12.0E-03	17.8E-03	27.9E-03	23.0E-03	27.0E-03	32.9E-03

Parameter : Differential Non linearity : DNL- 5VIN0
Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.560	-0.496	-0.496	-0.576	-0.560	-0.536	-0.512	-0.560	-0.512
ON samples									
2	-0.512	-0.496	-0.464	-0.568	-0.464	-0.480	-0.512	-0.552	-0.544
3	-0.552	-0.528	-0.496	-0.528	-0.528	-0.480	-0.432	-0.480	-0.480
4	-0.464	-0.512	-0.512	-0.496	-0.544	-0.496	-0.496	-0.496	-0.432
5	-0.568	-0.480	-0.464	-0.480	-0.432	-0.512	-0.480	-0.480	-0.480
6	-0.528	-0.576	-0.496	-0.496	-0.480	-0.400	-0.480	-0.528	-0.480
Statistics									
Min	-0.568	-0.576	-0.512	-0.568	-0.544	-0.512	-0.512	-0.552	-0.544
Max	-0.464	-0.480	-0.464	-0.480	-0.432	-0.400	-0.432	-0.480	-0.432
Average	-0.525	-0.518	-0.486	-0.514	-0.490	-0.474	-0.480	-0.507	-0.483
Sigma	0.036	0.033	0.019	0.031	0.041	0.039	0.027	0.028	0.036

Drift Calculation

DNL- 5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	16.0E-03	48.0E-03	-56.0E-03	48.0E-03	32.0E-03	0.0E+00	-40.0E-03	-32.0E-03
3	-	24.0E-03	56.0E-03	24.0E-03	24.0E-03	72.0E-03	120.0E-03	72.0E-03	72.0E-03
4	-	-48.0E-03	-48.0E-03	-32.0E-03	-80.0E-03	-32.0E-03	-32.0E-03	-32.0E-03	32.0E-03
5	-	88.0E-03	104.0E-03	88.0E-03	136.0E-03	56.0E-03	88.0E-03	88.0E-03	88.0E-03
6	-	-48.0E-03	32.0E-03	32.0E-03	48.0E-03	128.0E-03	48.0E-03	0.0E+00	48.0E-03
Average	-	6.4E-03	38.4E-03	11.2E-03	35.2E-03	51.2E-03	44.8E-03	17.6E-03	41.6E-03
Sigma	-	50.9E-03	49.4E-03	50.7E-03	69.1E-03	52.2E-03	55.6E-03	52.9E-03	41.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

DNL_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.560	-0.496	-0.496	-0.576	-0.560	-0.536	-0.512	-0.560	-0.512
OFF samples									
7	-0.528	-0.536	-0.544	-0.512	-0.496	-0.448	-0.448	-0.464	-0.480
8	-0.552	-0.464	-0.544	-0.464	-0.496	-0.448	-0.432	-0.496	-0.464
9	-0.464	-0.528	-0.480	-0.544	-0.512	-0.480	-0.496	-0.480	-0.544
10	-0.512	-0.480	-0.512	-0.560	-0.496	-0.448	-0.464	-0.512	-0.528
11	-0.504	-0.480	-0.448	-0.480	-0.592	-0.464	-0.464	-0.480	-0.432
Statistics									
Min	-0.552	-0.536	-0.544	-0.560	-0.592	-0.480	-0.496	-0.512	-0.544
Max	-0.464	-0.464	-0.448	-0.464	-0.496	-0.448	-0.432	-0.464	-0.432
Average	-0.512	-0.498	-0.506	-0.512	-0.518	-0.458	-0.461	-0.486	-0.490
Sigma	0.029	0.029	0.037	0.036	0.037	0.013	0.021	0.016	0.041

Drift Calculation

DNL_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-8.0E-03	-16.0E-03	16.0E-03	32.0E-03	80.0E-03	80.0E-03	64.0E-03	48.0E-03
8	-	88.0E-03	8.0E-03	88.0E-03	56.0E-03	104.0E-03	120.0E-03	56.0E-03	88.0E-03
9	-	-64.0E-03	-16.0E-03	-80.0E-03	-48.0E-03	-16.0E-03	-32.0E-03	-16.0E-03	-80.0E-03
10	-	32.0E-03	0.0E+00	-48.0E-03	16.0E-03	64.0E-03	48.0E-03	0.0E+00	-16.0E-03
11	-	24.0E-03	56.0E-03	24.0E-03	-88.0E-03	40.0E-03	40.0E-03	24.0E-03	72.0E-03
Average	-	14.4E-03	6.4E-03	0.0E+00	-6.4E-03	54.4E-03	51.2E-03	25.6E-03	22.4E-03
Sigma	-	49.9E-03	26.5E-03	58.8E-03	53.4E-03	40.9E-03	50.2E-03	30.9E-03	62.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Differential Non linearity : DNL- 5VIN1

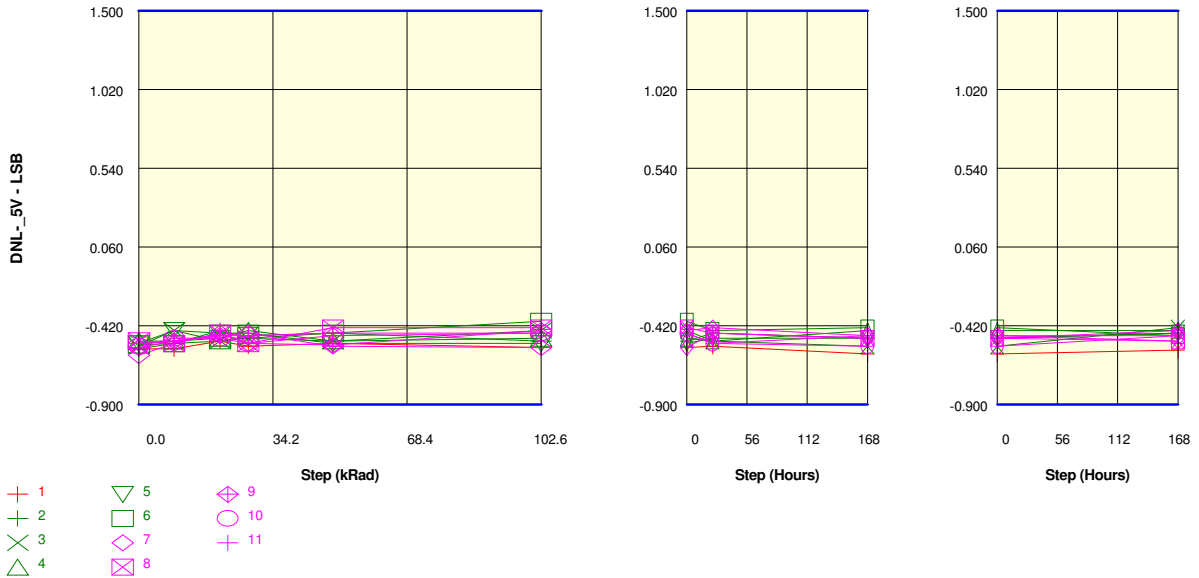
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -0.900

Spec Limit Max : 1.500

Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.560	-0.560	-0.512	-0.544	-0.528	-0.552	-0.544	-0.592	-0.568
ON samples									
2	-0.560	-0.528	-0.448	-0.496	-0.464	-0.512	-0.464	-0.496	-0.464
3	-0.544	-0.448	-0.512	-0.496	-0.512	-0.448	-0.512	-0.544	-0.432
4	-0.512	-0.512	-0.496	-0.448	-0.512	-0.496	-0.512	-0.448	-0.448
5	-0.528	-0.448	-0.464	-0.464	-0.528	-0.528	-0.496	-0.496	-0.464
6	-0.536	-0.528	-0.512	-0.480	-0.464	-0.392	-0.448	-0.432	-0.480
Statistics									
Min	-0.560	-0.528	-0.512	-0.496	-0.528	-0.512	-0.544	-0.544	-0.480
Max	-0.512	-0.448	-0.448	-0.448	-0.464	-0.392	-0.448	-0.432	-0.432
Average	-0.536	-0.493	-0.486	-0.477	-0.496	-0.475	-0.486	-0.483	-0.458
Sigma	0.016	0.037	0.026	0.019	0.027	0.049	0.026	0.040	0.016

Drift Calculation

DNL- 5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	32.0E-03	112.0E-03	64.0E-03	96.0E-03	48.0E-03	96.0E-03	64.0E-03	96.0E-03
3	-	96.0E-03	32.0E-03	48.0E-03	32.0E-03	96.0E-03	32.0E-03	0.0E+00	112.0E-03
4	-	0.0E+00	16.0E-03	64.0E-03	0.0E+00	16.0E-03	0.0E+00	64.0E-03	64.0E-03
5	-	80.0E-03	64.0E-03	64.0E-03	0.0E+00	0.0E+00	32.0E-03	32.0E-03	64.0E-03
6	-	8.0E-03	24.0E-03	56.0E-03	72.0E-03	144.0E-03	88.0E-03	104.0E-03	56.0E-03
Average	-	43.2E-03	49.6E-03	59.2E-03	40.0E-03	60.8E-03	49.6E-03	52.8E-03	78.4E-03
Sigma	-	38.4E-03	35.2E-03	6.4E-03	38.5E-03	53.0E-03	36.6E-03	34.9E-03	21.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

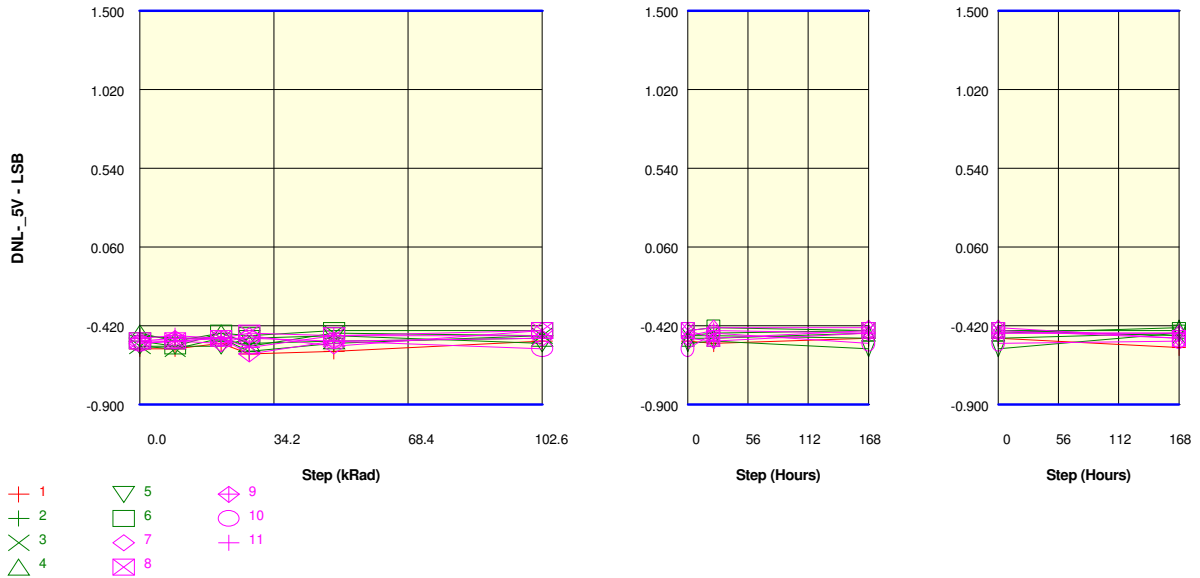
Measurements

DNL_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.560	-0.560	-0.512	-0.544	-0.528	-0.552	-0.544	-0.592	-0.568
OFF samples									
7	-0.600	-0.528	-0.464	-0.528	-0.536	-0.448	-0.432	-0.480	-0.512
8	-0.512	-0.528	-0.464	-0.528	-0.432	-0.432	-0.464	-0.496	-0.512
9	-0.552	-0.512	-0.480	-0.464	-0.544	-0.552	-0.464	-0.496	-0.448
10	-0.544	-0.496	-0.496	-0.528	-0.480	-0.464	-0.528	-0.544	-0.480
11	-0.528	-0.512	-0.480	-0.480	-0.464	-0.464	-0.528	-0.480	-0.480
Statistics									
Min	-0.600	-0.528	-0.496	-0.528	-0.544	-0.552	-0.528	-0.544	-0.512
Max	-0.512	-0.496	-0.464	-0.464	-0.432	-0.432	-0.432	-0.480	-0.448
Average	-0.547	-0.515	-0.477	-0.506	-0.491	-0.472	-0.483	-0.499	-0.486
Sigma	0.030	0.012	0.012	0.028	0.043	0.042	0.038	0.024	0.024

Drift Calculation

DNL_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	72.0E-03	136.0E-03	72.0E-03	64.0E-03	152.0E-03	168.0E-03	120.0E-03	88.0E-03
8	-	-16.0E-03	48.0E-03	-16.0E-03	80.0E-03	80.0E-03	48.0E-03	16.0E-03	0.0E+00
9	-	40.0E-03	72.0E-03	88.0E-03	8.0E-03	0.0E+00	88.0E-03	56.0E-03	104.0E-03
10	-	48.0E-03	48.0E-03	16.0E-03	64.0E-03	80.0E-03	16.0E-03	0.0E+00	64.0E-03
11	-	16.0E-03	48.0E-03	48.0E-03	64.0E-03	64.0E-03	0.0E+00	48.0E-03	48.0E-03
Average	-	32.0E-03	70.4E-03	41.6E-03	56.0E-03	75.2E-03	64.0E-03	48.0E-03	60.8E-03
Sigma	-	29.9E-03	34.1E-03	37.7E-03	24.8E-03	48.4E-03	60.1E-03	41.4E-03	36.0E-03

Parameter : Differential Non linearity : DNL-_5VIN2
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.560	-0.560	-0.528	-0.592	-0.576	-0.512	-0.528	-0.496	-0.552
ON samples									
2	-0.480	-0.496	-0.496	-0.576	-0.528	-0.480	-0.480	-0.496	-0.464
3	-0.544	-0.560	-0.496	-0.544	-0.464	-0.480	-0.464	-0.448	-0.480
4	-0.464	-0.512	-0.464	-0.528	-0.512	-0.496	-0.496	-0.464	-0.432
5	-0.544	-0.544	-0.544	-0.496	-0.480	-0.528	-0.512	-0.560	-0.464
6	-0.512	-0.544	-0.464	-0.480	-0.448	-0.448	-0.432	-0.448	-0.448
Statistics									
Min	-0.544	-0.560	-0.544	-0.576	-0.528	-0.528	-0.512	-0.560	-0.480
Max	-0.464	-0.496	-0.464	-0.480	-0.448	-0.448	-0.432	-0.448	-0.432
Average	-0.509	-0.531	-0.493	-0.525	-0.486	-0.486	-0.477	-0.483	-0.458
Sigma	0.033	0.024	0.029	0.034	0.030	0.026	0.028	0.042	0.016

Drift Calculation

DNL- 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-16.0E-03	-16.0E-03	-96.0E-03	-48.0E-03	0.0E+00	0.0E+00	-16.0E-03	16.0E-03
3	-	-16.0E-03	48.0E-03	0.0E+00	80.0E-03	64.0E-03	80.0E-03	96.0E-03	64.0E-03
4	-	-48.0E-03	0.0E+00	-64.0E-03	-48.0E-03	-32.0E-03	-32.0E-03	0.0E+00	32.0E-03
5	-	0.0E+00	0.0E+00	48.0E-03	64.0E-03	16.0E-03	32.0E-03	-16.0E-03	80.0E-03
6	-	-32.0E-03	48.0E-03	32.0E-03	64.0E-03	64.0E-03	80.0E-03	64.0E-03	64.0E-03
Average	-	-22.4E-03	16.0E-03	-16.0E-03	22.4E-03	22.4E-03	32.0E-03	25.6E-03	51.2E-03
Sigma	-	16.3E-03	26.8E-03	55.4E-03	57.8E-03	37.3E-03	44.1E-03	45.9E-03	23.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

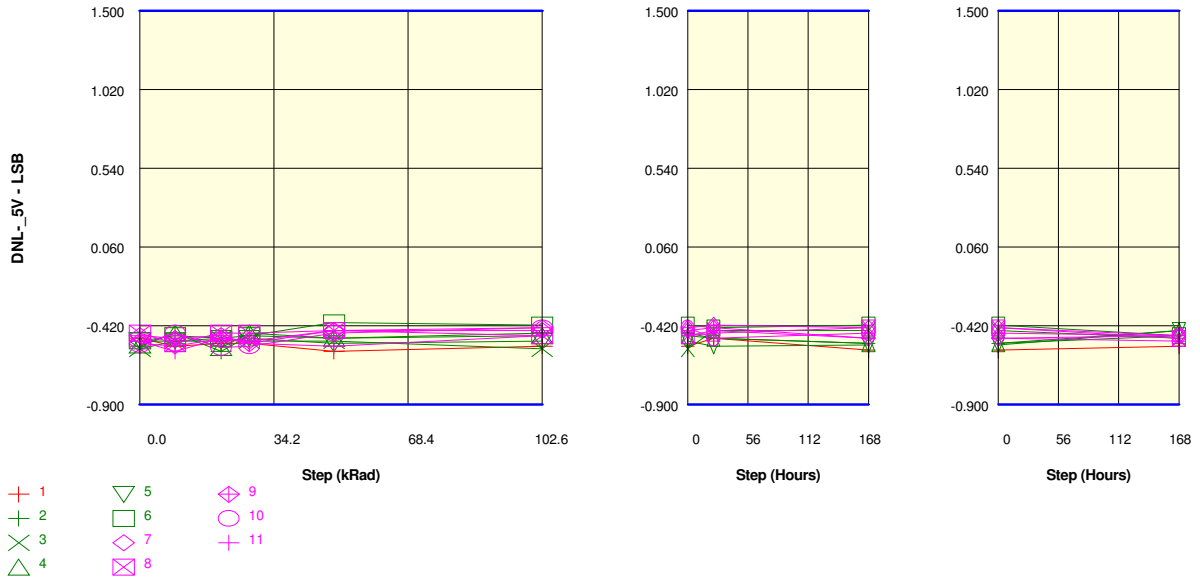
Measurements

DNL- 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.560	-0.560	-0.528	-0.592	-0.576	-0.512	-0.528	-0.496	-0.552
OFF samples									
7	-0.528	-0.512	-0.528	-0.480	-0.544	-0.448	-0.432	-0.432	-0.496
8	-0.512	-0.512	-0.496	-0.464	-0.480	-0.448	-0.496	-0.448	-0.496
9	-0.512	-0.496	-0.496	-0.592	-0.512	-0.496	-0.512	-0.464	-0.464
10	-0.528	-0.512	-0.496	-0.496	-0.512	-0.560	-0.464	-0.528	-0.512
11	-0.496	-0.480	-0.496	-0.552	-0.480	-0.480	-0.448	-0.464	-0.464
Statistics									
Min	-0.528	-0.512	-0.528	-0.592	-0.544	-0.560	-0.512	-0.528	-0.512
Max	-0.496	-0.480	-0.496	-0.464	-0.480	-0.448	-0.432	-0.432	-0.464
Average	-0.515	-0.502	-0.502	-0.517	-0.506	-0.486	-0.470	-0.467	-0.486
Sigma	0.012	0.013	0.013	0.048	0.024	0.041	0.030	0.033	0.019

Drift Calculation

DNL- 5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	16.0E-03	0.0E+00	48.0E-03	-16.0E-03	80.0E-03	96.0E-03	96.0E-03	32.0E-03
8	-	0.0E+00	16.0E-03	48.0E-03	32.0E-03	64.0E-03	16.0E-03	64.0E-03	16.0E-03
9	-	16.0E-03	16.0E-03	-80.0E-03	0.0E+00	16.0E-03	0.0E+00	48.0E-03	48.0E-03
10	-	16.0E-03	32.0E-03	32.0E-03	16.0E-03	-32.0E-03	64.0E-03	0.0E+00	16.0E-03
11	-	16.0E-03	0.0E+00	-56.0E-03	16.0E-03	16.0E-03	48.0E-03	32.0E-03	32.0E-03
Average	-	12.8E-03	12.8E-03	-1.6E-03	9.6E-03	28.8E-03	44.8E-03	48.0E-03	28.8E-03
Sigma	-	6.4E-03	12.0E-03	55.1E-03	16.3E-03	39.7E-03	34.2E-03	32.0E-03	12.0E-03

Parameter : Differential Non linearity : DNL-_5VIN3
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.496	-0.544	-0.528	-0.528	-0.576	-0.544	-0.496	-0.568	-0.544
ON samples									
2	-0.544	-0.464	-0.576	-0.480	-0.496	-0.464	-0.496	-0.528	-0.480
3	-0.560	-0.512	-0.496	-0.512	-0.512	-0.560	-0.448	-0.448	-0.496
4	-0.536	-0.464	-0.552	-0.464	-0.496	-0.480	-0.496	-0.528	-0.448
5	-0.512	-0.512	-0.512	-0.496	-0.528	-0.512	-0.544	-0.536	-0.448
6	-0.512	-0.480	-0.496	-0.480	-0.400	-0.416	-0.432	-0.416	-0.480
Statistics									
Min	-0.560	-0.512	-0.576	-0.512	-0.528	-0.560	-0.544	-0.536	-0.496
Max	-0.512	-0.464	-0.496	-0.464	-0.400	-0.416	-0.432	-0.416	-0.448
Average	-0.533	-0.486	-0.526	-0.486	-0.486	-0.486	-0.483	-0.491	-0.470
Sigma	0.019	0.022	0.032	0.016	0.045	0.048	0.040	0.049	0.019

Drift Calculation

DNL- 5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	80.0E-03	-32.0E-03	64.0E-03	48.0E-03	80.0E-03	48.0E-03	16.0E-03	64.0E-03
3	-	48.0E-03	64.0E-03	48.0E-03	48.0E-03	0.0E+00	112.0E-03	112.0E-03	64.0E-03
4	-	72.0E-03	-16.0E-03	72.0E-03	40.0E-03	56.0E-03	40.0E-03	8.0E-03	88.0E-03
5	-	0.0E+00	0.0E+00	16.0E-03	-16.0E-03	0.0E+00	-32.0E-03	-24.0E-03	64.0E-03
6	-	32.0E-03	16.0E-03	32.0E-03	112.0E-03	96.0E-03	80.0E-03	96.0E-03	32.0E-03
Average	-	46.4E-03	6.4E-03	46.4E-03	46.4E-03	46.4E-03	49.6E-03	41.6E-03	62.4E-03
Sigma	-	28.8E-03	32.9E-03	20.5E-03	40.6E-03	40.0E-03	48.1E-03	52.9E-03	17.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

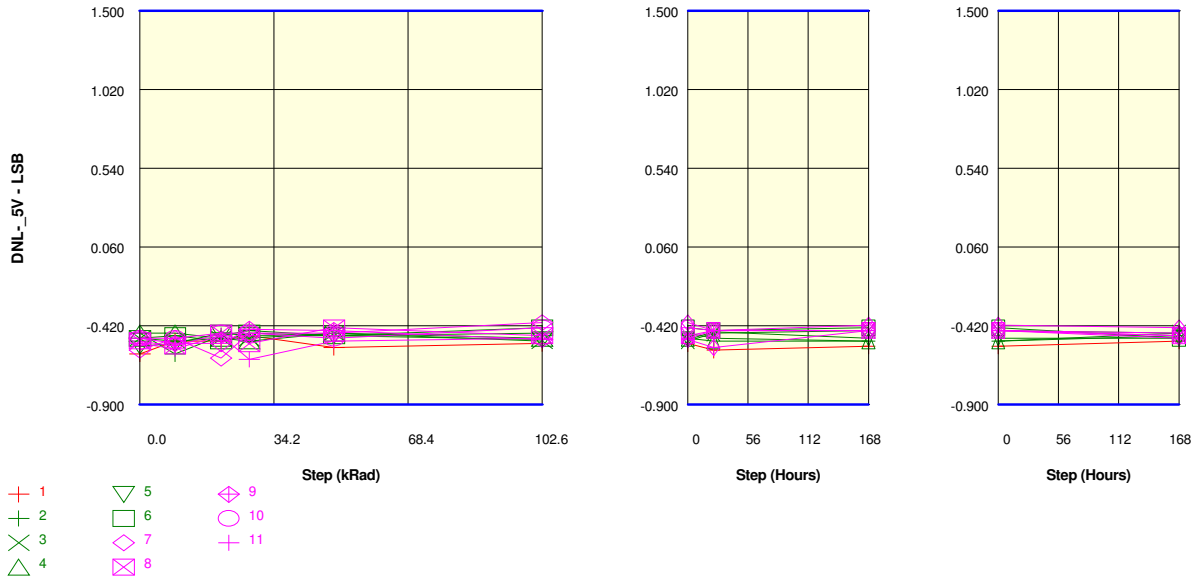
Measurements

DNL_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.496	-0.544	-0.528	-0.528	-0.576	-0.544	-0.496	-0.568	-0.544
OFF samples									
7	-0.528	-0.544	-0.496	-0.512	-0.448	-0.432	-0.416	-0.432	-0.480
8	-0.464	-0.528	-0.464	-0.464	-0.448	-0.480	-0.464	-0.432	-0.496
9	-0.480	-0.496	-0.480	-0.528	-0.448	-0.448	-0.432	-0.496	-0.480
10	-0.536	-0.464	-0.552	-0.544	-0.464	-0.432	-0.496	-0.464	-0.480
11	-0.512	-0.576	-0.496	-0.528	-0.544	-0.480	-0.448	-0.496	-0.512
Statistics									
Min	-0.536	-0.576	-0.552	-0.544	-0.544	-0.480	-0.496	-0.496	-0.512
Max	-0.464	-0.464	-0.464	-0.464	-0.448	-0.432	-0.416	-0.432	-0.480
Average	-0.504	-0.522	-0.498	-0.515	-0.470	-0.454	-0.451	-0.464	-0.490
Sigma	0.028	0.039	0.030	0.028	0.037	0.022	0.028	0.029	0.013

Drift Calculation

DNL_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-16.0E-03	32.0E-03	16.0E-03	80.0E-03	96.0E-03	112.0E-03	96.0E-03	48.0E-03
8	-	-64.0E-03	0.0E+00	0.0E+00	16.0E-03	-16.0E-03	0.0E+00	32.0E-03	-32.0E-03
9	-	-16.0E-03	0.0E+00	-48.0E-03	32.0E-03	32.0E-03	48.0E-03	-16.0E-03	0.0E+00
10	-	72.0E-03	-16.0E-03	-8.0E-03	72.0E-03	104.0E-03	40.0E-03	72.0E-03	56.0E-03
11	-	-64.0E-03	16.0E-03	-16.0E-03	-32.0E-03	32.0E-03	64.0E-03	16.0E-03	0.0E+00
Average	-	-17.6E-03	6.4E-03	-11.2E-03	33.6E-03	49.6E-03	52.8E-03	40.0E-03	14.4E-03
Sigma	-	49.7E-03	16.3E-03	21.2E-03	40.6E-03	44.8E-03	36.3E-03	39.8E-03	32.9E-03

Parameter : Differential Non linearity : DNL- 5VIN4
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.592	-0.512	-0.512	-0.480	-0.552	-0.528	-0.568	-0.544	-0.512
ON samples									
2	-0.464	-0.592	-0.480	-0.448	-0.480	-0.464	-0.496	-0.512	-0.480
3	-0.496	-0.512	-0.496	-0.496	-0.464	-0.512	-0.464	-0.448	-0.464
4	-0.464	-0.464	-0.496	-0.512	-0.464	-0.496	-0.512	-0.512	-0.464
5	-0.544	-0.528	-0.464	-0.480	-0.480	-0.504	-0.456	-0.496	-0.496
6	-0.496	-0.480	-0.512	-0.464	-0.480	-0.432	-0.448	-0.432	-0.496
Statistics									
Min	-0.544	-0.592	-0.512	-0.512	-0.480	-0.512	-0.512	-0.512	-0.496
Max	-0.464	-0.464	-0.464	-0.448	-0.464	-0.432	-0.448	-0.432	-0.464
Average	-0.493	-0.515	-0.490	-0.480	-0.474	-0.482	-0.475	-0.480	-0.480
Sigma	0.029	0.045	0.016	0.023	0.008	0.030	0.025	0.034	0.014

Drift Calculation

DNL- 5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-128.0E-03	-16.0E-03	16.0E-03	-16.0E-03	0.0E+00	-32.0E-03	-48.0E-03	-16.0E-03
3	-	-16.0E-03	0.0E+00	0.0E+00	32.0E-03	-16.0E-03	32.0E-03	48.0E-03	32.0E-03
4	-	0.0E+00	-32.0E-03	-48.0E-03	0.0E+00	-32.0E-03	-48.0E-03	-48.0E-03	0.0E+00
5	-	16.0E-03	80.0E-03	64.0E-03	64.0E-03	40.0E-03	88.0E-03	48.0E-03	48.0E-03
6	-	16.0E-03	-16.0E-03	32.0E-03	16.0E-03	64.0E-03	48.0E-03	64.0E-03	0.0E+00
Average	-	-22.4E-03	3.2E-03	12.8E-03	19.2E-03	11.2E-03	17.6E-03	12.8E-03	12.8E-03
Sigma	-	54.1E-03	39.7E-03	37.0E-03	27.5E-03	35.6E-03	50.7E-03	50.0E-03	23.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

DNL_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.592	-0.512	-0.512	-0.480	-0.552	-0.528	-0.568	-0.544	-0.512
OFF samples									
7	-0.568	-0.496	-0.616	-0.464	-0.464	-0.400	-0.448	-0.416	-0.432
8	-0.512	-0.544	-0.464	-0.528	-0.432	-0.480	-0.448	-0.448	-0.480
9	-0.496	-0.528	-0.528	-0.440	-0.448	-0.504	-0.552	-0.448	-0.464
10	-0.496	-0.496	-0.464	-0.464	-0.496	-0.432	-0.448	-0.448	-0.480
11	-0.528	-0.560	-0.480	-0.624	-0.512	-0.496	-0.448	-0.448	-0.496
Statistics									
Min	-0.568	-0.560	-0.616	-0.624	-0.512	-0.504	-0.552	-0.448	-0.496
Max	-0.496	-0.496	-0.464	-0.440	-0.432	-0.400	-0.448	-0.416	-0.432
Average	-0.520	-0.525	-0.510	-0.504	-0.470	-0.462	-0.469	-0.442	-0.470
Sigma	0.027	0.026	0.058	0.067	0.030	0.040	0.042	0.013	0.022

Drift Calculation

DNL_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	72.0E-03	-48.0E-03	104.0E-03	104.0E-03	168.0E-03	120.0E-03	152.0E-03	136.0E-03
8	-	-32.0E-03	48.0E-03	-16.0E-03	80.0E-03	32.0E-03	64.0E-03	64.0E-03	32.0E-03
9	-	-32.0E-03	-32.0E-03	56.0E-03	48.0E-03	-8.0E-03	-56.0E-03	48.0E-03	32.0E-03
10	-	0.0E+00	32.0E-03	32.0E-03	0.0E+00	64.0E-03	48.0E-03	48.0E-03	16.0E-03
11	-	-32.0E-03	48.0E-03	-96.0E-03	16.0E-03	32.0E-03	80.0E-03	80.0E-03	32.0E-03
Average	-	-4.8E-03	9.6E-03	16.0E-03	49.6E-03	57.6E-03	51.2E-03	78.4E-03	49.6E-03
Sigma	-	40.4E-03	41.2E-03	68.1E-03	38.7E-03	59.7E-03	58.7E-03	38.7E-03	43.6E-03

Parameter : Differential Non linearity : DNL- 5VIN5

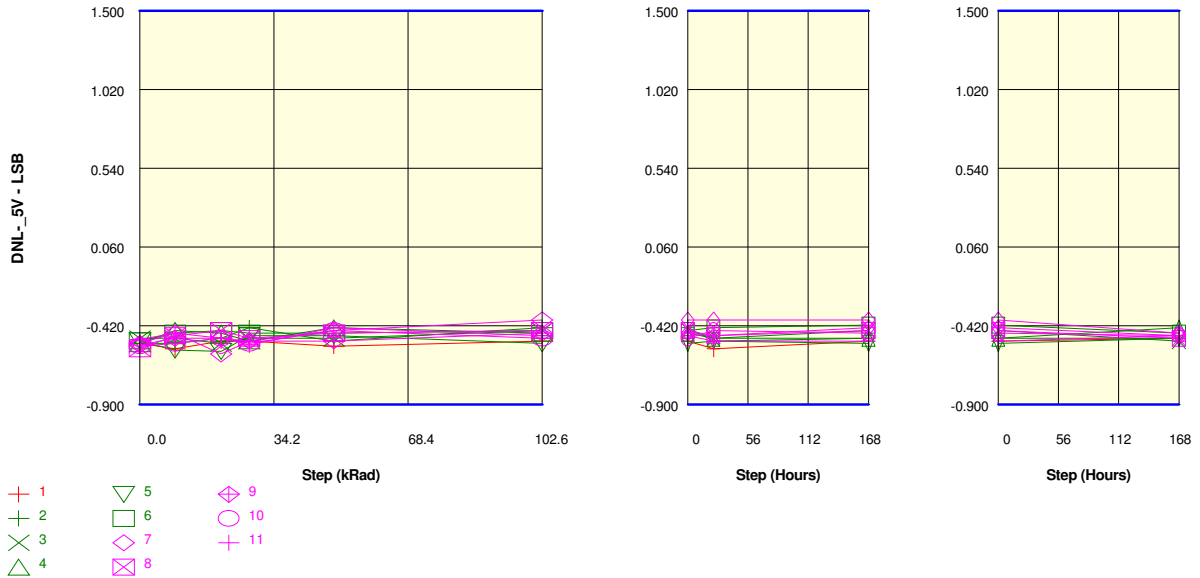
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -0.900

Spec Limit Max : 1.500

Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.528	-0.560	-0.512	-0.512	-0.544	-0.512	-0.560	-0.512	-0.496
ON samples									
2	-0.528	-0.528	-0.496	-0.432	-0.512	-0.432	-0.512	-0.496	-0.496
3	-0.496	-0.496	-0.528	-0.496	-0.496	-0.448	-0.496	-0.448	-0.512
4	-0.528	-0.448	-0.464	-0.512	-0.432	-0.464	-0.496	-0.496	-0.432
5	-0.512	-0.568	-0.576	-0.480	-0.480	-0.528	-0.512	-0.528	-0.496
6	-0.512	-0.464	-0.448	-0.464	-0.464	-0.448	-0.432	-0.416	-0.464
Statistics									
Min	-0.528	-0.568	-0.576	-0.512	-0.512	-0.528	-0.512	-0.528	-0.512
Max	-0.496	-0.448	-0.448	-0.432	-0.432	-0.432	-0.432	-0.416	-0.432
Average	-0.515	-0.501	-0.502	-0.477	-0.477	-0.464	-0.490	-0.477	-0.480
Sigma	0.012	0.043	0.046	0.028	0.028	0.034	0.030	0.040	0.029

Drift Calculation

DNL- 5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	32.0E-03	96.0E-03	16.0E-03	96.0E-03	16.0E-03	32.0E-03	32.0E-03
3	-	0.0E+00	-32.0E-03	0.0E+00	0.0E+00	48.0E-03	0.0E+00	48.0E-03	-16.0E-03
4	-	80.0E-03	64.0E-03	16.0E-03	96.0E-03	64.0E-03	32.0E-03	32.0E-03	96.0E-03
5	-	-56.0E-03	-64.0E-03	32.0E-03	32.0E-03	-16.0E-03	0.0E+00	-16.0E-03	16.0E-03
6	-	48.0E-03	64.0E-03	48.0E-03	48.0E-03	64.0E-03	80.0E-03	96.0E-03	48.0E-03
Average	-	14.4E-03	12.8E-03	38.4E-03	38.4E-03	51.2E-03	25.6E-03	38.4E-03	35.2E-03
Sigma	-	46.5E-03	52.0E-03	32.9E-03	32.9E-03	37.0E-03	29.7E-03	35.9E-03	37.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

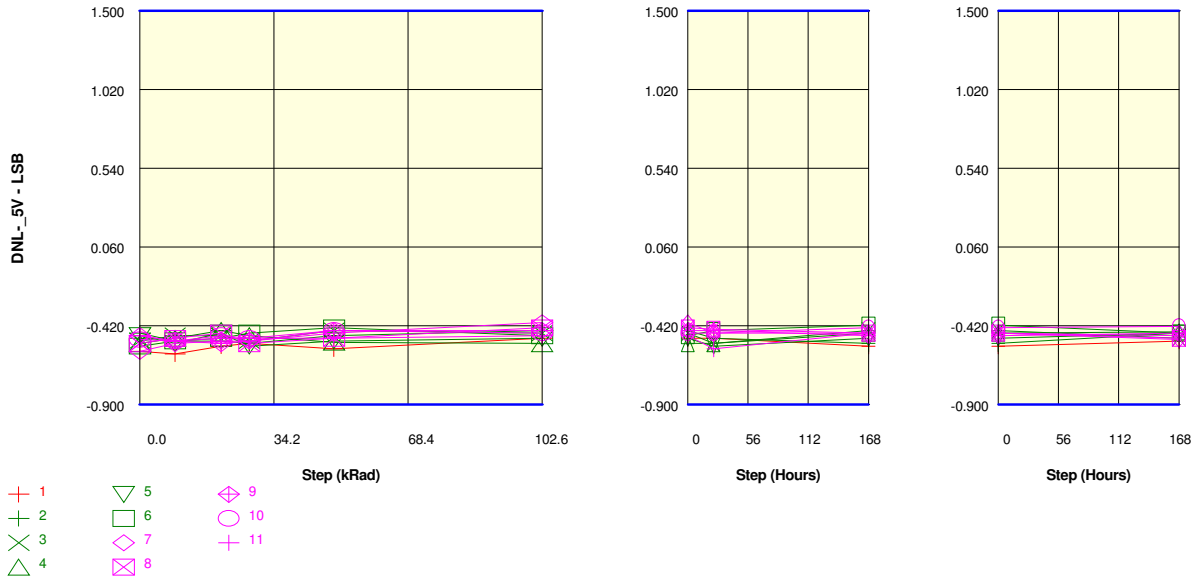
Measurements

DNL_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.528	-0.560	-0.512	-0.512	-0.544	-0.512	-0.560	-0.512	-0.496
OFF samples									
7	-0.528	-0.464	-0.592	-0.512	-0.448	-0.384	-0.384	-0.384	-0.464
8	-0.560	-0.480	-0.448	-0.496	-0.464	-0.448	-0.480	-0.448	-0.496
9	-0.536	-0.496	-0.496	-0.512	-0.512	-0.464	-0.480	-0.432	-0.480
10	-0.544	-0.528	-0.496	-0.528	-0.448	-0.496	-0.448	-0.464	-0.480
11	-0.504	-0.464	-0.496	-0.536	-0.432	-0.480	-0.512	-0.512	-0.480
Statistics									
Min	-0.560	-0.528	-0.592	-0.536	-0.512	-0.496	-0.512	-0.512	-0.496
Max	-0.504	-0.464	-0.448	-0.496	-0.432	-0.384	-0.384	-0.384	-0.464
Average	-0.534	-0.486	-0.506	-0.517	-0.461	-0.454	-0.461	-0.448	-0.480
Sigma	0.019	0.024	0.047	0.014	0.028	0.039	0.043	0.042	0.010

Drift Calculation

DNL_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	64.0E-03	-64.0E-03	16.0E-03	80.0E-03	144.0E-03	144.0E-03	144.0E-03	64.0E-03
8	-	80.0E-03	112.0E-03	64.0E-03	96.0E-03	112.0E-03	80.0E-03	112.0E-03	64.0E-03
9	-	40.0E-03	40.0E-03	24.0E-03	24.0E-03	72.0E-03	56.0E-03	104.0E-03	56.0E-03
10	-	16.0E-03	48.0E-03	16.0E-03	96.0E-03	48.0E-03	96.0E-03	80.0E-03	64.0E-03
11	-	40.0E-03	8.0E-03	-32.0E-03	72.0E-03	24.0E-03	-8.0E-03	-8.0E-03	24.0E-03
Average	-	48.0E-03	28.8E-03	17.6E-03	73.6E-03	80.0E-03	73.6E-03	86.4E-03	54.4E-03
Sigma	-	22.1E-03	57.4E-03	30.5E-03	26.5E-03	43.2E-03	49.9E-03	51.4E-03	15.5E-03

Parameter : Differential Non linearity : DNL-_5VIN6
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.576	-0.592	-0.544	-0.528	-0.560	-0.496	-0.496	-0.544	-0.512
ON samples									
2	-0.464	-0.512	-0.512	-0.528	-0.480	-0.448	-0.496	-0.528	-0.464
3	-0.512	-0.480	-0.480	-0.512	-0.448	-0.464	-0.528	-0.448	-0.496
4	-0.528	-0.496	-0.448	-0.480	-0.520	-0.528	-0.528	-0.464	-0.456
5	-0.480	-0.528	-0.464	-0.544	-0.512	-0.496	-0.544	-0.496	-0.464
6	-0.544	-0.512	-0.496	-0.464	-0.432	-0.480	-0.448	-0.416	-0.464
Statistics									
Min	-0.544	-0.528	-0.512	-0.544	-0.520	-0.528	-0.544	-0.528	-0.496
Max	-0.464	-0.480	-0.448	-0.464	-0.432	-0.448	-0.448	-0.416	-0.456
Average	-0.506	-0.506	-0.480	-0.506	-0.478	-0.483	-0.509	-0.470	-0.469
Sigma	0.030	0.016	0.023	0.030	0.034	0.028	0.034	0.039	0.014

Drift Calculation

DNL- 5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-48.0E-03	-48.0E-03	-64.0E-03	-16.0E-03	16.0E-03	-32.0E-03	-64.0E-03	0.0E+00
3	-	32.0E-03	32.0E-03	0.0E+00	64.0E-03	48.0E-03	-16.0E-03	64.0E-03	16.0E-03
4	-	32.0E-03	80.0E-03	48.0E-03	8.0E-03	0.0E+00	0.0E+00	64.0E-03	72.0E-03
5	-	-48.0E-03	16.0E-03	-64.0E-03	-32.0E-03	-16.0E-03	-64.0E-03	-16.0E-03	16.0E-03
6	-	32.0E-03	48.0E-03	80.0E-03	112.0E-03	64.0E-03	96.0E-03	128.0E-03	80.0E-03
Average	-	11.1E-18	25.6E-03	0.0E+00	27.2E-03	22.4E-03	-3.2E-03	35.2E-03	36.8E-03
Sigma	-	39.2E-03	42.5E-03	58.1E-03	53.5E-03	29.7E-03	53.9E-03	67.4E-03	32.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

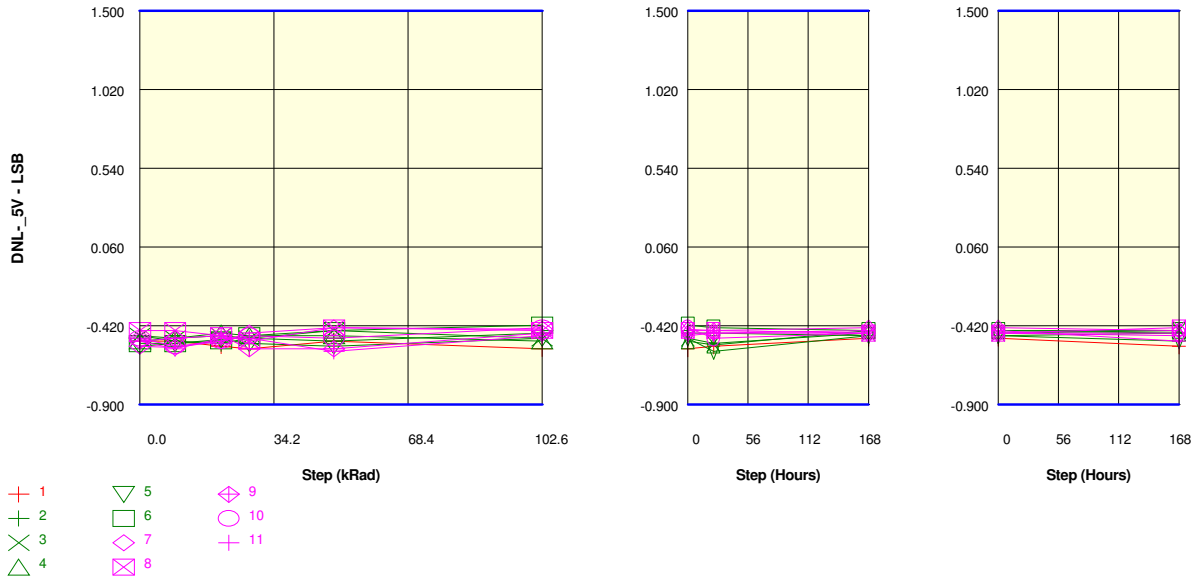
Measurements

DNL_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.576	-0.592	-0.544	-0.528	-0.560	-0.496	-0.496	-0.544	-0.512
OFF samples									
7	-0.576	-0.528	-0.512	-0.512	-0.464	-0.400	-0.464	-0.464	-0.504
8	-0.528	-0.496	-0.464	-0.528	-0.496	-0.432	-0.440	-0.464	-0.496
9	-0.480	-0.512	-0.528	-0.512	-0.448	-0.448	-0.448	-0.480	-0.464
10	-0.504	-0.512	-0.480	-0.496	-0.448	-0.464	-0.464	-0.432	-0.424
11	-0.480	-0.512	-0.496	-0.496	-0.496	-0.480	-0.560	-0.464	-0.480
Statistics									
Min	-0.576	-0.528	-0.528	-0.528	-0.496	-0.480	-0.560	-0.480	-0.504
Max	-0.480	-0.496	-0.464	-0.496	-0.448	-0.400	-0.440	-0.432	-0.424
Average	-0.514	-0.512	-0.496	-0.509	-0.470	-0.445	-0.475	-0.461	-0.474
Sigma	0.036	0.010	0.023	0.012	0.022	0.028	0.043	0.016	0.028

Drift Calculation

DNL_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	48.0E-03	64.0E-03	64.0E-03	112.0E-03	176.0E-03	112.0E-03	112.0E-03	72.0E-03
8	-	32.0E-03	64.0E-03	0.0E+00	32.0E-03	96.0E-03	88.0E-03	64.0E-03	32.0E-03
9	-	-32.0E-03	-48.0E-03	-32.0E-03	32.0E-03	32.0E-03	32.0E-03	0.0E+00	16.0E-03
10	-	-8.0E-03	24.0E-03	8.0E-03	56.0E-03	40.0E-03	40.0E-03	72.0E-03	80.0E-03
11	-	-32.0E-03	-16.0E-03	-16.0E-03	-16.0E-03	0.0E+00	-80.0E-03	16.0E-03	0.0E+00
Average	-	1.6E-03	17.6E-03	4.8E-03	43.2E-03	68.8E-03	38.4E-03	52.8E-03	40.0E-03
Sigma	-	32.9E-03	44.2E-03	32.6E-03	41.6E-03	61.9E-03	66.2E-03	40.4E-03	31.2E-03

Parameter : Differential Non linearity : DNL-_5VIN7
 Test conditions : INX => X= 0 to 7
 Unit : LSB
 Spec Limit Min : -0.900
 Spec Limit Max : 1.500
 Spec limits are represented in bold lines on the graphic.



Measurements

DNL- 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.512	-0.512	-0.544	-0.560	-0.512	-0.560	-0.544	-0.496	-0.544
ON samples									
2	-0.480	-0.512	-0.528	-0.496	-0.512	-0.464	-0.464	-0.480	-0.464
3	-0.480	-0.496	-0.480	-0.496	-0.448	-0.496	-0.528	-0.464	-0.448
4	-0.512	-0.496	-0.464	-0.480	-0.480	-0.512	-0.536	-0.448	-0.464
5	-0.544	-0.528	-0.504	-0.528	-0.544	-0.496	-0.576	-0.480	-0.512
6	-0.528	-0.528	-0.512	-0.480	-0.448	-0.416	-0.432	-0.448	-0.448
Statistics									
Min	-0.544	-0.528	-0.528	-0.528	-0.544	-0.512	-0.576	-0.480	-0.512
Max	-0.480	-0.496	-0.464	-0.480	-0.448	-0.416	-0.432	-0.448	-0.448
Average	-0.509	-0.512	-0.498	-0.496	-0.486	-0.477	-0.507	-0.464	-0.467
Sigma	0.026	0.014	0.023	0.018	0.037	0.034	0.052	0.014	0.024

Drift Calculation

DNL- 5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-32.0E-03	-48.0E-03	-16.0E-03	-32.0E-03	16.0E-03	16.0E-03	0.0E+00	16.0E-03
3	-	-16.0E-03	0.0E+00	-16.0E-03	32.0E-03	-16.0E-03	-48.0E-03	16.0E-03	32.0E-03
4	-	16.0E-03	48.0E-03	32.0E-03	32.0E-03	0.0E+00	-24.0E-03	64.0E-03	48.0E-03
5	-	16.0E-03	40.0E-03	16.0E-03	0.0E+00	48.0E-03	-32.0E-03	64.0E-03	32.0E-03
6	-	0.0E+00	16.0E-03	48.0E-03	80.0E-03	112.0E-03	96.0E-03	80.0E-03	80.0E-03
Average	-	-3.2E-03	11.2E-03	12.8E-03	22.4E-03	32.0E-03	1.6E-03	44.8E-03	41.6E-03
Sigma	-	18.7E-03	34.2E-03	25.6E-03	37.3E-03	45.3E-03	51.7E-03	31.0E-03	21.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

DNL_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.512	-0.512	-0.544	-0.560	-0.512	-0.560	-0.544	-0.496	-0.544
OFF samples									
7	-0.544	-0.552	-0.512	-0.464	-0.432	-0.440	-0.448	-0.432	-0.448
8	-0.448	-0.448	-0.480	-0.512	-0.432	-0.448	-0.448	-0.464	-0.432
9	-0.512	-0.496	-0.480	-0.560	-0.560	-0.464	-0.464	-0.464	-0.480
10	-0.496	-0.544	-0.512	-0.480	-0.496	-0.432	-0.496	-0.464	-0.464
11	-0.512	-0.560	-0.496	-0.496	-0.576	-0.480	-0.464	-0.448	-0.512
Statistics									
Min	-0.544	-0.560	-0.512	-0.560	-0.576	-0.480	-0.496	-0.464	-0.512
Max	-0.448	-0.448	-0.480	-0.464	-0.432	-0.432	-0.448	-0.432	-0.432
Average	-0.502	-0.520	-0.496	-0.502	-0.499	-0.453	-0.464	-0.454	-0.467
Sigma	0.031	0.042	0.014	0.033	0.061	0.017	0.018	0.013	0.028

Drift Calculation

DNL_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-8.0E-03	32.0E-03	80.0E-03	112.0E-03	104.0E-03	96.0E-03	112.0E-03	96.0E-03
8	-	0.0E+00	-32.0E-03	-64.0E-03	16.0E-03	0.0E+00	0.0E+00	-16.0E-03	16.0E-03
9	-	16.0E-03	32.0E-03	-48.0E-03	-48.0E-03	48.0E-03	48.0E-03	48.0E-03	32.0E-03
10	-	-48.0E-03	-16.0E-03	16.0E-03	0.0E+00	64.0E-03	0.0E+00	32.0E-03	32.0E-03
11	-	-48.0E-03	16.0E-03	16.0E-03	-64.0E-03	32.0E-03	48.0E-03	64.0E-03	0.0E+00
Average	-	-17.6E-03	6.4E-03	0.0E+00	3.2E-03	49.6E-03	38.4E-03	48.0E-03	35.2E-03
Sigma	-	26.0E-03	26.0E-03	51.6E-03	61.9E-03	34.5E-03	35.9E-03	41.7E-03	32.6E-03

Parameter : Offset Error : Voff_5VIN0

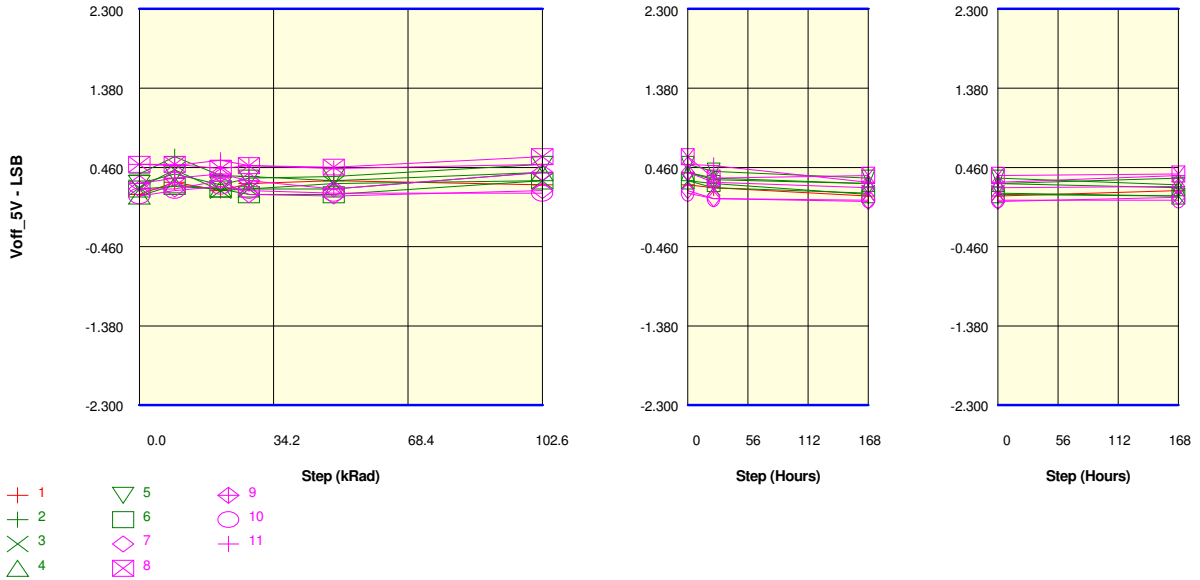
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	0.144	0.288	0.192	0.272	0.304	0.256	0.224	0.128	0.192
ON samples									
2	0.384	0.584	0.368	0.352	0.304	0.400	0.320	0.272	0.336
3	0.224	0.432	0.192	0.208	0.272	0.304	0.224	0.160	0.128
4	0.128	0.256	0.208	0.208	0.208	0.400	0.336	0.272	0.224
5	0.272	0.384	0.256	0.336	0.352	0.496	0.416	0.336	0.256
6	0.208	0.240	0.208	0.144	0.144	0.304	0.272	0.144	0.128
Statistics									
Min	0.128	0.240	0.192	0.144	0.144	0.304	0.224	0.144	0.128
Max	0.384	0.584	0.368	0.352	0.352	0.496	0.416	0.336	0.336
Average	0.243	0.379	0.246	0.250	0.256	0.381	0.314	0.237	0.214
Sigma	0.084	0.126	0.064	0.081	0.073	0.072	0.064	0.073	0.079

Drift Calculation

Voff_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	200.0E-03	-16.0E-03	-32.0E-03	-80.0E-03	16.0E-03	-64.0E-03	-112.0E-03	-48.0E-03
3	-	208.0E-03	-32.0E-03	-16.0E-03	48.0E-03	80.0E-03	0.0E+00	-64.0E-03	-96.0E-03
4	-	128.0E-03	80.0E-03	80.0E-03	80.0E-03	272.0E-03	208.0E-03	144.0E-03	96.0E-03
5	-	112.0E-03	-16.0E-03	64.0E-03	80.0E-03	224.0E-03	144.0E-03	64.0E-03	-16.0E-03
6	-	32.0E-03	0.0E+00	-64.0E-03	-64.0E-03	96.0E-03	64.0E-03	-64.0E-03	-80.0E-03
Average	-	136.0E-03	3.2E-03	6.4E-03	12.8E-03	137.6E-03	70.4E-03	-6.4E-03	-28.8E-03
Sigma	-	64.4E-03	39.7E-03	56.0E-03	70.4E-03	95.3E-03	97.4E-03	95.3E-03	68.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.144	0.288	0.192	0.272	0.304	0.256	0.224	0.128	0.192
OFF samples									
7	0.208	0.208	0.304	0.144	0.128	0.192	0.096	0.064	0.112
8	0.496	0.496	0.448	0.480	0.464	0.584	0.336	0.368	0.384
9	0.272	0.336	0.384	0.304	0.208	0.400	0.288	0.224	0.240
10	0.128	0.192	0.240	0.192	0.160	0.160	0.096	0.080	0.080
11	0.496	0.480	0.544	0.480	0.448	0.496	0.480	0.288	0.368
Statistics									
Min	0.128	0.192	0.240	0.144	0.128	0.160	0.096	0.064	0.080
Max	0.496	0.496	0.544	0.480	0.464	0.584	0.480	0.368	0.384
Average	0.320	0.342	0.384	0.320	0.282	0.366	0.259	0.205	0.237
Sigma	0.151	0.129	0.107	0.141	0.145	0.166	0.147	0.118	0.126

Drift Calculation

Voff_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	96.0E-03	-64.0E-03	-80.0E-03	-16.0E-03	-112.0E-03	-144.0E-03	-96.0E-03
8	-	0.0E+00	-48.0E-03	-16.0E-03	-32.0E-03	88.0E-03	-160.0E-03	-128.0E-03	-112.0E-03
9	-	64.0E-03	112.0E-03	32.0E-03	-64.0E-03	128.0E-03	16.0E-03	-48.0E-03	-32.0E-03
10	-	64.0E-03	112.0E-03	64.0E-03	32.0E-03	32.0E-03	-32.0E-03	-48.0E-03	-48.0E-03
11	-	-16.0E-03	48.0E-03	-16.0E-03	-48.0E-03	0.0E+00	-16.0E-03	-208.0E-03	-128.0E-03
Average	-	22.4E-03	64.0E-03	0.0E+00	-38.4E-03	46.4E-03	-60.8E-03	-115.2E-03	-83.2E-03
Sigma	-	34.5E-03	60.7E-03	44.1E-03	38.7E-03	54.1E-03	65.1E-03	61.1E-03	37.0E-03

Parameter : Offset Error : Voff_5VIN1

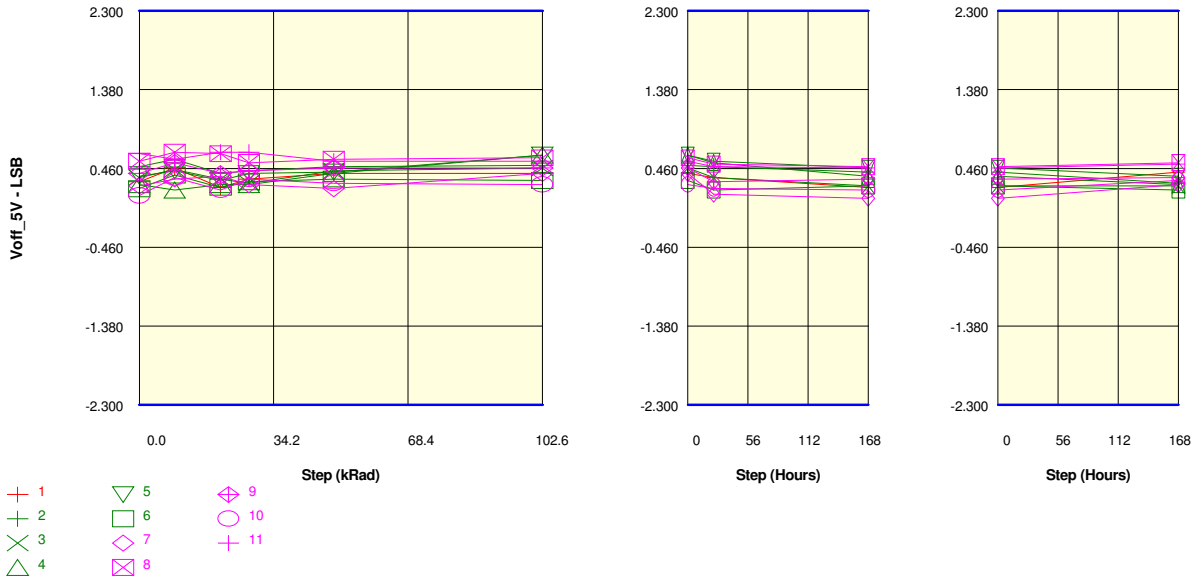
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.304	0.464	0.240	0.336	0.400	0.400	0.352	0.240	0.416
ON samples									
2	0.480	0.568	0.400	0.432	0.480	0.496	0.480	0.416	0.288
3	0.352	0.448	0.336	0.288	0.432	0.464	0.352	0.256	0.256
4	0.272	0.208	0.272	0.272	0.400	0.616	0.528	0.368	0.272
5	0.368	0.432	0.320	0.400	0.416	0.616	0.544	0.464	0.368
6	0.224	0.384	0.240	0.304	0.336	0.320	0.208	0.256	0.208
Statistics									
Min	0.224	0.208	0.240	0.272	0.336	0.320	0.208	0.256	0.208
Max	0.480	0.568	0.400	0.432	0.480	0.616	0.544	0.464	0.368
Average	0.339	0.408	0.314	0.339	0.413	0.502	0.422	0.352	0.278
Sigma	0.088	0.117	0.055	0.064	0.047	0.110	0.127	0.084	0.052

Drift Calculation

Voff_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	88.0E-03	-80.0E-03	-48.0E-03	0.0E+00	16.0E-03	0.0E+00	-64.0E-03	-192.0E-03
3	-	96.0E-03	-16.0E-03	-64.0E-03	80.0E-03	112.0E-03	0.0E+00	-96.0E-03	-96.0E-03
4	-	-64.0E-03	0.0E+00	0.0E+00	128.0E-03	344.0E-03	256.0E-03	96.0E-03	0.0E+00
5	-	64.0E-03	-48.0E-03	32.0E-03	48.0E-03	248.0E-03	176.0E-03	96.0E-03	0.0E+00
6	-	160.0E-03	16.0E-03	80.0E-03	112.0E-03	96.0E-03	-16.0E-03	32.0E-03	-16.0E-03
Average	-	68.8E-03	-25.6E-03	44.4E-18	73.6E-03	163.2E-03	83.2E-03	12.8E-03	-60.8E-03
Sigma	-	73.6E-03	34.5E-03	52.6E-03	45.9E-03	117.2E-03	111.5E-03	79.9E-03	74.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.304	0.464	0.240	0.336	0.400	0.400	0.352	0.240	0.416
OFF samples									
7	0.256	0.336	0.368	0.272	0.224	0.400	0.160	0.112	0.272
8	0.544	0.648	0.632	0.528	0.568	0.584	0.512	0.480	0.528
9	0.400	0.528	0.400	0.432	0.464	0.464	0.304	0.336	0.352
10	0.144	0.352	0.208	0.336	0.288	0.272	0.224	0.208	0.320
11	0.632	0.568	0.648	0.648	0.544	0.544	0.480	0.464	0.512
Statistics									
Min	0.144	0.336	0.208	0.272	0.224	0.272	0.160	0.112	0.272
Max	0.632	0.648	0.648	0.648	0.568	0.584	0.512	0.480	0.528
Average	0.395	0.486	0.451	0.443	0.418	0.453	0.336	0.320	0.397
Sigma	0.179	0.123	0.167	0.134	0.138	0.111	0.139	0.143	0.104

Drift Calculation

Voff_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	80.0E-03	112.0E-03	16.0E-03	-32.0E-03	144.0E-03	-96.0E-03	-144.0E-03	16.0E-03
8	-	104.0E-03	88.0E-03	-16.0E-03	24.0E-03	40.0E-03	-32.0E-03	-64.0E-03	-16.0E-03
9	-	128.0E-03	0.0E+00	32.0E-03	64.0E-03	64.0E-03	-96.0E-03	-64.0E-03	-48.0E-03
10	-	208.0E-03	64.0E-03	192.0E-03	144.0E-03	128.0E-03	80.0E-03	64.0E-03	176.0E-03
11	-	-64.0E-03	16.0E-03	16.0E-03	-88.0E-03	-88.0E-03	-152.0E-03	-168.0E-03	-120.0E-03
Average	-	91.2E-03	56.0E-03	48.0E-03	22.4E-03	57.6E-03	-59.2E-03	-75.2E-03	1.6E-03
Sigma	-	88.7E-03	42.3E-03	73.7E-03	79.6E-03	82.4E-03	79.3E-03	81.2E-03	98.2E-03

Parameter : Offset Error : Voff_5VIN2

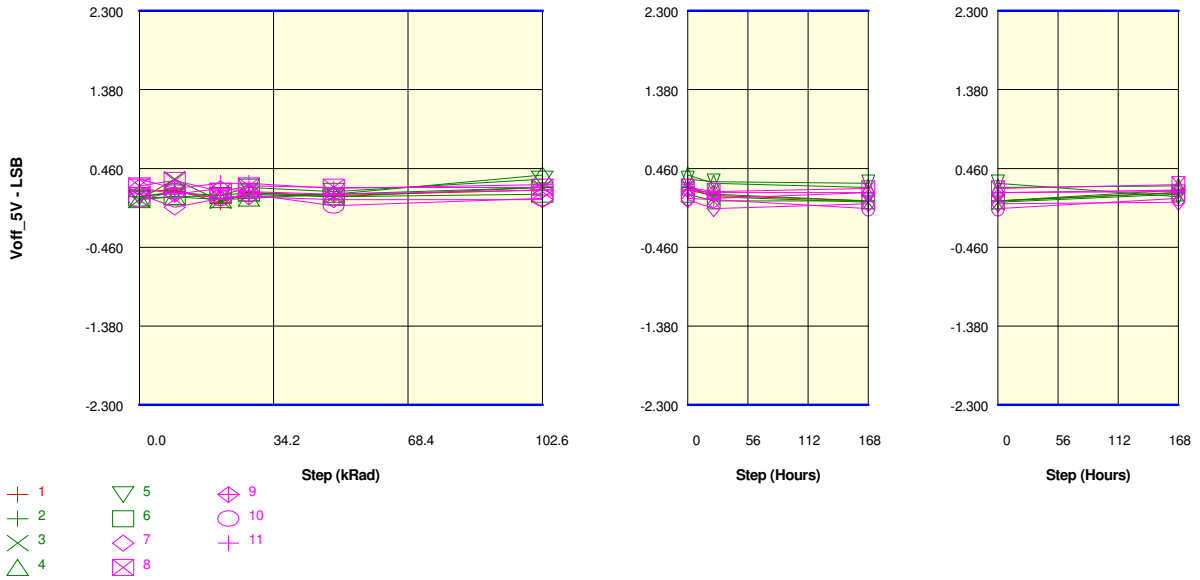
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.192	0.208	0.064	0.176	0.144	0.208	0.144	0.080	0.176
ON samples									
2	0.128	0.192	0.112	0.128	0.160	0.240	0.160	0.080	0.208
3	0.096	0.336	0.080	0.160	0.128	0.240	0.128	0.064	0.160
4	0.096	0.128	0.096	0.112	0.160	0.384	0.288	0.240	0.256
5	0.128	0.176	0.144	0.240	0.192	0.336	0.304	0.288	0.128
6	0.112	0.128	0.144	0.176	0.128	0.160	0.080	0.080	0.176
Statistics									
Min	0.096	0.128	0.080	0.112	0.128	0.160	0.080	0.064	0.128
Max	0.128	0.336	0.144	0.240	0.192	0.384	0.304	0.288	0.256
Average	0.112	0.192	0.115	0.163	0.154	0.272	0.192	0.150	0.186
Sigma	0.014	0.076	0.026	0.045	0.024	0.079	0.089	0.094	0.044

Drift Calculation

Voff_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	64.0E-03	-16.0E-03	0.0E+00	32.0E-03	112.0E-03	32.0E-03	-48.0E-03	80.0E-03
3	-	240.0E-03	-16.0E-03	64.0E-03	32.0E-03	144.0E-03	32.0E-03	-32.0E-03	64.0E-03
4	-	32.0E-03	0.0E+00	16.0E-03	64.0E-03	288.0E-03	192.0E-03	144.0E-03	160.0E-03
5	-	48.0E-03	16.0E-03	112.0E-03	64.0E-03	208.0E-03	176.0E-03	160.0E-03	0.0E+00
6	-	16.0E-03	32.0E-03	64.0E-03	16.0E-03	48.0E-03	-32.0E-03	-32.0E-03	64.0E-03
Average	-	80.0E-03	3.2E-03	51.2E-03	41.6E-03	160.0E-03	80.0E-03	38.4E-03	73.6E-03
Sigma	-	81.6E-03	18.7E-03	39.7E-03	19.2E-03	82.2E-03	88.2E-03	93.1E-03	51.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.192	0.208	0.064	0.176	0.144	0.208	0.144	0.080	0.176
OFF samples									
7	0.160	0.008	0.112	0.128	0.096	0.096	-0.008	0.048	0.064
8	0.256	0.320	0.192	0.256	0.240	0.240	0.192	0.224	0.272
9	0.240	0.160	0.224	0.192	0.160	0.208	0.176	0.176	0.208
10	0.096	0.192	0.112	0.160	0.024	0.112	0.096	-0.008	0.112
11	0.336	0.224	0.288	0.288	0.224	0.272	0.112	0.176	0.192
Statistics									
Min	0.096	0.008	0.112	0.128	0.024	0.096	-0.008	-0.008	0.064
Max	0.336	0.320	0.288	0.288	0.240	0.272	0.192	0.224	0.272
Average	0.218	0.181	0.186	0.205	0.149	0.186	0.114	0.123	0.170
Sigma	0.083	0.102	0.068	0.059	0.081	0.070	0.071	0.088	0.073

Drift Calculation

Voff_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-152.0E-03	-48.0E-03	-32.0E-03	-64.0E-03	-64.0E-03	-168.0E-03	-112.0E-03	-96.0E-03
8	-	64.0E-03	-64.0E-03	0.0E+00	-16.0E-03	-16.0E-03	-64.0E-03	-32.0E-03	16.0E-03
9	-	-80.0E-03	-16.0E-03	-48.0E-03	-80.0E-03	-32.0E-03	-64.0E-03	-64.0E-03	-32.0E-03
10	-	96.0E-03	16.0E-03	64.0E-03	-72.0E-03	16.0E-03	0.0E+00	-104.0E-03	16.0E-03
11	-	-112.0E-03	-48.0E-03	-48.0E-03	-112.0E-03	-64.0E-03	-224.0E-03	-160.0E-03	-144.0E-03
Average	-	-36.8E-03	-32.0E-03	-12.8E-03	-68.8E-03	-32.0E-03	-104.0E-03	-94.4E-03	-48.0E-03
Sigma	-	98.6E-03	28.6E-03	42.2E-03	31.0E-03	30.4E-03	80.6E-03	43.6E-03	63.2E-03

Parameter : Offset Error : Voff_5VIN3

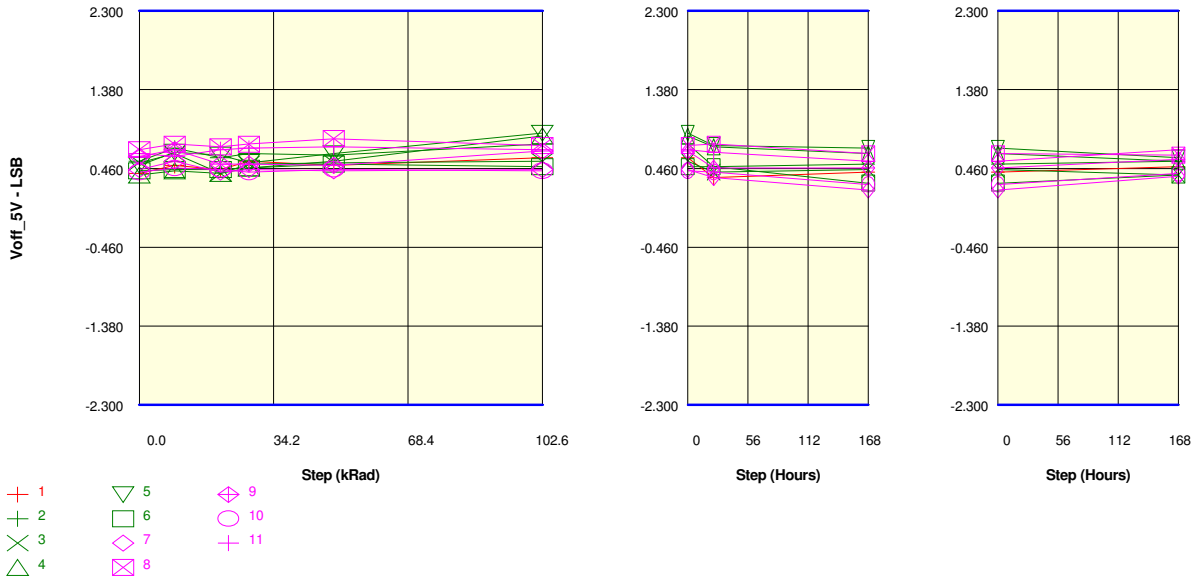
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.400	0.496	0.448	0.544	0.496	0.584	0.352	0.416	0.480
ON samples									
2	0.544	0.696	0.584	0.632	0.616	0.744	0.480	0.512	0.544
3	0.528	0.632	0.400	0.512	0.528	0.544	0.416	0.448	0.384
4	0.384	0.432	0.400	0.464	0.544	0.840	0.712	0.632	0.544
5	0.496	0.648	0.616	0.528	0.632	0.872	0.728	0.696	0.584
6	0.432	0.448	0.448	0.464	0.512	0.480	0.480	0.288	0.384
Statistics									
Min	0.384	0.432	0.400	0.464	0.512	0.480	0.416	0.288	0.384
Max	0.544	0.696	0.616	0.632	0.632	0.872	0.728	0.696	0.584
Average	0.477	0.571	0.490	0.520	0.566	0.696	0.563	0.515	0.488
Sigma	0.060	0.109	0.092	0.062	0.048	0.157	0.130	0.143	0.086

Drift Calculation

Voff_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	152.0E-03	40.0E-03	88.0E-03	72.0E-03	200.0E-03	-64.0E-03	-32.0E-03	0.0E+00
3	-	104.0E-03	-128.0E-03	-16.0E-03	0.0E+00	16.0E-03	-112.0E-03	-80.0E-03	-144.0E-03
4	-	48.0E-03	16.0E-03	80.0E-03	160.0E-03	456.0E-03	328.0E-03	248.0E-03	160.0E-03
5	-	152.0E-03	120.0E-03	32.0E-03	136.0E-03	376.0E-03	232.0E-03	200.0E-03	88.0E-03
6	-	16.0E-03	16.0E-03	32.0E-03	80.0E-03	48.0E-03	48.0E-03	-144.0E-03	-48.0E-03
Average	-	94.4E-03	12.8E-03	43.2E-03	89.6E-03	219.2E-03	86.4E-03	38.4E-03	11.2E-03
Sigma	-	54.8E-03	80.1E-03	37.7E-03	55.7E-03	174.1E-03	169.1E-03	156.4E-03	105.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.400	0.496	0.448	0.544	0.496	0.584	0.352	0.416	0.480
OFF samples									
7	0.448	0.544	0.416	0.448	0.432	0.448	0.352	0.208	0.368
8	0.680	0.744	0.712	0.744	0.808	0.728	0.744	0.632	0.616
9	0.600	0.680	0.512	0.512	0.496	0.664	0.464	0.464	0.568
10	0.416	0.464	0.448	0.416	0.448	0.432	0.416	0.272	0.400
11	0.632	0.600	0.680	0.696	0.712	0.680	0.648	0.544	0.680
Statistics									
Min	0.416	0.464	0.416	0.416	0.432	0.432	0.352	0.208	0.368
Max	0.680	0.744	0.712	0.744	0.808	0.728	0.744	0.632	0.680
Average	0.555	0.606	0.554	0.563	0.579	0.590	0.525	0.424	0.526
Sigma	0.104	0.099	0.121	0.133	0.152	0.125	0.147	0.161	0.122

Drift Calculation

Voff_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	96.0E-03	-32.0E-03	0.0E+00	-16.0E-03	0.0E+00	-96.0E-03	-240.0E-03	-80.0E-03
8	-	64.0E-03	32.0E-03	64.0E-03	128.0E-03	48.0E-03	64.0E-03	-48.0E-03	-64.0E-03
9	-	80.0E-03	-88.0E-03	-88.0E-03	-104.0E-03	64.0E-03	-136.0E-03	-136.0E-03	-32.0E-03
10	-	48.0E-03	32.0E-03	0.0E+00	32.0E-03	16.0E-03	0.0E+00	-144.0E-03	-16.0E-03
11	-	-32.0E-03	48.0E-03	64.0E-03	80.0E-03	48.0E-03	16.0E-03	-88.0E-03	48.0E-03
Average	-	51.2E-03	-1.6E-03	8.0E-03	24.0E-03	35.2E-03	-30.4E-03	-131.2E-03	-28.8E-03
Sigma	-	44.6E-03	51.2E-03	55.9E-03	80.0E-03	23.5E-03	74.1E-03	64.5E-03	44.6E-03

Parameter : Offset Error : Voff_5VIN4

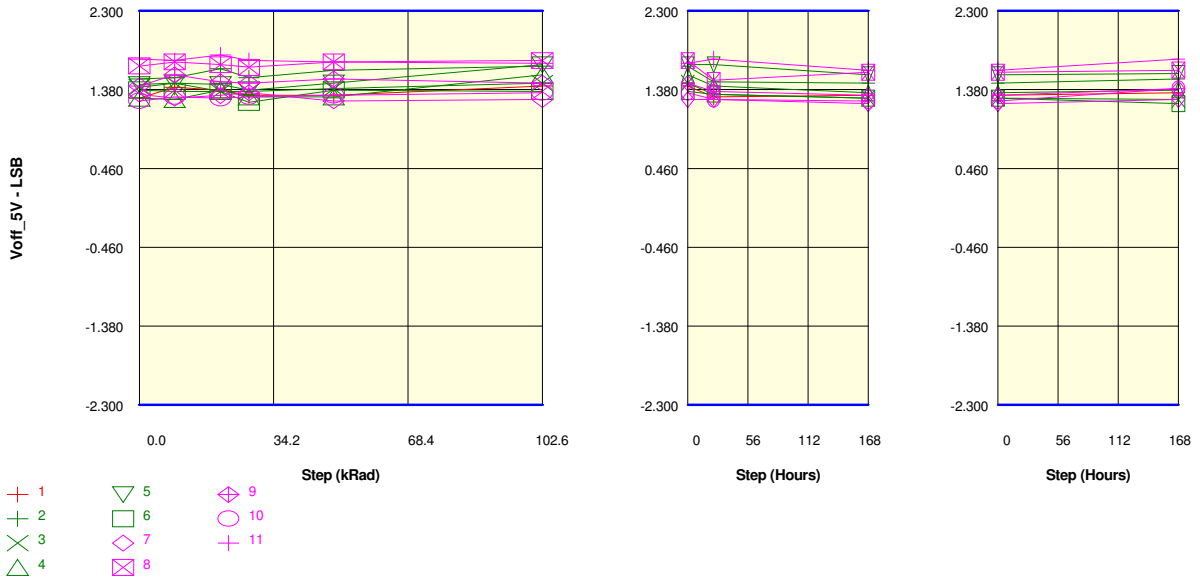
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.280	1.408	1.376	1.312	1.312	1.424	1.296	1.312	1.344
ON samples									
2	1.504	1.520	1.624	1.520	1.608	1.656	1.472	1.456	1.504
3	1.408	1.456	1.360	1.360	1.392	1.456	1.328	1.280	1.264
4	1.280	1.264	1.376	1.296	1.296	1.552	1.424	1.344	1.376
5	1.440	1.456	1.440	1.376	1.456	1.672	1.672	1.552	1.568
6	1.376	1.360	1.360	1.232	1.376	1.360	1.328	1.280	1.216
Statistics									
Min	1.280	1.264	1.360	1.232	1.296	1.360	1.328	1.280	1.216
Max	1.504	1.520	1.624	1.520	1.608	1.672	1.672	1.552	1.568
Average	1.402	1.411	1.432	1.357	1.426	1.539	1.445	1.382	1.386
Sigma	0.074	0.090	0.100	0.096	0.104	0.119	0.127	0.106	0.135

Drift Calculation

Voff_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	16.0E-03	120.0E-03	16.0E-03	104.0E-03	152.0E-03	-32.0E-03	-48.0E-03	0.0E+00
3	-	48.0E-03	-48.0E-03	-48.0E-03	-16.0E-03	48.0E-03	-80.0E-03	-128.0E-03	-144.0E-03
4	-	-16.0E-03	96.0E-03	16.0E-03	16.0E-03	272.0E-03	144.0E-03	64.0E-03	96.0E-03
5	-	16.0E-03	0.0E+00	-64.0E-03	16.0E-03	232.0E-03	232.0E-03	112.0E-03	128.0E-03
6	-	-16.0E-03	-16.0E-03	-144.0E-03	0.0E+00	-16.0E-03	-48.0E-03	-96.0E-03	-160.0E-03
Average	-	9.6E-03	30.4E-03	-44.8E-03	24.0E-03	137.6E-03	43.2E-03	-19.2E-03	-16.0E-03
Sigma	-	23.9E-03	65.7E-03	59.4E-03	41.7E-03	108.4E-03	122.4E-03	92.4E-03	118.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.280	1.408	1.376	1.312	1.312	1.424	1.296	1.312	1.344
OFF samples									
7	1.328	1.280	1.312	1.344	1.248	1.264	1.264	1.216	1.264
8	1.656	1.704	1.672	1.640	1.704	1.720	1.488	1.584	1.608
9	1.424	1.552	1.472	1.456	1.504	1.456	1.360	1.312	1.392
10	1.248	1.296	1.280	1.296	1.312	1.344	1.264	1.248	1.392
11	1.736	1.720	1.784	1.720	1.704	1.688	1.736	1.608	1.736
Statistics									
Min	1.248	1.280	1.280	1.296	1.248	1.264	1.264	1.216	1.264
Max	1.736	1.720	1.784	1.720	1.704	1.720	1.736	1.608	1.736
Average	1.478	1.510	1.504	1.491	1.494	1.494	1.422	1.394	1.478
Sigma	0.188	0.191	0.197	0.165	0.191	0.182	0.177	0.168	0.170

Drift Calculation

Voff_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-48.0E-03	-16.0E-03	16.0E-03	-80.0E-03	-64.0E-03	-64.0E-03	-112.0E-03	-64.0E-03
8	-	48.0E-03	16.0E-03	-16.0E-03	48.0E-03	64.0E-03	-168.0E-03	-72.0E-03	-48.0E-03
9	-	128.0E-03	48.0E-03	32.0E-03	80.0E-03	32.0E-03	-64.0E-03	-112.0E-03	-32.0E-03
10	-	48.0E-03	32.0E-03	48.0E-03	64.0E-03	96.0E-03	16.0E-03	0.0E+00	144.0E-03
11	-	-16.0E-03	48.0E-03	-16.0E-03	-32.0E-03	-48.0E-03	0.0E+00	-128.0E-03	0.0E+00
Average	-	32.0E-03	25.6E-03	12.8E-03	16.0E-03	16.0E-03	-56.0E-03	-84.8E-03	-44.4E-18
Sigma	-	60.7E-03	23.9E-03	25.6E-03	61.6E-03	62.4E-03	64.8E-03	46.3E-03	75.0E-03

Parameter : Offset Error : Voff_5VIN5

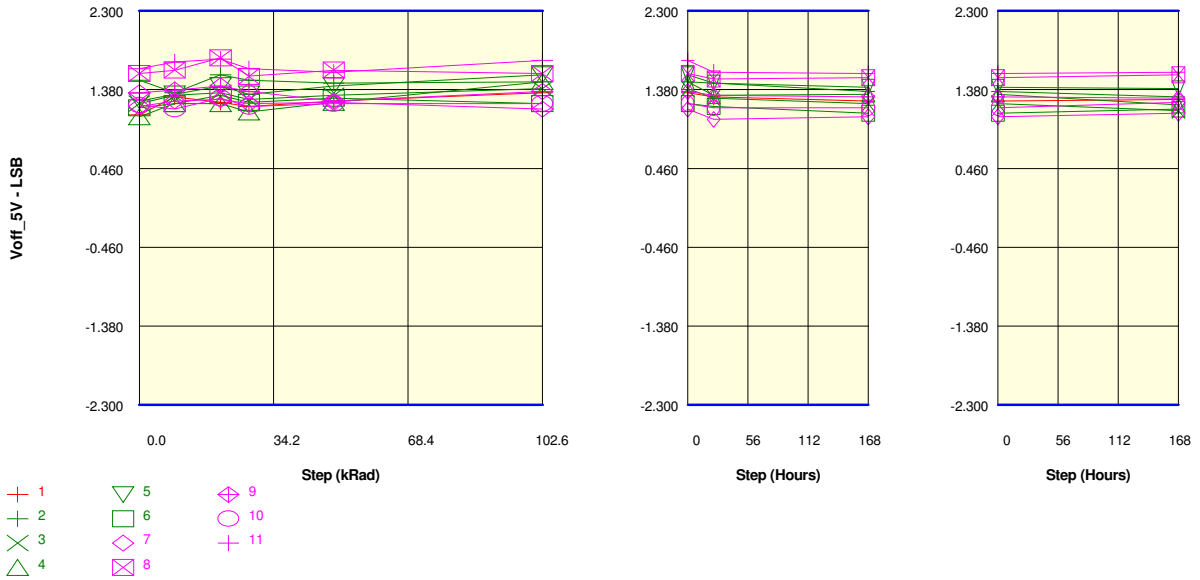
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.088	1.296	1.232	1.184	1.248	1.344	1.296	1.248	1.264
ON samples									
2	1.488	1.344	1.552	1.488	1.456	1.472	1.456	1.360	1.296
3	1.216	1.312	1.344	1.264	1.312	1.392	1.280	1.216	1.136
4	1.064	1.216	1.216	1.120	1.232	1.472	1.312	1.328	1.200
5	1.248	1.328	1.424	1.328	1.424	1.552	1.456	1.408	1.392
6	1.168	1.216	1.312	1.232	1.280	1.216	1.184	1.104	1.152
Statistics									
Min	1.064	1.216	1.216	1.120	1.232	1.216	1.184	1.104	1.136
Max	1.488	1.344	1.552	1.488	1.456	1.552	1.456	1.408	1.392
Average	1.237	1.283	1.370	1.286	1.341	1.421	1.338	1.283	1.235
Sigma	0.140	0.056	0.113	0.121	0.086	0.114	0.105	0.110	0.096

Drift Calculation

Voff_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-144.0E-03	64.0E-03	0.0E+00	-32.0E-03	-16.0E-03	-32.0E-03	-128.0E-03	-192.0E-03
3	-	96.0E-03	128.0E-03	48.0E-03	96.0E-03	176.0E-03	64.0E-03	0.0E+00	-80.0E-03
4	-	152.0E-03	152.0E-03	56.0E-03	168.0E-03	408.0E-03	248.0E-03	264.0E-03	136.0E-03
5	-	80.0E-03	176.0E-03	80.0E-03	176.0E-03	304.0E-03	208.0E-03	160.0E-03	144.0E-03
6	-	48.0E-03	144.0E-03	64.0E-03	112.0E-03	48.0E-03	16.0E-03	-64.0E-03	-16.0E-03
Average	-	46.4E-03	132.8E-03	49.6E-03	104.0E-03	184.0E-03	100.8E-03	46.4E-03	-1.6E-03
Sigma	-	101.0E-03	37.7E-03	27.0E-03	74.7E-03	156.9E-03	108.9E-03	144.9E-03	128.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.088	1.296	1.232	1.184	1.248	1.344	1.296	1.248	1.264
OFF samples									
7	1.184	1.248	1.264	1.216	1.232	1.152	1.032	1.064	1.104
8	1.568	1.608	1.752	1.536	1.608	1.568	1.504	1.520	1.552
9	1.344	1.376	1.424	1.360	1.248	1.360	1.312	1.296	1.280
10	1.200	1.152	1.280	1.184	1.216	1.216	1.168	1.168	1.232
11	1.624	1.704	1.736	1.624	1.584	1.720	1.584	1.568	1.584
Statistics									
Min	1.184	1.152	1.264	1.184	1.216	1.152	1.032	1.064	1.104
Max	1.624	1.704	1.752	1.624	1.608	1.720	1.584	1.568	1.584
Average	1.384	1.418	1.491	1.384	1.378	1.403	1.320	1.323	1.350
Sigma	0.183	0.209	0.214	0.173	0.179	0.213	0.205	0.195	0.187

Drift Calculation

Voff_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	64.0E-03	80.0E-03	32.0E-03	48.0E-03	-32.0E-03	-152.0E-03	-120.0E-03	-80.0E-03
8	-	40.0E-03	184.0E-03	-32.0E-03	40.0E-03	0.0E+00	-64.0E-03	-48.0E-03	-16.0E-03
9	-	32.0E-03	80.0E-03	16.0E-03	-96.0E-03	16.0E-03	-32.0E-03	-48.0E-03	-64.0E-03
10	-	-48.0E-03	80.0E-03	-16.0E-03	16.0E-03	16.0E-03	-32.0E-03	-32.0E-03	32.0E-03
11	-	80.0E-03	112.0E-03	0.0E+00	-40.0E-03	96.0E-03	-40.0E-03	-56.0E-03	-40.0E-03
Average	-	33.6E-03	107.2E-03	0.0E+00	-6.4E-03	19.2E-03	-64.0E-03	-60.8E-03	-33.6E-03
Sigma	-	44.2E-03	40.4E-03	22.6E-03	54.4E-03	42.2E-03	45.5E-03	30.6E-03	39.3E-03

Parameter : Offset Error : Voff_5VIN6

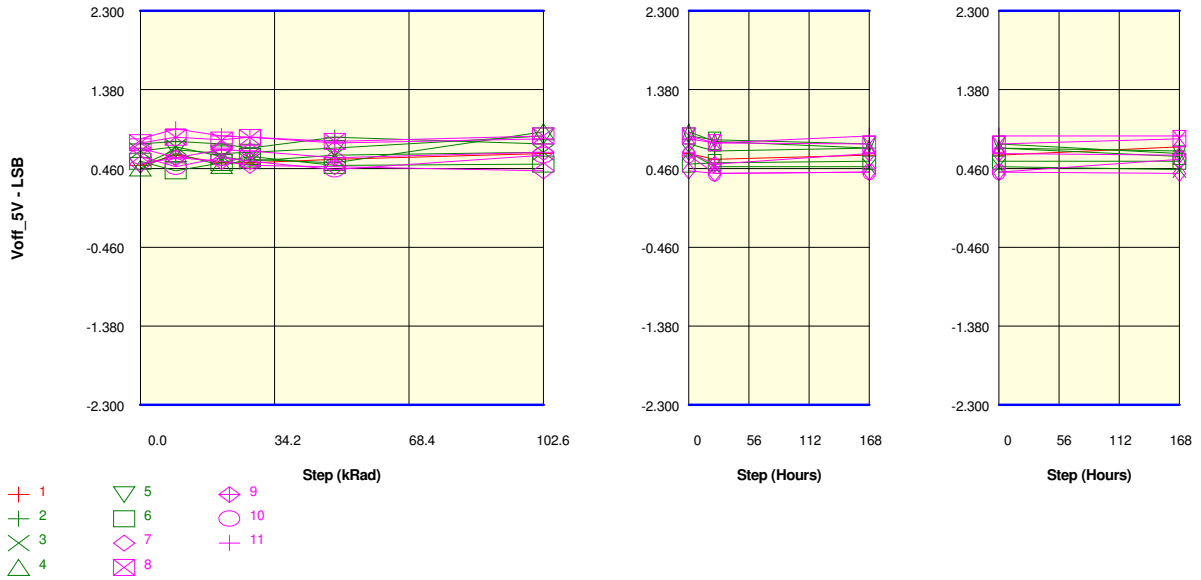
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.496	0.616	0.528	0.528	0.568	0.632	0.568	0.616	0.712
ON samples									
2	0.744	0.776	0.744	0.696	0.824	0.744	0.664	0.696	0.664
3	0.664	0.712	0.600	0.544	0.616	0.648	0.480	0.480	0.448
4	0.464	0.632	0.496	0.568	0.528	0.888	0.776	0.696	0.600
5	0.496	0.680	0.632	0.648	0.696	0.840	0.792	0.744	0.632
6	0.544	0.432	0.528	0.600	0.496	0.512	0.528	0.544	0.544
Statistics									
Min	0.464	0.432	0.496	0.544	0.496	0.512	0.480	0.480	0.448
Max	0.744	0.776	0.744	0.696	0.824	0.888	0.792	0.744	0.664
Average	0.582	0.646	0.600	0.611	0.632	0.726	0.648	0.632	0.578
Sigma	0.106	0.117	0.087	0.055	0.119	0.135	0.126	0.102	0.076

Drift Calculation

Voff_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	32.0E-03	0.0E+00	-48.0E-03	80.0E-03	0.0E+00	-80.0E-03	-48.0E-03	-80.0E-03
3	-	48.0E-03	-64.0E-03	-120.0E-03	-48.0E-03	-16.0E-03	-184.0E-03	-184.0E-03	-216.0E-03
4	-	168.0E-03	32.0E-03	104.0E-03	64.0E-03	424.0E-03	312.0E-03	232.0E-03	136.0E-03
5	-	184.0E-03	136.0E-03	152.0E-03	200.0E-03	344.0E-03	296.0E-03	248.0E-03	136.0E-03
6	-	-112.0E-03	-16.0E-03	56.0E-03	-48.0E-03	-32.0E-03	-16.0E-03	0.0E+00	0.0E+00
Average	-	64.0E-03	17.6E-03	28.8E-03	49.6E-03	144.0E-03	65.6E-03	49.6E-03	-4.8E-03
Sigma	-	107.2E-03	66.8E-03	99.6E-03	92.5E-03	197.8E-03	202.0E-03	166.8E-03	134.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Voff_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.496	0.616	0.528	0.528	0.568	0.632	0.568	0.616	0.712
OFF samples									
7	0.512	0.584	0.544	0.496	0.480	0.432	0.400	0.416	0.400
8	0.760	0.824	0.792	0.824	0.776	0.840	0.760	0.744	0.808
9	0.696	0.584	0.680	0.664	0.584	0.648	0.512	0.632	0.616
10	0.600	0.480	0.584	0.544	0.448	0.616	0.400	0.416	0.568
11	0.808	0.920	0.840	0.824	0.760	0.808	0.760	0.840	0.840
Statistics									
Min	0.512	0.480	0.544	0.496	0.448	0.432	0.400	0.416	0.400
Max	0.808	0.920	0.840	0.824	0.776	0.840	0.760	0.840	0.840
Average	0.675	0.678	0.688	0.670	0.610	0.669	0.566	0.610	0.646
Sigma	0.107	0.165	0.114	0.137	0.137	0.147	0.163	0.171	0.162

Drift Calculation

Voff_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	72.0E-03	32.0E-03	-16.0E-03	-32.0E-03	-80.0E-03	-112.0E-03	-96.0E-03	-112.0E-03
8	-	64.0E-03	32.0E-03	64.0E-03	16.0E-03	80.0E-03	0.0E+00	-16.0E-03	48.0E-03
9	-	-112.0E-03	-16.0E-03	-32.0E-03	-112.0E-03	-48.0E-03	-184.0E-03	-64.0E-03	-80.0E-03
10	-	-120.0E-03	-16.0E-03	-56.0E-03	-152.0E-03	16.0E-03	-200.0E-03	-184.0E-03	-32.0E-03
11	-	112.0E-03	32.0E-03	16.0E-03	-48.0E-03	0.0E+00	-48.0E-03	32.0E-03	32.0E-03
Average	-	3.2E-03	12.8E-03	-4.8E-03	-65.6E-03	-6.4E-03	-108.8E-03	-65.6E-03	-28.8E-03
Sigma	-	98.7E-03	23.5E-03	41.6E-03	59.5E-03	55.1E-03	76.8E-03	73.4E-03	61.9E-03

Parameter : Offset Error : Voff_5VIN7

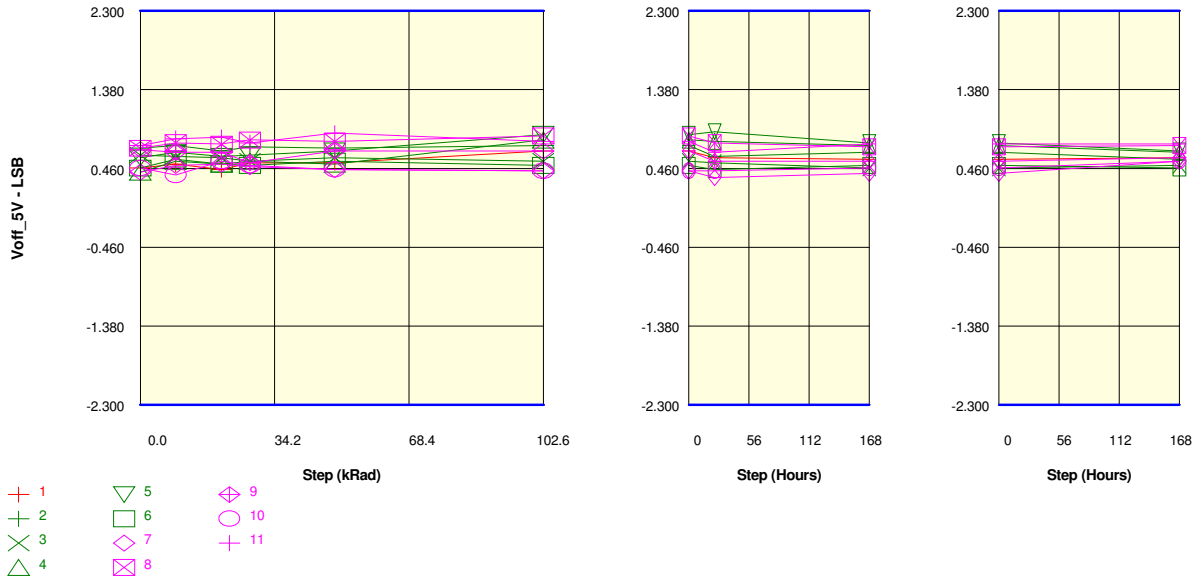
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.300

Spec Limit Max : 2.300

Spec limits are represented in bold lines on the graphic.



Measurements

Voff_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.464	0.512	0.448	0.528	0.528	0.664	0.584	0.568	0.584
ON samples									
2	0.696	0.728	0.664	0.712	0.696	0.728	0.600	0.648	0.568
3	0.616	0.600	0.584	0.544	0.584	0.544	0.528	0.464	0.496
4	0.416	0.544	0.512	0.544	0.512	0.792	0.776	0.728	0.648
5	0.584	0.648	0.600	0.616	0.664	0.856	0.888	0.760	0.664
6	0.464	0.568	0.512	0.496	0.544	0.496	0.448	0.496	0.464
Statistics									
Min	0.416	0.544	0.512	0.496	0.512	0.496	0.448	0.464	0.464
Max	0.696	0.728	0.664	0.712	0.696	0.856	0.888	0.760	0.664
Average	0.555	0.618	0.574	0.582	0.600	0.683	0.648	0.619	0.568
Sigma	0.102	0.065	0.058	0.075	0.070	0.140	0.162	0.120	0.080

Drift Calculation

Voff_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	32.0E-03	-32.0E-03	16.0E-03	0.0E+00	32.0E-03	-96.0E-03	-48.0E-03	-128.0E-03
3	-	-16.0E-03	-32.0E-03	-72.0E-03	-32.0E-03	-72.0E-03	-88.0E-03	-152.0E-03	-120.0E-03
4	-	128.0E-03	96.0E-03	128.0E-03	96.0E-03	376.0E-03	360.0E-03	312.0E-03	232.0E-03
5	-	64.0E-03	16.0E-03	32.0E-03	80.0E-03	272.0E-03	304.0E-03	176.0E-03	80.0E-03
6	-	104.0E-03	48.0E-03	32.0E-03	80.0E-03	32.0E-03	-16.0E-03	32.0E-03	0.0E+00
Average	-	62.4E-03	19.2E-03	27.2E-03	44.8E-03	128.0E-03	92.8E-03	64.0E-03	12.8E-03
Sigma	-	51.2E-03	49.0E-03	63.5E-03	51.0E-03	167.7E-03	198.1E-03	163.9E-03	134.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT				Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor		Issue:	02	

Measurements

Voff_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.464	0.512	0.448	0.528	0.528	0.664	0.584	0.568	0.584
OFF samples									
7	0.416	0.496	0.512	0.480	0.448	0.432	0.352	0.400	0.544
8	0.696	0.760	0.744	0.792	0.776	0.840	0.760	0.712	0.728
9	0.680	0.648	0.648	0.528	0.664	0.664	0.544	0.544	0.584
10	0.464	0.384	0.544	0.496	0.448	0.432	0.432	0.464	0.544
11	0.728	0.808	0.824	0.760	0.872	0.776	0.648	0.744	0.744
Statistics									
Min	0.416	0.384	0.512	0.480	0.448	0.432	0.352	0.400	0.544
Max	0.728	0.808	0.824	0.792	0.872	0.840	0.760	0.744	0.744
Average	0.597	0.619	0.654	0.611	0.642	0.629	0.547	0.573	0.629
Sigma	0.130	0.159	0.118	0.136	0.171	0.170	0.146	0.135	0.089

Drift Calculation

Voff_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	80.0E-03	96.0E-03	64.0E-03	32.0E-03	16.0E-03	-64.0E-03	-16.0E-03	128.0E-03
8	-	64.0E-03	48.0E-03	96.0E-03	80.0E-03	144.0E-03	64.0E-03	16.0E-03	32.0E-03
9	-	-32.0E-03	-32.0E-03	-152.0E-03	-16.0E-03	-16.0E-03	-136.0E-03	-136.0E-03	-96.0E-03
10	-	-80.0E-03	80.0E-03	32.0E-03	-16.0E-03	-32.0E-03	-32.0E-03	0.0E+00	80.0E-03
11	-	80.0E-03	96.0E-03	32.0E-03	144.0E-03	48.0E-03	-80.0E-03	16.0E-03	16.0E-03
Average	-	22.4E-03	57.6E-03	14.4E-03	44.8E-03	32.0E-03	-49.6E-03	-24.0E-03	32.0E-03
Sigma	-	66.0E-03	48.1E-03	86.5E-03	61.1E-03	62.4E-03	66.0E-03	57.2E-03	75.0E-03

Parameter : Full Scale Error : FSE_5VIN0

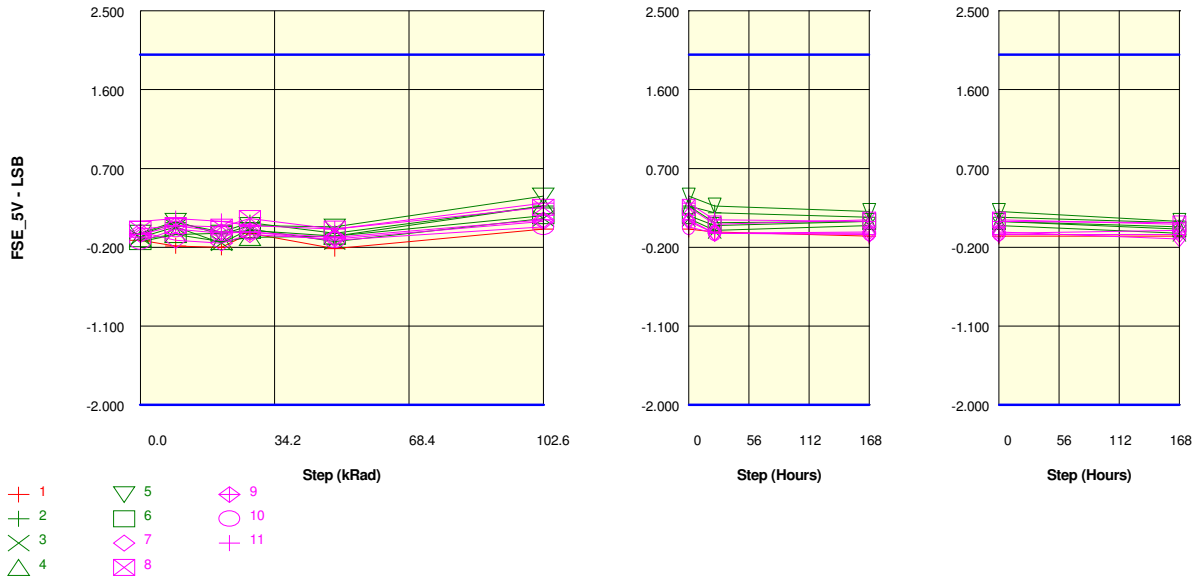
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.120	-0.184	-0.200	-0.040	-0.216	0.008	-0.024	-0.072	-0.072
ON samples									
2	-0.056	0.080	-0.024	0.080	-0.040	0.272	0.192	0.144	0.080
3	-0.088	0.032	-0.152	0.008	-0.136	0.128	-0.008	0.048	-0.040
4	-0.104	-0.056	-0.136	-0.088	-0.072	0.272	0.080	0.096	0.032
5	-0.040	0.096	-0.056	0.048	0.032	0.384	0.272	0.208	0.096
6	-0.136	-0.056	-0.040	-0.008	-0.072	0.160	0.048	0.096	0.008
Statistics									
Min	-0.136	-0.056	-0.152	-0.088	-0.136	0.128	-0.008	0.048	-0.040
Max	-0.040	0.096	-0.024	0.080	0.032	0.384	0.272	0.208	0.096
Average	-0.085	0.019	-0.082	0.008	-0.058	0.243	0.117	0.118	0.035
Sigma	0.034	0.065	0.052	0.057	0.055	0.091	0.101	0.054	0.049

Drift Calculation

FSE_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	136.0E-03	32.0E-03	136.0E-03	16.0E-03	328.0E-03	248.0E-03	200.0E-03	136.0E-03
3	-	120.0E-03	-64.0E-03	96.0E-03	-48.0E-03	216.0E-03	80.0E-03	136.0E-03	48.0E-03
4	-	48.0E-03	-32.0E-03	16.0E-03	32.0E-03	376.0E-03	184.0E-03	200.0E-03	136.0E-03
5	-	136.0E-03	-16.0E-03	88.0E-03	72.0E-03	424.0E-03	312.0E-03	248.0E-03	136.0E-03
6	-	80.0E-03	96.0E-03	128.0E-03	64.0E-03	296.0E-03	184.0E-03	232.0E-03	144.0E-03
Average	-	104.0E-03	3.2E-03	92.8E-03	27.2E-03	328.0E-03	201.6E-03	203.2E-03	120.0E-03
Sigma	-	34.7E-03	55.8E-03	42.5E-03	42.8E-03	70.8E-03	77.1E-03	38.4E-03	36.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.120	-0.184	-0.200	-0.040	-0.216	0.008	-0.024	-0.072	-0.072
OFF samples									
7	-0.024	-0.120	-0.152	-0.056	-0.104	0.096	-0.040	-0.024	-0.104
8	0.008	0.048	0.032	0.128	0.008	0.256	0.064	0.112	0.064
9	-0.056	0.048	-0.024	-0.024	-0.088	0.112	-0.040	-0.056	-0.056
10	-0.136	0.008	-0.040	-0.024	-0.120	0.032	-0.040	-0.040	-0.008
11	0.096	0.128	0.096	0.048	0.008	0.304	0.112	0.096	0.080
Statistics									
Min	-0.136	-0.120	-0.152	-0.056	-0.120	0.032	-0.040	-0.056	-0.104
Max	0.096	0.128	0.096	0.128	0.008	0.304	0.112	0.112	0.080
Average	-0.022	0.022	-0.018	0.014	-0.059	0.160	0.011	0.018	-0.005
Sigma	0.076	0.081	0.082	0.066	0.056	0.103	0.065	0.071	0.070

Drift Calculation

FSE_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-96.0E-03	-128.0E-03	-32.0E-03	-80.0E-03	120.0E-03	-16.0E-03	0.0E+00	-80.0E-03
8	-	40.0E-03	24.0E-03	120.0E-03	0.0E+00	248.0E-03	56.0E-03	104.0E-03	56.0E-03
9	-	104.0E-03	32.0E-03	32.0E-03	-32.0E-03	168.0E-03	16.0E-03	0.0E+00	0.0E+00
10	-	144.0E-03	96.0E-03	112.0E-03	16.0E-03	168.0E-03	96.0E-03	96.0E-03	128.0E-03
11	-	32.0E-03	0.0E+00	-48.0E-03	-88.0E-03	208.0E-03	16.0E-03	0.0E+00	-16.0E-03
Average	-	44.8E-03	4.8E-03	36.8E-03	-36.8E-03	182.4E-03	33.6E-03	40.0E-03	17.6E-03
Sigma	-	81.7E-03	73.6E-03	70.0E-03	41.6E-03	43.1E-03	38.7E-03	49.1E-03	70.2E-03

Parameter : Full Scale Error : FSE_5VIN1

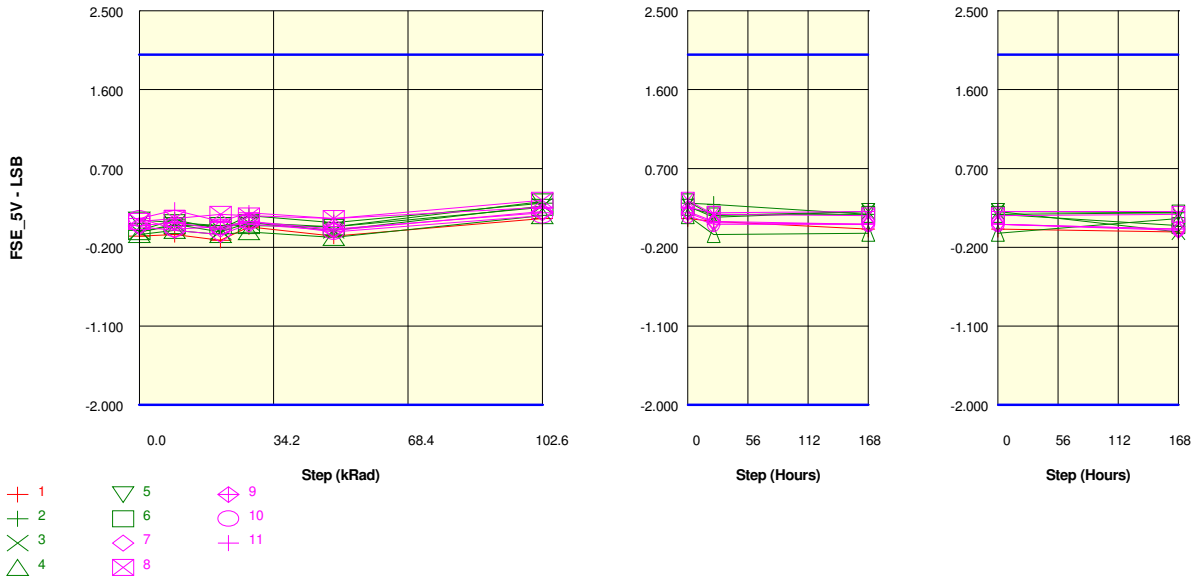
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.072	-0.056	-0.120	0.032	-0.072	0.128	0.096	0.008	-0.024
ON samples									
2	-0.008	0.112	0.008	0.160	0.080	0.304	0.288	0.176	0.192
3	-0.024	0.064	-0.024	0.080	-0.008	0.272	0.144	0.208	-0.024
4	-0.056	-0.008	-0.056	-0.024	-0.088	0.160	-0.056	-0.040	0.128
5	0.112	0.080	0.048	0.080	0.032	0.320	0.160	0.208	0.192
6	-0.024	0.048	0.048	0.048	0.032	0.256	0.176	0.176	0.048
Statistics									
Min	-0.056	-0.008	-0.056	-0.024	-0.088	0.160	-0.056	-0.040	-0.024
Max	0.112	0.112	0.048	0.160	0.080	0.320	0.288	0.208	0.192
Average	0.000	0.059	0.005	0.069	0.010	0.262	0.142	0.146	0.107
Sigma	0.058	0.040	0.041	0.059	0.056	0.056	0.111	0.094	0.084

Drift Calculation

FSE_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	120.0E-03	16.0E-03	168.0E-03	88.0E-03	312.0E-03	296.0E-03	184.0E-03	200.0E-03
3	-	88.0E-03	0.0E+00	104.0E-03	16.0E-03	296.0E-03	168.0E-03	232.0E-03	0.0E+00
4	-	48.0E-03	0.0E+00	32.0E-03	-32.0E-03	216.0E-03	0.0E+00	16.0E-03	184.0E-03
5	-	-32.0E-03	-64.0E-03	-32.0E-03	-80.0E-03	208.0E-03	48.0E-03	96.0E-03	80.0E-03
6	-	72.0E-03	72.0E-03	72.0E-03	56.0E-03	280.0E-03	200.0E-03	200.0E-03	72.0E-03
Average	-	59.2E-03	4.8E-03	68.8E-03	9.6E-03	262.4E-03	142.4E-03	145.6E-03	107.2E-03
Sigma	-	51.2E-03	43.4E-03	67.2E-03	60.2E-03	42.5E-03	106.5E-03	78.9E-03	74.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.072	-0.056	-0.120	0.032	-0.072	0.128	0.096	0.008	-0.024
OFF samples									
7	0.032	-0.008	-0.056	0.064	-0.008	0.208	0.096	0.064	-0.008
8	0.096	0.128	0.176	0.160	0.128	0.336	0.176	0.160	0.176
9	0.048	0.080	0.008	0.096	0.008	0.192	0.080	0.064	0.008
10	0.128	0.008	0.032	0.096	-0.024	0.160	0.064	0.064	0.008
11	0.128	0.224	0.096	0.192	0.128	0.256	0.192	0.208	0.208
Statistics									
Min	0.032	-0.008	-0.056	0.064	-0.024	0.160	0.064	0.064	-0.008
Max	0.128	0.224	0.176	0.192	0.128	0.336	0.192	0.208	0.208
Average	0.086	0.086	0.051	0.122	0.046	0.230	0.122	0.112	0.078
Sigma	0.040	0.085	0.079	0.047	0.067	0.061	0.052	0.061	0.093

Drift Calculation

FSE_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-40.0E-03	-88.0E-03	32.0E-03	-40.0E-03	176.0E-03	64.0E-03	32.0E-03	-40.0E-03
8	-	32.0E-03	80.0E-03	64.0E-03	32.0E-03	240.0E-03	80.0E-03	64.0E-03	80.0E-03
9	-	32.0E-03	-40.0E-03	48.0E-03	-40.0E-03	144.0E-03	32.0E-03	16.0E-03	-40.0E-03
10	-	-120.0E-03	-96.0E-03	-32.0E-03	-152.0E-03	32.0E-03	-64.0E-03	-64.0E-03	-120.0E-03
11	-	96.0E-03	-32.0E-03	64.0E-03	0.0E+00	128.0E-03	64.0E-03	80.0E-03	80.0E-03
Average	-	0.0E+00	-35.2E-03	35.2E-03	-40.0E-03	144.0E-03	35.2E-03	25.6E-03	-8.0E-03
Sigma	-	73.8E-03	62.9E-03	35.6E-03	62.2E-03	67.9E-03	52.0E-03	50.2E-03	77.6E-03

Parameter : Full Scale Error : FSE_5VIN2

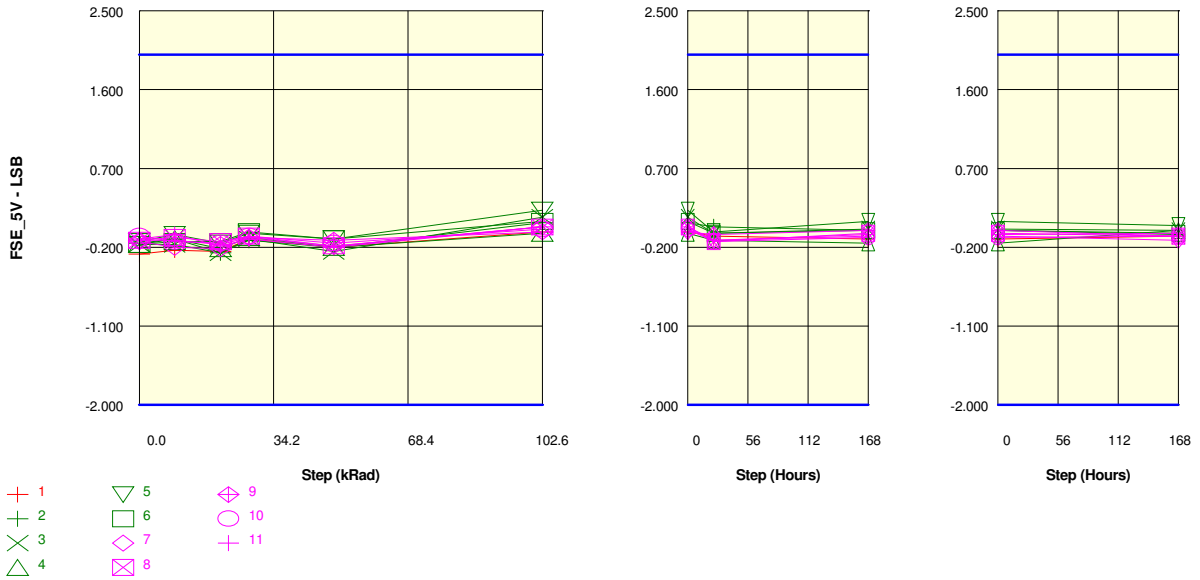
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-0.280	-0.232	-0.248	-0.104	-0.200	-0.024	-0.072	-0.104	-0.072
ON samples									
2	-0.152	-0.104	-0.264	-0.120	-0.200	0.080	0.032	-0.008	-0.056
3	-0.168	-0.168	-0.264	-0.104	-0.248	0.144	-0.040	0.008	-0.008
4	-0.168	-0.104	-0.216	-0.088	-0.200	-0.040	-0.120	-0.152	-0.008
5	-0.136	-0.056	-0.152	-0.040	-0.104	0.224	-0.024	0.096	0.048
6	-0.168	-0.136	-0.136	-0.024	-0.104	0.096	-0.040	-0.008	-0.040
Statistics									
Min	-0.168	-0.168	-0.264	-0.120	-0.248	-0.040	-0.120	-0.152	-0.056
Max	-0.136	-0.056	-0.136	-0.024	-0.104	0.224	0.032	0.096	0.048
Average	-0.158	-0.114	-0.206	-0.075	-0.171	0.101	-0.038	-0.013	-0.013
Sigma	0.013	0.037	0.054	0.037	0.058	0.086	0.049	0.080	0.036

Drift Calculation

FSE_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	48.0E-03	-112.0E-03	32.0E-03	-48.0E-03	232.0E-03	184.0E-03	144.0E-03	96.0E-03
3	-	0.0E+00	-96.0E-03	64.0E-03	-80.0E-03	312.0E-03	128.0E-03	176.0E-03	160.0E-03
4	-	64.0E-03	-48.0E-03	80.0E-03	-32.0E-03	128.0E-03	48.0E-03	16.0E-03	160.0E-03
5	-	80.0E-03	-16.0E-03	96.0E-03	32.0E-03	360.0E-03	112.0E-03	232.0E-03	184.0E-03
6	-	32.0E-03	32.0E-03	144.0E-03	64.0E-03	264.0E-03	128.0E-03	160.0E-03	128.0E-03
Average	-	44.8E-03	-48.0E-03	83.2E-03	-12.8E-03	259.2E-03	120.0E-03	145.6E-03	145.6E-03
Sigma	-	27.5E-03	52.6E-03	37.0E-03	53.0E-03	78.6E-03	43.5E-03	71.3E-03	30.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

FSE_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-0.280	-0.232	-0.248	-0.104	-0.200	-0.024	-0.072	-0.104	-0.072
OFF samples									
7	-0.136	-0.200	-0.216	-0.088	-0.184	0.032	-0.120	-0.072	-0.120
8	-0.120	-0.088	-0.136	-0.072	-0.184	0.032	-0.136	-0.040	-0.072
9	-0.120	-0.120	-0.168	-0.088	-0.120	-0.024	-0.056	-0.008	-0.072
10	-0.072	-0.136	-0.152	-0.072	-0.152	0.008	-0.136	-0.088	-0.072
11	-0.104	-0.056	-0.184	-0.104	-0.200	0.032	-0.120	-0.056	-0.040
Statistics									
Min	-0.136	-0.200	-0.216	-0.104	-0.200	-0.024	-0.136	-0.088	-0.120
Max	-0.072	-0.056	-0.136	-0.072	-0.120	0.032	-0.056	-0.008	-0.040
Average	-0.110	-0.120	-0.171	-0.085	-0.168	0.016	-0.114	-0.053	-0.075
Sigma	0.022	0.049	0.028	0.012	0.029	0.022	0.030	0.028	0.026

Drift Calculation

FSE_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-64.0E-03	-80.0E-03	48.0E-03	-48.0E-03	168.0E-03	16.0E-03	64.0E-03	16.0E-03
8	-	32.0E-03	-16.0E-03	48.0E-03	-64.0E-03	152.0E-03	-16.0E-03	80.0E-03	48.0E-03
9	-	0.0E+00	-48.0E-03	32.0E-03	0.0E+00	96.0E-03	64.0E-03	112.0E-03	48.0E-03
10	-	-64.0E-03	-80.0E-03	0.0E+00	-80.0E-03	80.0E-03	-64.0E-03	-16.0E-03	0.0E+00
11	-	48.0E-03	-80.0E-03	0.0E+00	-96.0E-03	136.0E-03	-16.0E-03	48.0E-03	64.0E-03
Average	-	-9.6E-03	-60.8E-03	25.6E-03	-57.6E-03	126.4E-03	-3.2E-03	57.6E-03	35.2E-03
Sigma	-	47.0E-03	25.6E-03	21.7E-03	32.9E-03	33.3E-03	42.2E-03	42.5E-03	23.5E-03

Parameter : Full Scale Error : FSE_5VIN3

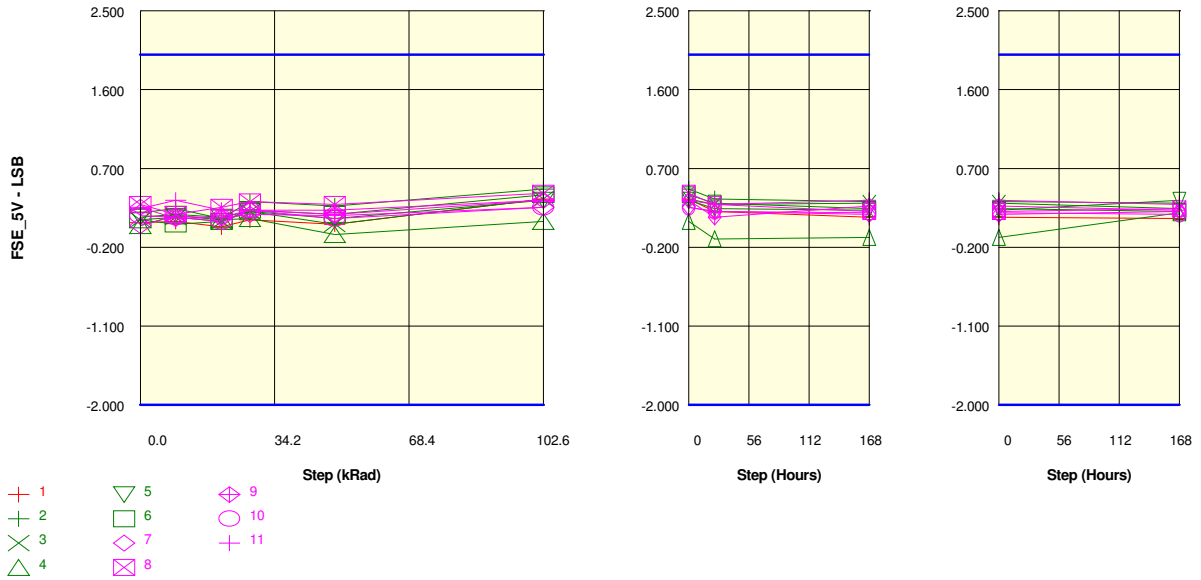
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.080	0.096	0.032	0.112	0.064	0.352	0.208	0.144	0.128
ON samples									
2	0.192	0.240	0.128	0.320	0.272	0.464	0.352	0.320	0.304
3	0.112	0.144	0.096	0.208	0.064	0.352	0.288	0.304	0.240
4	0.048	0.160	0.112	0.128	-0.056	0.096	-0.104	-0.088	0.192
5	0.144	0.176	0.144	0.208	0.128	0.336	0.240	0.224	0.336
6	0.112	0.064	0.096	0.224	0.176	0.400	0.304	0.240	0.208
Statistics									
Min	0.048	0.064	0.096	0.128	-0.056	0.096	-0.104	-0.088	0.192
Max	0.192	0.240	0.144	0.320	0.272	0.464	0.352	0.320	0.336
Average	0.122	0.157	0.115	0.218	0.117	0.330	0.216	0.200	0.256
Sigma	0.047	0.057	0.019	0.061	0.110	0.125	0.164	0.149	0.055

Drift Calculation

FSE_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	48.0E-03	-64.0E-03	128.0E-03	80.0E-03	272.0E-03	160.0E-03	128.0E-03	112.0E-03
3	-	32.0E-03	-16.0E-03	96.0E-03	-48.0E-03	240.0E-03	176.0E-03	192.0E-03	128.0E-03
4	-	112.0E-03	64.0E-03	80.0E-03	-104.0E-03	48.0E-03	-152.0E-03	-136.0E-03	144.0E-03
5	-	32.0E-03	0.0E+00	64.0E-03	-16.0E-03	192.0E-03	96.0E-03	80.0E-03	192.0E-03
6	-	-48.0E-03	-16.0E-03	112.0E-03	64.0E-03	288.0E-03	192.0E-03	128.0E-03	96.0E-03
Average	-	35.2E-03	-6.4E-03	96.0E-03	-4.8E-03	208.0E-03	94.4E-03	78.4E-03	134.4E-03
Sigma	-	51.0E-03	41.2E-03	22.6E-03	68.9E-03	86.5E-03	127.4E-03	113.0E-03	32.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.080	0.096	0.032	0.112	0.064	0.352	0.208	0.144	0.128
OFF samples									
7	0.048	0.160	0.128	0.176	0.160	0.256	0.208	0.176	0.208
8	0.288	0.176	0.256	0.320	0.288	0.416	0.288	0.208	0.240
9	0.256	0.128	0.144	0.224	0.176	0.336	0.144	0.272	0.224
10	0.160	0.144	0.096	0.224	0.128	0.256	0.208	0.192	0.176
11	0.240	0.336	0.224	0.224	0.224	0.336	0.288	0.336	0.288
Statistics									
Min	0.048	0.128	0.096	0.176	0.128	0.256	0.144	0.176	0.176
Max	0.288	0.336	0.256	0.320	0.288	0.416	0.288	0.336	0.288
Average	0.198	0.189	0.170	0.234	0.195	0.320	0.227	0.237	0.227
Sigma	0.086	0.075	0.060	0.047	0.056	0.060	0.055	0.059	0.037

Drift Calculation

FSE_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	112.0E-03	80.0E-03	128.0E-03	112.0E-03	208.0E-03	160.0E-03	128.0E-03	160.0E-03
8	-	-112.0E-03	-32.0E-03	32.0E-03	0.0E+00	128.0E-03	0.0E+00	-80.0E-03	-48.0E-03
9	-	-128.0E-03	-112.0E-03	-32.0E-03	-80.0E-03	80.0E-03	-112.0E-03	16.0E-03	-32.0E-03
10	-	-16.0E-03	-64.0E-03	64.0E-03	-32.0E-03	96.0E-03	48.0E-03	32.0E-03	16.0E-03
11	-	96.0E-03	-16.0E-03	-16.0E-03	-16.0E-03	96.0E-03	48.0E-03	96.0E-03	48.0E-03
Average	-	-9.6E-03	-28.8E-03	35.2E-03	-3.2E-03	121.6E-03	28.8E-03	38.4E-03	28.8E-03
Sigma	-	100.5E-03	63.5E-03	57.6E-03	63.5E-03	45.9E-03	87.9E-03	72.0E-03	73.9E-03

Parameter : Full Scale Error : FSE_5VIN4

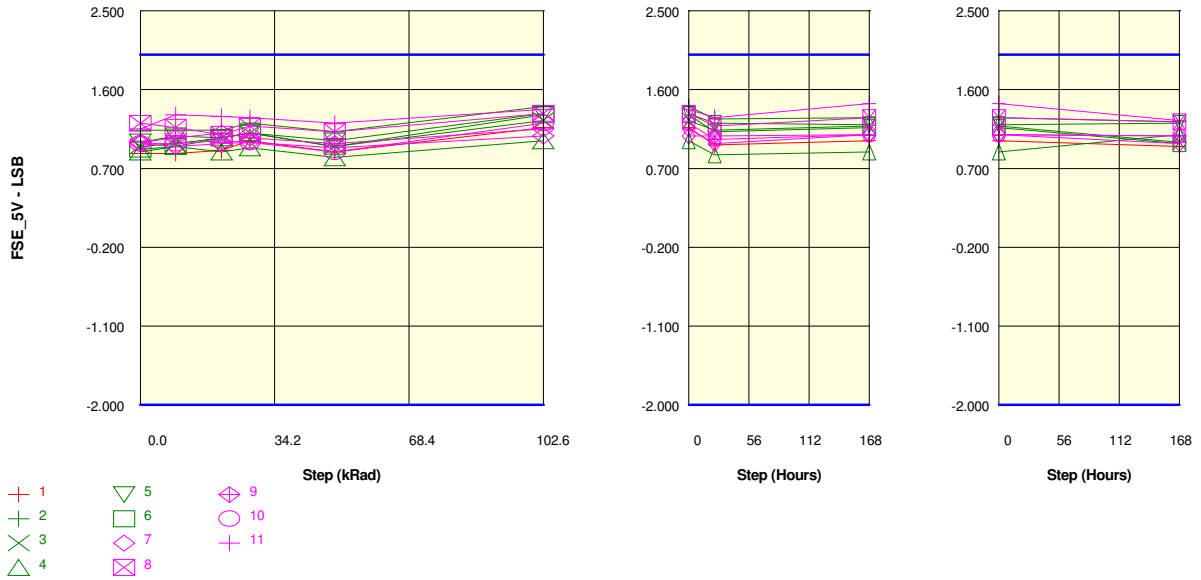
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.872	0.872	0.904	1.016	0.888	1.168	0.968	1.016	0.952
ON samples									
2	1.136	1.136	1.136	1.216	1.120	1.408	1.264	1.280	1.232
3	0.952	0.984	1.048	1.104	0.952	1.248	1.136	1.184	1.000
4	0.888	0.952	0.888	0.936	0.824	1.016	0.856	0.888	1.088
5	1.000	1.072	1.048	1.104	1.016	1.328	1.216	1.200	1.216
6	0.920	0.952	1.048	1.104	0.952	1.312	1.120	1.168	0.984
Statistics									
Min	0.888	0.952	0.888	0.936	0.824	1.016	0.856	0.888	0.984
Max	1.136	1.136	1.136	1.216	1.120	1.408	1.264	1.280	1.232
Average	0.979	1.019	1.034	1.093	0.973	1.262	1.118	1.144	1.104
Sigma	0.087	0.073	0.080	0.090	0.096	0.133	0.141	0.134	0.104

Drift Calculation

FSE_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	0.0E+00	80.0E-03	-16.0E-03	272.0E-03	128.0E-03	144.0E-03	96.0E-03
3	-	32.0E-03	96.0E-03	152.0E-03	0.0E+00	296.0E-03	184.0E-03	232.0E-03	48.0E-03
4	-	64.0E-03	0.0E+00	48.0E-03	-64.0E-03	128.0E-03	-32.0E-03	0.0E+00	200.0E-03
5	-	72.0E-03	48.0E-03	104.0E-03	16.0E-03	328.0E-03	216.0E-03	200.0E-03	216.0E-03
6	-	32.0E-03	128.0E-03	184.0E-03	32.0E-03	392.0E-03	200.0E-03	248.0E-03	64.0E-03
Average	-	40.0E-03	54.4E-03	113.6E-03	-6.4E-03	283.2E-03	139.2E-03	164.8E-03	124.8E-03
Sigma	-	25.8E-03	51.2E-03	48.9E-03	32.9E-03	87.4E-03	90.6E-03	89.7E-03	69.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.872	0.872	0.904	1.016	0.888	1.168	0.968	1.016	0.952
OFF samples									
7	0.984	0.952	0.984	1.000	0.936	1.072	1.072	1.088	0.984
8	1.216	1.168	1.088	1.184	1.120	1.328	1.184	1.280	1.232
9	1.000	1.048	1.104	1.048	0.984	1.152	0.984	1.088	1.072
10	0.984	0.984	1.016	1.000	0.888	1.216	1.032	1.088	1.072
11	1.152	1.312	1.296	1.280	1.216	1.376	1.280	1.440	1.248
Statistics									
Min	0.984	0.952	0.984	1.000	0.888	1.072	0.984	1.088	0.984
Max	1.216	1.312	1.296	1.280	1.216	1.376	1.280	1.440	1.248
Average	1.067	1.093	1.098	1.102	1.029	1.229	1.110	1.197	1.122
Sigma	0.098	0.132	0.109	0.111	0.121	0.111	0.107	0.143	0.102

Drift Calculation

FSE_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-32.0E-03	0.0E+00	16.0E-03	-48.0E-03	88.0E-03	88.0E-03	104.0E-03	0.0E+00
8	-	-48.0E-03	-128.0E-03	-32.0E-03	-96.0E-03	112.0E-03	-32.0E-03	64.0E-03	16.0E-03
9	-	48.0E-03	104.0E-03	48.0E-03	-16.0E-03	152.0E-03	-16.0E-03	88.0E-03	72.0E-03
10	-	0.0E+00	32.0E-03	16.0E-03	-96.0E-03	232.0E-03	48.0E-03	104.0E-03	88.0E-03
11	-	160.0E-03	144.0E-03	128.0E-03	64.0E-03	224.0E-03	128.0E-03	288.0E-03	96.0E-03
Average	-	25.6E-03	30.4E-03	35.2E-03	-38.4E-03	161.6E-03	43.2E-03	129.6E-03	54.4E-03
Sigma	-	74.8E-03	94.2E-03	53.0E-03	59.5E-03	58.0E-03	60.6E-03	80.5E-03	39.0E-03

Parameter : Full Scale Error : FSE_5VIN5

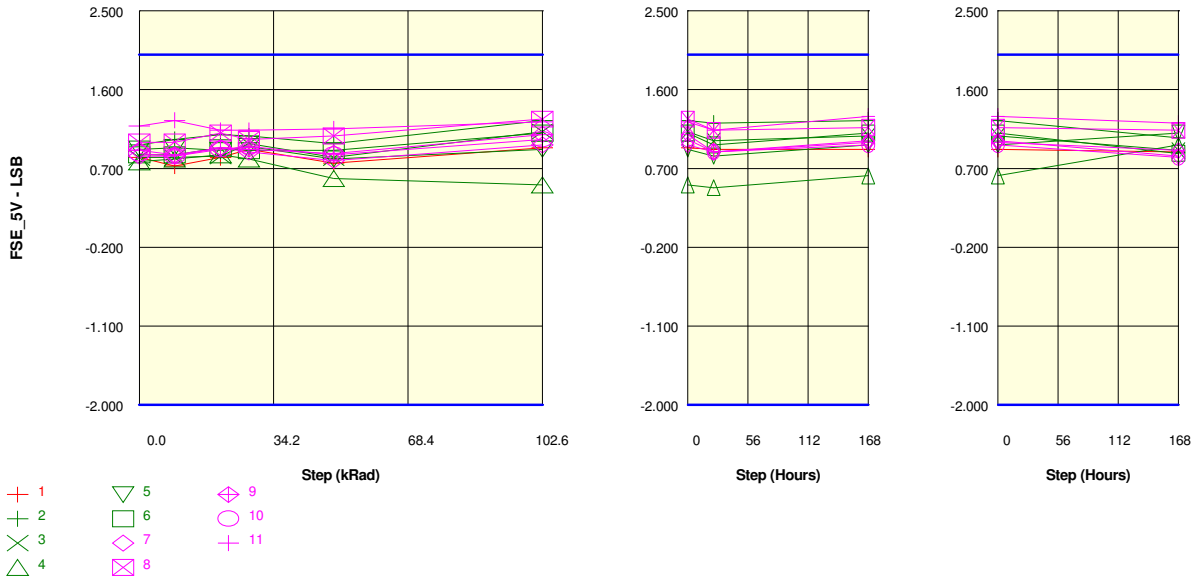
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.824	0.728	0.824	0.920	0.760	0.936	0.920	0.920	0.888
ON samples									
2	0.968	1.032	1.088	1.072	0.984	1.248	1.216	1.248	1.048
3	0.824	0.824	0.840	0.984	0.824	1.120	1.016	1.072	0.904
4	0.776	0.808	0.856	0.808	0.584	0.512	0.480	0.616	0.968
5	0.920	0.936	0.904	0.952	0.808	0.920	0.840	0.968	1.104
6	0.856	0.856	0.936	0.904	0.904	1.104	0.968	1.104	0.872
Statistics									
Min	0.776	0.808	0.840	0.808	0.584	0.512	0.480	0.616	0.872
Max	0.968	1.032	1.088	1.072	0.984	1.248	1.216	1.248	1.104
Average	0.869	0.891	0.925	0.944	0.821	0.981	0.904	1.002	0.979
Sigma	0.068	0.083	0.088	0.087	0.134	0.257	0.244	0.213	0.087

Drift Calculation

FSE_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	64.0E-03	120.0E-03	104.0E-03	16.0E-03	280.0E-03	248.0E-03	280.0E-03	80.0E-03
3	-	0.0E+00	16.0E-03	160.0E-03	0.0E+00	296.0E-03	192.0E-03	248.0E-03	80.0E-03
4	-	32.0E-03	80.0E-03	32.0E-03	-192.0E-03	-264.0E-03	-296.0E-03	-160.0E-03	192.0E-03
5	-	16.0E-03	-16.0E-03	32.0E-03	-112.0E-03	0.0E+00	-80.0E-03	48.0E-03	184.0E-03
6	-	0.0E+00	80.0E-03	48.0E-03	48.0E-03	248.0E-03	112.0E-03	248.0E-03	16.0E-03
Average	-	22.4E-03	56.0E-03	75.2E-03	-48.0E-03	112.0E-03	35.2E-03	132.8E-03	110.4E-03
Sigma	-	23.9E-03	49.1E-03	50.0E-03	89.9E-03	216.6E-03	199.4E-03	168.0E-03	67.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.824	0.728	0.824	0.920	0.760	0.936	0.920	0.920	0.888
OFF samples									
7	0.840	0.840	0.936	0.888	0.792	0.968	0.888	1.016	0.840
8	1.000	1.000	1.104	1.032	1.072	1.264	1.136	1.168	1.136
9	0.904	0.856	0.936	0.920	0.872	1.088	0.888	1.000	0.904
10	0.872	0.840	0.920	0.952	0.856	1.032	0.888	0.968	0.824
11	1.184	1.248	1.136	1.136	1.152	1.232	1.136	1.296	1.216
Statistics									
Min	0.840	0.840	0.920	0.888	0.792	0.968	0.888	0.968	0.824
Max	1.184	1.248	1.136	1.136	1.152	1.264	1.136	1.296	1.216
Average	0.960	0.957	1.006	0.986	0.949	1.117	0.987	1.090	0.984
Sigma	0.124	0.158	0.093	0.089	0.138	0.114	0.121	0.124	0.161

Drift Calculation

FSE_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	96.0E-03	48.0E-03	-48.0E-03	128.0E-03	48.0E-03	176.0E-03	0.0E+00
8	-	0.0E+00	104.0E-03	32.0E-03	72.0E-03	264.0E-03	136.0E-03	168.0E-03	136.0E-03
9	-	-48.0E-03	32.0E-03	16.0E-03	-32.0E-03	184.0E-03	-16.0E-03	96.0E-03	0.0E+00
10	-	-32.0E-03	48.0E-03	80.0E-03	-16.0E-03	160.0E-03	16.0E-03	96.0E-03	-48.0E-03
11	-	64.0E-03	-48.0E-03	-48.0E-03	-32.0E-03	48.0E-03	-48.0E-03	112.0E-03	32.0E-03
Average	-	-3.2E-03	46.4E-03	25.6E-03	-11.2E-03	156.8E-03	27.2E-03	129.6E-03	24.0E-03
Sigma	-	38.4E-03	54.6E-03	42.5E-03	42.8E-03	70.6E-03	63.1E-03	35.2E-03	61.6E-03

Parameter : Full Scale Error : FSE_5VIN6

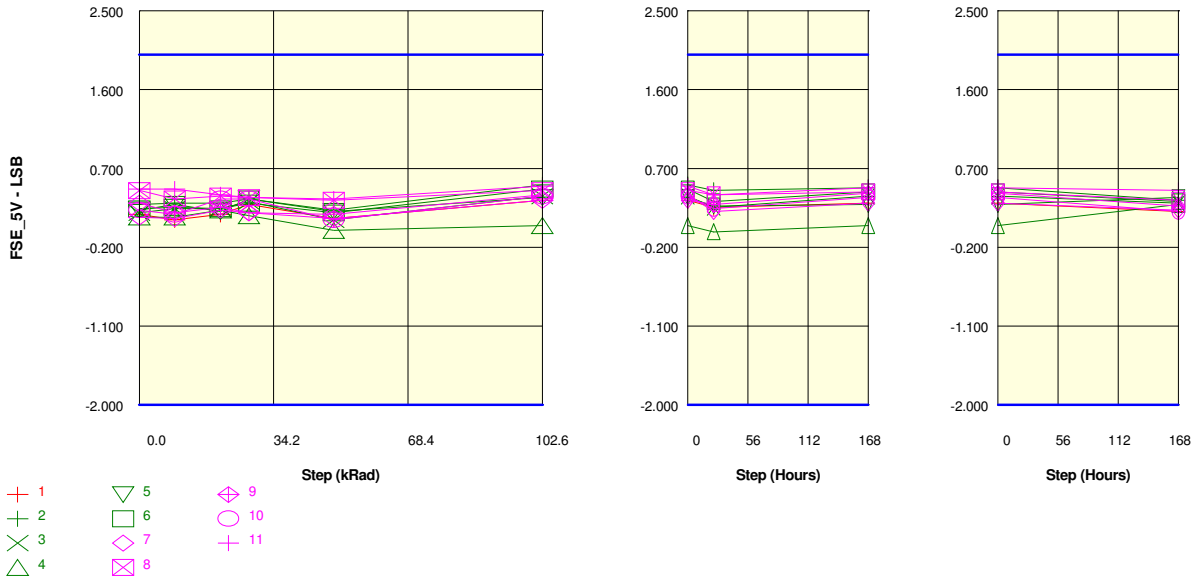
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.176	0.112	0.176	0.288	0.128	0.336	0.256	0.304	0.208
ON samples									
2	0.288	0.304	0.304	0.352	0.224	0.512	0.448	0.480	0.336
3	0.192	0.240	0.240	0.320	0.112	0.384	0.256	0.384	0.304
4	0.144	0.144	0.224	0.160	-0.008	0.048	-0.024	0.048	0.288
5	0.224	0.288	0.208	0.352	0.208	0.368	0.272	0.288	0.368
6	0.240	0.256	0.240	0.304	0.192	0.464	0.320	0.432	0.320
Statistics									
Min	0.144	0.144	0.208	0.160	-0.008	0.048	-0.024	0.048	0.288
Max	0.288	0.304	0.304	0.352	0.224	0.512	0.448	0.480	0.368
Average	0.218	0.246	0.243	0.298	0.146	0.355	0.254	0.326	0.323
Sigma	0.048	0.056	0.033	0.071	0.086	0.162	0.155	0.153	0.028

Drift Calculation

FSE_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	16.0E-03	16.0E-03	64.0E-03	-64.0E-03	224.0E-03	160.0E-03	192.0E-03	48.0E-03
3	-	48.0E-03	48.0E-03	128.0E-03	-80.0E-03	192.0E-03	64.0E-03	192.0E-03	112.0E-03
4	-	0.0E+00	80.0E-03	16.0E-03	-152.0E-03	-96.0E-03	-168.0E-03	-96.0E-03	144.0E-03
5	-	64.0E-03	-16.0E-03	128.0E-03	-16.0E-03	144.0E-03	48.0E-03	64.0E-03	144.0E-03
6	-	16.0E-03	0.0E+00	64.0E-03	-48.0E-03	224.0E-03	80.0E-03	192.0E-03	80.0E-03
Average	-	28.8E-03	25.6E-03	80.0E-03	-72.0E-03	137.6E-03	36.8E-03	108.8E-03	105.6E-03
Sigma	-	23.5E-03	34.5E-03	42.9E-03	45.3E-03	120.4E-03	109.4E-03	113.8E-03	37.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

FSE_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.176	0.112	0.176	0.288	0.128	0.336	0.256	0.304	0.208
OFF samples									
7	0.144	0.128	0.224	0.192	0.176	0.400	0.208	0.304	0.224
8	0.448	0.352	0.384	0.368	0.336	0.448	0.400	0.432	0.336
9	0.304	0.192	0.256	0.192	0.128	0.336	0.288	0.416	0.272
10	0.224	0.176	0.352	0.352	0.112	0.384	0.240	0.368	0.208
11	0.464	0.464	0.400	0.368	0.352	0.496	0.400	0.480	0.448
Statistics									
Min	0.144	0.128	0.224	0.192	0.112	0.336	0.208	0.304	0.208
Max	0.464	0.464	0.400	0.368	0.352	0.496	0.400	0.480	0.448
Average	0.317	0.262	0.323	0.294	0.221	0.413	0.307	0.400	0.298
Sigma	0.125	0.126	0.070	0.084	0.103	0.055	0.080	0.060	0.087

Drift Calculation

FSE_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-16.0E-03	80.0E-03	48.0E-03	32.0E-03	256.0E-03	64.0E-03	160.0E-03	80.0E-03
8	-	-96.0E-03	-64.0E-03	-80.0E-03	-112.0E-03	0.0E+00	-48.0E-03	-16.0E-03	-112.0E-03
9	-	-112.0E-03	-48.0E-03	-112.0E-03	-176.0E-03	32.0E-03	-16.0E-03	112.0E-03	-32.0E-03
10	-	-48.0E-03	128.0E-03	128.0E-03	-112.0E-03	160.0E-03	16.0E-03	144.0E-03	-16.0E-03
11	-	0.0E+00	-64.0E-03	-96.0E-03	-112.0E-03	32.0E-03	-64.0E-03	16.0E-03	-16.0E-03
Average	-	-54.4E-03	6.4E-03	-22.4E-03	-96.0E-03	96.0E-03	-9.6E-03	83.2E-03	-19.2E-03
Sigma	-	43.6E-03	81.3E-03	94.2E-03	68.6E-03	97.1E-03	45.9E-03	70.4E-03	61.1E-03

Parameter : Full Scale Error : FSE_5VIN7

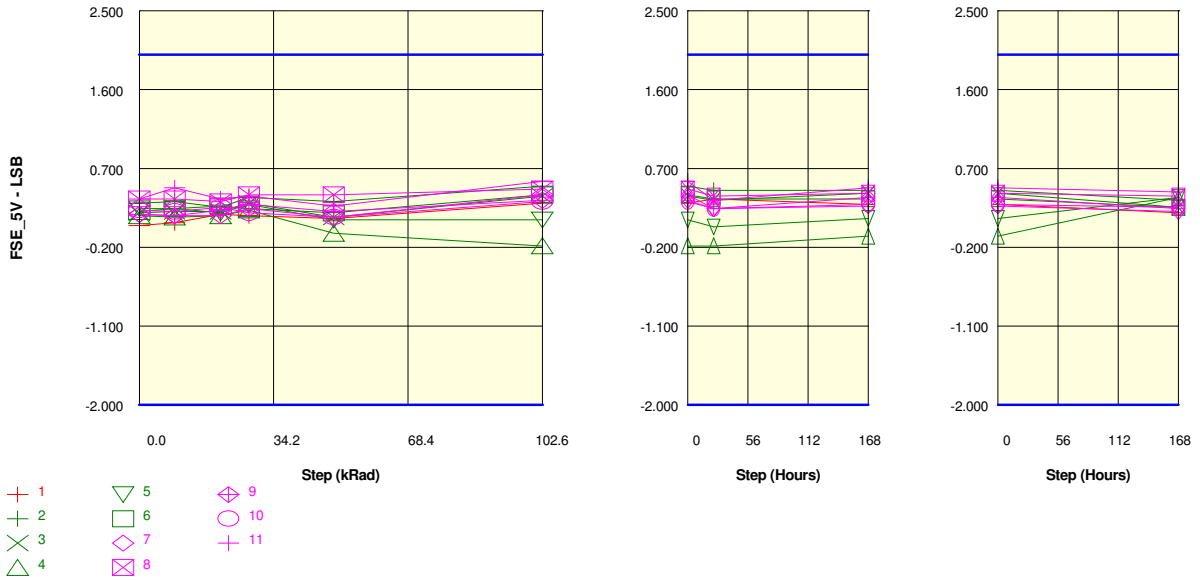
Test conditions : INX => X= 0 to 7

Unit : LSB

Spec Limit Min : -2.000

Spec Limit Max : 2.000

Spec limits are represented in bold lines on the graphic.



Measurements

FSE_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.048	0.080	0.176	0.160	0.128	0.304	0.352	0.288	0.192
ON samples									
2	0.304	0.320	0.256	0.368	0.320	0.496	0.448	0.448	0.336
3	0.192	0.208	0.208	0.304	0.144	0.384	0.336	0.416	0.256
4	0.160	0.144	0.160	0.224	-0.040	-0.184	-0.184	-0.072	0.368
5	0.240	0.240	0.192	0.288	0.112	0.112	0.032	0.128	0.368
6	0.208	0.240	0.272	0.240	0.192	0.400	0.352	0.352	0.256
Statistics									
Min	0.160	0.144	0.160	0.224	-0.040	-0.184	-0.184	-0.072	0.256
Max	0.304	0.320	0.272	0.368	0.320	0.496	0.448	0.448	0.368
Average	0.221	0.230	0.218	0.285	0.146	0.242	0.197	0.254	0.317
Sigma	0.049	0.057	0.041	0.051	0.117	0.248	0.236	0.198	0.051

Drift Calculation

FSE_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	16.0E-03	-48.0E-03	64.0E-03	16.0E-03	192.0E-03	144.0E-03	144.0E-03	32.0E-03
3	-	16.0E-03	16.0E-03	112.0E-03	-48.0E-03	192.0E-03	144.0E-03	224.0E-03	64.0E-03
4	-	-16.0E-03	0.0E+00	64.0E-03	-200.0E-03	-344.0E-03	-344.0E-03	-232.0E-03	208.0E-03
5	-	0.0E+00	-48.0E-03	48.0E-03	-128.0E-03	-128.0E-03	-208.0E-03	-112.0E-03	128.0E-03
6	-	32.0E-03	64.0E-03	32.0E-03	-16.0E-03	192.0E-03	144.0E-03	144.0E-03	48.0E-03
Average	-	9.6E-03	-3.2E-03	64.0E-03	-75.2E-03	20.8E-03	-24.0E-03	33.6E-03	96.0E-03
Sigma	-	16.3E-03	42.2E-03	26.8E-03	78.6E-03	220.5E-03	210.2E-03	174.6E-03	64.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

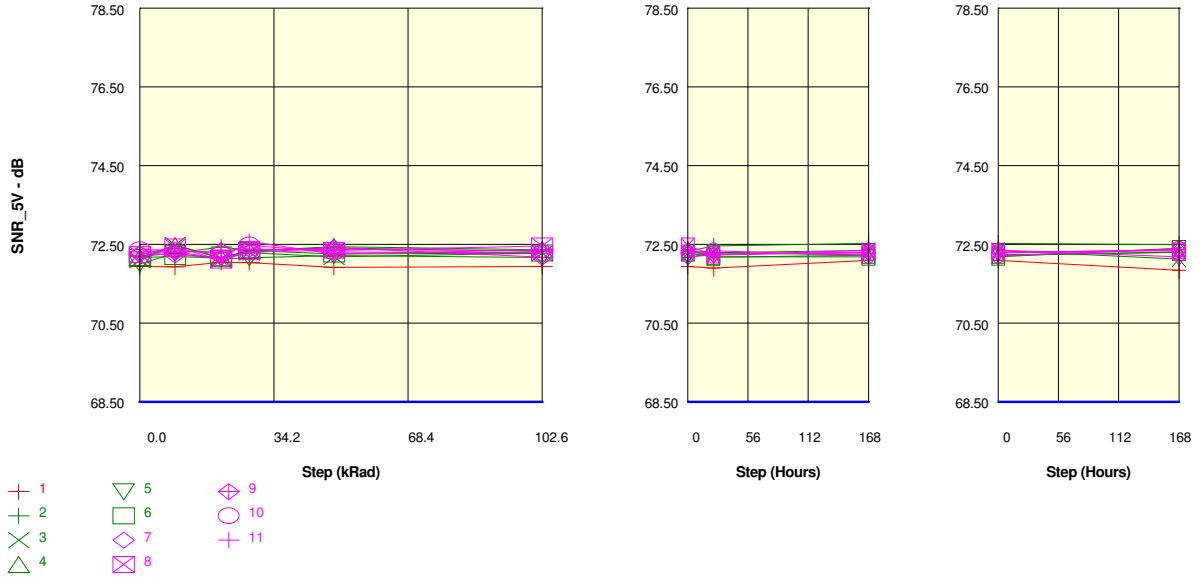
Measurements

FSE_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	0.048	0.080	0.176	0.160	0.128	0.304	0.352	0.288	0.192
OFF samples									
7	0.176	0.160	0.160	0.240	0.144	0.400	0.240	0.272	0.208
8	0.352	0.352	0.320	0.400	0.400	0.464	0.384	0.416	0.384
9	0.176	0.160	0.224	0.288	0.208	0.336	0.240	0.368	0.240
10	0.224	0.208	0.256	0.192	0.144	0.320	0.240	0.288	0.256
11	0.352	0.480	0.352	0.384	0.272	0.552	0.336	0.480	0.432
Statistics									
Min	0.176	0.160	0.160	0.192	0.144	0.320	0.240	0.272	0.208
Max	0.352	0.480	0.352	0.400	0.400	0.552	0.384	0.480	0.432
Average	0.256	0.272	0.262	0.301	0.234	0.414	0.288	0.365	0.304
Sigma	0.080	0.126	0.068	0.081	0.096	0.086	0.061	0.078	0.088

Drift Calculation

FSE_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-16.0E-03	-16.0E-03	64.0E-03	-32.0E-03	224.0E-03	64.0E-03	96.0E-03	32.0E-03
8	-	0.0E+00	-32.0E-03	48.0E-03	48.0E-03	112.0E-03	32.0E-03	64.0E-03	32.0E-03
9	-	-16.0E-03	48.0E-03	112.0E-03	32.0E-03	160.0E-03	64.0E-03	192.0E-03	64.0E-03
10	-	-16.0E-03	32.0E-03	-32.0E-03	-80.0E-03	96.0E-03	16.0E-03	64.0E-03	32.0E-03
11	-	128.0E-03	0.0E+00	32.0E-03	-80.0E-03	200.0E-03	-16.0E-03	128.0E-03	80.0E-03
Average	-	16.0E-03	6.4E-03	44.8E-03	-22.4E-03	158.4E-03	32.0E-03	108.8E-03	48.0E-03
Sigma	-	56.3E-03	29.7E-03	46.8E-03	54.1E-03	49.2E-03	30.4E-03	47.9E-03	20.2E-03

Parameter : Signal to noise ratio : SNR_5VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.94	71.93	72.04	72.04	71.92	71.95	71.90	72.10	71.84
ON samples									
2	72.20	72.28	72.43	72.35	72.41	72.32	72.46	72.53	72.50
3	72.10	72.49	72.15	72.29	72.19	72.28	72.29	72.34	72.13
4	72.16	72.48	72.16	72.34	72.45	72.37	72.18	72.23	72.30
5	72.01	72.27	72.14	72.16	72.22	72.17	72.29	72.23	72.31
6	72.17	72.20	72.15	72.35	72.26	72.28	72.18	72.18	72.40
Statistics									
Min	72.01	72.20	72.14	72.16	72.19	72.17	72.18	72.18	72.13
Max	72.20	72.49	72.43	72.35	72.45	72.37	72.46	72.53	72.50
Average	72.13	72.34	72.21	72.30	72.30	72.28	72.28	72.30	72.33
Sigma	0.07	0.12	0.11	0.07	0.11	0.06	0.10	0.13	0.12

Drift Calculation

SNR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	75.0E-03	232.0E-03	147.0E-03	212.0E-03	120.0E-03	257.0E-03	326.0E-03	297.0E-03
3	-	390.0E-03	48.0E-03	195.0E-03	87.0E-03	182.0E-03	192.0E-03	244.0E-03	33.0E-03
4	-	315.0E-03	2.0E-03	174.0E-03	285.0E-03	205.0E-03	17.0E-03	64.0E-03	135.0E-03
5	-	263.0E-03	130.0E-03	148.0E-03	210.0E-03	162.0E-03	282.0E-03	222.0E-03	297.0E-03
6	-	27.0E-03	-18.0E-03	176.0E-03	90.0E-03	114.0E-03	14.0E-03	11.0E-03	233.0E-03
Average	-	214.0E-03	78.8E-03	168.0E-03	176.8E-03	156.6E-03	152.4E-03	173.4E-03	199.0E-03
Sigma	-	139.9E-03	92.0E-03	18.3E-03	77.0E-03	35.1E-03	115.6E-03	117.5E-03	102.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

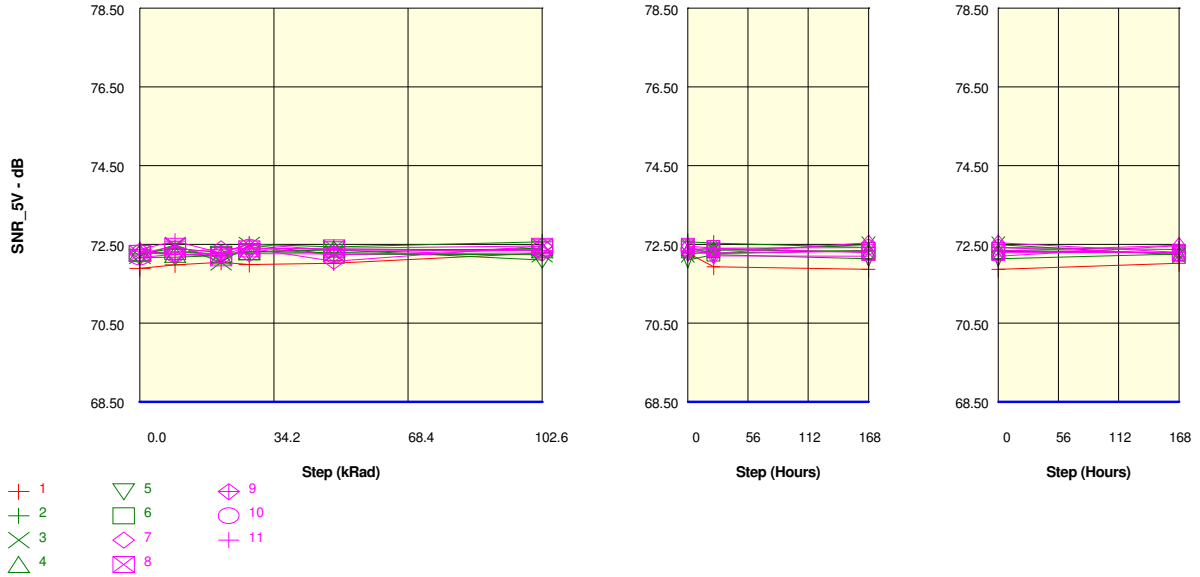
SNR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.94	71.93	72.04	72.04	71.92	71.95	71.90	72.10	71.84
OFF samples									
7	72.27	72.23	72.17	72.29	72.42	72.18	72.24	72.30	72.35
8	72.24	72.44	72.10	72.32	72.35	72.47	72.24	72.31	72.34
9	72.25	72.30	72.34	72.38	72.37	72.34	72.23	72.36	72.18
10	72.36	72.36	72.26	72.48	72.31	72.29	72.34	72.21	72.38
11	72.32	72.32	72.15	72.58	72.26	72.36	72.26	72.28	72.37
Statistics									
Min	72.24	72.23	72.10	72.29	72.26	72.18	72.23	72.21	72.18
Max	72.36	72.44	72.34	72.58	72.42	72.47	72.34	72.36	72.38
Average	72.29	72.33	72.20	72.41	72.34	72.33	72.26	72.29	72.33
Sigma	0.05	0.07	0.09	0.11	0.06	0.09	0.04	0.05	0.07

Drift Calculation

SNR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-41.0E-03	-96.0E-03	21.0E-03	149.0E-03	-95.0E-03	-28.0E-03	34.0E-03	84.0E-03
8	-	200.0E-03	-144.0E-03	74.0E-03	107.0E-03	222.0E-03	-5.0E-03	62.0E-03	97.0E-03
9	-	51.0E-03	85.0E-03	126.0E-03	118.0E-03	86.0E-03	-23.0E-03	103.0E-03	-71.0E-03
10	-	-7.0E-03	-100.0E-03	120.0E-03	-57.0E-03	-73.0E-03	-23.0E-03	-151.0E-03	21.0E-03
11	-	0.0E+00	-175.0E-03	258.0E-03	-65.0E-03	44.0E-03	-64.0E-03	-40.0E-03	51.0E-03
Average	-	40.6E-03	-86.0E-03	119.8E-03	50.4E-03	36.8E-03	-28.6E-03	1.6E-03	36.4E-03
Sigma	-	85.0E-03	90.4E-03	78.7E-03	92.0E-03	115.1E-03	19.4E-03	89.4E-03	59.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise ratio : SNR_5VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.89	71.98	72.04	71.99	72.03	72.28	71.93	71.87	72.02
ON samples									
2	72.26	72.40	72.29	72.51	72.43	72.57	72.53	72.42	72.37
3	72.20	72.49	72.05	72.49	72.25	72.25	72.35	72.50	72.24
4	72.29	72.25	72.20	72.31	72.38	72.36	72.37	72.32	72.29
5	72.17	72.17	72.22	72.31	72.36	72.10	72.24	72.14	72.26
6	72.27	72.32	72.25	72.32	72.29	72.41	72.28	72.35	72.29
Statistics									
Min	72.17	72.17	72.05	72.31	72.25	72.10	72.24	72.14	72.24
Max	72.29	72.49	72.29	72.51	72.43	72.57	72.53	72.50	72.37
Average	72.24	72.33	72.20	72.39	72.34	72.34	72.35	72.34	72.29
Sigma	0.04	0.11	0.08	0.09	0.07	0.16	0.10	0.12	0.05

Drift Calculation

SNR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	145.0E-03	35.0E-03	247.0E-03	174.0E-03	310.0E-03	276.0E-03	163.0E-03	116.0E-03
3	-	289.0E-03	-156.0E-03	283.0E-03	46.0E-03	42.0E-03	147.0E-03	293.0E-03	32.0E-03
4	-	-41.0E-03	-86.0E-03	25.0E-03	91.0E-03	71.0E-03	77.0E-03	32.0E-03	-4.0E-03
5	-	2.0E-03	47.0E-03	135.0E-03	192.0E-03	-68.0E-03	65.0E-03	-37.0E-03	89.0E-03
6	-	51.0E-03	-15.0E-03	47.0E-03	23.0E-03	140.0E-03	14.0E-03	77.0E-03	21.0E-03
Average	-	89.2E-03	-35.0E-03	147.4E-03	105.2E-03	99.0E-03	115.8E-03	105.6E-03	50.8E-03
Sigma	-	117.5E-03	76.5E-03	103.5E-03	67.4E-03	125.0E-03	90.6E-03	114.0E-03	44.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

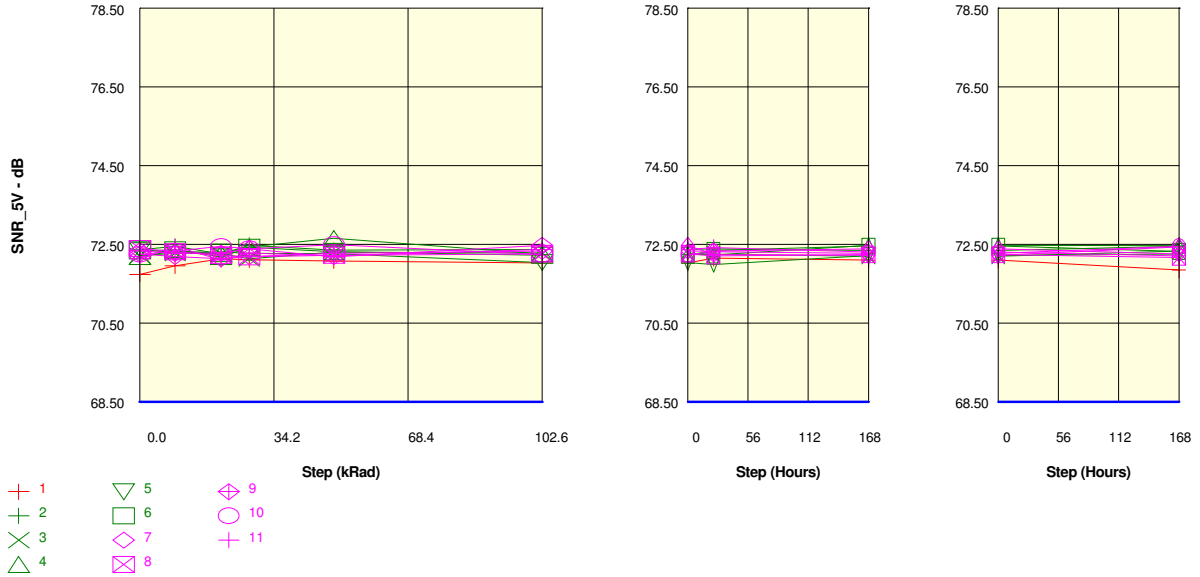
Measurements

SNR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.89	71.98	72.04	71.99	72.03	72.28	71.93	71.87	72.02
OFF samples									
7	72.26	72.29	72.39	72.41	72.07	72.46	72.21	72.20	72.47
8	72.27	72.46	72.16	72.39	72.41	72.46	72.40	72.29	72.30
9	72.33	72.25	72.28	72.27	72.26	72.28	72.27	72.54	72.30
10	72.17	72.25	72.23	72.43	72.23	72.37	72.40	72.42	72.27
11	72.38	72.59	72.28	72.51	72.36	72.35	72.27	72.33	72.47
Statistics									
Min	72.17	72.25	72.16	72.27	72.07	72.28	72.21	72.20	72.27
Max	72.38	72.59	72.39	72.51	72.41	72.46	72.40	72.54	72.47
Average	72.28	72.37	72.27	72.40	72.27	72.39	72.31	72.36	72.36
Sigma	0.07	0.13	0.07	0.08	0.12	0.07	0.08	0.12	0.09

Drift Calculation

SNR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	35.0E-03	133.0E-03	153.0E-03	-183.0E-03	209.0E-03	-46.0E-03	-53.0E-03	215.0E-03
8	-	183.0E-03	-110.0E-03	117.0E-03	137.0E-03	187.0E-03	128.0E-03	20.0E-03	28.0E-03
9	-	-85.0E-03	-50.0E-03	-65.0E-03	-76.0E-03	-50.0E-03	-63.0E-03	206.0E-03	-32.0E-03
10	-	76.0E-03	59.0E-03	261.0E-03	60.0E-03	197.0E-03	228.0E-03	250.0E-03	93.0E-03
11	-	207.0E-03	-99.0E-03	130.0E-03	-21.0E-03	-27.0E-03	-112.0E-03	-50.0E-03	96.0E-03
Average	-	83.2E-03	-13.4E-03	119.2E-03	-16.6E-03	103.2E-03	27.0E-03	74.6E-03	80.0E-03
Sigma	-	105.8E-03	94.5E-03	105.2E-03	110.2E-03	116.1E-03	129.1E-03	128.7E-03	82.3E-03

Parameter : Signal to noise ratio : SNR_5VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.74	71.96	72.14	72.11	72.08	72.03	72.15	72.11	71.85
ON samples									
2	72.36	72.45	72.26	72.48	72.35	72.37	72.38	72.34	72.45
3	72.22	72.28	72.27	72.14	72.31	72.28	72.25	72.20	72.33
4	72.19	72.34	72.27	72.43	72.65	72.26	72.23	72.48	72.47
5	72.36	72.30	72.31	72.28	72.27	72.04	71.99	72.22	72.26
6	72.34	72.37	72.19	72.43	72.32	72.23	72.35	72.46	72.32
Statistics									
Min	72.19	72.28	72.19	72.14	72.27	72.04	71.99	72.20	72.26
Max	72.36	72.45	72.31	72.48	72.65	72.37	72.38	72.48	72.47
Average	72.29	72.35	72.26	72.35	72.38	72.24	72.24	72.34	72.37
Sigma	0.08	0.06	0.04	0.13	0.14	0.11	0.14	0.12	0.08

Drift Calculation

SNR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	85.0E-03	-107.0E-03	116.0E-03	-10.0E-03	10.0E-03	21.0E-03	-20.0E-03	91.0E-03
3	-	61.0E-03	49.0E-03	-77.0E-03	92.0E-03	63.0E-03	35.0E-03	-13.0E-03	110.0E-03
4	-	153.0E-03	78.0E-03	245.0E-03	465.0E-03	73.0E-03	47.0E-03	289.0E-03	284.0E-03
5	-	-61.0E-03	-54.0E-03	-87.0E-03	-96.0E-03	-321.0E-03	-370.0E-03	-147.0E-03	-102.0E-03
6	-	29.0E-03	-150.0E-03	89.0E-03	-20.0E-03	-111.0E-03	7.0E-03	121.0E-03	-15.0E-03
Average	-	53.4E-03	-36.8E-03	57.2E-03	86.2E-03	-57.2E-03	-52.0E-03	46.0E-03	73.6E-03
Sigma	-	70.2E-03	87.8E-03	125.3E-03	198.6E-03	147.2E-03	159.6E-03	148.2E-03	130.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

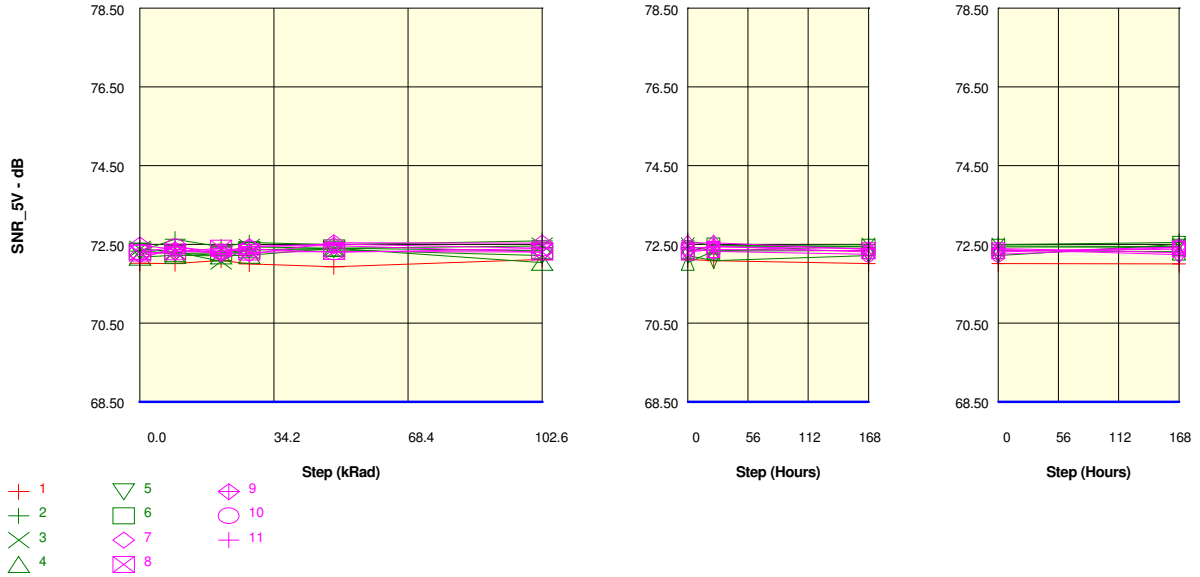
Measurements

SNR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.74	71.96	72.14	72.11	72.08	72.03	72.15	72.11	71.85
OFF samples									
7	72.26	72.19	72.13	72.19	72.28	72.33	72.34	72.39	72.26
8	72.40	72.32	72.22	72.18	72.23	72.26	72.21	72.24	72.17
9	72.34	72.27	72.28	72.39	72.19	72.48	72.25	72.22	72.43
10	72.25	72.33	72.45	72.39	72.50	72.25	72.32	72.27	72.45
11	72.14	72.45	72.11	72.29	72.21	72.37	72.42	72.31	72.21
Statistics									
Min	72.14	72.19	72.11	72.18	72.19	72.25	72.21	72.22	72.17
Max	72.40	72.45	72.45	72.39	72.50	72.48	72.42	72.39	72.45
Average	72.28	72.31	72.24	72.29	72.28	72.34	72.31	72.29	72.30
Sigma	0.09	0.08	0.12	0.09	0.11	0.08	0.07	0.06	0.11

Drift Calculation

SNR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-64.0E-03	-124.0E-03	-64.0E-03	17.0E-03	68.0E-03	78.0E-03	136.0E-03	-3.0E-03
8	-	-82.0E-03	-181.0E-03	-215.0E-03	-169.0E-03	-138.0E-03	-185.0E-03	-158.0E-03	-226.0E-03
9	-	-66.0E-03	-57.0E-03	50.0E-03	-151.0E-03	140.0E-03	-92.0E-03	-115.0E-03	95.0E-03
10	-	79.0E-03	201.0E-03	143.0E-03	250.0E-03	-2.0E-03	70.0E-03	27.0E-03	202.0E-03
11	-	312.0E-03	-28.0E-03	151.0E-03	77.0E-03	235.0E-03	283.0E-03	174.0E-03	77.0E-03
Average	-	35.8E-03	-37.8E-03	13.0E-03	4.8E-03	60.6E-03	30.8E-03	12.8E-03	29.0E-03
Sigma	-	149.9E-03	130.7E-03	138.0E-03	154.9E-03	126.6E-03	160.6E-03	131.8E-03	143.3E-03

Parameter : Signal to noise ratio : SNR_5VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	72.02	72.01	72.10	72.01	71.93	72.12	72.09	72.01	72.00
ON samples									
2	72.33	72.63	72.44	72.55	72.50	72.59	72.46	72.49	72.56
3	72.39	72.32	72.07	72.44	72.40	72.47	72.33	72.46	72.45
4	72.17	72.23	72.21	72.22	72.40	72.04	72.33	72.35	72.31
5	72.33	72.27	72.23	72.36	72.37	72.22	72.09	72.22	72.50
6	72.32	72.27	72.28	72.36	72.41	72.34	72.46	72.43	72.43
Statistics									
Min	72.17	72.23	72.07	72.22	72.37	72.04	72.09	72.22	72.31
Max	72.39	72.63	72.44	72.55	72.50	72.59	72.46	72.49	72.56
Average	72.31	72.34	72.25	72.39	72.41	72.33	72.33	72.39	72.45
Sigma	0.07	0.15	0.12	0.11	0.04	0.19	0.14	0.10	0.08

Drift Calculation

SNR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	302.0E-03	108.0E-03	216.0E-03	168.0E-03	262.0E-03	127.0E-03	158.0E-03	226.0E-03
3	-	-74.0E-03	-320.0E-03	45.0E-03	10.0E-03	77.0E-03	-59.0E-03	71.0E-03	55.0E-03
4	-	51.0E-03	33.0E-03	49.0E-03	226.0E-03	-133.0E-03	157.0E-03	172.0E-03	137.0E-03
5	-	-62.0E-03	-103.0E-03	27.0E-03	32.0E-03	-113.0E-03	-247.0E-03	-114.0E-03	170.0E-03
6	-	-50.0E-03	-35.0E-03	45.0E-03	89.0E-03	22.0E-03	144.0E-03	114.0E-03	108.0E-03
Average	-	33.4E-03	-63.4E-03	76.4E-03	105.0E-03	23.0E-03	24.4E-03	80.2E-03	139.2E-03
Sigma	-	141.5E-03	146.2E-03	70.2E-03	81.5E-03	143.4E-03	156.9E-03	103.4E-03	57.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

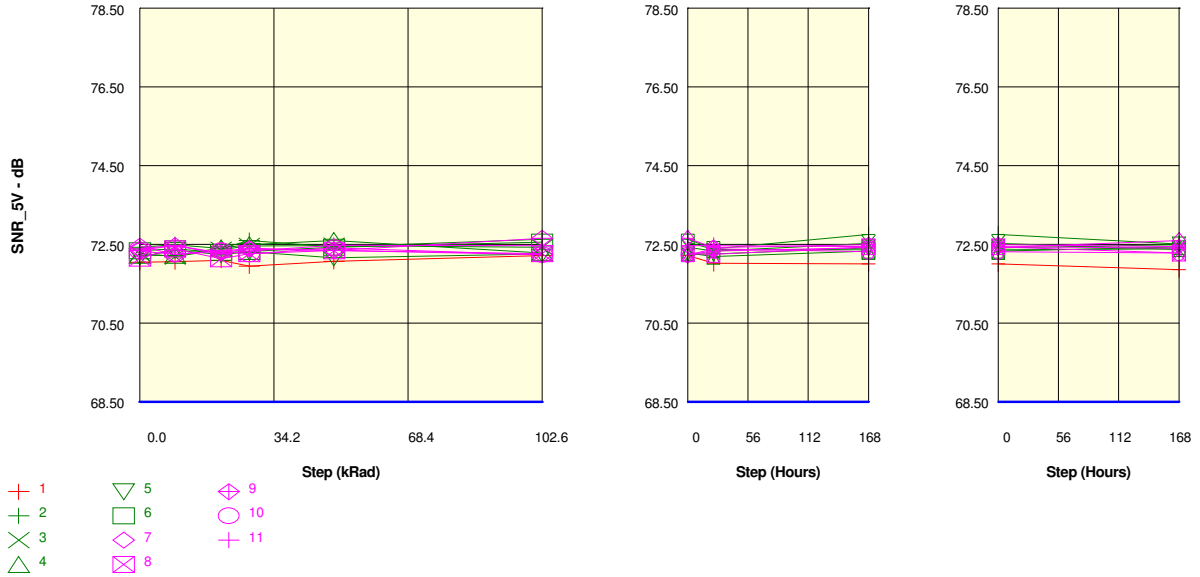
SNR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	72.02	72.01	72.10	72.01	71.93	72.12	72.09	72.01	72.00
OFF samples									
7	72.23	72.31	72.32	72.45	72.47	72.31	72.45	72.31	72.44
8	72.28	72.31	72.41	72.30	72.32	72.31	72.37	72.34	72.38
9	72.49	72.37	72.26	72.26	72.55	72.54	72.54	72.38	72.24
10	72.30	72.44	72.31	72.39	72.30	72.40	72.32	72.25	72.42
11	72.12	72.45	72.25	72.45	72.51	72.41	72.43	72.40	72.29
Statistics									
Min	72.12	72.31	72.25	72.26	72.30	72.31	72.32	72.25	72.24
Max	72.49	72.45	72.41	72.45	72.55	72.54	72.54	72.40	72.44
Average	72.28	72.38	72.31	72.37	72.43	72.39	72.42	72.33	72.35
Sigma	0.12	0.06	0.05	0.08	0.10	0.08	0.07	0.05	0.08

Drift Calculation

SNR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	82.0E-03	87.0E-03	220.0E-03	240.0E-03	79.0E-03	219.0E-03	78.0E-03	207.0E-03
8	-	33.0E-03	126.0E-03	22.0E-03	44.0E-03	29.0E-03	94.0E-03	59.0E-03	103.0E-03
9	-	-114.0E-03	-222.0E-03	-224.0E-03	60.0E-03	51.0E-03	52.0E-03	-109.0E-03	-248.0E-03
10	-	134.0E-03	12.0E-03	86.0E-03	1.0E-03	98.0E-03	23.0E-03	-53.0E-03	118.0E-03
11	-	322.0E-03	128.0E-03	322.0E-03	390.0E-03	283.0E-03	308.0E-03	272.0E-03	169.0E-03
Average	-	91.4E-03	26.2E-03	85.2E-03	147.0E-03	108.0E-03	139.2E-03	49.4E-03	69.8E-03
Sigma	-	141.9E-03	131.0E-03	186.5E-03	146.4E-03	90.6E-03	107.7E-03	131.2E-03	163.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise ratio : SNR_5VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	72.05	72.07	72.10	71.95	72.07	72.22	72.02	72.01	71.86
ON samples									
2	72.43	72.50	72.40	72.60	72.43	72.63	72.39	72.75	72.52
3	72.28	72.19	72.37	72.46	72.47	72.43	72.33	72.53	72.37
4	72.22	72.22	72.41	72.49	72.60	72.29	72.20	72.33	72.44
5	72.19	72.35	72.24	72.32	72.16	72.26	72.26	72.42	72.49
6	72.34	72.39	72.29	72.32	72.43	72.56	72.38	72.36	72.39
Statistics									
Min	72.19	72.19	72.24	72.32	72.16	72.26	72.20	72.33	72.37
Max	72.43	72.50	72.41	72.60	72.60	72.63	72.39	72.75	72.52
Average	72.29	72.33	72.34	72.44	72.42	72.43	72.31	72.48	72.44
Sigma	0.09	0.11	0.07	0.11	0.14	0.15	0.07	0.15	0.06

Drift Calculation

SNR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	64.0E-03	-34.0E-03	171.0E-03	2.0E-03	195.0E-03	-42.0E-03	323.0E-03	84.0E-03
3	-	-83.0E-03	94.0E-03	188.0E-03	195.0E-03	156.0E-03	52.0E-03	251.0E-03	94.0E-03
4	-	-2.0E-03	192.0E-03	271.0E-03	376.0E-03	65.0E-03	-23.0E-03	105.0E-03	217.0E-03
5	-	166.0E-03	53.0E-03	129.0E-03	-28.0E-03	69.0E-03	68.0E-03	227.0E-03	303.0E-03
6	-	51.0E-03	-48.0E-03	-18.0E-03	86.0E-03	222.0E-03	35.0E-03	19.0E-03	52.0E-03
Average	-	39.2E-03	51.4E-03	148.2E-03	126.2E-03	141.4E-03	18.0E-03	185.0E-03	150.0E-03
Sigma	-	81.8E-03	88.0E-03	95.1E-03	146.9E-03	64.3E-03	43.0E-03	108.7E-03	94.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

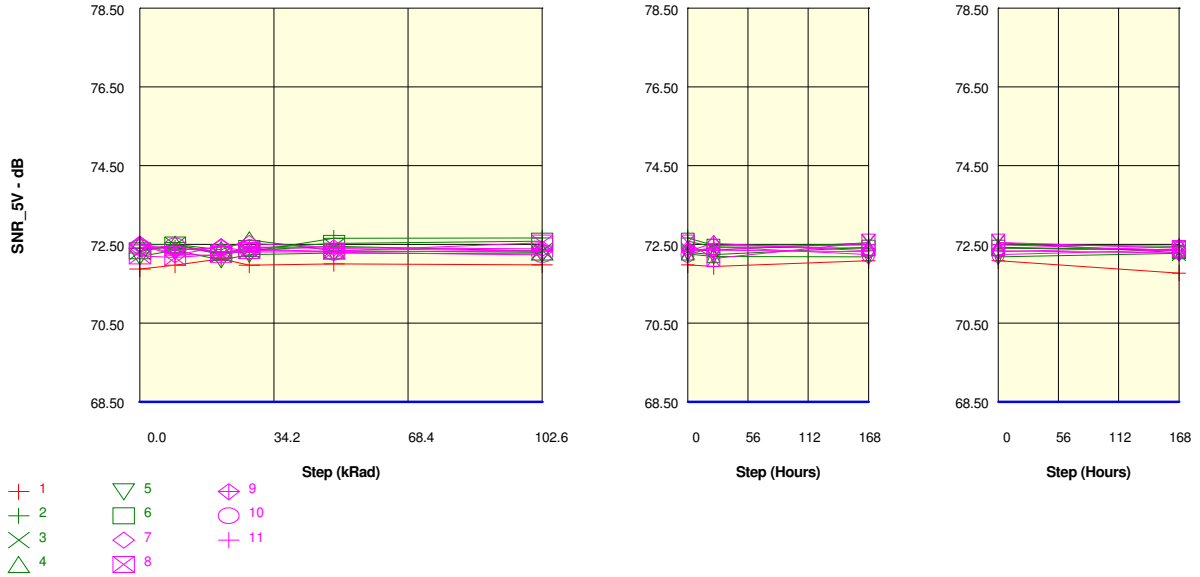
Measurements

SNR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	72.05	72.07	72.10	71.95	72.07	72.22	72.02	72.01	71.86
OFF samples									
7	72.46	72.25	72.35	72.38	72.34	72.24	72.33	72.42	72.60
8	72.15	72.39	72.14	72.27	72.34	72.27	72.25	72.44	72.29
9	72.39	72.48	72.29	72.40	72.35	72.66	72.42	72.50	72.44
10	72.33	72.25	72.34	72.26	72.42	72.24	72.39	72.32	72.28
11	72.35	72.47	72.25	72.33	72.48	72.47	72.47	72.45	72.41
Statistics									
Min	72.15	72.25	72.14	72.26	72.34	72.24	72.25	72.32	72.28
Max	72.46	72.48	72.35	72.40	72.48	72.66	72.47	72.50	72.60
Average	72.34	72.37	72.27	72.33	72.39	72.37	72.37	72.42	72.40
Sigma	0.10	0.10	0.08	0.06	0.05	0.17	0.08	0.06	0.12

Drift Calculation

SNR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-214.0E-03	-115.0E-03	-78.0E-03	-116.0E-03	-220.0E-03	-127.0E-03	-36.0E-03	138.0E-03
8	-	237.0E-03	-14.0E-03	116.0E-03	192.0E-03	116.0E-03	98.0E-03	289.0E-03	136.0E-03
9	-	91.0E-03	-98.0E-03	15.0E-03	-34.0E-03	275.0E-03	33.0E-03	112.0E-03	58.0E-03
10	-	-77.0E-03	7.0E-03	-73.0E-03	86.0E-03	-94.0E-03	61.0E-03	-13.0E-03	-50.0E-03
11	-	114.0E-03	-100.0E-03	-27.0E-03	123.0E-03	116.0E-03	114.0E-03	92.0E-03	56.0E-03
Average	-	30.2E-03	-64.0E-03	-9.4E-03	50.2E-03	38.6E-03	35.8E-03	88.8E-03	67.6E-03
Sigma	-	157.9E-03	50.2E-03	71.2E-03	110.8E-03	174.5E-03	86.2E-03	115.4E-03	68.8E-03

Parameter : Signal to noise ratio : SNR_5VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.88	71.97	72.14	71.98	72.01	71.98	71.94	72.09	71.77
ON samples									
2	72.40	72.41	72.30	72.31	72.66	72.67	72.48	72.50	72.45
3	72.32	72.49	72.24	72.35	72.46	72.34	72.36	72.54	72.29
4	72.49	72.50	72.36	72.62	72.34	72.30	72.24	72.43	72.34
5	72.19	72.35	72.11	72.25	72.29	72.26	72.20	72.19	72.28
6	72.34	72.48	72.29	72.40	72.53	72.59	72.43	72.41	72.36
Statistics									
Min	72.19	72.35	72.11	72.25	72.29	72.26	72.20	72.19	72.28
Max	72.49	72.50	72.36	72.62	72.66	72.67	72.48	72.54	72.45
Average	72.35	72.45	72.26	72.39	72.45	72.43	72.34	72.41	72.34
Sigma	0.10	0.06	0.09	0.13	0.13	0.16	0.11	0.12	0.06

Drift Calculation

SNR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	11.0E-03	-101.0E-03	-89.0E-03	261.0E-03	264.0E-03	78.0E-03	97.0E-03	48.0E-03
3	-	173.0E-03	-75.0E-03	37.0E-03	140.0E-03	20.0E-03	39.0E-03	227.0E-03	-26.0E-03
4	-	14.0E-03	-124.0E-03	129.0E-03	-148.0E-03	-182.0E-03	-246.0E-03	-55.0E-03	-143.0E-03
5	-	159.0E-03	-85.0E-03	53.0E-03	95.0E-03	64.0E-03	5.0E-03	-8.0E-03	83.0E-03
6	-	144.0E-03	-48.0E-03	59.0E-03	186.0E-03	245.0E-03	94.0E-03	67.0E-03	21.0E-03
Average	-	100.2E-03	-86.6E-03	37.8E-03	106.8E-03	82.2E-03	-6.0E-03	65.6E-03	-3.4E-03
Sigma	-	72.2E-03	25.4E-03	70.8E-03	138.7E-03	163.4E-03	123.9E-03	97.0E-03	78.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

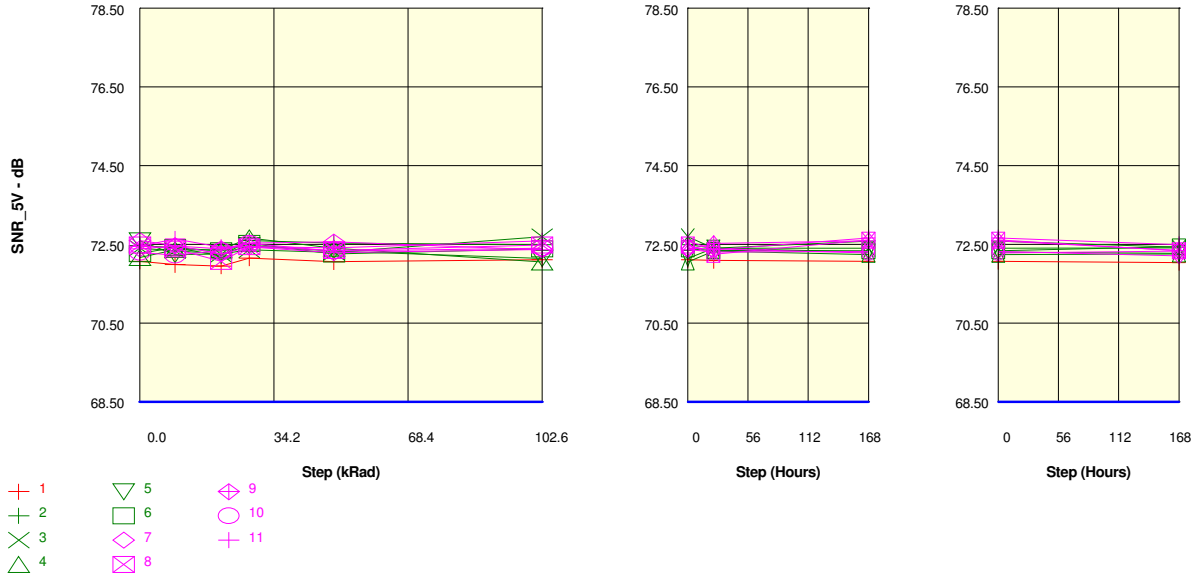
SNR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.88	71.97	72.14	71.98	72.01	71.98	71.94	72.09	71.77
OFF samples									
7	72.51	72.35	72.43	72.53	72.42	72.39	72.36	72.32	72.44
8	72.21	72.17	72.25	72.35	72.33	72.54	72.15	72.56	72.40
9	72.49	72.23	72.45	72.31	72.32	72.33	72.53	72.34	72.28
10	72.42	72.46	72.28	72.41	72.30	72.23	72.44	72.24	72.36
11	72.51	72.26	72.21	72.43	72.40	72.33	72.41	72.49	72.34
Statistics									
Min	72.21	72.17	72.21	72.31	72.30	72.23	72.15	72.24	72.28
Max	72.51	72.46	72.45	72.53	72.42	72.54	72.53	72.56	72.44
Average	72.43	72.29	72.32	72.40	72.35	72.37	72.37	72.39	72.36
Sigma	0.11	0.10	0.10	0.08	0.05	0.10	0.13	0.12	0.05

Drift Calculation

SNR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-165.0E-03	-84.0E-03	13.0E-03	-95.0E-03	-120.0E-03	-157.0E-03	-196.0E-03	-76.0E-03
8	-	-42.0E-03	38.0E-03	137.0E-03	120.0E-03	327.0E-03	-67.0E-03	344.0E-03	190.0E-03
9	-	-256.0E-03	-39.0E-03	-181.0E-03	-168.0E-03	-154.0E-03	40.0E-03	-146.0E-03	-205.0E-03
10	-	49.0E-03	-132.0E-03	-6.0E-03	-120.0E-03	-181.0E-03	20.0E-03	-174.0E-03	-53.0E-03
11	-	-253.0E-03	-295.0E-03	-77.0E-03	-114.0E-03	-181.0E-03	-97.0E-03	-15.0E-03	-166.0E-03
Average	-	-133.4E-03	-102.4E-03	-22.8E-03	-75.4E-03	-61.8E-03	-52.2E-03	-37.4E-03	-62.0E-03
Sigma	-	120.0E-03	111.4E-03	104.9E-03	100.6E-03	195.7E-03	73.4E-03	200.8E-03	137.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise ratio : SNR_5VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	72.07	71.99	71.95	72.15	72.06	72.11	72.09	72.07	72.04
ON samples									
2	72.47	72.42	72.21	72.60	72.54	72.49	72.41	72.58	72.43
3	72.41	72.34	72.25	72.36	72.30	72.70	72.41	72.40	72.41
4	72.17	72.37	72.37	72.67	72.40	72.05	72.34	72.25	72.26
5	72.59	72.24	72.26	72.47	72.33	72.14	72.40	72.31	72.28
6	72.27	72.42	72.34	72.53	72.26	72.39	72.35	72.34	72.44
Statistics									
Min	72.17	72.24	72.21	72.36	72.26	72.05	72.34	72.25	72.26
Max	72.59	72.42	72.37	72.67	72.54	72.70	72.41	72.58	72.44
Average	72.38	72.36	72.28	72.52	72.37	72.35	72.38	72.38	72.36
Sigma	0.15	0.07	0.06	0.10	0.10	0.23	0.03	0.11	0.08

Drift Calculation

SNR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-53.0E-03	-261.0E-03	123.0E-03	63.0E-03	19.0E-03	-63.0E-03	107.0E-03	-45.0E-03
3	-	-69.0E-03	-153.0E-03	-46.0E-03	-107.0E-03	288.0E-03	2.0E-03	-4.0E-03	6.0E-03
4	-	198.0E-03	199.0E-03	496.0E-03	235.0E-03	-116.0E-03	166.0E-03	77.0E-03	87.0E-03
5	-	-351.0E-03	-338.0E-03	-121.0E-03	-260.0E-03	-451.0E-03	-190.0E-03	-286.0E-03	-318.0E-03
6	-	151.0E-03	65.0E-03	256.0E-03	-13.0E-03	119.0E-03	82.0E-03	69.0E-03	172.0E-03
Average	-	-24.8E-03	-97.6E-03	141.6E-03	-16.4E-03	-28.2E-03	-600.0E-06	-7.4E-03	-19.6E-03
Sigma	-	194.8E-03	201.0E-03	220.5E-03	165.6E-03	249.1E-03	121.9E-03	144.0E-03	166.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

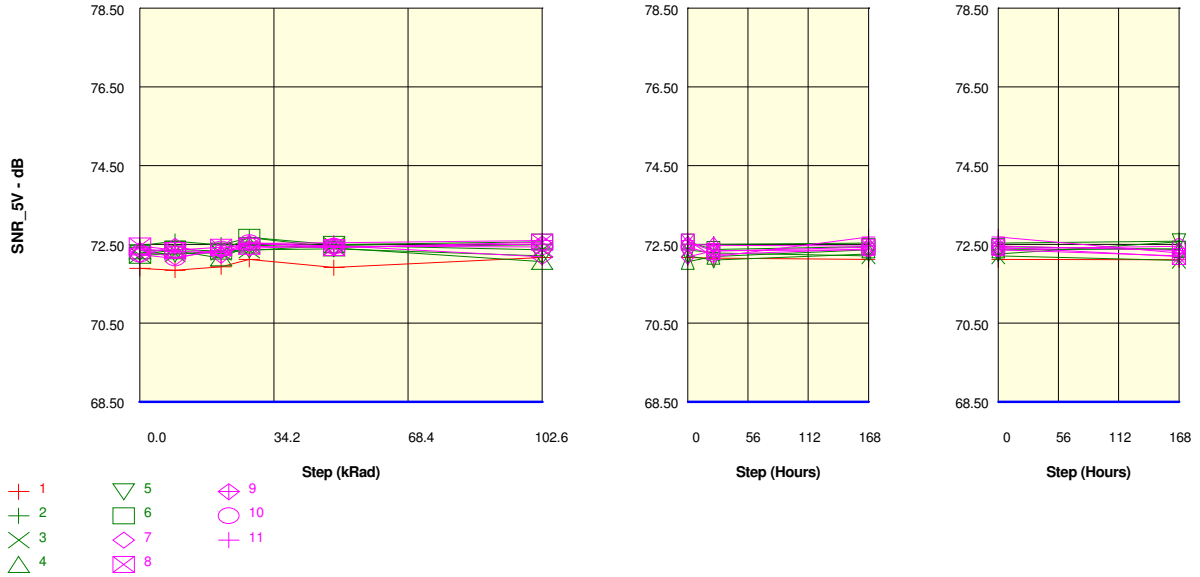
Measurements

SNR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	72.07	71.99	71.95	72.15	72.06	72.11	72.09	72.07	72.04
OFF samples									
7	72.60	72.47	72.26	72.44	72.29	72.37	72.31	72.32	72.21
8	72.48	72.38	72.07	72.44	72.35	72.49	72.25	72.61	72.34
9	72.39	72.46	72.39	72.53	72.56	72.36	72.52	72.59	72.35
10	72.30	72.22	72.34	72.53	72.34	72.41	72.39	72.28	72.33
11	72.45	72.64	72.43	72.44	72.41	72.59	72.37	72.67	72.49
Statistics									
Min	72.30	72.22	72.07	72.44	72.29	72.36	72.25	72.28	72.21
Max	72.60	72.64	72.43	72.53	72.56	72.59	72.52	72.67	72.49
Average	72.44	72.44	72.30	72.48	72.39	72.44	72.37	72.50	72.34
Sigma	0.10	0.14	0.13	0.04	0.10	0.09	0.09	0.16	0.09

Drift Calculation

SNR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-129.0E-03	-339.0E-03	-166.0E-03	-310.0E-03	-232.0E-03	-296.0E-03	-277.0E-03	-388.0E-03
8	-	-98.0E-03	-410.0E-03	-38.0E-03	-133.0E-03	6.0E-03	-230.0E-03	130.0E-03	-143.0E-03
9	-	69.0E-03	-1000.0E-06	145.0E-03	175.0E-03	-25.0E-03	134.0E-03	202.0E-03	-40.0E-03
10	-	-76.0E-03	42.0E-03	227.0E-03	35.0E-03	110.0E-03	88.0E-03	-16.0E-03	28.0E-03
11	-	194.0E-03	-22.0E-03	-5.0E-03	-37.0E-03	140.0E-03	-83.0E-03	217.0E-03	44.0E-03
Average	-	-8.0E-03	-146.0E-03	32.6E-03	-54.0E-03	-200.0E-06	-77.4E-03	51.2E-03	-99.8E-03
Sigma	-	121.7E-03	189.0E-03	138.8E-03	162.7E-03	131.3E-03	169.2E-03	183.7E-03	158.4E-03

Parameter : Signal to noise ratio : SNR_5VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.50
 Spec limits are represented in bold lines on the graphic.



Measurements

SNR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.89	71.85	71.93	72.12	71.91	72.17	72.15	72.12	72.11
ON samples									
2	72.47	72.58	72.49	72.68	72.43	72.49	72.50	72.53	72.59
3	72.23	72.26	72.29	72.35	72.48	72.36	72.29	72.21	72.09
4	72.34	72.34	72.16	72.49	72.41	72.07	72.20	72.36	72.39
5	72.29	72.26	72.33	72.36	72.39	72.21	72.10	72.26	72.57
6	72.23	72.38	72.33	72.68	72.50	72.56	72.37	72.45	72.37
Statistics									
Min	72.23	72.26	72.16	72.35	72.39	72.07	72.10	72.21	72.09
Max	72.47	72.58	72.49	72.68	72.50	72.56	72.50	72.53	72.59
Average	72.31	72.36	72.32	72.51	72.44	72.34	72.29	72.36	72.40
Sigma	0.09	0.12	0.11	0.14	0.04	0.18	0.14	0.12	0.18

Drift Calculation

SNR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	112.0E-03	20.0E-03	210.0E-03	-42.0E-03	24.0E-03	33.0E-03	66.0E-03	120.0E-03
3	-	33.0E-03	68.0E-03	127.0E-03	256.0E-03	137.0E-03	60.0E-03	-17.0E-03	-131.0E-03
4	-	0.0E+00	-184.0E-03	149.0E-03	72.0E-03	-271.0E-03	-140.0E-03	24.0E-03	46.0E-03
5	-	-37.0E-03	33.0E-03	67.0E-03	92.0E-03	-87.0E-03	-191.0E-03	-32.0E-03	277.0E-03
6	-	152.0E-03	106.0E-03	455.0E-03	274.0E-03	339.0E-03	149.0E-03	221.0E-03	149.0E-03
Average	-	52.0E-03	8.6E-03	201.6E-03	130.4E-03	28.4E-03	-17.8E-03	52.4E-03	92.2E-03
Sigma	-	70.1E-03	100.8E-03	134.7E-03	119.2E-03	205.5E-03	127.6E-03	90.9E-03	134.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

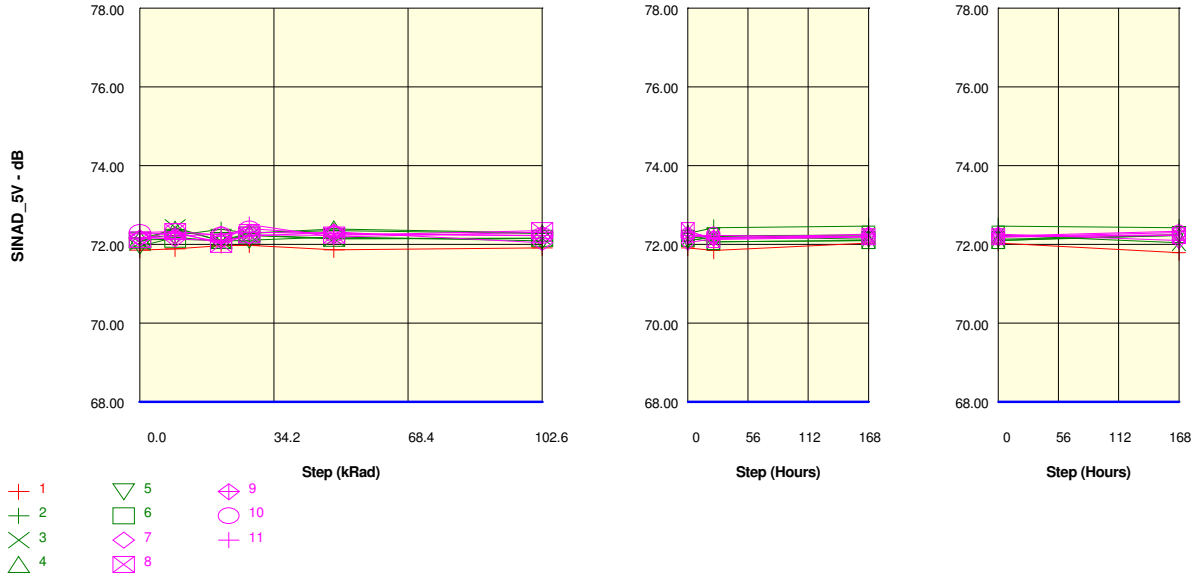
Measurements

SNR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.89	71.85	71.93	72.12	71.91	72.17	72.15	72.12	72.11
OFF samples									
7	72.35	72.17	72.35	72.40	72.47	72.19	72.34	72.37	72.21
8	72.46	72.35	72.43	72.45	72.42	72.56	72.33	72.43	72.20
9	72.24	72.46	72.23	72.53	72.43	72.51	72.48	72.46	72.35
10	72.25	72.15	72.39	72.54	72.45	72.44	72.24	72.39	72.45
11	72.39	72.32	72.30	72.53	72.54	72.60	72.18	72.69	72.29
Statistics									
Min	72.24	72.15	72.23	72.40	72.42	72.19	72.18	72.37	72.20
Max	72.46	72.46	72.43	72.54	72.54	72.60	72.48	72.69	72.45
Average	72.34	72.29	72.34	72.49	72.46	72.46	72.31	72.47	72.30
Sigma	0.09	0.12	0.07	0.05	0.04	0.14	0.10	0.12	0.09

Drift Calculation

SNR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-181.0E-03	-4.0E-03	48.0E-03	114.0E-03	-165.0E-03	-13.0E-03	12.0E-03	-142.0E-03
8	-	-108.0E-03	-30.0E-03	-7.0E-03	-39.0E-03	98.0E-03	-135.0E-03	-30.0E-03	-265.0E-03
9	-	221.0E-03	-9.0E-03	295.0E-03	190.0E-03	276.0E-03	246.0E-03	228.0E-03	113.0E-03
10	-	-99.0E-03	140.0E-03	295.0E-03	208.0E-03	193.0E-03	-2.0E-03	140.0E-03	204.0E-03
11	-	-72.0E-03	-90.0E-03	137.0E-03	145.0E-03	202.0E-03	-212.0E-03	294.0E-03	-107.0E-03
Average	-	-47.8E-03	1.4E-03	153.6E-03	123.6E-03	120.8E-03	-23.2E-03	128.8E-03	-39.4E-03
Sigma	-	139.2E-03	75.7E-03	124.3E-03	87.8E-03	153.7E-03	155.7E-03	123.4E-03	172.3E-03

Parameter : Signal to noise + distortion : SINAD_5VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.86	71.88	71.97	71.98	71.86	71.91	71.84	72.03	71.79
ON samples									
2	72.16	72.23	72.38	72.29	72.35	72.28	72.43	72.47	72.43
3	72.05	72.44	72.08	72.23	72.14	72.15	72.22	72.24	72.04
4	72.14	72.39	72.10	72.29	72.39	72.29	72.07	72.10	72.23
5	71.96	72.18	72.09	72.11	72.19	72.09	72.21	72.13	72.24
6	72.11	72.13	72.10	72.24	72.15	72.16	72.07	72.10	72.26
Statistics									
Min	71.96	72.13	72.08	72.11	72.14	72.09	72.07	72.10	72.04
Max	72.16	72.44	72.38	72.29	72.39	72.29	72.43	72.47	72.43
Average	72.08	72.27	72.15	72.23	72.25	72.19	72.20	72.21	72.24
Sigma	0.07	0.12	0.11	0.07	0.10	0.08	0.13	0.14	0.12

Drift Calculation

SINAD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	64.0E-03	216.0E-03	125.0E-03	185.0E-03	115.0E-03	262.0E-03	302.0E-03	265.0E-03
3	-	386.0E-03	35.0E-03	177.0E-03	95.0E-03	105.0E-03	169.0E-03	190.0E-03	-10.0E-03
4	-	255.0E-03	-32.0E-03	149.0E-03	257.0E-03	153.0E-03	-66.0E-03	-35.0E-03	97.0E-03
5	-	226.0E-03	131.0E-03	151.0E-03	238.0E-03	133.0E-03	253.0E-03	170.0E-03	280.0E-03
6	-	18.0E-03	-13.0E-03	127.0E-03	41.0E-03	45.0E-03	-42.0E-03	-12.0E-03	146.0E-03
Average	-	189.8E-03	67.4E-03	145.8E-03	163.2E-03	110.2E-03	115.2E-03	123.0E-03	155.6E-03
Sigma	-	133.7E-03	93.3E-03	19.0E-03	83.0E-03	36.5E-03	142.1E-03	128.0E-03	108.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

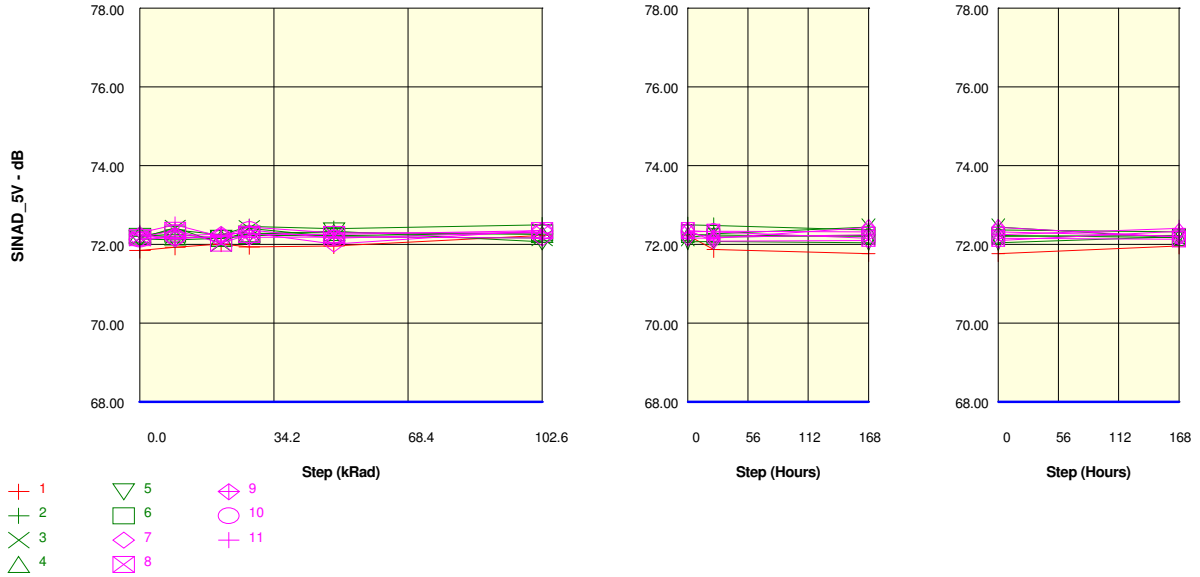
Measurements

SINAD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.86	71.88	71.97	71.98	71.86	71.91	71.84	72.03	71.79
OFF samples									
7	72.17	72.14	72.10	72.21	72.32	72.05	72.15	72.20	72.25
8	72.12	72.33	72.01	72.24	72.23	72.35	72.12	72.19	72.23
9	72.16	72.22	72.26	72.31	72.28	72.24	72.17	72.26	72.10
10	72.30	72.33	72.24	72.40	72.26	72.22	72.24	72.18	72.30
11	72.27	72.27	72.07	72.51	72.19	72.31	72.17	72.21	72.34
Statistics									
Min	72.12	72.14	72.01	72.21	72.19	72.05	72.12	72.18	72.10
Max	72.30	72.33	72.26	72.51	72.32	72.35	72.24	72.26	72.34
Average	72.20	72.26	72.14	72.33	72.26	72.23	72.17	72.21	72.24
Sigma	0.07	0.07	0.10	0.11	0.05	0.11	0.04	0.03	0.08

Drift Calculation

SINAD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-30.0E-03	-70.0E-03	39.0E-03	150.0E-03	-125.0E-03	-21.0E-03	26.0E-03	75.0E-03
8	-	205.0E-03	-117.0E-03	121.0E-03	112.0E-03	229.0E-03	1.0E-03	71.0E-03	106.0E-03
9	-	57.0E-03	104.0E-03	152.0E-03	124.0E-03	78.0E-03	7.0E-03	102.0E-03	-62.0E-03
10	-	24.0E-03	-66.0E-03	93.0E-03	-39.0E-03	-82.0E-03	-67.0E-03	-119.0E-03	-3.0E-03
11	-	4.0E-03	-197.0E-03	238.0E-03	-85.0E-03	42.0E-03	-96.0E-03	-56.0E-03	65.0E-03
Average	-	52.0E-03	-69.2E-03	128.6E-03	52.4E-03	28.4E-03	-35.2E-03	4.8E-03	36.2E-03
Sigma	-	81.5E-03	98.6E-03	66.1E-03	95.3E-03	125.4E-03	40.0E-03	81.6E-03	60.6E-03

Parameter : Signal to noise + distortion : SINAD_5VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.85	71.93	72.01	71.94	71.96	72.23	71.88	71.77	71.96
ON samples									
2	72.20	72.37	72.25	72.45	72.40	72.50	72.48	72.37	72.32
3	72.16	72.42	72.02	72.41	72.20	72.17	72.27	72.45	72.16
4	72.25	72.19	72.16	72.27	72.30	72.25	72.24	72.20	72.23
5	72.14	72.12	72.16	72.26	72.34	72.06	72.08	72.05	72.20
6	72.21	72.26	72.15	72.23	72.22	72.30	72.19	72.24	72.17
Statistics									
Min	72.14	72.12	72.02	72.23	72.20	72.06	72.08	72.05	72.16
Max	72.25	72.42	72.25	72.45	72.40	72.50	72.48	72.45	72.32
Average	72.19	72.27	72.15	72.33	72.29	72.26	72.25	72.26	72.22
Sigma	0.04	0.11	0.07	0.09	0.07	0.14	0.13	0.14	0.06

Drift Calculation

SINAD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	165.0E-03	46.0E-03	250.0E-03	199.0E-03	293.0E-03	276.0E-03	164.0E-03	117.0E-03
3	-	263.0E-03	-138.0E-03	252.0E-03	37.0E-03	6.0E-03	111.0E-03	285.0E-03	4.0E-03
4	-	-58.0E-03	-89.0E-03	25.0E-03	55.0E-03	6.0E-03	-9.0E-03	-45.0E-03	-16.0E-03
5	-	-22.0E-03	17.0E-03	123.0E-03	200.0E-03	-76.0E-03	-62.0E-03	-95.0E-03	56.0E-03
6	-	54.0E-03	-59.0E-03	20.0E-03	15.0E-03	87.0E-03	-15.0E-03	27.0E-03	-39.0E-03
Average	-	80.4E-03	-44.6E-03	134.0E-03	101.2E-03	63.2E-03	60.2E-03	67.2E-03	24.4E-03
Sigma	-	119.0E-03	67.7E-03	102.4E-03	81.3E-03	125.9E-03	122.1E-03	139.5E-03	55.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

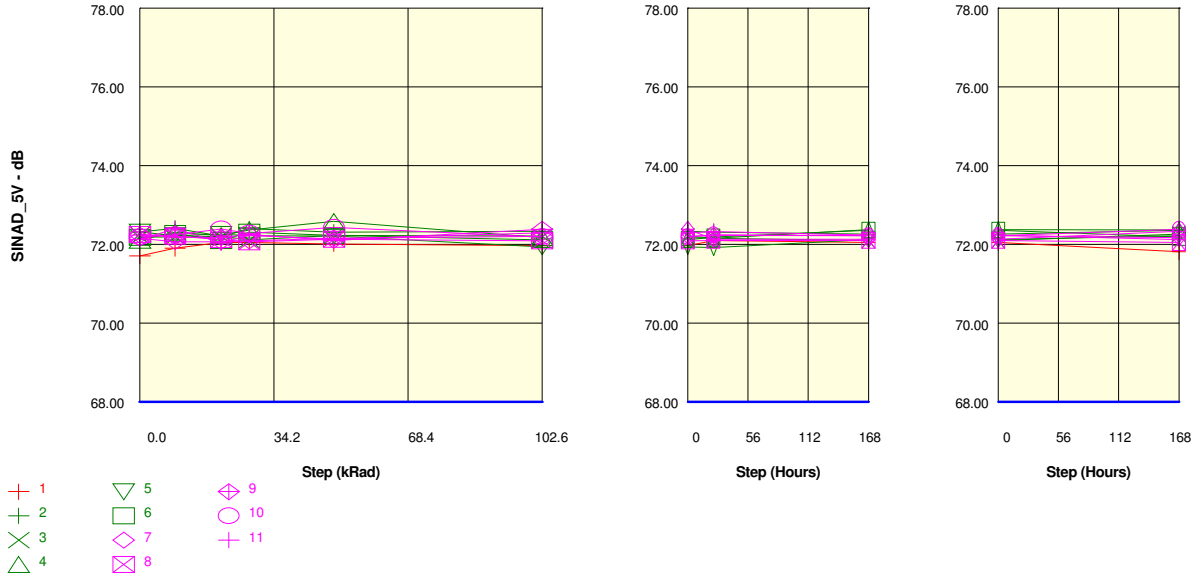
SINAD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.85	71.93	72.01	71.94	71.96	72.23	71.88	71.77	71.96
OFF samples									
7	72.14	72.22	72.26	72.30	72.01	72.36	72.09	72.10	72.34
8	72.17	72.36	72.03	72.26	72.26	72.35	72.32	72.16	72.13
9	72.24	72.14	72.21	72.18	72.19	72.17	72.16	72.43	72.19
10	72.12	72.18	72.18	72.37	72.16	72.32	72.33	72.32	72.20
11	72.30	72.50	72.20	72.45	72.29	72.29	72.18	72.25	72.41
Statistics									
Min	72.12	72.14	72.03	72.18	72.01	72.17	72.09	72.10	72.13
Max	72.30	72.50	72.26	72.45	72.29	72.36	72.33	72.43	72.41
Average	72.19	72.28	72.18	72.31	72.18	72.30	72.21	72.25	72.25
Sigma	0.07	0.13	0.08	0.09	0.10	0.07	0.09	0.12	0.10

Drift Calculation

SINAD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	88.0E-03	124.0E-03	160.0E-03	-126.0E-03	222.0E-03	-49.0E-03	-39.0E-03	199.0E-03
8	-	187.0E-03	-139.0E-03	83.0E-03	83.0E-03	180.0E-03	144.0E-03	-16.0E-03	-39.0E-03
9	-	-100.0E-03	-29.0E-03	-63.0E-03	-58.0E-03	-78.0E-03	-86.0E-03	190.0E-03	-54.0E-03
10	-	59.0E-03	59.0E-03	247.0E-03	33.0E-03	198.0E-03	207.0E-03	199.0E-03	79.0E-03
11	-	207.0E-03	-98.0E-03	149.0E-03	-6.0E-03	-3.0E-03	-117.0E-03	-49.0E-03	117.0E-03
Average	-	88.2E-03	-16.6E-03	115.2E-03	-14.8E-03	103.8E-03	19.8E-03	57.0E-03	60.4E-03
Sigma	-	109.7E-03	97.2E-03	103.3E-03	72.3E-03	120.9E-03	130.5E-03	112.8E-03	95.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise + distortion : SINAD_5VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.71	71.90	72.05	72.06	72.02	71.97	72.10	72.05	71.82
ON samples									
2	72.33	72.41	72.22	72.39	72.31	72.34	72.31	72.27	72.36
3	72.19	72.19	72.20	72.11	72.23	72.21	72.16	72.10	72.26
4	72.11	72.31	72.22	72.37	72.58	72.17	72.16	72.38	72.37
5	72.32	72.23	72.26	72.23	72.21	71.94	71.92	72.12	72.22
6	72.18	72.28	72.10	72.31	72.23	72.12	72.19	72.36	72.18
Statistics									
Min	72.11	72.19	72.10	72.11	72.21	71.94	71.92	72.10	72.18
Max	72.33	72.41	72.26	72.39	72.58	72.34	72.31	72.38	72.37
Average	72.22	72.28	72.20	72.28	72.31	72.16	72.15	72.25	72.28
Sigma	0.08	0.08	0.05	0.10	0.14	0.13	0.13	0.11	0.07

Drift Calculation

SINAD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	83.0E-03	-110.0E-03	69.0E-03	-16.0E-03	13.0E-03	-12.0E-03	-59.0E-03	36.0E-03
3	-	-1000.0E-06	17.0E-03	-75.0E-03	45.0E-03	24.0E-03	-28.0E-03	-83.0E-03	74.0E-03
4	-	201.0E-03	109.0E-03	258.0E-03	473.0E-03	62.0E-03	46.0E-03	265.0E-03	254.0E-03
5	-	-91.0E-03	-58.0E-03	-91.0E-03	-105.0E-03	-375.0E-03	-396.0E-03	-194.0E-03	-92.0E-03
6	-	103.0E-03	-79.0E-03	133.0E-03	51.0E-03	-57.0E-03	12.0E-03	180.0E-03	7.0E-03
Average	-	59.0E-03	-24.2E-03	58.8E-03	89.6E-03	-66.6E-03	-75.6E-03	21.8E-03	55.8E-03
Sigma	-	98.8E-03	78.7E-03	130.9E-03	199.7E-03	158.9E-03	162.1E-03	172.2E-03	113.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

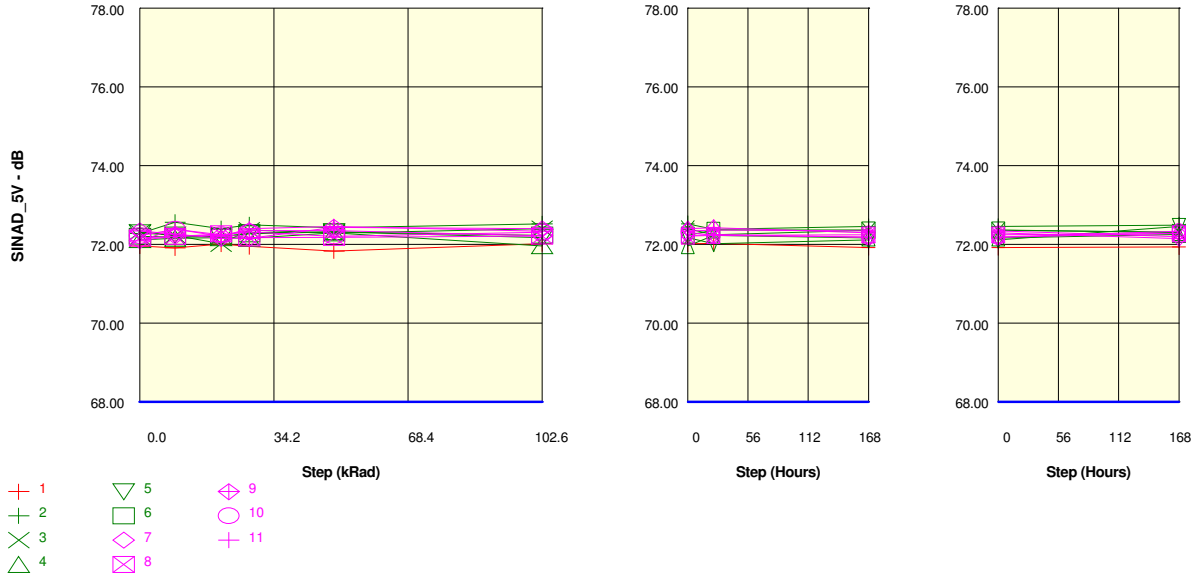
Measurements

SINAD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.71	71.90	72.05	72.06	72.02	71.97	72.10	72.05	71.82
OFF samples									
7	72.16	72.07	72.07	72.09	72.16	72.20	72.23	72.22	72.17
8	72.25	72.21	72.12	72.07	72.13	72.09	72.10	72.10	72.05
9	72.24	72.19	72.18	72.25	72.10	72.39	72.14	72.13	72.34
10	72.19	72.25	72.39	72.28	72.43	72.19	72.25	72.22	72.39
11	72.12	72.40	72.04	72.23	72.14	72.29	72.33	72.24	72.12
Statistics									
Min	72.12	72.07	72.04	72.07	72.10	72.09	72.10	72.10	72.05
Max	72.25	72.40	72.39	72.28	72.43	72.39	72.33	72.24	72.39
Average	72.19	72.22	72.16	72.19	72.19	72.23	72.21	72.18	72.21
Sigma	0.05	0.11	0.12	0.09	0.12	0.10	0.08	0.06	0.13

Drift Calculation

SINAD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-87.0E-03	-90.0E-03	-69.0E-03	2.0E-03	44.0E-03	69.0E-03	63.0E-03	13.0E-03
8	-	-40.0E-03	-131.0E-03	-184.0E-03	-122.0E-03	-163.0E-03	-150.0E-03	-151.0E-03	-199.0E-03
9	-	-50.0E-03	-62.0E-03	17.0E-03	-135.0E-03	151.0E-03	-101.0E-03	-108.0E-03	101.0E-03
10	-	58.0E-03	205.0E-03	96.0E-03	244.0E-03	5.0E-03	58.0E-03	33.0E-03	198.0E-03
11	-	279.0E-03	-80.0E-03	112.0E-03	19.0E-03	173.0E-03	208.0E-03	118.0E-03	3.0E-03
Average	-	32.0E-03	-31.6E-03	-5.6E-03	1.6E-03	42.0E-03	16.8E-03	-9.0E-03	23.2E-03
Sigma	-	132.5E-03	120.4E-03	110.0E-03	136.4E-03	120.4E-03	128.6E-03	103.0E-03	131.5E-03

Parameter : Signal to noise + distortion : SINAD_5VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.96	71.91	72.01	71.95	71.84	72.02	72.02	71.92	71.94
ON samples									
2	72.28	72.57	72.40	72.50	72.43	72.52	72.38	72.45	72.49
3	72.32	72.23	72.02	72.36	72.29	72.40	72.25	72.36	72.31
4	72.12	72.16	72.18	72.16	72.29	71.97	72.23	72.17	72.25
5	72.30	72.24	72.18	72.30	72.32	72.18	72.02	72.11	72.46
6	72.21	72.19	72.21	72.27	72.32	72.23	72.37	72.37	72.30
Statistics									
Min	72.12	72.16	72.02	72.16	72.29	71.97	72.02	72.11	72.25
Max	72.32	72.57	72.40	72.50	72.43	72.52	72.38	72.45	72.49
Average	72.24	72.28	72.20	72.32	72.33	72.26	72.25	72.29	72.36
Sigma	0.07	0.15	0.12	0.11	0.05	0.19	0.13	0.13	0.09

Drift Calculation

SINAD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	284.0E-03	119.0E-03	221.0E-03	148.0E-03	239.0E-03	101.0E-03	171.0E-03	207.0E-03
3	-	-91.0E-03	-299.0E-03	46.0E-03	-30.0E-03	79.0E-03	-72.0E-03	44.0E-03	-6.0E-03
4	-	40.0E-03	56.0E-03	37.0E-03	175.0E-03	-152.0E-03	112.0E-03	48.0E-03	134.0E-03
5	-	-60.0E-03	-114.0E-03	1.0E-03	26.0E-03	-119.0E-03	-278.0E-03	-183.0E-03	165.0E-03
6	-	-15.0E-03	2.0E-03	61.0E-03	116.0E-03	27.0E-03	158.0E-03	160.0E-03	93.0E-03
Average	-	31.6E-03	-47.2E-03	73.2E-03	87.0E-03	14.8E-03	4.2E-03	48.0E-03	118.6E-03
Sigma	-	133.7E-03	147.3E-03	76.5E-03	77.1E-03	141.6E-03	161.3E-03	127.3E-03	72.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

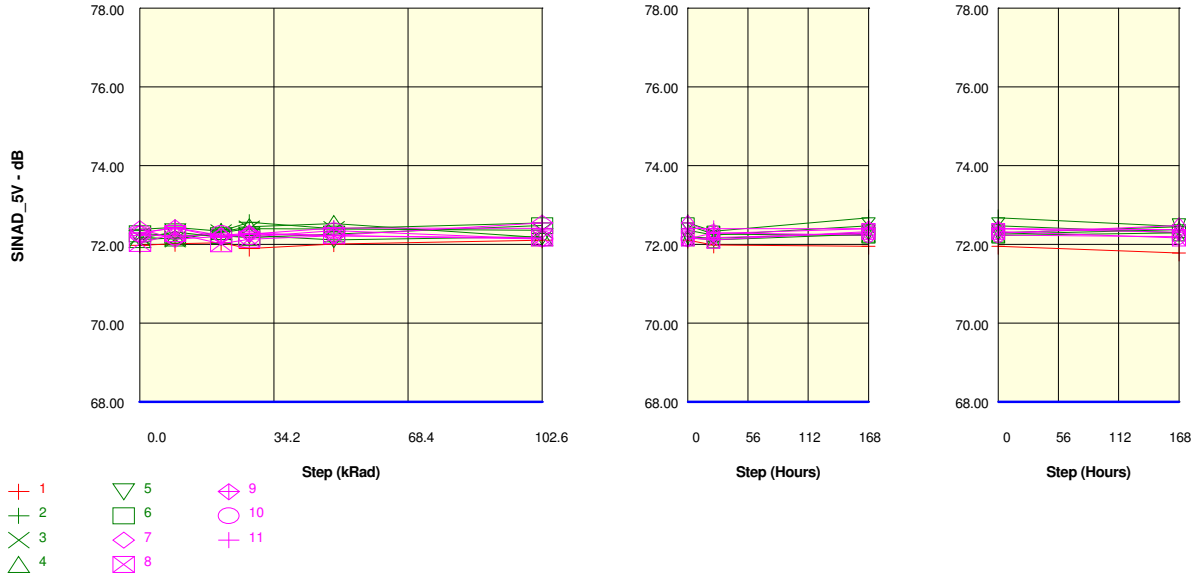
SINAD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.96	71.91	72.01	71.95	71.84	72.02	72.02	71.92	71.94
OFF samples									
7	72.10	72.21	72.23	72.35	72.36	72.22	72.26	72.18	72.28
8	72.17	72.20	72.27	72.17	72.18	72.21	72.23	72.24	72.27
9	72.34	72.26	72.15	72.15	72.43	72.39	72.43	72.29	72.15
10	72.22	72.38	72.25	72.32	72.21	72.31	72.23	72.18	72.33
11	72.09	72.39	72.20	72.40	72.45	72.34	72.36	72.35	72.20
Statistics									
Min	72.09	72.20	72.15	72.15	72.18	72.21	72.23	72.18	72.15
Max	72.34	72.39	72.27	72.40	72.45	72.39	72.43	72.35	72.33
Average	72.18	72.29	72.22	72.28	72.33	72.30	72.30	72.25	72.25
Sigma	0.09	0.08	0.04	0.10	0.11	0.07	0.08	0.06	0.06

Drift Calculation

SINAD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	115.0E-03	129.0E-03	255.0E-03	256.0E-03	117.0E-03	156.0E-03	81.0E-03	185.0E-03
8	-	36.0E-03	99.0E-03	1.0E-03	12.0E-03	47.0E-03	65.0E-03	76.0E-03	106.0E-03
9	-	-80.0E-03	-188.0E-03	-189.0E-03	91.0E-03	52.0E-03	86.0E-03	-51.0E-03	-191.0E-03
10	-	162.0E-03	29.0E-03	95.0E-03	-11.0E-03	90.0E-03	13.0E-03	-36.0E-03	111.0E-03
11	-	298.0E-03	108.0E-03	311.0E-03	360.0E-03	248.0E-03	271.0E-03	253.0E-03	104.0E-03
Average	-	106.2E-03	35.4E-03	94.6E-03	141.6E-03	110.8E-03	118.2E-03	64.6E-03	63.0E-03
Sigma	-	126.2E-03	116.6E-03	179.9E-03	143.8E-03	73.2E-03	89.1E-03	109.0E-03	130.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise + distortion : SINAD_5VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.98	72.02	72.04	71.90	72.01	72.11	71.99	71.95	71.78
ON samples									
2	72.38	72.43	72.34	72.57	72.40	72.55	72.34	72.68	72.46
3	72.19	72.13	72.30	72.40	72.39	72.36	72.24	72.47	72.29
4	72.12	72.17	72.32	72.45	72.53	72.18	72.12	72.26	72.38
5	72.15	72.32	72.18	72.23	72.12	72.20	72.16	72.29	72.45
6	72.27	72.24	72.22	72.18	72.27	72.48	72.27	72.23	72.29
Statistics									
Min	72.12	72.13	72.18	72.18	72.12	72.18	72.12	72.23	72.29
Max	72.38	72.43	72.34	72.57	72.53	72.55	72.34	72.68	72.46
Average	72.22	72.26	72.27	72.37	72.34	72.35	72.22	72.39	72.37
Sigma	0.09	0.11	0.06	0.14	0.14	0.15	0.08	0.17	0.07

Drift Calculation

SINAD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	53.0E-03	-44.0E-03	186.0E-03	20.0E-03	172.0E-03	-43.0E-03	300.0E-03	76.0E-03
3	-	-59.0E-03	112.0E-03	212.0E-03	200.0E-03	170.0E-03	46.0E-03	277.0E-03	98.0E-03
4	-	43.0E-03	200.0E-03	323.0E-03	407.0E-03	51.0E-03	-9.0E-03	139.0E-03	253.0E-03
5	-	167.0E-03	29.0E-03	82.0E-03	-33.0E-03	46.0E-03	4.0E-03	142.0E-03	299.0E-03
6	-	-32.0E-03	-46.0E-03	-91.0E-03	-4.0E-03	210.0E-03	-4.0E-03	-35.0E-03	23.0E-03
Average	-	34.4E-03	50.2E-03	142.4E-03	118.0E-03	129.8E-03	-1.2E-03	164.6E-03	149.8E-03
Sigma	-	78.9E-03	94.7E-03	139.6E-03	165.9E-03	67.9E-03	28.5E-03	120.0E-03	106.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

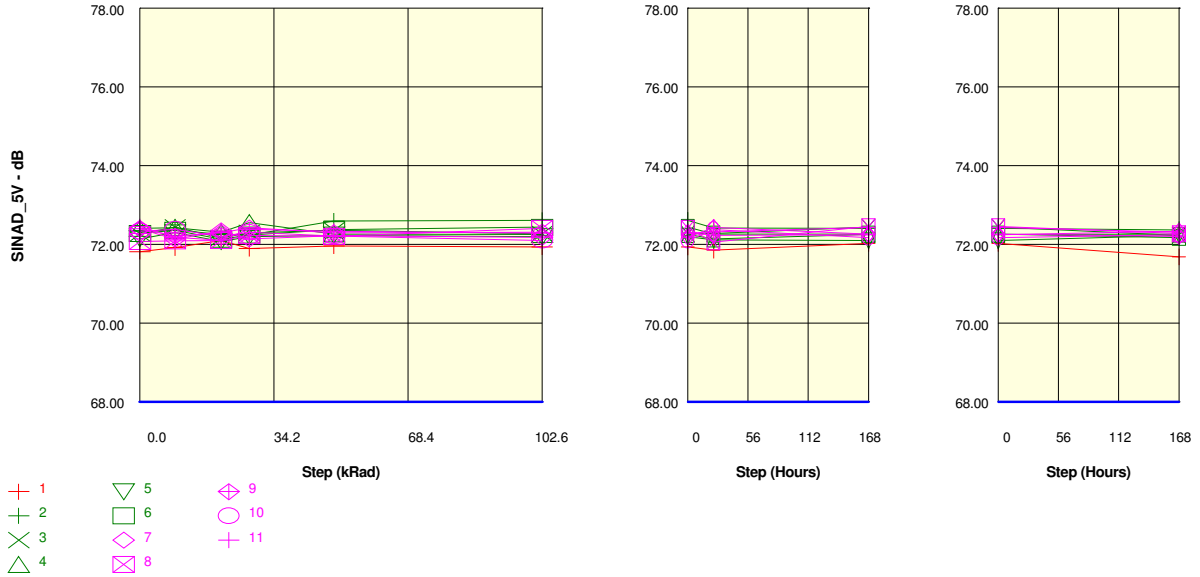
Measurements

SINAD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.98	72.02	72.04	71.90	72.01	72.11	71.99	71.95	71.78
OFF samples									
7	72.40	72.13	72.21	72.26	72.22	72.14	72.18	72.29	72.48
8	72.03	72.28	72.02	72.13	72.22	72.17	72.11	72.33	72.17
9	72.29	72.43	72.23	72.28	72.23	72.54	72.27	72.40	72.31
10	72.27	72.19	72.28	72.19	72.35	72.14	72.30	72.24	72.20
11	72.29	72.43	72.17	72.27	72.42	72.41	72.40	72.40	72.37
Statistics									
Min	72.03	72.13	72.02	72.13	72.22	72.14	72.11	72.24	72.17
Max	72.40	72.43	72.28	72.28	72.42	72.54	72.40	72.40	72.48
Average	72.25	72.29	72.18	72.23	72.29	72.28	72.25	72.33	72.30
Sigma	0.12	0.12	0.09	0.06	0.08	0.16	0.10	0.06	0.11

Drift Calculation

SINAD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-270.0E-03	-190.0E-03	-137.0E-03	-175.0E-03	-253.0E-03	-220.0E-03	-109.0E-03	82.0E-03
8	-	253.0E-03	-8.0E-03	105.0E-03	195.0E-03	140.0E-03	85.0E-03	302.0E-03	140.0E-03
9	-	138.0E-03	-60.0E-03	-4.0E-03	-55.0E-03	254.0E-03	-15.0E-03	113.0E-03	18.0E-03
10	-	-78.0E-03	15.0E-03	-75.0E-03	82.0E-03	-122.0E-03	31.0E-03	-24.0E-03	-69.0E-03
11	-	134.0E-03	-117.0E-03	-25.0E-03	124.0E-03	117.0E-03	111.0E-03	111.0E-03	83.0E-03
Average	-	35.4E-03	-72.0E-03	-27.2E-03	34.2E-03	27.2E-03	-1.6E-03	78.6E-03	50.8E-03
Sigma	-	186.4E-03	74.5E-03	80.4E-03	132.6E-03	186.0E-03	117.6E-03	139.9E-03	71.3E-03

Parameter : Signal to noise + distortion : SINAD_5VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.82	71.92	72.10	71.90	71.96	71.94	71.86	72.03	71.68
ON samples									
2	72.34	72.36	72.26	72.24	72.60	72.61	72.42	72.41	72.37
3	72.27	72.44	72.17	72.30	72.36	72.27	72.28	72.44	72.23
4	72.41	72.43	72.31	72.55	72.27	72.25	72.14	72.25	72.26
5	72.15	72.30	72.07	72.20	72.23	72.20	72.11	72.10	72.23
6	72.28	72.36	72.13	72.24	72.37	72.44	72.26	72.26	72.18
Statistics									
Min	72.15	72.30	72.07	72.20	72.23	72.20	72.11	72.10	72.18
Max	72.41	72.44	72.31	72.55	72.60	72.61	72.42	72.44	72.37
Average	72.29	72.38	72.19	72.30	72.37	72.35	72.24	72.29	72.26
Sigma	0.09	0.05	0.08	0.13	0.13	0.15	0.11	0.13	0.06

Drift Calculation

SINAD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	28.0E-03	-79.0E-03	-99.0E-03	261.0E-03	274.0E-03	81.0E-03	78.0E-03	36.0E-03
3	-	168.0E-03	-103.0E-03	25.0E-03	89.0E-03	-2.0E-03	5.0E-03	174.0E-03	-37.0E-03
4	-	24.0E-03	-99.0E-03	146.0E-03	-140.0E-03	-154.0E-03	-267.0E-03	-152.0E-03	-142.0E-03
5	-	157.0E-03	-71.0E-03	52.0E-03	89.0E-03	53.0E-03	-35.0E-03	-50.0E-03	86.0E-03
6	-	79.0E-03	-148.0E-03	-42.0E-03	93.0E-03	156.0E-03	-19.0E-03	-18.0E-03	-102.0E-03
Average	-	91.2E-03	-100.0E-03	16.4E-03	78.4E-03	65.4E-03	-47.0E-03	6.4E-03	-31.8E-03
Sigma	-	61.5E-03	26.8E-03	83.5E-03	127.7E-03	144.6E-03	117.0E-03	111.4E-03	84.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

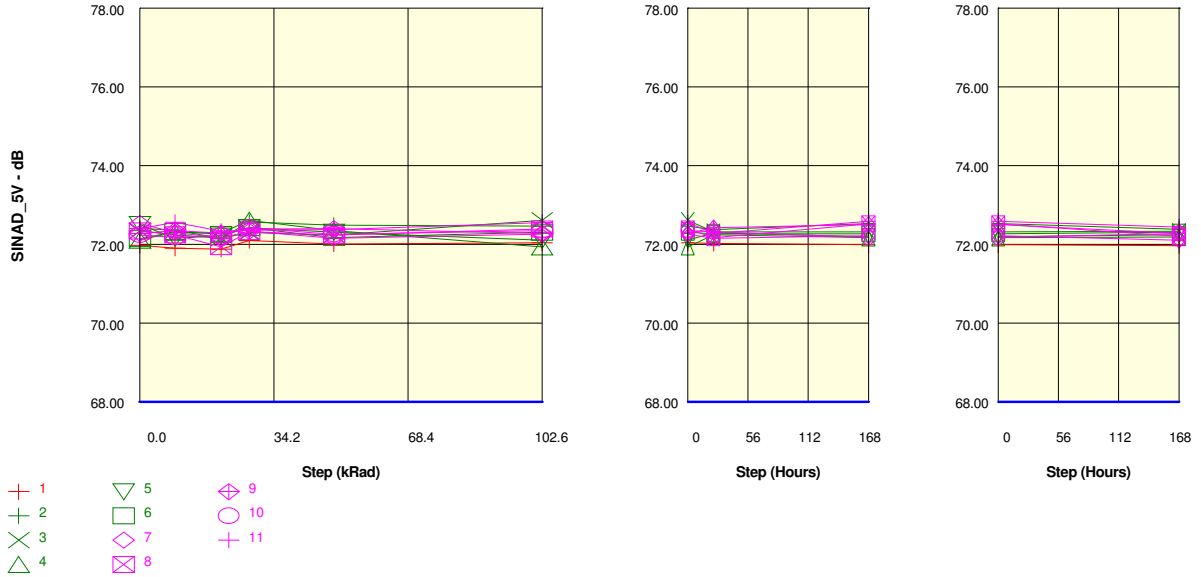
Measurements

SINAD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.82	71.92	72.10	71.90	71.96	71.94	71.86	72.03	71.68
OFF samples									
7	72.41	72.21	72.30	72.42	72.30	72.31	72.24	72.25	72.34
8	72.07	72.09	72.10	72.23	72.20	72.41	72.06	72.45	72.27
9	72.39	72.13	72.34	72.14	72.22	72.18	72.43	72.26	72.20
10	72.34	72.39	72.20	72.31	72.21	72.10	72.37	72.18	72.25
11	72.45	72.18	72.11	72.38	72.34	72.29	72.32	72.43	72.31
Statistics									
Min	72.07	72.09	72.10	72.14	72.20	72.10	72.06	72.18	72.20
Max	72.45	72.39	72.34	72.42	72.34	72.41	72.43	72.45	72.34
Average	72.33	72.20	72.21	72.29	72.25	72.26	72.28	72.31	72.27
Sigma	0.13	0.10	0.10	0.10	0.05	0.11	0.13	0.11	0.05

Drift Calculation

SINAD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-198.0E-03	-111.0E-03	15.0E-03	-110.0E-03	-98.0E-03	-172.0E-03	-159.0E-03	-68.0E-03
8	-	15.0E-03	26.0E-03	154.0E-03	129.0E-03	338.0E-03	-14.0E-03	379.0E-03	199.0E-03
9	-	-261.0E-03	-51.0E-03	-257.0E-03	-176.0E-03	-213.0E-03	38.0E-03	-135.0E-03	-190.0E-03
10	-	47.0E-03	-138.0E-03	-32.0E-03	-128.0E-03	-234.0E-03	35.0E-03	-160.0E-03	-92.0E-03
11	-	-271.0E-03	-347.0E-03	-73.0E-03	-115.0E-03	-166.0E-03	-132.0E-03	-20.0E-03	-146.0E-03
Average	-	-133.6E-03	-124.2E-03	-38.6E-03	-80.0E-03	-74.6E-03	-49.0E-03	-19.0E-03	-59.4E-03
Sigma	-	137.1E-03	124.8E-03	133.3E-03	107.1E-03	211.5E-03	87.0E-03	205.6E-03	136.0E-03

Parameter : Signal to noise + distortion : SINAD_5VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.98	71.90	71.88	72.10	72.01	72.04	72.03	72.00	71.97
ON samples									
2	72.41	72.36	72.16	72.57	72.49	72.47	72.38	72.54	72.38
3	72.35	72.24	72.16	72.30	72.24	72.61	72.32	72.33	72.33
4	72.11	72.31	72.29	72.61	72.35	71.94	72.25	72.17	72.19
5	72.51	72.16	72.22	72.43	72.31	72.11	72.30	72.20	72.25
6	72.15	72.33	72.26	72.43	72.18	72.31	72.27	72.27	72.31
Statistics									
Min	72.11	72.16	72.16	72.30	72.18	71.94	72.25	72.17	72.19
Max	72.51	72.36	72.29	72.61	72.49	72.61	72.38	72.54	72.38
Average	72.30	72.28	72.22	72.47	72.31	72.29	72.30	72.30	72.29
Sigma	0.15	0.07	0.05	0.11	0.11	0.24	0.04	0.13	0.07

Drift Calculation

SINAD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-51.0E-03	-251.0E-03	159.0E-03	76.0E-03	56.0E-03	-35.0E-03	125.0E-03	-28.0E-03
3	-	-103.0E-03	-187.0E-03	-41.0E-03	-105.0E-03	269.0E-03	-23.0E-03	-20.0E-03	-14.0E-03
4	-	196.0E-03	173.0E-03	499.0E-03	240.0E-03	-175.0E-03	135.0E-03	57.0E-03	75.0E-03
5	-	-349.0E-03	-289.0E-03	-82.0E-03	-198.0E-03	-402.0E-03	-211.0E-03	-312.0E-03	-262.0E-03
6	-	181.0E-03	112.0E-03	282.0E-03	30.0E-03	162.0E-03	122.0E-03	122.0E-03	162.0E-03
Average	-	-25.2E-03	-88.4E-03	163.4E-03	8.6E-03	-18.0E-03	-2.4E-03	-5.6E-03	-13.4E-03
Sigma	-	201.5E-03	192.3E-03	213.9E-03	151.1E-03	241.8E-03	126.0E-03	162.1E-03	141.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

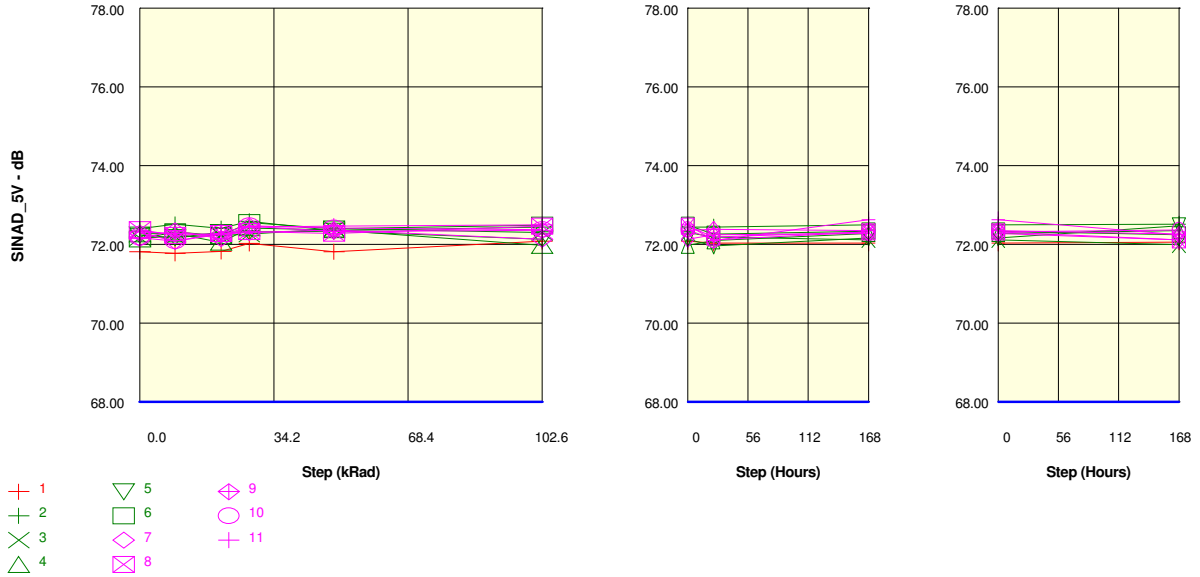
SINAD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.98	71.90	71.88	72.10	72.01	72.04	72.03	72.00	71.97
OFF samples									
7	72.53	72.30	72.16	72.34	72.16	72.26	72.16	72.22	72.11
8	72.34	72.25	71.94	72.33	72.24	72.39	72.17	72.52	72.20
9	72.28	72.35	72.28	72.39	72.40	72.28	72.42	72.51	72.28
10	72.24	72.18	72.23	72.43	72.26	72.36	72.32	72.18	72.28
11	72.40	72.56	72.34	72.36	72.38	72.55	72.27	72.59	72.44
Statistics									
Min	72.24	72.18	71.94	72.33	72.16	72.26	72.16	72.18	72.11
Max	72.53	72.56	72.34	72.43	72.40	72.55	72.42	72.59	72.44
Average	72.36	72.33	72.19	72.37	72.29	72.37	72.27	72.40	72.26
Sigma	0.10	0.13	0.14	0.04	0.09	0.10	0.10	0.17	0.11

Drift Calculation

SINAD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-230.0E-03	-367.0E-03	-194.0E-03	-369.0E-03	-266.0E-03	-368.0E-03	-310.0E-03	-423.0E-03
8	-	-96.0E-03	-403.0E-03	-15.0E-03	-104.0E-03	50.0E-03	-172.0E-03	182.0E-03	-138.0E-03
9	-	72.0E-03	6.0E-03	111.0E-03	124.0E-03	2.0E-03	144.0E-03	229.0E-03	1000.0E-06
10	-	-59.0E-03	-14.0E-03	187.0E-03	15.0E-03	114.0E-03	80.0E-03	-60.0E-03	38.0E-03
11	-	168.0E-03	-59.0E-03	-34.0E-03	-21.0E-03	157.0E-03	-123.0E-03	194.0E-03	45.0E-03
Average	-	-29.0E-03	-167.4E-03	11.0E-03	-71.0E-03	11.4E-03	-87.8E-03	47.0E-03	-95.4E-03
Sigma	-	137.7E-03	179.3E-03	130.9E-03	166.0E-03	148.5E-03	183.7E-03	205.8E-03	176.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Signal to noise + distortion : SINAD_5VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Min : 68.00
 Spec limits are represented in bold lines on the graphic.



Measurements

SINAD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	71.82	71.77	71.82	72.02	71.82	72.08	72.04	72.03	72.06
ON samples									
2	72.39	72.51	72.41	72.59	72.36	72.44	72.44	72.50	72.52
3	72.17	72.19	72.23	72.26	72.40	72.30	72.19	72.12	71.99
4	72.27	72.27	72.06	72.42	72.37	71.98	72.10	72.28	72.35
5	72.24	72.17	72.31	72.32	72.34	72.13	71.96	72.17	72.48
6	72.13	72.32	72.22	72.55	72.40	72.49	72.26	72.34	72.25
Statistics									
Min	72.13	72.17	72.06	72.26	72.34	71.98	71.96	72.12	71.99
Max	72.39	72.51	72.41	72.59	72.40	72.49	72.44	72.50	72.52
Average	72.24	72.29	72.24	72.43	72.37	72.27	72.19	72.28	72.32
Sigma	0.09	0.12	0.11	0.13	0.02	0.19	0.16	0.13	0.19

Drift Calculation

SINAD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	117.0E-03	11.0E-03	197.0E-03	-39.0E-03	49.0E-03	48.0E-03	104.0E-03	123.0E-03
3	-	24.0E-03	66.0E-03	93.0E-03	228.0E-03	134.0E-03	21.0E-03	-49.0E-03	-176.0E-03
4	-	5.0E-03	-213.0E-03	150.0E-03	102.0E-03	-288.0E-03	-173.0E-03	11.0E-03	81.0E-03
5	-	-64.0E-03	68.0E-03	82.0E-03	100.0E-03	-104.0E-03	-278.0E-03	-73.0E-03	237.0E-03
6	-	186.0E-03	90.0E-03	419.0E-03	261.0E-03	355.0E-03	129.0E-03	206.0E-03	113.0E-03
Average	-	53.6E-03	4.4E-03	188.2E-03	130.4E-03	29.2E-03	-50.6E-03	39.8E-03	75.6E-03
Sigma	-	87.9E-03	111.8E-03	122.6E-03	106.8E-03	217.2E-03	150.9E-03	103.1E-03	136.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

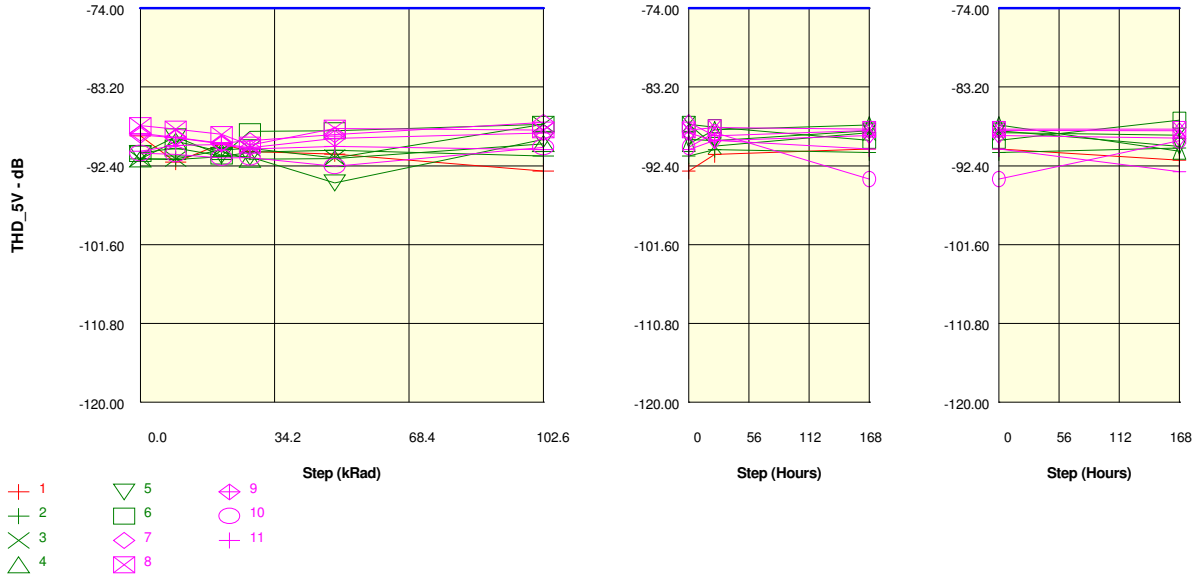
Measurements

SINAD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	71.82	71.77	71.82	72.02	71.82	72.08	72.04	72.03	72.06
OFF samples									
7	72.29	72.08	72.26	72.30	72.37	72.13	72.25	72.28	72.11
8	72.38	72.23	72.28	72.33	72.28	72.47	72.19	72.32	72.11
9	72.15	72.35	72.15	72.47	72.33	72.36	72.38	72.35	72.26
10	72.18	72.09	72.29	72.47	72.42	72.38	72.11	72.32	72.37
11	72.33	72.28	72.25	72.45	72.46	72.50	72.10	72.63	72.25
Statistics									
Min	72.15	72.08	72.15	72.30	72.28	72.13	72.10	72.28	72.11
Max	72.38	72.35	72.29	72.47	72.46	72.50	72.38	72.63	72.37
Average	72.26	72.21	72.24	72.40	72.37	72.37	72.21	72.38	72.22
Sigma	0.09	0.11	0.05	0.07	0.06	0.13	0.10	0.13	0.10

Drift Calculation

SINAD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-210.0E-03	-29.0E-03	14.0E-03	81.0E-03	-158.0E-03	-41.0E-03	-14.0E-03	-176.0E-03
8	-	-148.0E-03	-100.0E-03	-52.0E-03	-97.0E-03	89.0E-03	-188.0E-03	-58.0E-03	-264.0E-03
9	-	199.0E-03	-3.0E-03	317.0E-03	181.0E-03	213.0E-03	234.0E-03	205.0E-03	109.0E-03
10	-	-88.0E-03	115.0E-03	295.0E-03	242.0E-03	199.0E-03	-63.0E-03	146.0E-03	189.0E-03
11	-	-45.0E-03	-76.0E-03	120.0E-03	138.0E-03	178.0E-03	-229.0E-03	302.0E-03	-80.0E-03
Average	-	-58.4E-03	-18.6E-03	138.8E-03	109.0E-03	104.2E-03	-57.4E-03	116.2E-03	-44.4E-03
Sigma	-	140.2E-03	75.0E-03	147.3E-03	115.7E-03	138.0E-03	162.3E-03	134.6E-03	170.2E-03

Parameter : Total Harmonic Distorsion : THD_5VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-88.91	-91.98	-89.85	-90.75	-91.03	-93.02	-91.06	-90.42	-91.74
ON samples									
2	-91.62	-91.66	-91.33	-90.81	-90.58	-91.26	-90.49	-90.86	-90.33
3	-91.59	-91.58	-90.56	-90.37	-91.46	-87.56	-90.09	-88.54	-88.83
4	-91.60	-89.52	-90.75	-91.64	-91.56	-89.81	-88.18	-87.62	-90.70
5	-91.04	-89.02	-91.20	-91.37	-94.40	-89.31	-89.47	-88.33	-90.14
6	-90.94	-90.32	-91.27	-88.40	-88.31	-87.56	-87.92	-89.42	-87.08
Statistics									
Min	-91.62	-91.66	-91.33	-91.64	-94.40	-91.26	-90.49	-90.86	-90.70
Max	-90.94	-89.02	-90.56	-88.40	-88.31	-87.56	-87.92	-87.62	-87.08
Average	-91.36	-90.42	-91.02	-90.52	-91.26	-89.10	-89.23	-88.95	-89.42
Sigma	0.30	1.06	0.31	1.15	1.96	1.41	1.02	1.11	1.33

Drift Calculation

THD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-37.0E-03	287.0E-03	808.0E-03	1.0E+00	356.0E-03	1.1E+00	760.0E-03	1.3E+00
3	-	10.0E-03	1.0E+00	1.2E+00	132.0E-03	4.0E+00	1.5E+00	3.1E+00	2.8E+00
4	-	2.1E+00	851.0E-03	-37.0E-03	42.0E-03	1.8E+00	3.4E+00	4.0E+00	903.0E-03
5	-	2.0E+00	-163.0E-03	-339.0E-03	-3.4E+00	1.7E+00	1.6E+00	2.7E+00	898.0E-03
6	-	618.0E-03	-335.0E-03	2.5E+00	2.6E+00	3.4E+00	3.0E+00	1.5E+00	3.9E+00
Average	-	935.6E-03	334.4E-03	838.2E-03	96.0E-03	2.3E+00	2.1E+00	2.4E+00	1.9E+00
Sigma	-	933.9E-03	538.8E-03	1.0E+00	2.0E+00	1.3E+00	914.3E-03	1.1E+00	1.2E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

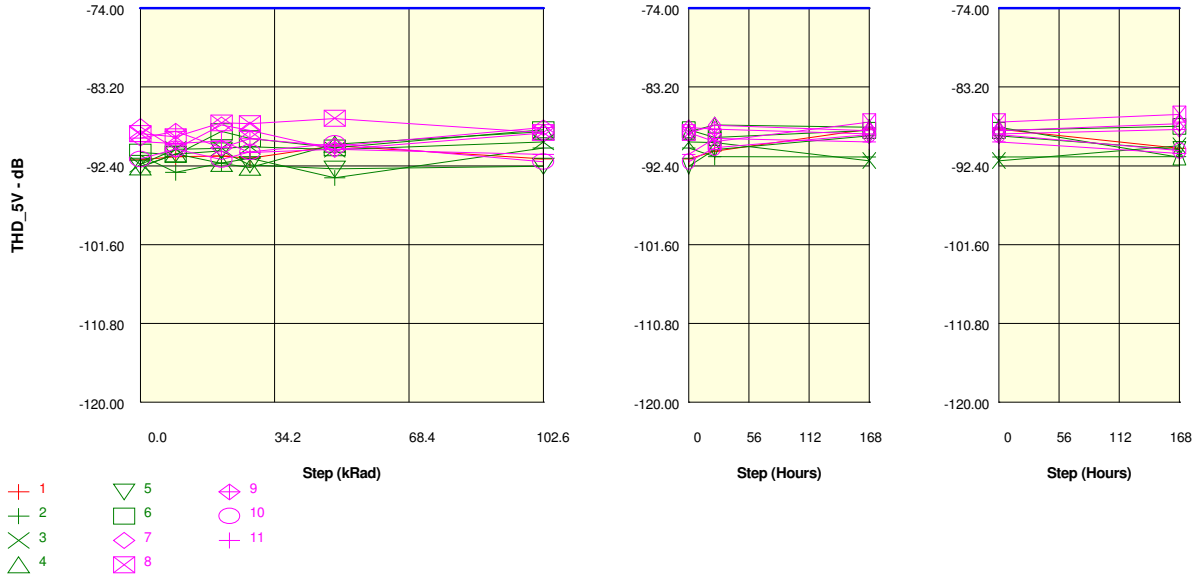
Measurements

THD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-88.91	-91.98	-89.85	-90.75	-91.03	-93.02	-91.06	-90.42	-91.74
OFF samples									
7	-88.59	-89.09	-89.79	-89.46	-88.77	-87.34	-88.91	-88.27	-88.31
8	-87.71	-88.12	-88.74	-89.99	-88.03	-88.22	-87.94	-88.14	-88.14
9	-88.82	-89.15	-89.86	-90.31	-89.20	-88.56	-89.48	-88.86	-89.17
10	-90.93	-91.05	-91.46	-91.43	-92.45	-90.22	-88.53	-93.97	-89.48
11	-90.70	-90.02	-89.92	-90.42	-90.15	-90.53	-89.44	-90.43	-93.09
Statistics									
Min	-90.93	-91.05	-91.46	-91.43	-92.45	-90.53	-89.48	-93.97	-93.09
Max	-87.71	-88.12	-88.74	-89.48	-88.03	-87.34	-87.94	-88.14	-88.14
Average	-89.35	-89.49	-89.95	-90.33	-89.72	-88.98	-88.86	-89.93	-89.64
Sigma	1.26	0.99	0.87	0.64	1.53	1.22	0.58	2.17	1.80

Drift Calculation

THD_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-493.0E-03	-1.2E+00	-885.0E-03	-176.0E-03	1.3E+00	-317.0E-03	324.0E-03	284.0E-03
8	-	-413.0E-03	-1.0E+00	-2.3E+00	-320.0E-03	-517.0E-03	-230.0E-03	-433.0E-03	-431.0E-03
9	-	-327.0E-03	-1.0E+00	-1.5E+00	-384.0E-03	259.0E-03	-662.0E-03	-43.0E-03	-349.0E-03
10	-	-124.0E-03	-525.0E-03	-502.0E-03	-1.5E+00	706.0E-03	2.4E+00	-3.0E+00	1.5E+00
11	-	680.0E-03	786.0E-03	283.0E-03	559.0E-03	171.0E-03	1.3E+00	276.0E-03	-2.4E+00
Average	-	-135.4E-03	-600.6E-03	-974.8E-03	-367.6E-03	373.8E-03	489.8E-03	-582.6E-03	-285.6E-03
Sigma	-	425.8E-03	729.1E-03	869.6E-03	666.2E-03	587.5E-03	1.2E+00	1.3E+00	1.2E+00

Parameter : Total Harmonic Distorsion : THD_5VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-91.71	-91.35	-91.25	-91.54	-90.07	-91.59	-90.73	-88.13	-90.39
ON samples									
2	-91.16	-93.19	-92.10	-91.55	-93.82	-90.32	-91.35	-91.36	-91.36
3	-92.22	-90.47	-90.35	-90.15	-90.50	-89.63	-89.71	-91.80	-90.06
4	-92.54	-91.00	-92.11	-92.60	-89.88	-88.41	-87.63	-87.91	-91.38
5	-92.48	-91.03	-90.65	-92.28	-92.78	-92.46	-90.52	-88.91	-90.50
6	-90.83	-91.10	-88.40	-89.22	-90.31	-88.20	-89.09	-88.26	-87.80
Statistics									
Min	-92.54	-93.19	-92.11	-92.60	-93.82	-92.46	-91.35	-91.80	-91.38
Max	-90.83	-90.47	-88.40	-89.22	-89.88	-88.20	-87.63	-87.91	-87.80
Average	-91.85	-91.36	-90.72	-91.16	-91.46	-89.80	-89.66	-89.65	-90.22
Sigma	0.71	0.94	1.37	1.28	1.55	1.54	1.27	1.62	1.31

Drift Calculation

THD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-2.0E+00	-935.0E-03	-385.0E-03	-2.7E+00	845.0E-03	-188.0E-03	-199.0E-03	-192.0E-03
3	-	1.8E+00	1.9E+00	2.1E+00	1.7E+00	2.6E+00	2.5E+00	422.0E-03	2.2E+00
4	-	1.5E+00	432.0E-03	-52.0E-03	2.7E+00	4.1E+00	4.9E+00	4.6E+00	1.2E+00
5	-	1.4E+00	1.8E+00	193.0E-03	-303.0E-03	20.0E-03	2.0E+00	3.6E+00	2.0E+00
6	-	-269.0E-03	2.4E+00	1.6E+00	522.0E-03	2.6E+00	1.7E+00	2.6E+00	3.0E+00
Average	-	489.8E-03	1.1E+00	685.8E-03	390.0E-03	2.0E+00	2.2E+00	2.2E+00	1.6E+00
Sigma	-	1.4E+00	1.2E+00	968.5E-03	1.8E+00	1.5E+00	1.6E+00	1.8E+00	1.1E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

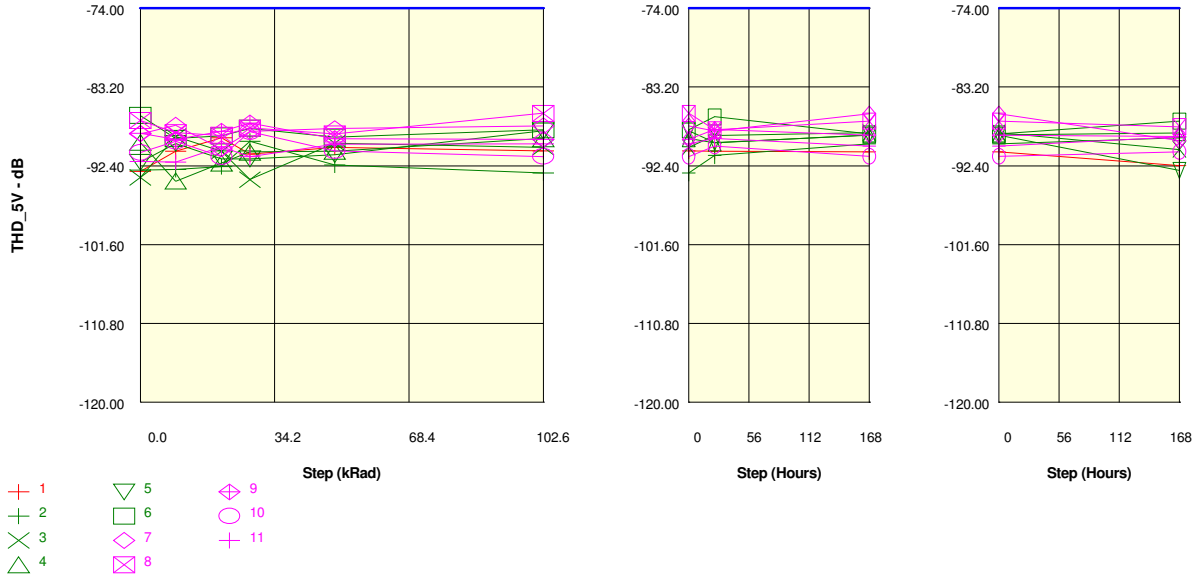
Measurements

THD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-91.71	-91.35	-91.25	-91.54	-90.07	-91.59	-90.73	-88.13	-90.39
OFF samples									
7	-87.83	-90.44	-87.63	-88.25	-90.49	-88.57	-87.67	-88.31	-87.49
8	-88.65	-89.01	-87.39	-87.47	-86.86	-88.52	-89.58	-87.28	-86.39
9	-89.17	-88.39	-90.29	-89.24	-90.10	-87.94	-88.12	-88.66	-88.15
10	-91.62	-90.45	-91.67	-90.80	-89.80	-91.92	-90.31	-88.77	-90.62
11	-89.57	-89.80	-89.52	-90.83	-90.47	-91.09	-89.21	-89.59	-90.97
Statistics									
Min	-91.62	-90.45	-91.67	-90.83	-90.49	-91.92	-90.31	-89.59	-90.97
Max	-87.83	-88.39	-87.39	-87.47	-86.86	-87.94	-87.67	-87.28	-86.39
Average	-89.37	-89.62	-89.30	-89.32	-89.54	-89.60	-88.97	-88.52	-88.72
Sigma	1.27	0.81	1.62	1.34	1.36	1.59	0.96	0.75	1.79

Drift Calculation

THD_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-2.6E+00	198.0E-03	-417.0E-03	-2.7E+00	-733.0E-03	166.0E-03	-477.0E-03	342.0E-03
8	-	-359.0E-03	1.3E+00	1.2E+00	1.8E+00	129.0E-03	-930.0E-03	1.4E+00	2.3E+00
9	-	788.0E-03	-1.1E+00	-67.0E-03	-925.0E-03	1.2E+00	1.1E+00	517.0E-03	1.0E+00
10	-	1.2E+00	-47.0E-03	821.0E-03	1.8E+00	-296.0E-03	1.3E+00	2.8E+00	997.0E-03
11	-	-234.0E-03	52.0E-03	-1.3E+00	-896.0E-03	-1.5E+00	361.0E-03	-24.0E-03	-1.4E+00
Average	-	-247.0E-03	68.4E-03	50.0E-03	-174.2E-03	-236.4E-03	393.4E-03	846.8E-03	644.8E-03
Sigma	-	1.3E+00	755.1E-03	872.2E-03	1.7E+00	914.7E-03	786.1E-03	1.2E+00	1.2E+00

Parameter : Total Harmonic Distorsion : THD_5VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-93.05	-90.72	-89.14	-91.04	-90.22	-90.68	-90.70	-90.77	-92.38
ON samples									
2	-92.90	-92.83	-92.49	-89.52	-92.32	-93.26	-91.21	-89.82	-89.14
3	-93.77	-88.99	-90.70	-94.01	-89.76	-90.23	-88.87	-88.52	-90.50
4	-89.68	-94.19	-92.09	-90.79	-90.72	-89.23	-89.71	-88.80	-88.56
5	-91.98	-89.79	-91.60	-91.60	-91.10	-88.33	-89.70	-88.83	-92.94
6	-86.52	-89.22	-88.91	-88.02	-89.07	-88.19	-86.69	-88.67	-87.18
Statistics									
Min	-93.77	-94.19	-92.49	-94.01	-92.32	-93.26	-91.21	-89.82	-92.94
Max	-86.52	-88.99	-88.91	-88.02	-89.07	-88.19	-86.69	-88.52	-87.18
Average	-90.97	-91.00	-91.16	-90.79	-90.59	-89.85	-89.24	-88.93	-89.66
Sigma	2.61	2.11	1.27	2.01	1.12	1.85	1.48	0.46	1.95

Drift Calculation

THD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	72.0E-03	412.0E-03	3.4E+00	581.0E-03	-351.0E-03	1.7E+00	3.1E+00	3.8E+00
3	-	4.8E+00	3.1E+00	-243.0E-03	4.0E+00	3.5E+00	4.9E+00	5.2E+00	3.3E+00
4	-	-4.5E+00	-2.4E+00	-1.1E+00	-1.0E+00	451.0E-03	-38.0E-03	873.0E-03	1.1E+00
5	-	2.2E+00	378.0E-03	378.0E-03	878.0E-03	3.6E+00	2.3E+00	3.1E+00	-965.0E-03
6	-	-2.7E+00	-2.4E+00	-1.5E+00	-2.5E+00	-1.7E+00	-162.0E-03	-2.1E+00	-658.0E-03
Average	-	-33.2E-03	-187.6E-03	181.0E-03	375.8E-03	1.1E+00	1.7E+00	2.0E+00	1.3E+00
Sigma	-	3.3E+00	2.1E+00	1.7E+00	2.2E+00	2.1E+00	1.8E+00	2.5E+00	1.9E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

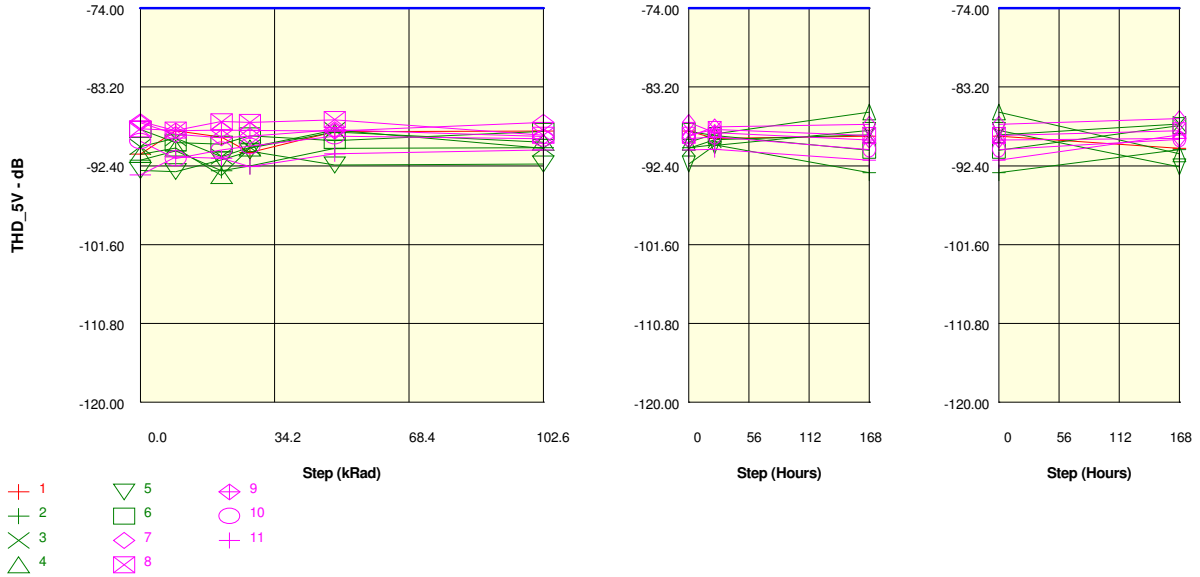
Measurements

THD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-93.05	-90.72	-89.14	-91.04	-90.22	-90.68	-90.70	-90.77	-92.38
OFF samples									
7	-88.65	-87.68	-90.42	-88.38	-88.07	-87.75	-88.36	-86.35	-89.45
8	-87.11	-88.52	-88.85	-87.98	-88.67	-86.28	-88.19	-87.19	-87.83
9	-88.62	-89.32	-88.37	-87.41	-89.24	-89.31	-88.14	-88.83	-88.97
10	-90.84	-89.54	-91.35	-88.43	-90.65	-91.31	-90.11	-91.31	-90.77
11	-91.89	-91.98	-90.19	-91.35	-89.89	-89.85	-89.23	-90.09	-89.03
Statistics									
Min	-91.89	-91.98	-91.35	-91.35	-90.65	-91.31	-90.11	-91.31	-90.77
Max	-87.11	-87.68	-88.37	-87.41	-88.07	-86.28	-88.14	-86.35	-87.83
Average	-89.42	-89.41	-89.83	-88.71	-89.30	-88.90	-88.81	-88.75	-89.21
Sigma	1.71	1.44	1.08	1.37	0.90	1.74	0.76	1.82	0.95

Drift Calculation

THD_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	971.0E-03	-1.8E+00	273.0E-03	584.0E-03	899.0E-03	298.0E-03	2.3E+00	-795.0E-03
8	-	-1.4E+00	-1.7E+00	-873.0E-03	-1.6E+00	836.0E-03	-1.1E+00	-74.0E-03	-719.0E-03
9	-	-695.0E-03	249.0E-03	1.2E+00	-614.0E-03	-691.0E-03	479.0E-03	-209.0E-03	-349.0E-03
10	-	1.3E+00	-507.0E-03	2.4E+00	186.0E-03	-473.0E-03	728.0E-03	-465.0E-03	75.0E-03
11	-	-88.0E-03	1.7E+00	537.0E-03	2.0E+00	2.0E+00	2.7E+00	1.8E+00	2.9E+00
Average	-	15.6E-03	-411.2E-03	710.8E-03	119.4E-03	523.4E-03	616.6E-03	670.0E-03	213.8E-03
Sigma	-	1.0E+00	1.3E+00	1.1E+00	1.2E+00	1.0E+00	1.2E+00	1.1E+00	1.4E+00

Parameter : Total Harmonic Distorsion : THD_5VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-91.02	-88.33	-89.07	-90.86	-88.42	-88.34	-89.21	-88.92	-90.38
ON samples									
2	-91.73	-90.66	-92.96	-92.44	-90.39	-90.31	-89.95	-93.20	-90.52
3	-90.18	-89.17	-91.32	-90.23	-88.23	-90.35	-89.36	-88.82	-87.53
4	-91.09	-90.34	-93.56	-90.33	-88.47	-89.66	-88.67	-86.13	-91.02
5	-92.95	-93.09	-91.71	-90.68	-92.30	-92.18	-90.05	-88.27	-92.54
6	-88.16	-89.71	-89.87	-88.91	-89.48	-88.39	-88.86	-90.60	-87.71
Statistics									
Min	-92.95	-93.09	-93.56	-92.44	-92.30	-92.18	-90.05	-93.20	-92.54
Max	-88.16	-89.17	-89.87	-88.91	-88.23	-88.39	-88.67	-86.13	-87.53
Average	-90.82	-90.59	-91.88	-90.52	-89.77	-90.18	-89.38	-89.40	-89.86
Sigma	1.61	1.35	1.29	1.14	1.48	1.23	0.56	2.37	1.95

Drift Calculation

THD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	1.1E+00	-1.2E+00	-711.0E-03	1.3E+00	1.4E+00	1.8E+00	-1.5E+00	1.2E+00
3	-	1.0E+00	-1.1E+00	-55.0E-03	1.9E+00	-171.0E-03	817.0E-03	1.4E+00	2.6E+00
4	-	747.0E-03	-2.5E+00	758.0E-03	2.6E+00	1.4E+00	2.4E+00	5.0E+00	70.0E-03
5	-	-141.0E-03	1.2E+00	2.3E+00	650.0E-03	763.0E-03	2.9E+00	4.7E+00	408.0E-03
6	-	-1.5E+00	-1.7E+00	-745.0E-03	-1.3E+00	-225.0E-03	-694.0E-03	-2.4E+00	454.0E-03
Average	-	231.0E-03	-1.1E+00	302.4E-03	1.0E+00	642.4E-03	1.4E+00	1.4E+00	958.0E-03
Sigma	-	987.1E-03	1.2E+00	1.1E+00	1.3E+00	727.4E-03	1.3E+00	3.0E+00	923.5E-03

Measurements

THD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-91.02	-88.33	-89.07	-90.86	-88.42	-88.34	-89.21	-88.92	-90.38
OFF samples									
7	-87.39	-88.74	-89.14	-88.95	-88.19	-88.99	-87.86	-87.56	-86.89
8	-88.08	-88.25	-87.24	-87.34	-87.02	-88.84	-88.16	-88.86	-88.29
9	-87.24	-88.32	-88.22	-88.27	-88.35	-87.33	-88.52	-89.40	-89.22
10	-89.53	-91.56	-90.55	-90.10	-88.94	-89.23	-89.03	-90.50	-89.31
11	-93.45	-91.37	-91.52	-92.51	-91.01	-90.54	-90.48	-91.75	-88.79
Statistics									
Min	-93.45	-91.56	-91.52	-92.51	-91.01	-90.54	-90.48	-91.75	-89.31
Max	-87.24	-88.25	-87.24	-87.34	-87.02	-87.33	-87.86	-87.56	-86.89
Average	-89.14	-89.65	-89.33	-89.44	-88.70	-88.99	-88.81	-89.61	-88.50
Sigma	2.30	1.49	1.54	1.78	1.31	1.03	0.92	1.43	0.88

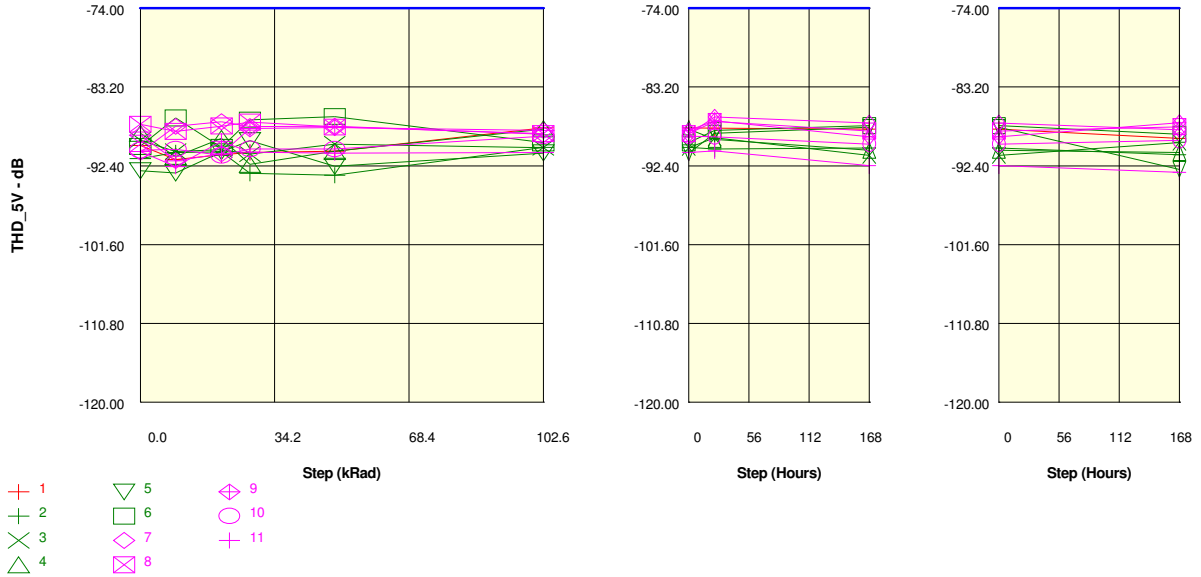
Drift Calculation

THD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.3E+00	-1.7E+00	-1.6E+00	-798.0E-03	-1.6E+00	-467.0E-03	-171.0E-03	499.0E-03
8	-	-170.0E-03	833.0E-03	732.0E-03	1.1E+00	-768.0E-03	-83.0E-03	-783.0E-03	-213.0E-03
9	-	-1.1E+00	-986.0E-03	-1.0E+00	-1.1E+00	-91.0E-03	-1.3E+00	-2.2E+00	-2.0E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT				Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor		Issue:	02

THD_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
10	-	-2.0E+00	-1.0E+00	-576.0E-03	591.0E-03	293.0E-03	500.0E-03	-973.0E-03	215.0E-03
11	-	2.1E+00	1.9E+00	935.0E-03	2.4E+00	2.9E+00	3.0E+00	1.7E+00	4.7E+00
Average	-	-511.0E-03	-197.6E-03	-300.4E-03	434.0E-03	148.0E-03	327.6E-03	-477.6E-03	635.0E-03
Sigma	-	1.4E+00	1.4E+00	978.8E-03	1.3E+00	1.5E+00	1.4E+00	1.3E+00	2.2E+00

Parameter : Total Harmonic Distorsion : THD_5VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-90.02	-91.68	-91.14	-90.84	-90.71	-88.00	-88.00	-88.14	-89.20
ON samples									
2	-91.57	-90.86	-90.78	-93.29	-93.51	-90.24	-90.45	-90.33	-91.09
3	-89.41	-90.73	-90.51	-91.03	-89.87	-90.28	-89.13	-91.19	-89.67
4	-88.63	-91.32	-89.19	-92.23	-90.72	-88.10	-89.31	-90.60	-90.86
5	-92.97	-93.25	-90.75	-89.47	-92.46	-90.90	-88.60	-87.92	-92.82
6	-90.12	-86.82	-90.24	-87.05	-86.65	-89.70	-88.27	-87.71	-88.72
Statistics									
Min	-92.97	-93.25	-90.78	-93.29	-93.51	-90.90	-90.45	-91.19	-92.82
Max	-88.63	-86.82	-89.19	-87.05	-86.65	-88.10	-88.27	-87.71	-88.72
Average	-90.54	-90.59	-90.30	-90.61	-90.64	-89.84	-89.15	-89.55	-90.63
Sigma	1.55	2.09	0.58	2.19	2.37	0.95	0.75	1.45	1.39

Drift Calculation

THD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	710.0E-03	790.0E-03	-1.7E+00	-1.9E+00	1.3E+00	1.1E+00	1.2E+00	480.0E-03
3	-	-1.3E+00	-1.1E+00	-1.6E+00	-460.0E-03	-868.0E-03	279.0E-03	-1.8E+00	-265.0E-03
4	-	-2.7E+00	-568.0E-03	-3.6E+00	-2.1E+00	522.0E-03	-684.0E-03	-2.0E+00	-2.2E+00
5	-	-279.0E-03	2.2E+00	3.5E+00	506.0E-03	2.1E+00	4.4E+00	5.0E+00	150.0E-03
6	-	3.3E+00	-115.0E-03	3.1E+00	3.5E+00	419.0E-03	1.9E+00	2.4E+00	1.4E+00
Average	-	-55.4E-03	243.8E-03	-74.4E-03	-101.2E-03	695.4E-03	1.4E+00	990.8E-03	-93.4E-03
Sigma	-	2.0E+00	1.2E+00	2.8E+00	2.0E+00	984.4E-03	1.7E+00	2.6E+00	1.2E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

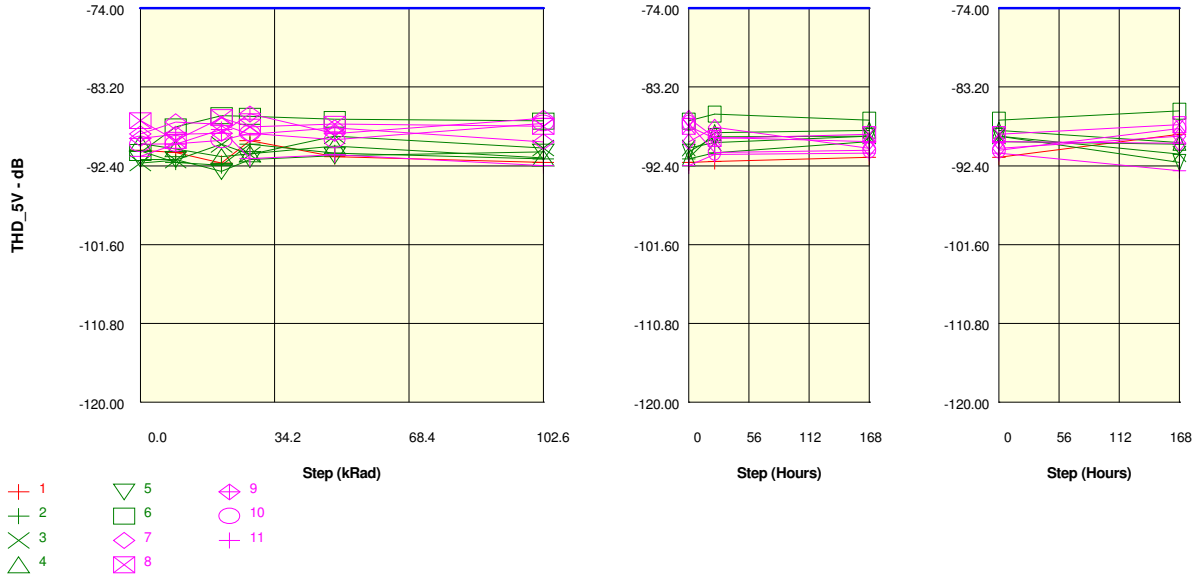
Measurements

THD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-90.02	-91.68	-91.14	-90.84	-90.71	-88.00	-88.00	-88.14	-89.20
OFF samples									
7	-90.81	-87.80	-87.25	-87.82	-87.79	-88.74	-86.71	-87.40	-88.17
8	-87.54	-88.39	-87.77	-87.30	-87.87	-88.64	-87.21	-88.35	-87.83
9	-88.84	-91.81	-90.99	-88.06	-87.94	-88.28	-87.13	-89.03	-87.37
10	-90.58	-90.47	-91.19	-90.45	-90.45	-88.92	-89.02	-89.87	-89.44
11	-90.73	-92.48	-89.53	-90.81	-90.90	-90.84	-90.64	-92.38	-93.15
Statistics									
Min	-90.81	-92.48	-91.19	-90.81	-90.90	-90.84	-90.64	-92.38	-93.15
Max	-87.54	-87.80	-87.25	-87.30	-87.79	-88.28	-86.71	-87.40	-87.37
Average	-89.70	-90.19	-89.34	-88.89	-88.99	-89.09	-88.14	-89.41	-89.19
Sigma	1.30	1.84	1.61	1.45	1.38	0.90	1.48	1.69	2.10

Drift Calculation

THD_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	3.0E+00	3.6E+00	3.0E+00	3.0E+00	2.1E+00	4.1E+00	3.4E+00	2.6E+00
8	-	-851.0E-03	-226.0E-03	242.0E-03	-335.0E-03	-1.1E+00	328.0E-03	-806.0E-03	-295.0E-03
9	-	-3.0E+00	-2.1E+00	778.0E-03	895.0E-03	556.0E-03	1.7E+00	-196.0E-03	1.5E+00
10	-	110.0E-03	-609.0E-03	129.0E-03	123.0E-03	1.7E+00	1.6E+00	708.0E-03	1.1E+00
11	-	-1.8E+00	1.2E+00	-80.0E-03	-170.0E-03	-112.0E-03	90.0E-03	-1.7E+00	-2.4E+00
Average	-	-490.0E-03	354.2E-03	810.8E-03	706.8E-03	612.0E-03	1.6E+00	293.0E-03	503.8E-03
Sigma	-	2.0E+00	1.9E+00	1.1E+00	1.2E+00	1.2E+00	1.4E+00	1.7E+00	1.7E+00

Parameter : Total Harmonic Distorsion : THD_5VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-90.58	-90.87	-92.11	-89.49	-91.34	-92.02	-91.87	-91.40	-88.71
ON samples									
2	-90.66	-92.00	-92.36	-89.90	-90.90	-91.62	-90.88	-89.59	-89.88
3	-92.07	-91.74	-89.90	-91.09	-88.93	-90.32	-89.69	-88.92	-91.03
4	-89.79	-90.43	-91.33	-91.00	-90.10	-91.49	-88.52	-88.24	-89.68
5	-91.65	-91.67	-93.04	-91.68	-91.22	-90.79	-88.99	-88.94	-92.01
6	-90.86	-87.84	-86.54	-86.63	-86.98	-87.17	-86.36	-87.08	-86.01
Statistics									
Min	-92.07	-92.00	-93.04	-91.68	-91.22	-91.62	-90.88	-89.59	-92.01
Max	-89.79	-87.84	-86.54	-86.63	-86.98	-87.17	-86.36	-87.08	-86.01
Average	-91.01	-90.73	-90.64	-90.06	-89.63	-90.28	-88.89	-88.55	-89.72
Sigma	0.80	1.55	2.30	1.81	1.54	1.63	1.49	0.85	2.04

Drift Calculation

THD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-1.3E+00	-1.7E+00	755.0E-03	-243.0E-03	-959.0E-03	-218.0E-03	1.1E+00	778.0E-03
3	-	336.0E-03	2.2E+00	985.0E-03	3.1E+00	1.7E+00	2.4E+00	3.1E+00	1.0E+00
4	-	-636.0E-03	-1.5E+00	-1.2E+00	-311.0E-03	-1.7E+00	1.3E+00	1.6E+00	111.0E-03
5	-	-24.0E-03	-1.4E+00	-30.0E-03	427.0E-03	854.0E-03	2.7E+00	2.7E+00	-359.0E-03
6	-	3.0E+00	4.3E+00	4.2E+00	3.9E+00	3.7E+00	4.5E+00	3.8E+00	4.8E+00
Average	-	272.2E-03	370.2E-03	947.0E-03	1.4E+00	727.6E-03	2.1E+00	2.5E+00	1.3E+00
Sigma	-	1.5E+00	2.4E+00	1.8E+00	1.8E+00	1.9E+00	1.6E+00	1.0E+00	1.8E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

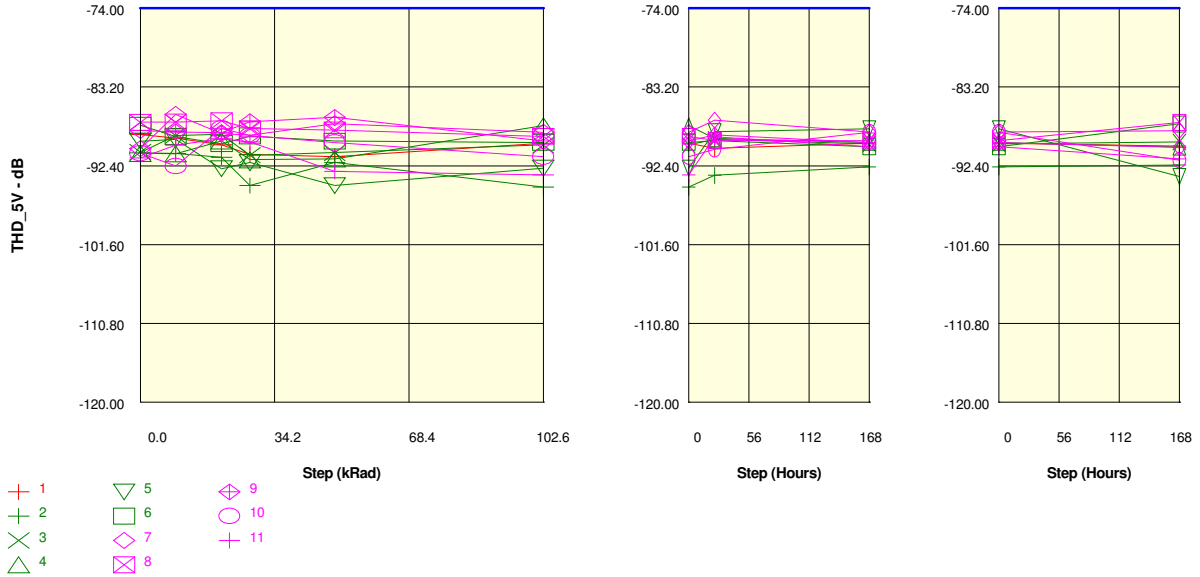
Measurements

THD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-90.58	-90.87	-92.11	-89.49	-91.34	-92.02	-91.87	-91.40	-88.71
OFF samples									
7	-88.68	-87.28	-87.57	-88.75	-87.98	-89.60	-87.90	-90.37	-88.94
8	-87.12	-89.43	-86.79	-87.87	-87.54	-87.80	-89.20	-88.75	-87.61
9	-89.21	-88.71	-88.62	-86.35	-88.63	-86.84	-89.11	-89.59	-89.76
10	-89.86	-89.82	-89.43	-88.58	-89.37	-87.42	-90.86	-90.59	-88.03
11	-91.30	-89.87	-88.15	-91.55	-91.13	-92.39	-91.08	-90.92	-92.96
Statistics									
Min	-91.30	-89.87	-89.43	-91.55	-91.13	-92.39	-91.08	-90.92	-92.96
Max	-87.12	-87.28	-86.79	-86.35	-87.54	-86.84	-87.90	-88.75	-87.61
Average	-89.23	-89.02	-88.11	-88.62	-88.93	-88.81	-89.63	-90.04	-89.46
Sigma	1.38	0.96	0.90	1.69	1.26	2.01	1.19	0.78	1.90

Drift Calculation

THD_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	1.4E+00	1.1E+00	-70.0E-03	698.0E-03	-920.0E-03	771.0E-03	-1.7E+00	-266.0E-03
8	-	-2.3E+00	328.0E-03	-752.0E-03	-420.0E-03	-685.0E-03	-2.1E+00	-1.6E+00	-492.0E-03
9	-	492.0E-03	591.0E-03	2.9E+00	572.0E-03	2.4E+00	98.0E-03	-384.0E-03	-554.0E-03
10	-	41.0E-03	433.0E-03	1.3E+00	486.0E-03	2.4E+00	-996.0E-03	-728.0E-03	1.8E+00
11	-	1.4E+00	3.2E+00	-250.0E-03	174.0E-03	-1.1E+00	219.0E-03	385.0E-03	-1.7E+00
Average	-	210.2E-03	1.1E+00	612.2E-03	302.0E-03	423.2E-03	-397.6E-03	-810.4E-03	-228.4E-03
Sigma	-	1.4E+00	1.1E+00	1.3E+00	400.3E-03	1.6E+00	1.0E+00	783.9E-03	1.1E+00

Parameter : Total Harmonic Distorsion : THD_5VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-88.75	-89.16	-89.97	-91.06	-91.32	-89.77	-90.38	-89.78	-90.10
ON samples									
2	-90.88	-90.95	-91.39	-94.71	-91.99	-94.91	-93.53	-92.53	-92.30
3	-90.83	-88.88	-88.74	-91.18	-90.86	-89.98	-89.31	-89.85	-89.61
4	-90.94	-90.99	-89.50	-91.69	-91.60	-87.73	-89.22	-89.68	-90.22
5	-89.53	-89.32	-92.74	-92.03	-94.71	-92.68	-88.41	-88.08	-93.66
6	-87.66	-88.98	-89.82	-88.92	-89.51	-89.67	-89.45	-90.18	-87.51
Statistics									
Min	-90.94	-90.99	-92.74	-94.71	-94.71	-94.91	-93.53	-92.53	-93.66
Max	-87.66	-88.88	-88.74	-88.92	-89.51	-87.73	-88.41	-88.08	-87.51
Average	-89.97	-89.82	-90.43	-91.70	-91.73	-90.99	-89.98	-90.06	-90.66
Sigma	1.27	0.95	1.44	1.85	1.71	2.51	1.81	1.43	2.14

Drift Calculation

THD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-70.0E-03	-506.0E-03	-3.8E+00	-1.1E+00	-4.0E+00	-2.6E+00	-1.6E+00	-1.4E+00
3	-	2.0E+00	2.1E+00	-344.0E-03	-33.0E-03	854.0E-03	1.5E+00	979.0E-03	1.2E+00
4	-	-50.0E-03	1.4E+00	-748.0E-03	-661.0E-03	3.2E+00	1.7E+00	1.3E+00	723.0E-03
5	-	206.0E-03	-3.2E+00	-2.5E+00	-5.2E+00	-3.2E+00	1.1E+00	1.4E+00	-4.1E+00
6	-	-1.3E+00	-2.2E+00	-1.3E+00	-1.8E+00	-2.0E+00	-1.8E+00	-2.5E+00	157.0E-03
Average	-	144.8E-03	-467.0E-03	-1.7E+00	-1.8E+00	-1.0E+00	-17.0E-03	-94.8E-03	-690.6E-03
Sigma	-	1.0E+00	2.0E+00	1.3E+00	1.8E+00	2.7E+00	1.8E+00	1.7E+00	1.9E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

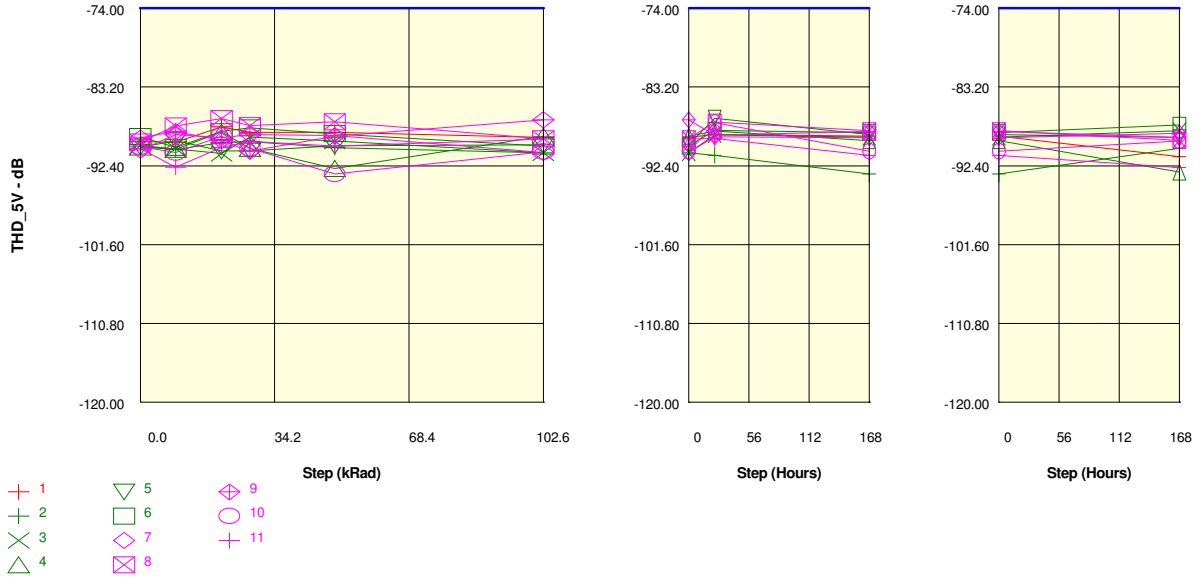
Measurements

THD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-88.75	-89.16	-89.97	-91.06	-91.32	-89.77	-90.38	-89.78	-90.10
OFF samples									
7	-90.41	-86.40	-88.65	-88.82	-87.48	-88.48	-87.08	-88.47	-88.29
8	-87.32	-87.30	-87.16	-88.07	-88.23	-88.98	-89.44	-89.49	-87.32
9	-88.27	-88.46	-88.52	-87.25	-86.76	-89.51	-88.81	-89.68	-90.24
10	-90.94	-92.44	-88.04	-88.86	-89.69	-91.32	-90.49	-88.49	-91.77
11	-91.49	-90.00	-89.24	-89.64	-93.07	-93.44	-89.02	-90.18	-91.62
Statistics									
Min	-91.49	-92.44	-89.24	-89.64	-93.07	-93.44	-90.49	-90.18	-91.77
Max	-87.32	-86.40	-87.16	-87.25	-86.76	-88.48	-87.08	-88.47	-87.32
Average	-89.69	-88.92	-88.32	-88.53	-89.05	-90.35	-88.97	-89.26	-89.85
Sigma	1.61	2.13	0.69	0.81	2.23	1.82	1.11	0.68	1.78

Drift Calculation

THD_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	4.0E+00	1.8E+00	1.6E+00	2.9E+00	1.9E+00	3.3E+00	1.9E+00	2.1E+00
8	-	18.0E-03	157.0E-03	-749.0E-03	-911.0E-03	-1.7E+00	-2.1E+00	-2.2E+00	-5.0E-03
9	-	-187.0E-03	-244.0E-03	1.0E+00	1.5E+00	-1.2E+00	-542.0E-03	-1.4E+00	-2.0E+00
10	-	-1.5E+00	2.9E+00	2.1E+00	1.2E+00	-388.0E-03	449.0E-03	2.5E+00	-831.0E-03
11	-	1.5E+00	2.3E+00	1.9E+00	-1.6E+00	-1.9E+00	2.5E+00	1.3E+00	-131.0E-03
Average	-	766.8E-03	1.4E+00	1.2E+00	639.6E-03	-659.6E-03	717.6E-03	424.8E-03	-162.8E-03
Sigma	-	1.9E+00	1.2E+00	1.0E+00	1.7E+00	1.4E+00	2.0E+00	1.9E+00	1.3E+00

Parameter : Total Harmonic Distorsion : THD_5VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : dB
 Spec Limit Max : -74.00
 Spec limits are represented in bold lines on the graphic.



Measurements

THD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-89.59	-89.65	-87.83	-88.50	-88.49	-89.09	-88.73	-88.93	-91.35
ON samples									
2	-90.12	-90.53	-89.68	-89.59	-90.28	-90.89	-91.17	-93.35	-90.39
3	-90.05	-90.42	-90.95	-89.07	-89.52	-90.89	-88.78	-89.07	-88.31
4	-90.21	-90.49	-88.48	-90.38	-92.72	-88.94	-88.35	-89.48	-93.12
5	-90.23	-89.46	-90.65	-90.68	-90.06	-89.96	-86.86	-88.76	-89.11
6	-88.99	-90.24	-88.40	-87.98	-88.66	-90.10	-88.27	-88.52	-87.65
Statistics									
Min	-90.23	-90.53	-90.95	-90.68	-92.72	-90.89	-91.17	-93.35	-93.12
Max	-88.99	-89.46	-88.40	-87.98	-88.66	-88.94	-86.86	-88.52	-87.65
Average	-89.92	-90.23	-89.63	-89.54	-90.25	-90.16	-88.68	-89.84	-89.71
Sigma	0.47	0.39	1.06	0.96	1.36	0.72	1.40	1.79	1.93

Drift Calculation

THD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-408.0E-03	437.0E-03	531.0E-03	-166.0E-03	-773.0E-03	-1.1E+00	-3.2E+00	-272.0E-03
3	-	-367.0E-03	-896.0E-03	980.0E-03	531.0E-03	-836.0E-03	1.3E+00	977.0E-03	1.7E+00
4	-	-273.0E-03	1.7E+00	-162.0E-03	-2.5E+00	1.3E+00	1.9E+00	729.0E-03	-2.9E+00
5	-	765.0E-03	-425.0E-03	-447.0E-03	168.0E-03	270.0E-03	3.4E+00	1.5E+00	1.1E+00
6	-	-1.3E+00	595.0E-03	1.0E+00	331.0E-03	-1.1E+00	724.0E-03	472.0E-03	1.3E+00
Average	-	-307.0E-03	289.0E-03	383.0E-03	-328.2E-03	-235.4E-03	1.2E+00	81.6E-03	206.2E-03
Sigma	-	641.4E-03	907.5E-03	593.5E-03	1.1E+00	890.1E-03	1.4E+00	1.7E+00	1.7E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

THD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-89.59	-89.65	-87.83	-88.50	-88.49	-89.09	-88.73	-88.93	-91.35
OFF samples									
7	-90.58	-88.77	-89.13	-88.76	-88.89	-90.86	-88.99	-89.12	-88.59
8	-89.61	-87.75	-86.87	-87.72	-87.25	-89.25	-87.30	-88.30	-89.41
9	-89.15	-88.40	-89.46	-90.70	-88.92	-87.04	-88.83	-88.37	-89.10
10	-90.18	-90.85	-88.92	-90.38	-93.35	-90.76	-87.38	-90.70	-89.52
11	-90.41	-92.55	-90.27	-89.56	-90.12	-89.28	-89.21	-91.20	-92.59
Statistics									
Min	-90.58	-92.55	-90.27	-90.70	-93.35	-90.86	-89.21	-91.20	-92.59
Max	-89.15	-87.75	-86.87	-87.72	-87.25	-87.04	-87.30	-88.30	-88.59
Average	-89.98	-89.66	-88.93	-89.42	-89.71	-89.44	-88.34	-89.54	-89.84
Sigma	0.53	1.78	1.13	1.09	2.04	1.38	0.83	1.20	1.41

Drift Calculation

THD_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	1.8E+00	1.5E+00	1.8E+00	1.7E+00	-277.0E-03	1.6E+00	1.5E+00	2.0E+00
8	-	1.9E+00	2.7E+00	1.9E+00	2.4E+00	357.0E-03	2.3E+00	1.3E+00	197.0E-03
9	-	755.0E-03	-307.0E-03	-1.5E+00	234.0E-03	2.1E+00	323.0E-03	789.0E-03	55.0E-03
10	-	-671.0E-03	1.3E+00	-200.0E-03	-3.2E+00	-581.0E-03	2.8E+00	-523.0E-03	660.0E-03
11	-	-2.1E+00	141.0E-03	848.0E-03	288.0E-03	1.1E+00	1.2E+00	-798.0E-03	-2.2E+00
Average	-	322.6E-03	1.1E+00	561.0E-03	279.2E-03	548.0E-03	1.6E+00	448.4E-03	143.2E-03
Sigma	-	1.5E+00	1.1E+00	1.3E+00	1.9E+00	977.5E-03	863.2E-03	936.6E-03	1.4E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

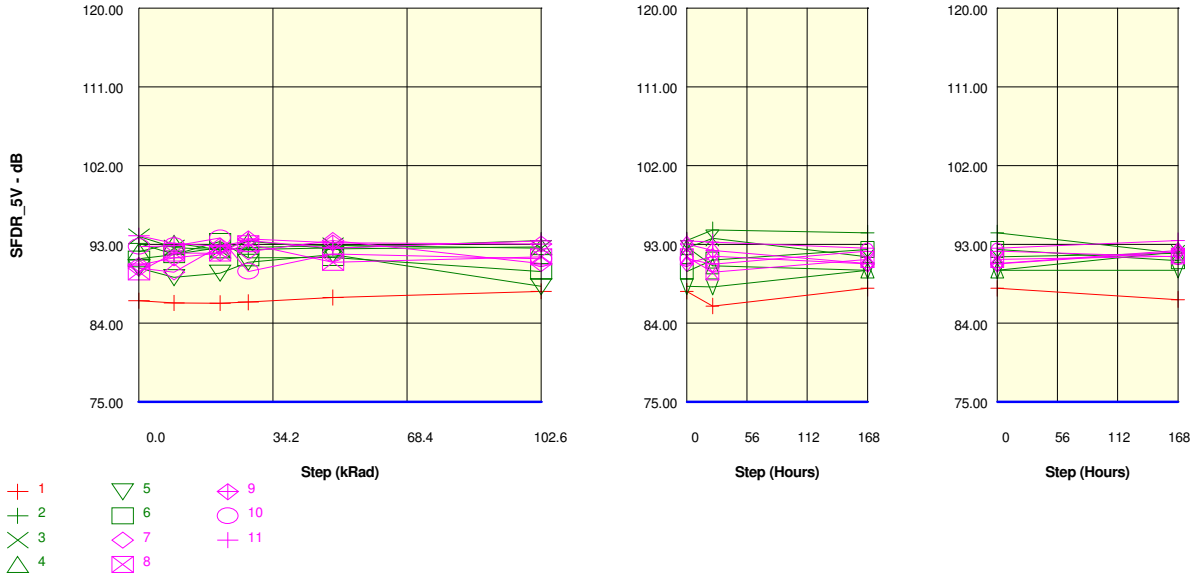
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN0

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	86.57	86.31	86.29	86.41	86.95	87.64	85.96	87.99	86.70
ON samples									
2	93.11	91.86	92.62	92.42	92.60	93.47	94.66	94.30	92.00
3	93.91	92.63	92.36	92.66	92.89	92.58	93.72	91.58	92.00
4	92.19	93.15	92.37	93.38	92.49	92.73	90.55	90.06	92.15
5	90.30	89.22	89.72	90.96	91.84	88.20	88.14	90.03	90.05
6	91.34	91.84	93.34	91.47	91.51	89.91	91.22	92.43	91.14
Statistics									
Min	90.30	89.22	89.72	90.96	91.51	88.20	88.14	90.03	90.05
Max	93.91	93.15	93.34	93.38	92.89	93.47	94.66	94.30	92.15
Average	92.17	91.74	92.08	92.18	92.27	91.38	91.66	91.68	91.47
Sigma	1.27	1.35	1.24	0.86	0.51	2.00	2.33	1.60	0.79

Drift Calculation

SFDR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-1.2E+00	-485.0E-03	-688.0E-03	-505.0E-03	357.0E-03	1.6E+00	1.2E+00	-1.1E+00
3	-	-1.3E+00	-1.5E+00	-1.2E+00	-1.0E+00	-1.3E+00	-184.0E-03	-2.3E+00	-1.9E+00
4	-	964.0E-03	184.0E-03	1.2E+00	303.0E-03	549.0E-03	-1.6E+00	-2.1E+00	-31.0E-03
5	-	-1.1E+00	-585.0E-03	655.0E-03	1.5E+00	-2.1E+00	-2.2E+00	-275.0E-03	-247.0E-03
6	-	499.0E-03	2.0E+00	127.0E-03	164.0E-03	-1.4E+00	-120.0E-03	1.1E+00	-207.0E-03
Average	-	-429.2E-03	-85.8E-03	7.6E-03	97.4E-03	-791.4E-03	-510.6E-03	-489.4E-03	-700.2E-03
Sigma	-	961.3E-03	1.2E+00	881.7E-03	865.9E-03	1.1E+00	1.3E+00	1.5E+00	710.1E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	86.57	86.31	86.29	86.41	86.95	87.64	85.96	87.99	86.70
OFF samples									
7	90.30	89.85	92.83	92.18	93.44	90.80	91.65	90.75	92.16
8	89.87	92.01	91.99	93.07	90.97	91.58	89.85	91.30	91.66
9	90.61	91.48	92.01	93.64	93.17	93.06	92.30	90.81	92.31
10	92.75	92.85	93.75	89.92	91.92	91.36	90.73	92.24	91.57
11	93.99	93.12	92.80	93.45	92.55	93.41	93.26	92.55	93.44
Statistics									
Min	89.87	89.85	91.99	89.92	90.97	90.80	89.85	90.75	91.57
Max	93.99	93.12	93.75	93.64	93.44	93.41	93.26	92.55	93.44
Average	91.51	91.86	92.68	92.45	92.41	92.04	91.56	91.53	92.23
Sigma	1.59	1.17	0.65	1.36	0.89	1.01	1.19	0.74	0.67

Drift Calculation

SFDR_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-454.0E-03	2.5E+00	1.9E+00	3.1E+00	498.0E-03	1.3E+00	449.0E-03	1.9E+00
8	-	2.1E+00	2.1E+00	3.2E+00	1.1E+00	1.7E+00	-18.0E-03	1.4E+00	1.8E+00
9	-	872.0E-03	1.4E+00	3.0E+00	2.6E+00	2.4E+00	1.7E+00	200.0E-03	1.7E+00
10	-	100.0E-03	992.0E-03	-2.8E+00	-834.0E-03	-1.4E+00	-2.0E+00	-511.0E-03	-1.2E+00
11	-	-870.0E-03	-1.2E+00	-542.0E-03	-1.4E+00	-584.0E-03	-730.0E-03	-1.4E+00	-557.0E-03
Average	-	358.8E-03	1.2E+00	945.8E-03	904.8E-03	537.8E-03	52.2E-03	26.4E-03	723.0E-03
Sigma	-	1.1E+00	1.3E+00	2.3E+00	1.8E+00	1.4E+00	1.4E+00	961.6E-03	1.3E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

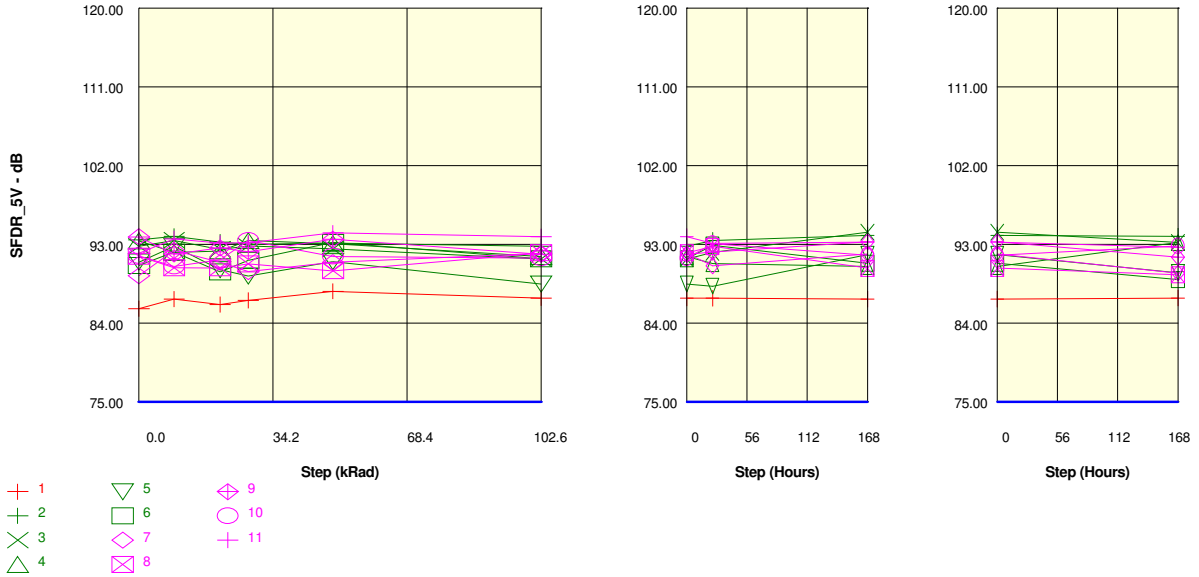
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN1

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	85.67	86.75	86.13	86.62	87.64	86.89	86.85	86.75	86.88
ON samples									
2	93.51	93.93	93.28	93.00	93.16	92.77	93.46	94.06	93.93
3	92.79	93.47	92.45	92.82	92.50	91.34	92.08	94.39	93.24
4	93.41	92.08	92.26	93.43	93.09	91.62	90.80	90.47	93.22
5	90.98	92.80	90.12	89.40	91.04	88.47	88.23	91.86	89.78
6	90.59	92.13	89.86	91.18	93.23	91.37	92.92	90.84	88.98
Statistics									
Min	90.59	92.08	89.86	89.40	91.04	88.47	88.23	90.47	88.98
Max	93.51	93.93	93.28	93.43	93.23	92.77	93.46	94.39	93.93
Average	92.26	92.88	91.59	91.97	92.60	91.12	91.50	92.32	91.83
Sigma	1.23	0.73	1.36	1.49	0.82	1.42	1.86	1.62	2.03

Drift Calculation

SFDR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	423.0E-03	-232.0E-03	-511.0E-03	-355.0E-03	-736.0E-03	-52.0E-03	549.0E-03	423.0E-03
3	-	681.0E-03	-338.0E-03	36.0E-03	-288.0E-03	-1.4E+00	-711.0E-03	1.6E+00	447.0E-03
4	-	-1.3E+00	-1.2E+00	20.0E-03	-327.0E-03	-1.8E+00	-2.6E+00	-2.9E+00	-194.0E-03
5	-	1.8E+00	-864.0E-03	-1.6E+00	57.0E-03	-2.5E+00	-2.8E+00	876.0E-03	-1.2E+00
6	-	1.5E+00	-728.0E-03	591.0E-03	2.6E+00	779.0E-03	2.3E+00	249.0E-03	-1.6E+00
Average	-	626.0E-03	-664.0E-03	-289.6E-03	344.8E-03	-1.1E+00	-760.6E-03	66.0E-03	-428.8E-03
Sigma	-	1.1E+00	340.9E-03	735.1E-03	1.2E+00	1.1E+00	1.9E+00	1.6E+00	843.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	85.67	86.75	86.13	86.62	87.64	86.89	86.85	86.75	86.88
OFF samples									
7	89.42	92.31	90.94	89.90	90.94	91.96	90.56	91.90	89.73
8	91.65	90.35	90.32	90.78	89.98	92.05	92.77	90.29	89.52
9	93.86	91.90	92.62	92.19	93.60	91.86	92.13	93.31	91.53
10	91.69	90.49	91.25	93.46	91.64	91.45	93.09	91.78	92.82
11	91.99	93.66	93.15	93.19	94.31	93.88	93.14	93.27	92.67
Statistics									
Min	89.42	90.35	90.32	89.90	89.98	91.45	90.56	90.29	89.52
Max	93.86	93.66	93.15	93.46	94.31	93.88	93.14	93.31	92.82
Average	91.72	91.74	91.66	91.90	92.09	92.24	92.34	92.11	91.26
Sigma	1.41	1.23	1.06	1.37	1.62	0.85	0.96	1.12	1.41

Drift Calculation

SFDR_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	2.9E+00	1.5E+00	489.0E-03	1.5E+00	2.5E+00	1.1E+00	2.5E+00	312.0E-03
8	-	-1.3E+00	-1.3E+00	-872.0E-03	-1.7E+00	400.0E-03	1.1E+00	-1.4E+00	-2.1E+00
9	-	-2.0E+00	-1.2E+00	-1.7E+00	-266.0E-03	-2.0E+00	-1.7E+00	-559.0E-03	-2.3E+00
10	-	-1.2E+00	-437.0E-03	1.8E+00	-47.0E-03	-241.0E-03	1.4E+00	89.0E-03	1.1E+00
11	-	1.7E+00	1.2E+00	1.2E+00	2.3E+00	1.9E+00	1.1E+00	1.3E+00	684.0E-03
Average	-	20.6E-03	-65.8E-03	181.8E-03	373.0E-03	519.2E-03	617.2E-03	386.0E-03	-465.6E-03
Sigma	-	1.9E+00	1.2E+00	1.3E+00	1.4E+00	1.6E+00	1.2E+00	1.4E+00	1.5E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

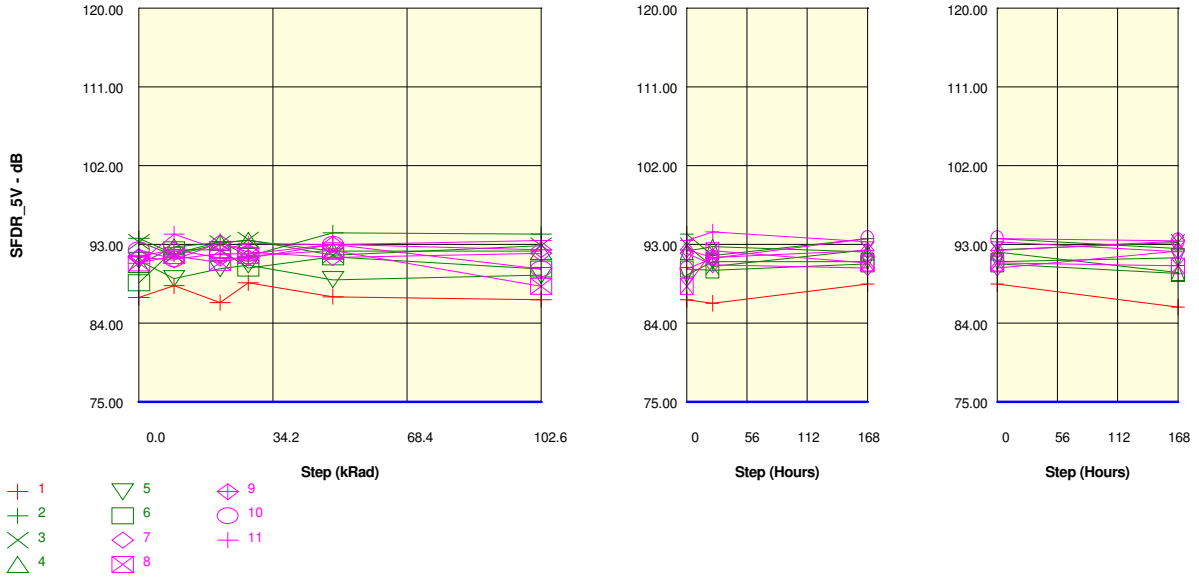
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN2

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	86.92	88.27	86.36	88.62	87.03	86.70	86.28	88.49	85.83
ON samples									
2	93.70	91.91	93.34	91.65	94.34	94.17	91.72	93.66	92.55
3	93.29	91.77	93.11	93.53	91.76	92.87	90.47	92.36	93.23
4	90.71	92.71	93.22	93.44	92.25	92.22	92.74	92.12	89.79
5	91.19	89.11	90.23	90.64	88.97	89.48	91.05	91.03	91.48
6	88.62	92.37	92.39	90.30	91.57	90.20	90.06	90.76	89.69
Statistics									
Min	88.62	89.11	90.23	90.30	88.97	89.48	90.06	90.76	89.69
Max	93.70	92.71	93.34	93.53	94.34	94.17	92.74	93.66	93.23
Average	91.50	91.58	92.46	91.91	91.78	91.79	91.21	91.99	91.35
Sigma	1.85	1.28	1.16	1.36	1.71	1.72	0.95	1.04	1.42

Drift Calculation

SFDR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-1.8E+00	-357.0E-03	-2.0E+00	646.0E-03	470.0E-03	-2.0E+00	-34.0E-03	-1.2E+00
3	-	-1.5E+00	-179.0E-03	238.0E-03	-1.5E+00	-424.0E-03	-2.8E+00	-931.0E-03	-62.0E-03
4	-	2.0E+00	2.5E+00	2.7E+00	1.5E+00	1.5E+00	2.0E+00	1.4E+00	-915.0E-03
5	-	-2.1E+00	-956.0E-03	-546.0E-03	-2.2E+00	-1.7E+00	-136.0E-03	-163.0E-03	288.0E-03
6	-	3.8E+00	3.8E+00	1.7E+00	3.0E+00	1.6E+00	1.4E+00	2.1E+00	1.1E+00
Average	-	75.4E-03	958.0E-03	412.8E-03	278.4E-03	286.0E-03	-291.4E-03	486.6E-03	-152.8E-03
Sigma	-	2.4E+00	1.8E+00	1.7E+00	1.9E+00	1.2E+00	1.9E+00	1.1E+00	811.2E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	86.92	88.27	86.36	88.62	87.03	86.70	86.28	88.49	85.83
OFF samples									
7	91.49	91.21	93.22	92.13	91.51	91.98	90.68	90.32	92.25
8	90.88	91.72	90.93	91.71	92.29	88.23	92.27	90.90	90.55
9	91.62	92.42	91.42	91.45	93.02	92.40	91.51	92.29	93.38
10	92.38	91.32	91.96	91.93	93.01	90.19	91.46	93.66	93.41
11	90.85	94.19	92.36	93.10	92.99	93.47	94.42	93.31	92.17
Statistics									
Min	90.85	91.21	90.93	91.45	91.51	88.23	90.68	90.32	90.55
Max	92.38	94.19	93.22	93.10	93.02	93.47	94.42	93.66	93.41
Average	91.44	92.17	91.98	92.06	92.57	91.25	92.07	92.10	92.35
Sigma	0.56	1.09	0.79	0.56	0.60	1.84	1.28	1.31	1.05

Drift Calculation

SFDR_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-283.0E-03	1.7E+00	636.0E-03	16.0E-03	487.0E-03	-818.0E-03	-1.2E+00	761.0E-03
8	-	842.0E-03	56.0E-03	835.0E-03	1.4E+00	-2.7E+00	1.4E+00	19.0E-03	-331.0E-03
9	-	799.0E-03	-197.0E-03	-169.0E-03	1.4E+00	774.0E-03	-115.0E-03	671.0E-03	1.8E+00
10	-	-1.1E+00	-422.0E-03	-446.0E-03	635.0E-03	-2.2E+00	-922.0E-03	1.3E+00	1.0E+00
11	-	3.3E+00	1.5E+00	2.3E+00	2.1E+00	2.6E+00	3.6E+00	2.5E+00	1.3E+00
Average	-	728.0E-03	534.8E-03	621.2E-03	1.1E+00	-191.2E-03	622.6E-03	654.0E-03	909.2E-03
Sigma	-	1.5E+00	900.3E-03	944.7E-03	731.0E-03	2.0E+00	1.7E+00	1.2E+00	703.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

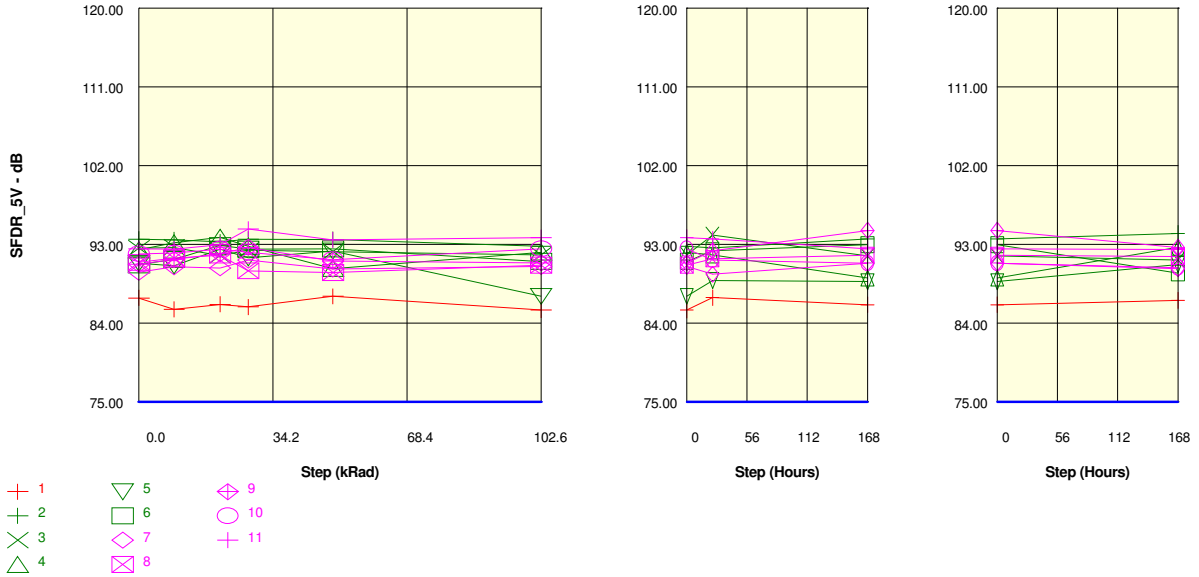
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN3

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	86.89	85.59	86.16	85.86	87.07	85.51	86.92	86.10	86.61
ON samples									
2	93.59	93.52	93.29	93.60	93.56	92.78	92.62	93.63	94.26
3	92.58	92.66	91.74	92.34	92.19	91.81	94.07	91.68	91.23
4	92.38	93.19	93.83	92.77	90.25	92.12	91.80	89.16	92.69
5	90.83	90.54	92.46	91.48	92.23	87.07	88.89	88.74	90.71
6	90.68	91.30	92.89	92.48	92.49	91.05	92.27	92.97	89.72
Statistics									
Min	90.68	90.54	91.74	91.48	90.25	87.07	88.89	88.74	89.72
Max	93.59	93.52	93.83	93.60	93.56	92.78	94.07	93.63	94.26
Average	92.01	92.24	92.84	92.53	92.14	90.97	91.93	91.24	91.72
Sigma	1.11	1.14	0.71	0.69	1.07	2.02	1.70	1.97	1.59

Drift Calculation

SFDR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-74.0E-03	-297.0E-03	13.0E-03	-30.0E-03	-816.0E-03	-974.0E-03	42.0E-03	666.0E-03
3	-	74.0E-03	-848.0E-03	-248.0E-03	-398.0E-03	-772.0E-03	1.5E+00	-901.0E-03	-1.4E+00
4	-	813.0E-03	1.4E+00	394.0E-03	-2.1E+00	-258.0E-03	-583.0E-03	-3.2E+00	311.0E-03
5	-	-294.0E-03	1.6E+00	646.0E-03	1.4E+00	-3.8E+00	-1.9E+00	-2.1E+00	-125.0E-03
6	-	617.0E-03	2.2E+00	1.8E+00	1.8E+00	371.0E-03	1.6E+00	2.3E+00	-959.0E-03
Average	-	227.2E-03	827.2E-03	519.8E-03	131.4E-03	-1.0E+00	-84.4E-03	-774.6E-03	-291.6E-03
Sigma	-	419.7E-03	1.2E+00	707.3E-03	1.4E+00	1.4E+00	1.4E+00	1.9E+00	758.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	86.89	85.59	86.16	85.86	87.07	85.51	86.92	86.10	86.61
OFF samples									
7	89.82	90.45	90.32	91.21	90.20	90.47	89.60	90.86	90.22
8	90.95	91.44	91.78	89.99	89.79	90.63	91.36	91.78	91.63
9	90.73	91.29	91.95	92.66	91.10	90.89	92.29	94.60	92.67
10	91.93	92.01	92.46	92.11	91.25	92.51	91.24	90.86	90.34
11	92.51	92.47	92.95	94.75	93.51	93.79	93.62	92.50	92.41
Statistics									
Min	89.82	90.45	90.32	89.99	89.79	90.47	89.60	90.86	90.22
Max	92.51	92.47	92.95	94.75	93.51	93.79	93.62	94.60	92.67
Average	91.19	91.53	91.89	92.14	91.17	91.66	91.62	92.12	91.45
Sigma	0.94	0.68	0.89	1.59	1.29	1.29	1.32	1.39	1.02

Drift Calculation

SFDR_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	628.0E-03	505.0E-03	1.4E+00	386.0E-03	653.0E-03	-221.0E-03	1.0E+00	401.0E-03
8	-	490.0E-03	832.0E-03	-962.0E-03	-1.2E+00	-320.0E-03	410.0E-03	831.0E-03	683.0E-03
9	-	558.0E-03	1.2E+00	1.9E+00	364.0E-03	159.0E-03	1.6E+00	3.9E+00	1.9E+00
10	-	77.0E-03	532.0E-03	184.0E-03	-677.0E-03	575.0E-03	-690.0E-03	-1.1E+00	-1.6E+00
11	-	-48.0E-03	438.0E-03	2.2E+00	1.0E+00	1.3E+00	1.1E+00	-10.0E-03	-100.0E-03
Average	-	341.0E-03	705.6E-03	956.0E-03	-17.4E-03	469.2E-03	431.4E-03	930.8E-03	266.0E-03
Sigma	-	273.0E-03	291.1E-03	1.2E+00	785.9E-03	532.9E-03	824.2E-03	1.6E+00	1.1E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

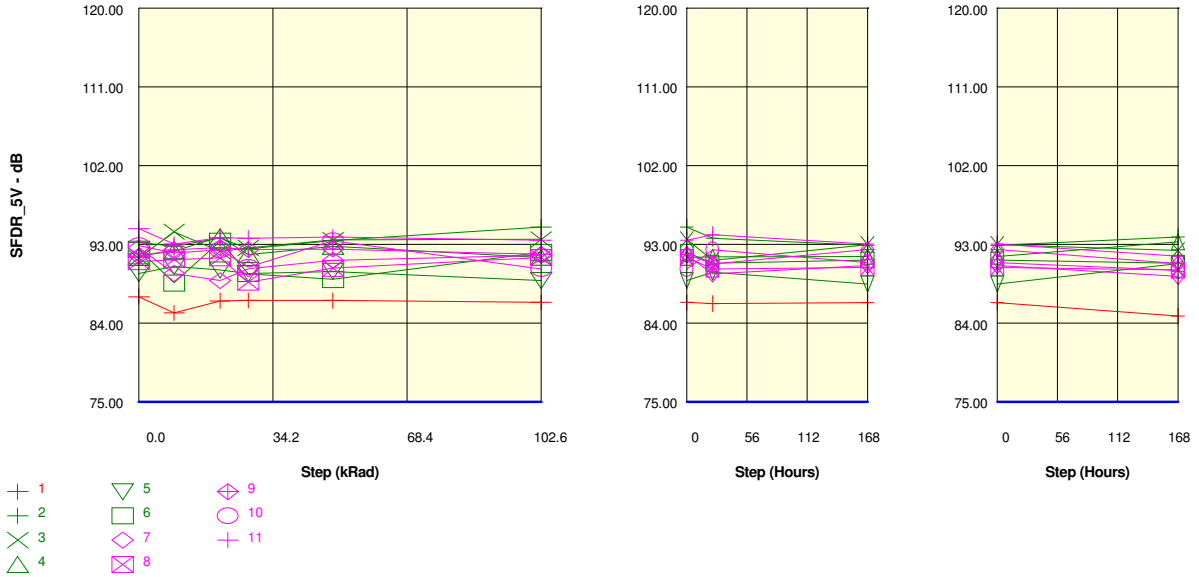
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN4

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	87.03	85.18	86.56	86.60	86.59	86.38	86.24	86.36	84.81
ON samples									
2	93.24	92.76	93.74	92.49	93.42	94.99	93.70	92.90	93.84
3	91.43	94.45	92.20	92.61	93.50	93.57	91.18	92.99	92.33
4	91.70	92.23	93.87	91.84	92.77	91.52	91.56	91.64	93.29
5	89.68	90.47	90.08	89.69	89.91	88.87	89.83	88.49	90.80
6	92.44	88.60	93.39	89.65	89.00	92.11	90.84	91.24	90.85
Statistics									
Min	89.68	88.60	90.08	89.65	89.00	88.87	89.83	88.49	90.80
Max	93.24	94.45	93.87	92.61	93.50	94.99	93.70	92.99	93.84
Average	91.70	91.70	92.65	91.26	91.72	92.21	91.42	91.45	92.22
Sigma	1.19	2.01	1.41	1.32	1.89	2.06	1.27	1.63	1.24

Drift Calculation

SFDR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-473.0E-03	501.0E-03	-749.0E-03	187.0E-03	1.8E+00	458.0E-03	-339.0E-03	604.0E-03
3	-	3.0E+00	767.0E-03	1.2E+00	2.1E+00	2.1E+00	-251.0E-03	1.6E+00	901.0E-03
4	-	526.0E-03	2.2E+00	138.0E-03	1.1E+00	-181.0E-03	-142.0E-03	-60.0E-03	1.6E+00
5	-	789.0E-03	402.0E-03	14.0E-03	235.0E-03	-805.0E-03	155.0E-03	-1.2E+00	1.1E+00
6	-	-3.8E+00	943.0E-03	-2.8E+00	-3.4E+00	-337.0E-03	-1.6E+00	-1.2E+00	-1.6E+00
Average	-	4.4E-03	955.4E-03	-441.8E-03	23.6E-03	513.6E-03	-276.4E-03	-247.8E-03	521.8E-03
Sigma	-	2.2E+00	633.9E-03	1.3E+00	1.9E+00	1.2E+00	707.3E-03	1.0E+00	1.1E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	87.03	85.18	86.56	86.60	86.59	86.38	86.24	86.36	84.81
OFF samples									
7	92.62	89.69	88.87	90.22	91.19	91.75	89.62	90.59	89.34
8	91.03	91.27	91.47	88.68	90.28	91.50	90.19	90.37	90.09
9	91.66	92.38	92.63	92.41	92.47	91.87	90.77	92.42	90.80
10	92.87	92.03	92.36	90.41	93.41	90.20	92.39	90.93	90.03
11	94.82	93.03	93.78	93.71	93.83	93.48	94.13	93.06	91.66
Statistics									
Min	91.03	89.69	88.87	88.68	90.28	90.20	89.62	90.37	89.34
Max	94.82	93.03	93.78	93.71	93.83	93.48	94.13	93.06	91.66
Average	92.60	91.68	91.82	91.09	92.24	91.76	91.42	91.48	90.38
Sigma	1.29	1.15	1.65	1.77	1.33	1.04	1.64	1.07	0.79

Drift Calculation

SFDR_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-2.9E+00	-3.8E+00	-2.4E+00	-1.4E+00	-872.0E-03	-3.0E+00	-2.0E+00	-3.3E+00
8	-	244.0E-03	447.0E-03	-2.3E+00	-744.0E-03	476.0E-03	-840.0E-03	-656.0E-03	-937.0E-03
9	-	716.0E-03	971.0E-03	749.0E-03	803.0E-03	202.0E-03	-896.0E-03	758.0E-03	-860.0E-03
10	-	-843.0E-03	-508.0E-03	-2.5E+00	544.0E-03	-2.7E+00	-484.0E-03	-1.9E+00	-2.8E+00
11	-	-1.8E+00	-1.0E+00	-1.1E+00	-987.0E-03	-1.3E+00	-685.0E-03	-1.8E+00	-3.2E+00
Average	-	-919.8E-03	-776.4E-03	-1.5E+00	-363.0E-03	-840.6E-03	-1.2E+00	-1.1E+00	-2.2E+00
Sigma	-	1.3E+00	1.6E+00	1.2E+00	878.3E-03	1.1E+00	921.5E-03	1.1E+00	1.1E+00

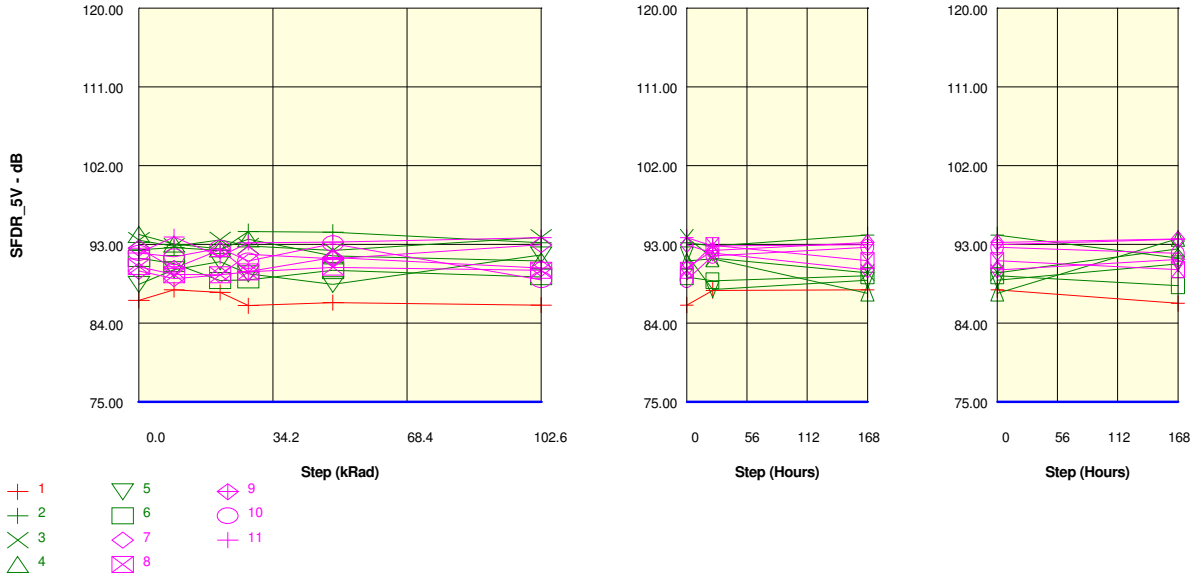
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN5

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	86.61	87.83	87.52	86.00	86.35	86.08	87.75	87.83	86.27
ON samples									
2	92.41	92.66	92.29	94.48	94.41	93.17	92.83	94.07	91.42
3	93.48	92.79	93.53	92.83	92.33	93.82	91.44	89.77	92.51
4	94.14	93.05	92.49	93.61	91.69	91.10	91.37	87.43	93.67
5	88.43	90.12	91.03	89.64	88.42	91.80	87.84	88.91	90.80
6	91.42	90.81	88.89	88.95	90.02	89.30	88.85	89.43	88.29
Statistics									
Min	88.43	90.12	88.89	88.95	88.42	89.30	87.84	87.43	88.29
Max	94.14	93.05	93.53	94.48	94.41	93.82	92.83	94.07	93.67
Average	91.97	91.88	91.65	91.90	91.37	91.84	90.47	89.92	91.34
Sigma	2.00	1.19	1.59	2.20	2.04	1.59	1.83	2.22	1.81

Drift Calculation

SFDR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	251.0E-03	-111.0E-03	2.1E+00	2.0E+00	765.0E-03	420.0E-03	1.7E+00	-984.0E-03
3	-	-691.0E-03	52.0E-03	-645.0E-03	-1.1E+00	342.0E-03	-2.0E+00	-3.7E+00	-970.0E-03
4	-	-1.1E+00	-1.6E+00	-523.0E-03	-2.4E+00	-3.0E+00	-2.8E+00	-6.7E+00	-461.0E-03
5	-	1.7E+00	2.6E+00	1.2E+00	-15.0E-03	3.4E+00	-589.0E-03	481.0E-03	2.4E+00
6	-	-609.0E-03	-2.5E+00	-2.5E+00	-1.4E+00	-2.1E+00	-2.6E+00	-2.0E+00	-3.1E+00
Average	-	-90.2E-03	-328.8E-03	-72.0E-03	-600.4E-03	-134.6E-03	-1.5E+00	-2.1E+00	-636.4E-03
Sigma	-	988.5E-03	1.8E+00	1.6E+00	1.5E+00	2.3E+00	1.2E+00	3.0E+00	1.8E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	86.61	87.83	87.52	86.00	86.35	86.08	87.75	87.83	86.27
OFF samples									
7	89.95	89.10	89.51	91.89	91.35	92.98	92.03	90.07	91.29
8	90.47	89.55	89.53	89.86	90.40	90.05	92.88	91.15	90.11
9	92.56	90.26	92.37	89.88	91.51	90.28	92.33	93.23	93.64
10	92.01	91.58	92.57	91.12	93.09	88.95	91.71	92.67	91.96
11	92.04	93.87	91.65	93.20	93.27	93.77	92.82	92.96	93.59
Statistics									
Min	89.95	89.10	89.51	89.86	90.40	88.95	91.71	90.07	90.11
Max	92.56	93.87	92.57	93.20	93.27	93.77	92.88	93.23	93.64
Average	91.41	90.87	91.13	91.19	91.92	91.21	92.35	92.02	92.12
Sigma	1.01	1.72	1.34	1.27	1.10	1.84	0.45	1.21	1.36

Drift Calculation

SFDR_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-849.0E-03	-433.0E-03	1.9E+00	1.4E+00	3.0E+00	2.1E+00	124.0E-03	1.3E+00
8	-	-914.0E-03	-932.0E-03	-603.0E-03	-70.0E-03	-420.0E-03	2.4E+00	687.0E-03	-351.0E-03
9	-	-2.3E+00	-195.0E-03	-2.7E+00	-1.1E+00	-2.3E+00	-235.0E-03	668.0E-03	1.1E+00
10	-	-434.0E-03	558.0E-03	-890.0E-03	1.1E+00	-3.1E+00	-308.0E-03	655.0E-03	-51.0E-03
11	-	1.8E+00	-391.0E-03	1.2E+00	1.2E+00	1.7E+00	777.0E-03	922.0E-03	1.6E+00
Average	-	-534.2E-03	-278.6E-03	-215.8E-03	515.6E-03	-199.2E-03	945.8E-03	611.2E-03	715.2E-03
Sigma	-	1.3E+00	483.8E-03	1.6E+00	940.9E-03	2.3E+00	1.1E+00	262.6E-03	768.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

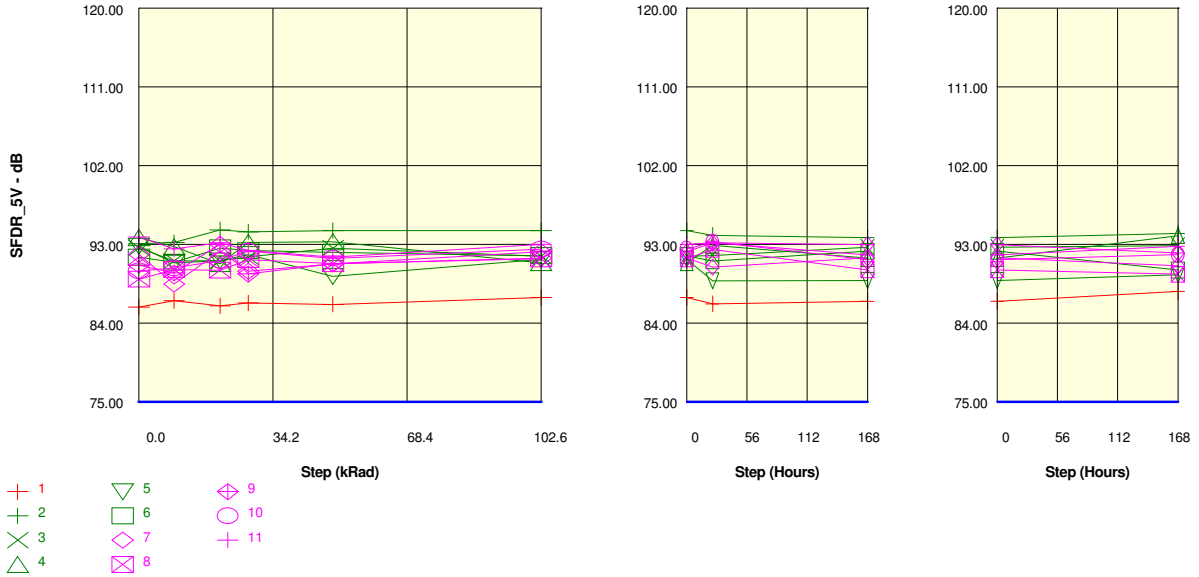
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN6

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	85.85	86.59	85.99	86.31	86.15	86.95	86.22	86.50	87.63
ON samples									
2	93.08	93.22	94.67	94.45	94.58	94.59	94.05	93.78	94.26
3	92.62	91.12	91.14	91.56	92.58	91.66	91.73	92.69	92.87
4	93.78	92.74	90.79	93.24	93.30	90.92	92.90	91.42	94.01
5	92.79	90.88	91.14	91.84	89.35	91.30	88.84	88.87	89.54
6	91.55	90.97	92.59	92.30	92.09	91.72	91.12	92.23	90.10
Statistics									
Min	91.55	90.88	90.79	91.56	89.35	90.92	88.84	88.87	89.54
Max	93.78	93.22	94.67	94.45	94.58	94.59	94.05	93.78	94.26
Average	92.76	91.78	92.07	92.68	92.38	92.04	91.73	91.80	92.16
Sigma	0.73	0.99	1.44	1.05	1.73	1.31	1.76	1.65	1.97

Drift Calculation

SFDR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	140.0E-03	1.6E+00	1.4E+00	1.5E+00	1.5E+00	973.0E-03	698.0E-03	1.2E+00
3	-	-1.5E+00	-1.5E+00	-1.1E+00	-40.0E-03	-958.0E-03	-890.0E-03	68.0E-03	249.0E-03
4	-	-1.0E+00	-3.0E+00	-545.0E-03	-486.0E-03	-2.9E+00	-880.0E-03	-2.4E+00	232.0E-03
5	-	-1.9E+00	-1.7E+00	-946.0E-03	-3.4E+00	-1.5E+00	-4.0E+00	-3.9E+00	-3.2E+00
6	-	-572.0E-03	1.0E+00	755.0E-03	549.0E-03	172.0E-03	-430.0E-03	682.0E-03	-1.5E+00
Average	-	-978.2E-03	-696.4E-03	-84.0E-03	-381.6E-03	-725.6E-03	-1.0E+00	-966.2E-03	-607.6E-03
Sigma	-	716.6E-03	1.7E+00	973.0E-03	1.7E+00	1.5E+00	1.6E+00	1.9E+00	1.6E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

SFDR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	85.85	86.59	85.99	86.31	86.15	86.95	86.22	86.50	87.63
OFF samples									
7	91.88	88.46	92.26	89.94	90.80	91.45	90.42	91.48	90.58
8	89.03	90.13	90.06	91.26	90.81	91.36	92.45	90.11	89.59
9	90.65	89.73	93.02	89.62	90.77	92.17	93.17	92.99	92.03
10	89.96	90.29	91.15	92.23	91.40	92.48	93.30	91.26	91.85
11	93.86	92.50	93.18	92.31	91.53	93.01	93.20	91.80	92.80
Statistics									
Min	89.03	88.46	90.06	89.62	90.77	91.36	90.42	90.11	89.59
Max	93.86	92.50	93.18	92.31	91.53	93.01	93.30	92.99	92.80
Average	91.08	90.22	91.93	91.07	91.06	92.09	92.51	91.53	91.37
Sigma	1.67	1.31	1.18	1.12	0.33	0.62	1.09	0.93	1.14

Drift Calculation

SFDR_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-3.4E+00	384.0E-03	-1.9E+00	-1.1E+00	-430.0E-03	-1.5E+00	-398.0E-03	-1.3E+00
8	-	1.1E+00	1.0E+00	2.2E+00	1.8E+00	2.3E+00	3.4E+00	1.1E+00	558.0E-03
9	-	-917.0E-03	2.4E+00	-1.0E+00	121.0E-03	1.5E+00	2.5E+00	2.3E+00	1.4E+00
10	-	332.0E-03	1.2E+00	2.3E+00	1.4E+00	2.5E+00	3.3E+00	1.3E+00	1.9E+00
11	-	-1.4E+00	-676.0E-03	-1.5E+00	-2.3E+00	-849.0E-03	-652.0E-03	-2.1E+00	-1.1E+00
Average	-	-852.4E-03	859.2E-03	-4.4E-03	-13.6E-03	1.0E+00	1.4E+00	450.8E-03	294.2E-03
Sigma	-	1.6E+00	1.0E+00	1.9E+00	1.5E+00	1.4E+00	2.1E+00	1.5E+00	1.3E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

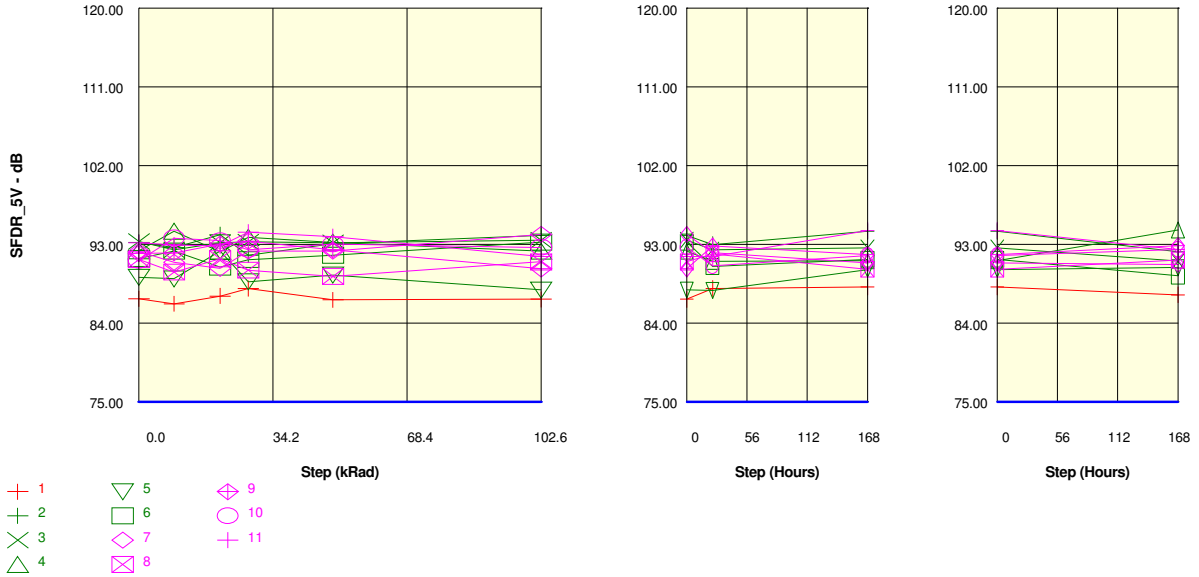
Parameter : Peak Harmonic or spurious noise : SFDR_5VIN7

Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7

Unit : dB

Spec Limit Min : 75.00

Spec limits are represented in bold lines on the graphic.



Measurements

SFDR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	86.79	86.22	87.10	87.97	86.67	86.73	87.96	88.16	87.25
ON samples									
2	93.23	92.66	94.11	91.79	93.08	94.02	92.97	94.49	92.17
3	93.33	92.38	93.18	93.29	93.18	93.48	92.37	92.60	91.09
4	92.27	94.51	92.19	93.81	93.25	92.23	91.07	91.13	94.65
5	89.23	89.08	92.25	88.72	89.50	87.80	87.75	90.12	90.35
6	91.40	92.24	90.41	91.26	91.76	93.26	90.49	91.31	89.41
Statistics									
Min	89.23	89.08	90.41	88.72	89.50	87.80	87.75	90.12	89.41
Max	93.33	94.51	94.11	93.81	93.25	94.02	92.97	94.49	94.65
Average	91.90	92.17	92.43	91.78	92.15	92.16	90.93	91.93	91.53
Sigma	1.51	1.75	1.23	1.79	1.44	2.26	1.82	1.50	1.80

Drift Calculation

SFDR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-570.0E-03	871.0E-03	-1.4E+00	-157.0E-03	782.0E-03	-262.0E-03	1.3E+00	-1.1E+00
3	-	-956.0E-03	-153.0E-03	-46.0E-03	-155.0E-03	149.0E-03	-962.0E-03	-733.0E-03	-2.2E+00
4	-	2.2E+00	-83.0E-03	1.5E+00	981.0E-03	-42.0E-03	-1.2E+00	-1.1E+00	2.4E+00
5	-	-154.0E-03	3.0E+00	-507.0E-03	270.0E-03	-1.4E+00	-1.5E+00	890.0E-03	1.1E+00
6	-	838.0E-03	-991.0E-03	-140.0E-03	359.0E-03	1.9E+00	-912.0E-03	-96.0E-03	-2.0E+00
Average	-	278.8E-03	531.8E-03	-120.0E-03	259.6E-03	262.0E-03	-964.6E-03	34.8E-03	-362.6E-03
Sigma	-	1.1E+00	1.4E+00	966.0E-03	418.5E-03	1.1E+00	405.2E-03	917.8E-03	1.8E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

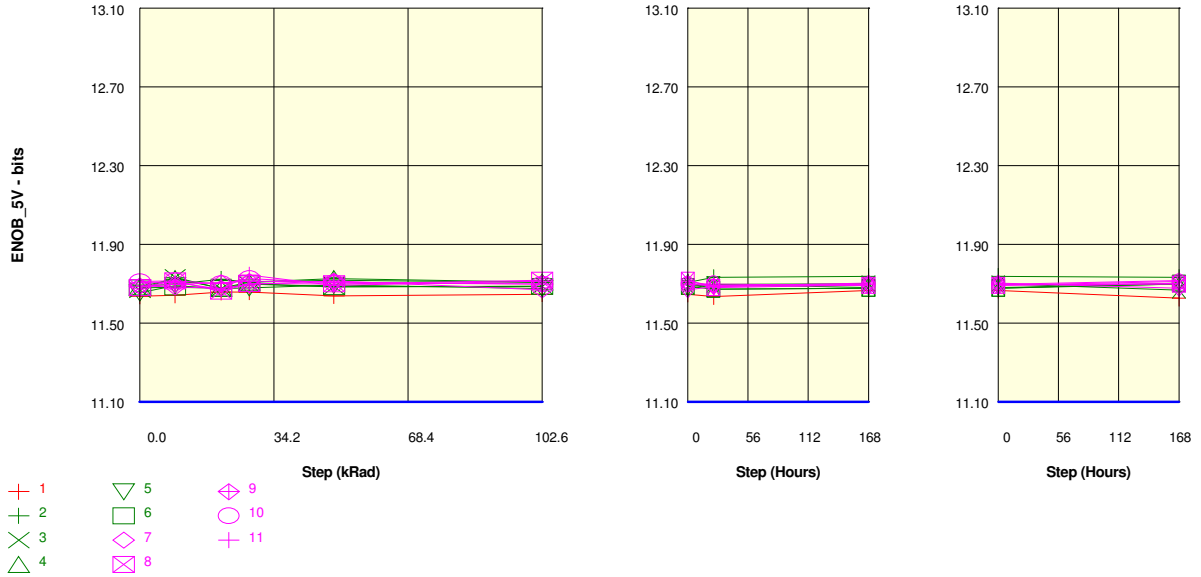
Measurements

SFDR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	86.79	86.22	87.10	87.97	86.67	86.73	87.96	88.16	87.25
OFF samples									
7	92.19	90.96	90.27	92.23	92.25	94.14	92.07	90.90	90.71
8	91.28	89.84	91.36	90.05	89.35	91.02	91.93	90.17	91.22
9	91.97	92.05	93.05	93.38	92.40	90.21	92.84	91.85	92.87
10	91.15	93.73	93.43	92.40	93.03	92.66	90.55	91.73	92.43
11	93.19	92.95	92.81	94.39	93.89	91.65	91.60	94.60	92.41
Statistics									
Min	91.15	89.84	90.27	90.05	89.35	90.21	90.55	90.17	90.71
Max	93.19	93.73	93.43	94.39	93.89	94.14	92.84	94.60	92.87
Average	91.96	91.90	92.18	92.49	92.18	91.93	91.80	91.85	91.93
Sigma	0.73	1.38	1.19	1.44	1.53	1.37	0.74	1.50	0.82

Drift Calculation

SFDR_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.2E+00	-1.9E+00	40.0E-03	51.0E-03	1.9E+00	-129.0E-03	-1.3E+00	-1.5E+00
8	-	-1.4E+00	81.0E-03	-1.2E+00	-1.9E+00	-260.0E-03	649.0E-03	-1.1E+00	-59.0E-03
9	-	80.0E-03	1.1E+00	1.4E+00	433.0E-03	-1.8E+00	870.0E-03	-117.0E-03	907.0E-03
10	-	2.6E+00	2.3E+00	1.2E+00	1.9E+00	1.5E+00	-603.0E-03	579.0E-03	1.3E+00
11	-	-243.0E-03	-382.0E-03	1.2E+00	700.0E-03	-1.5E+00	-1.6E+00	1.4E+00	-783.0E-03
Average	-	-52.0E-03	228.0E-03	536.0E-03	226.2E-03	-21.4E-03	-160.6E-03	-106.4E-03	-27.6E-03
Sigma	-	1.4E+00	1.4E+00	1.0E+00	1.2E+00	1.5E+00	889.7E-03	1.0E+00	1.0E+00

Parameter : Effective Number of bit : ENOB_5VIN0
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.64	11.64	11.66	11.66	11.64	11.65	11.64	11.67	11.63
ON samples									
2	11.69	11.70	11.72	11.71	11.72	11.71	11.73	11.74	11.73
3	11.67	11.73	11.68	11.70	11.69	11.69	11.70	11.70	11.67
4	11.68	11.73	11.68	11.71	11.73	11.71	11.67	11.68	11.70
5	11.65	11.69	11.68	11.68	11.69	11.68	11.70	11.68	11.70
6	11.68	11.68	11.68	11.70	11.69	11.69	11.67	11.68	11.70
Statistics									
Min	11.65	11.68	11.68	11.68	11.69	11.68	11.67	11.68	11.67
Max	11.69	11.73	11.72	11.71	11.73	11.71	11.73	11.74	11.73
Average	11.68	11.71	11.69	11.70	11.70	11.69	11.69	11.70	11.70
Sigma	0.01	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.02

Drift Calculation

ENOB_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	11.0E-03	36.0E-03	21.0E-03	31.0E-03	19.0E-03	44.0E-03	50.0E-03	44.0E-03
3	-	64.0E-03	6.0E-03	30.0E-03	16.0E-03	18.0E-03	28.0E-03	32.0E-03	-1.0E-03
4	-	42.0E-03	-6.0E-03	24.0E-03	42.0E-03	25.0E-03	-11.0E-03	-6.0E-03	16.0E-03
5	-	37.0E-03	22.0E-03	25.0E-03	39.0E-03	22.0E-03	42.0E-03	28.0E-03	46.0E-03
6	-	3.0E-03	-3.0E-03	21.0E-03	6.0E-03	7.0E-03	-7.0E-03	-2.0E-03	24.0E-03
Average	-	31.4E-03	11.0E-03	24.2E-03	26.8E-03	18.2E-03	19.2E-03	20.4E-03	25.8E-03
Sigma	-	22.0E-03	15.8E-03	3.3E-03	13.8E-03	6.1E-03	23.7E-03	21.3E-03	17.6E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

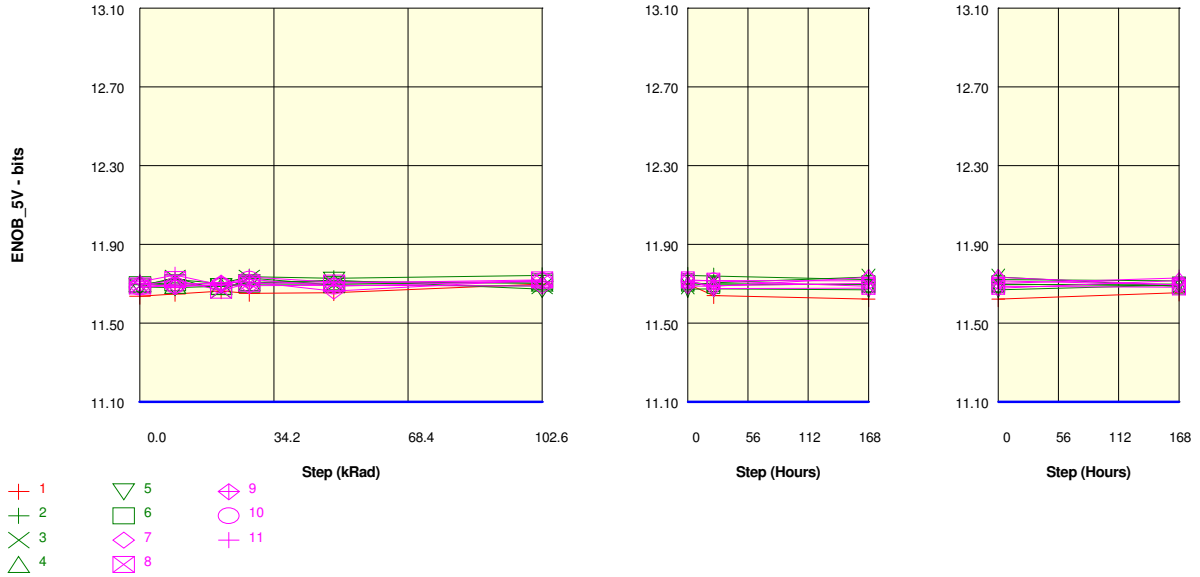
Measurements

ENOB_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.64	11.64	11.66	11.66	11.64	11.65	11.64	11.67	11.63
OFF samples									
7	11.69	11.68	11.68	11.70	11.71	11.67	11.69	11.69	11.70
8	11.68	11.72	11.66	11.70	11.70	11.72	11.68	11.69	11.70
9	11.69	11.70	11.71	11.71	11.71	11.70	11.69	11.70	11.68
10	11.71	11.72	11.70	11.73	11.71	11.70	11.70	11.69	11.71
11	11.71	11.71	11.67	11.75	11.69	11.71	11.69	11.70	11.72
Statistics									
Min	11.68	11.68	11.66	11.70	11.69	11.67	11.68	11.69	11.68
Max	11.71	11.72	11.71	11.75	11.71	11.72	11.70	11.70	11.72
Average	11.69	11.70	11.68	11.72	11.70	11.70	11.69	11.70	11.70
Sigma	0.01	0.01	0.02	0.02	0.01	0.02	0.01	0.00	0.01

Drift Calculation

ENOB_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-5.0E-03	-11.0E-03	7.0E-03	25.0E-03	-20.0E-03	-3.0E-03	5.0E-03	13.0E-03
8	-	34.0E-03	-19.0E-03	21.0E-03	19.0E-03	38.0E-03	0.0E+00	12.0E-03	18.0E-03
9	-	10.0E-03	18.0E-03	26.0E-03	21.0E-03	13.0E-03	2.0E-03	17.0E-03	-10.0E-03
10	-	4.0E-03	-10.0E-03	16.0E-03	-6.0E-03	-13.0E-03	-11.0E-03	-19.0E-03	0.0E+00
11	-	1.0E-03	-33.0E-03	39.0E-03	-14.0E-03	7.0E-03	-16.0E-03	-9.0E-03	11.0E-03
Average	-	8.8E-03	-11.0E-03	21.8E-03	9.0E-03	5.0E-03	-5.6E-03	1.2E-03	6.4E-03
Sigma	-	13.5E-03	16.7E-03	10.6E-03	15.8E-03	20.5E-03	6.8E-03	13.4E-03	10.1E-03

Parameter : Effective Number of bit : ENOB_5VIN1
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.64	11.65	11.66	11.65	11.65	11.70	11.64	11.62	11.65
ON samples									
2	11.70	11.72	11.70	11.74	11.73	11.74	11.74	11.72	11.71
3	11.69	11.73	11.67	11.73	11.69	11.69	11.71	11.74	11.69
4	11.70	11.69	11.69	11.71	11.71	11.70	11.70	11.70	11.70
5	11.68	11.68	11.69	11.71	11.72	11.67	11.67	11.67	11.69
6	11.70	11.71	11.69	11.70	11.70	11.71	11.69	11.70	11.69
Statistics									
Min	11.68	11.68	11.67	11.70	11.69	11.67	11.67	11.67	11.69
Max	11.70	11.73	11.70	11.74	11.73	11.74	11.74	11.74	11.71
Average	11.69	11.71	11.69	11.72	11.71	11.70	11.70	11.70	11.70
Sigma	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.01

Drift Calculation

ENOB_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	27.0E-03	7.0E-03	41.0E-03	33.0E-03	48.0E-03	45.0E-03	27.0E-03	19.0E-03
3	-	43.0E-03	-23.0E-03	42.0E-03	6.0E-03	1000.0E-06	18.0E-03	47.0E-03	0.0E+00
4	-	-9.0E-03	-15.0E-03	5.0E-03	9.0E-03	1000.0E-06	-1000.0E-06	-7.0E-03	-2.0E-03
5	-	-3.0E-03	3.0E-03	21.0E-03	34.0E-03	-12.0E-03	-10.0E-03	-15.0E-03	10.0E-03
6	-	9.0E-03	-10.0E-03	3.0E-03	2.0E-03	14.0E-03	-3.0E-03	4.0E-03	-7.0E-03
Average	-	13.4E-03	-7.6E-03	22.4E-03	16.8E-03	10.4E-03	9.8E-03	11.2E-03	4.0E-03
Sigma	-	19.2E-03	11.2E-03	16.8E-03	13.8E-03	20.5E-03	19.9E-03	22.8E-03	9.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

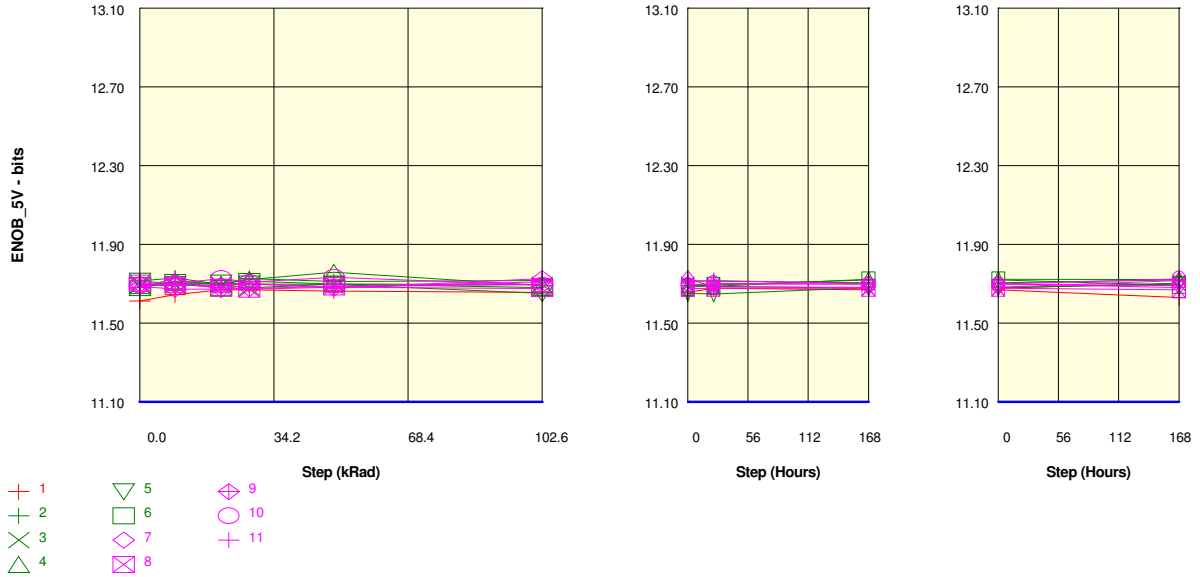
Measurements

ENOB_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.64	11.65	11.66	11.65	11.65	11.70	11.64	11.62	11.65
OFF samples									
7	11.68	11.70	11.70	11.71	11.66	11.72	11.68	11.68	11.72
8	11.69	11.72	11.67	11.70	11.70	11.72	11.71	11.69	11.68
9	11.70	11.69	11.70	11.69	11.69	11.69	11.69	11.73	11.69
10	11.68	11.69	11.69	11.72	11.69	11.72	11.72	11.72	11.70
11	11.71	11.75	11.69	11.74	11.71	11.71	11.69	11.70	11.73
Statistics									
Min	11.68	11.69	11.67	11.69	11.66	11.69	11.68	11.68	11.68
Max	11.71	11.75	11.70	11.74	11.71	11.72	11.72	11.73	11.73
Average	11.69	11.71	11.69	11.71	11.69	11.71	11.70	11.70	11.70
Sigma	0.01	0.02	0.01	0.02	0.02	0.01	0.02	0.02	0.02

Drift Calculation

ENOB_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	14.0E-03	20.0E-03	26.0E-03	-21.0E-03	37.0E-03	-8.0E-03	-7.0E-03	33.0E-03
8	-	31.0E-03	-23.0E-03	14.0E-03	14.0E-03	30.0E-03	24.0E-03	-3.0E-03	-7.0E-03
9	-	-16.0E-03	-4.0E-03	-10.0E-03	-9.0E-03	-12.0E-03	-14.0E-03	32.0E-03	-8.0E-03
10	-	10.0E-03	10.0E-03	41.0E-03	5.0E-03	33.0E-03	34.0E-03	33.0E-03	13.0E-03
11	-	35.0E-03	-16.0E-03	25.0E-03	-1.0E-03	0.0E+00	-19.0E-03	-8.0E-03	20.0E-03
Average	-	14.8E-03	-2.6E-03	19.2E-03	-2.4E-03	17.6E-03	3.4E-03	9.4E-03	10.2E-03
Sigma	-	18.1E-03	15.9E-03	16.9E-03	12.0E-03	19.8E-03	21.4E-03	18.9E-03	15.8E-03

Parameter : Effective Number of bit : ENOB_5VIN2
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.61	11.65	11.67	11.67	11.66	11.66	11.68	11.67	11.63
ON samples									
2	11.72	11.73	11.70	11.73	11.71	11.72	11.71	11.71	11.72
3	11.69	11.69	11.70	11.68	11.70	11.70	11.69	11.68	11.70
4	11.68	11.71	11.70	11.72	11.76	11.69	11.69	11.72	11.72
5	11.71	11.70	11.70	11.70	11.70	11.65	11.65	11.68	11.70
6	11.69	11.71	11.68	11.71	11.70	11.68	11.69	11.72	11.69
Statistics									
Min	11.68	11.69	11.68	11.68	11.70	11.65	11.65	11.68	11.69
Max	11.72	11.73	11.70	11.73	11.76	11.72	11.71	11.72	11.72
Average	11.70	11.71	11.69	11.71	11.71	11.69	11.69	11.70	11.71
Sigma	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01

Drift Calculation

ENOB_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	14.0E-03	-18.0E-03	12.0E-03	-3.0E-03	2.0E-03	-2.0E-03	-10.0E-03	6.0E-03
3	-	0.0E+00	3.0E-03	-12.0E-03	8.0E-03	4.0E-03	-5.0E-03	-14.0E-03	12.0E-03
4	-	33.0E-03	18.0E-03	42.0E-03	78.0E-03	10.0E-03	7.0E-03	44.0E-03	42.0E-03
5	-	-16.0E-03	-10.0E-03	-15.0E-03	-18.0E-03	-63.0E-03	-66.0E-03	-33.0E-03	-16.0E-03
6	-	17.0E-03	-14.0E-03	22.0E-03	8.0E-03	-10.0E-03	2.0E-03	29.0E-03	1000.0E-06
Average	-	9.6E-03	-4.2E-03	9.8E-03	14.6E-03	-11.4E-03	-12.8E-03	3.2E-03	9.0E-03
Sigma	-	16.5E-03	13.2E-03	21.4E-03	33.1E-03	26.6E-03	26.9E-03	28.7E-03	19.0E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

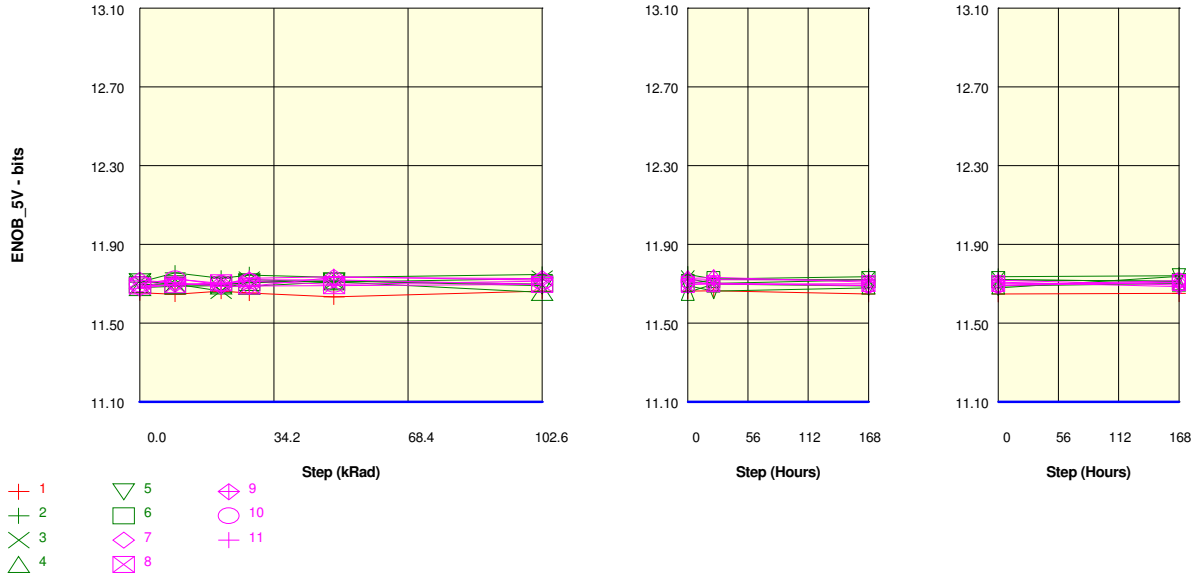
Measurements

ENOB_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.61	11.65	11.67	11.67	11.66	11.66	11.68	11.67	11.63
OFF samples									
7	11.69	11.67	11.67	11.68	11.69	11.70	11.70	11.70	11.69
8	11.70	11.70	11.68	11.67	11.68	11.68	11.68	11.68	11.67
9	11.70	11.69	11.69	11.70	11.68	11.73	11.68	11.68	11.72
10	11.69	11.70	11.73	11.71	11.73	11.69	11.70	11.70	11.73
11	11.68	11.73	11.67	11.70	11.68	11.71	11.72	11.70	11.68
Statistics									
Min	11.68	11.67	11.67	11.67	11.68	11.68	11.68	11.68	11.67
Max	11.70	11.73	11.73	11.71	11.73	11.73	11.72	11.70	11.73
Average	11.69	11.70	11.69	11.69	11.69	11.70	11.70	11.69	11.70
Sigma	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.02

Drift Calculation

ENOB_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-15.0E-03	-15.0E-03	-12.0E-03	0.0E+00	7.0E-03	11.0E-03	10.0E-03	2.0E-03
8	-	-7.0E-03	-22.0E-03	-30.0E-03	-20.0E-03	-27.0E-03	-25.0E-03	-25.0E-03	-33.0E-03
9	-	-8.0E-03	-10.0E-03	3.0E-03	-22.0E-03	26.0E-03	-16.0E-03	-17.0E-03	17.0E-03
10	-	10.0E-03	34.0E-03	16.0E-03	41.0E-03	1000.0E-06	10.0E-03	6.0E-03	33.0E-03
11	-	47.0E-03	-13.0E-03	19.0E-03	3.0E-03	29.0E-03	35.0E-03	20.0E-03	1.0E-03
Average	-	5.4E-03	-5.2E-03	-800.0E-06	400.0E-06	7.2E-03	3.0E-03	-1.2E-03	4.0E-03
Sigma	-	22.4E-03	20.0E-03	18.3E-03	22.7E-03	20.2E-03	21.4E-03	17.0E-03	21.9E-03

Parameter : Effective Number of bit : ENOB_5VIN3
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.66	11.65	11.66	11.65	11.63	11.66	11.67	11.65	11.65
ON samples									
2	11.71	11.76	11.73	11.75	11.73	11.75	11.73	11.74	11.74
3	11.71	11.70	11.66	11.72	11.71	11.73	11.70	11.72	11.71
4	11.68	11.69	11.69	11.69	11.71	11.66	11.70	11.69	11.70
5	11.71	11.70	11.69	11.71	11.71	11.69	11.66	11.68	11.74
6	11.70	11.69	11.70	11.71	11.72	11.70	11.72	11.72	11.71
Statistics									
Min	11.68	11.69	11.66	11.69	11.71	11.66	11.66	11.68	11.70
Max	11.71	11.76	11.73	11.75	11.73	11.75	11.73	11.74	11.74
Average	11.70	11.71	11.69	11.71	11.72	11.70	11.70	11.71	11.72
Sigma	0.01	0.02	0.02	0.02	0.01	0.03	0.02	0.02	0.02

Drift Calculation

ENOB_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	47.0E-03	20.0E-03	37.0E-03	24.0E-03	39.0E-03	17.0E-03	28.0E-03	34.0E-03
3	-	-15.0E-03	-50.0E-03	8.0E-03	-5.0E-03	13.0E-03	-12.0E-03	7.0E-03	-1.0E-03
4	-	7.0E-03	9.0E-03	6.0E-03	29.0E-03	-25.0E-03	18.0E-03	8.0E-03	22.0E-03
5	-	-10.0E-03	-19.0E-03	0.0E+00	4.0E-03	-20.0E-03	-46.0E-03	-30.0E-03	27.0E-03
6	-	-3.0E-03	0.0E+00	10.0E-03	19.0E-03	4.0E-03	26.0E-03	26.0E-03	15.0E-03
Average	-	5.2E-03	-8.0E-03	12.2E-03	14.2E-03	2.2E-03	600.0E-06	7.8E-03	19.4E-03
Sigma	-	22.2E-03	24.6E-03	12.8E-03	12.7E-03	23.3E-03	26.6E-03	20.8E-03	11.9E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

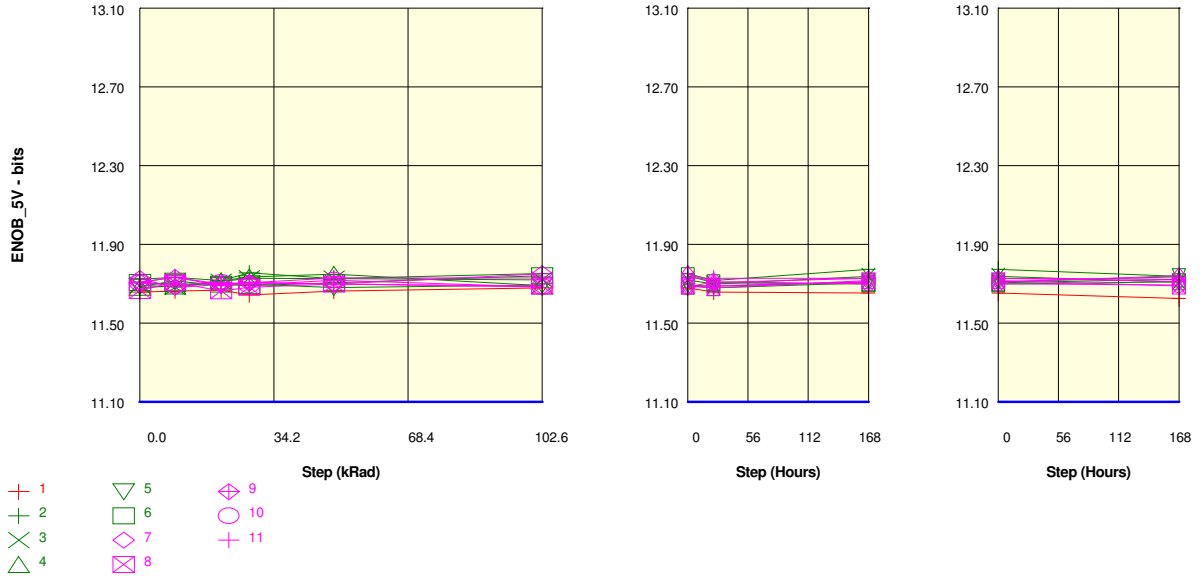
Measurements

ENOB_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.66	11.65	11.66	11.65	11.63	11.66	11.67	11.65	11.65
OFF samples									
7	11.68	11.70	11.70	11.72	11.72	11.70	11.70	11.69	11.71
8	11.69	11.70	11.71	11.69	11.69	11.70	11.70	11.70	11.71
9	11.72	11.71	11.69	11.69	11.73	11.73	11.73	11.71	11.69
10	11.70	11.73	11.70	11.71	11.70	11.71	11.70	11.69	11.72
11	11.68	11.73	11.70	11.73	11.74	11.72	11.72	11.72	11.69
Statistics									
Min	11.68	11.70	11.69	11.69	11.69	11.70	11.70	11.69	11.69
Max	11.72	11.73	11.71	11.73	11.74	11.73	11.73	11.72	11.72
Average	11.69	11.71	11.70	11.71	11.72	11.71	11.71	11.70	11.70
Sigma	0.02	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01

Drift Calculation

ENOB_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	19.0E-03	21.0E-03	42.0E-03	42.0E-03	19.0E-03	26.0E-03	13.0E-03	30.0E-03
8	-	6.0E-03	16.0E-03	0.0E+00	2.0E-03	8.0E-03	11.0E-03	12.0E-03	17.0E-03
9	-	-13.0E-03	-31.0E-03	-31.0E-03	15.0E-03	9.0E-03	14.0E-03	-9.0E-03	-32.0E-03
10	-	27.0E-03	4.0E-03	15.0E-03	-2.0E-03	15.0E-03	2.0E-03	-6.0E-03	18.0E-03
11	-	49.0E-03	18.0E-03	51.0E-03	59.0E-03	41.0E-03	45.0E-03	42.0E-03	17.0E-03
Average	-	17.6E-03	5.6E-03	15.4E-03	23.2E-03	18.4E-03	19.6E-03	10.4E-03	10.0E-03
Sigma	-	20.7E-03	19.2E-03	29.5E-03	23.6E-03	12.0E-03	14.8E-03	18.2E-03	21.6E-03

Parameter : Effective Number of bit : ENOB_5VIN4
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.66	11.66	11.67	11.64	11.66	11.68	11.66	11.65	11.63
ON samples									
2	11.72	11.73	11.72	11.76	11.73	11.75	11.72	11.77	11.74
3	11.69	11.68	11.71	11.73	11.73	11.72	11.70	11.74	11.71
4	11.68	11.69	11.72	11.74	11.75	11.69	11.68	11.71	11.72
5	11.69	11.71	11.69	11.70	11.68	11.69	11.69	11.71	11.74
6	11.71	11.70	11.70	11.69	11.71	11.74	11.71	11.70	11.71
Statistics									
Min	11.68	11.68	11.69	11.69	11.68	11.69	11.68	11.70	11.71
Max	11.72	11.73	11.72	11.76	11.75	11.75	11.72	11.77	11.74
Average	11.70	11.70	11.71	11.72	11.72	11.72	11.70	11.73	11.72
Sigma	0.02	0.02	0.01	0.02	0.02	0.02	0.01	0.03	0.01

Drift Calculation

ENOB_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	9.0E-03	-7.0E-03	31.0E-03	3.0E-03	29.0E-03	-7.0E-03	50.0E-03	13.0E-03
3	-	-10.0E-03	18.0E-03	35.0E-03	33.0E-03	28.0E-03	7.0E-03	46.0E-03	16.0E-03
4	-	7.0E-03	33.0E-03	53.0E-03	67.0E-03	8.0E-03	-2.0E-03	23.0E-03	42.0E-03
5	-	28.0E-03	5.0E-03	14.0E-03	-5.0E-03	8.0E-03	1000.0E-06	24.0E-03	50.0E-03
6	-	-6.0E-03	-8.0E-03	-15.0E-03	-1000.0E-06	35.0E-03	-1000.0E-06	-6.0E-03	4.0E-03
Average	-	5.6E-03	8.2E-03	23.6E-03	19.4E-03	21.6E-03	-400.0E-06	27.4E-03	25.0E-03
Sigma	-	13.4E-03	15.6E-03	22.9E-03	27.3E-03	11.4E-03	4.5E-03	20.0E-03	17.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

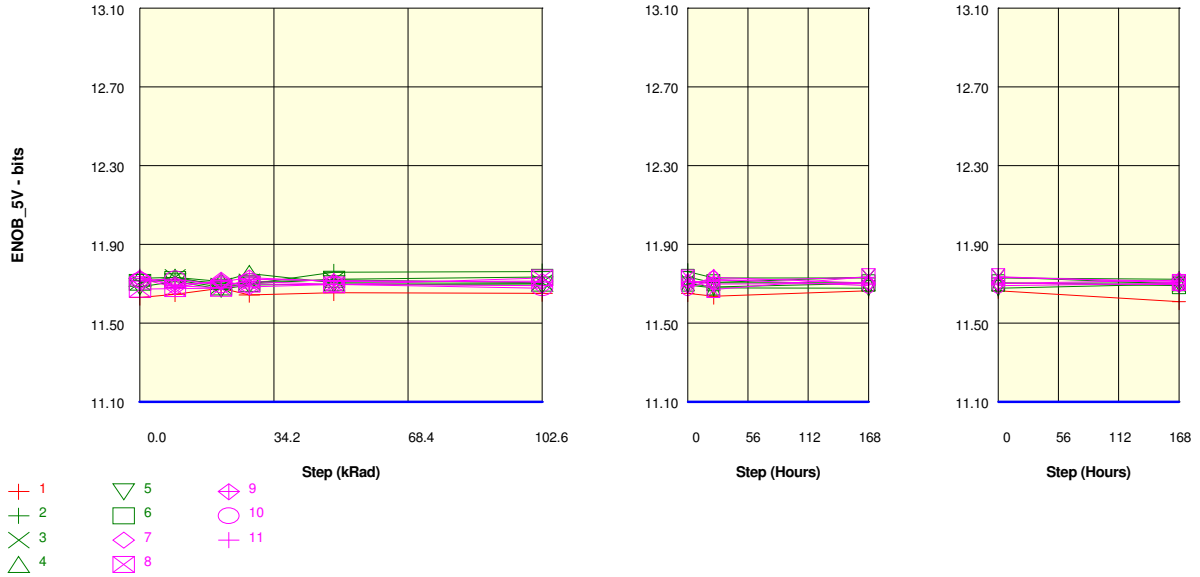
ENOB_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.66	11.66	11.67	11.64	11.66	11.68	11.66	11.65	11.63
OFF samples									
7	11.73	11.68	11.70	11.70	11.70	11.69	11.69	11.71	11.74
8	11.67	11.71	11.66	11.68	11.70	11.69	11.68	11.72	11.69
9	11.71	11.73	11.70	11.71	11.70	11.75	11.71	11.73	11.71
10	11.71	11.69	11.71	11.69	11.72	11.69	11.71	11.70	11.69
11	11.71	11.73	11.69	11.71	11.73	11.73	11.73	11.73	11.72
Statistics									
Min	11.67	11.68	11.66	11.68	11.70	11.69	11.68	11.70	11.69
Max	11.73	11.73	11.71	11.71	11.73	11.75	11.73	11.73	11.74
Average	11.70	11.71	11.69	11.70	11.71	11.71	11.70	11.72	11.71
Sigma	0.02	0.02	0.01	0.01	0.01	0.03	0.02	0.01	0.02

Drift Calculation

ENOB_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-45.0E-03	-31.0E-03	-23.0E-03	-29.0E-03	-42.0E-03	-36.0E-03	-18.0E-03	14.0E-03
8	-	42.0E-03	-2.0E-03	17.0E-03	32.0E-03	23.0E-03	14.0E-03	50.0E-03	23.0E-03
9	-	23.0E-03	-10.0E-03	-1000.0E-06	-9.0E-03	42.0E-03	-2.0E-03	19.0E-03	3.0E-03
10	-	-13.0E-03	3.0E-03	-12.0E-03	14.0E-03	-20.0E-03	5.0E-03	-4.0E-03	-11.0E-03
11	-	23.0E-03	-19.0E-03	-4.0E-03	21.0E-03	20.0E-03	19.0E-03	19.0E-03	14.0E-03
Average	-	6.0E-03	-11.8E-03	-4.6E-03	5.8E-03	4.6E-03	355.3E-18	13.2E-03	8.6E-03
Sigma	-	31.1E-03	12.2E-03	13.2E-03	22.0E-03	30.8E-03	19.4E-03	23.2E-03	11.7E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Effective Number of bit : ENOB_5VIN5
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.63	11.65	11.68	11.64	11.65	11.65	11.64	11.67	11.61
ON samples									
2	11.72	11.72	11.70	11.70	11.76	11.76	11.73	11.73	11.72
3	11.71	11.73	11.69	11.71	11.72	11.71	11.71	11.74	11.70
4	11.73	11.73	11.71	11.75	11.71	11.70	11.68	11.70	11.71
5	11.69	11.71	11.67	11.69	11.70	11.69	11.68	11.68	11.70
6	11.71	11.72	11.68	11.70	11.72	11.73	11.71	11.71	11.69
Statistics									
Min	11.69	11.71	11.67	11.69	11.70	11.69	11.68	11.68	11.69
Max	11.73	11.73	11.71	11.75	11.76	11.76	11.73	11.74	11.72
Average	11.71	11.72	11.69	11.71	11.72	11.72	11.70	11.71	11.70
Sigma	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01

Drift Calculation

ENOB_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	5.0E-03	-13.0E-03	-17.0E-03	43.0E-03	45.0E-03	13.0E-03	13.0E-03	6.0E-03
3	-	28.0E-03	-17.0E-03	4.0E-03	15.0E-03	0.0E+00	1.0E-03	29.0E-03	-6.0E-03
4	-	5.0E-03	-16.0E-03	25.0E-03	-23.0E-03	-25.0E-03	-44.0E-03	-25.0E-03	-23.0E-03
5	-	26.0E-03	-12.0E-03	9.0E-03	15.0E-03	9.0E-03	-6.0E-03	-8.0E-03	14.0E-03
6	-	13.0E-03	-25.0E-03	-7.0E-03	15.0E-03	26.0E-03	-3.0E-03	-3.0E-03	-17.0E-03
Average	-	15.4E-03	-16.6E-03	2.8E-03	13.0E-03	11.0E-03	-7.8E-03	1.2E-03	-5.2E-03
Sigma	-	9.9E-03	4.6E-03	14.3E-03	21.0E-03	23.7E-03	19.2E-03	18.4E-03	13.8E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

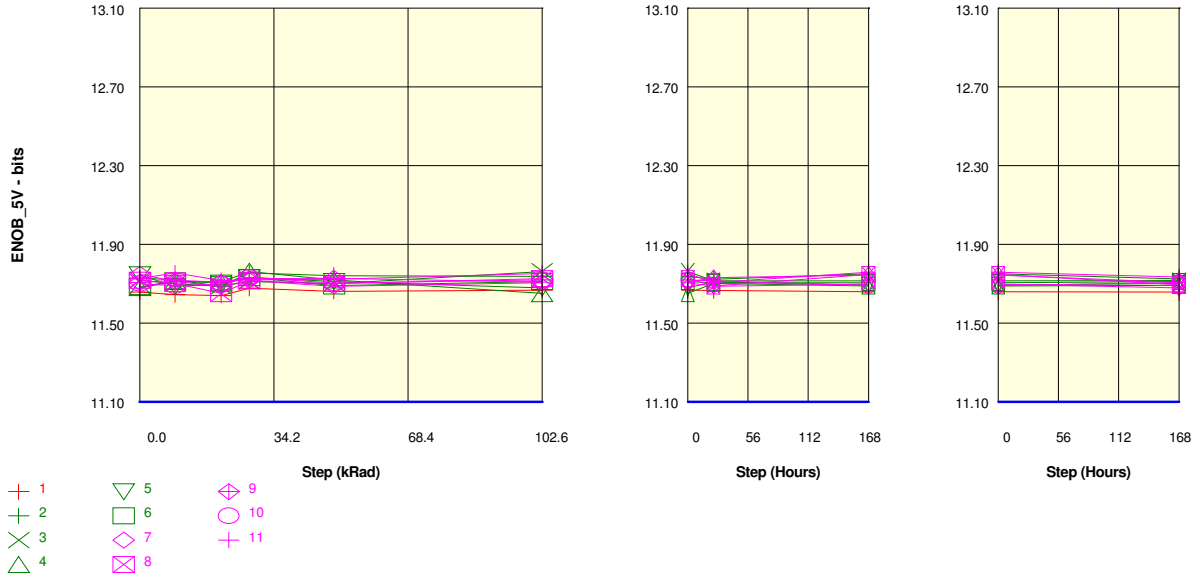
Measurements

ENOB_5VINS	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.63	11.65	11.68	11.64	11.65	11.65	11.64	11.67	11.61
OFF samples									
7	11.73	11.70	11.71	11.73	11.71	11.71	11.70	11.70	11.72
8	11.67	11.68	11.68	11.70	11.70	11.73	11.67	11.74	11.71
9	11.73	11.68	11.72	11.68	11.70	11.69	11.73	11.70	11.70
10	11.72	11.73	11.69	11.71	11.70	11.68	11.72	11.69	11.70
11	11.74	11.69	11.68	11.72	11.72	11.71	11.71	11.73	11.71
Statistics									
Min	11.67	11.68	11.68	11.68	11.70	11.68	11.67	11.69	11.70
Max	11.74	11.73	11.72	11.73	11.72	11.73	11.73	11.74	11.72
Average	11.72	11.69	11.70	11.71	11.70	11.70	11.71	11.71	11.71
Sigma	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.01

Drift Calculation

ENOB_5VINS	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-33.0E-03	-19.0E-03	2.0E-03	-18.0E-03	-16.0E-03	-29.0E-03	-27.0E-03	-11.0E-03
8	-	3.0E-03	5.0E-03	26.0E-03	22.0E-03	57.0E-03	-2.0E-03	63.0E-03	33.0E-03
9	-	-44.0E-03	-9.0E-03	-43.0E-03	-30.0E-03	-36.0E-03	6.0E-03	-23.0E-03	-32.0E-03
10	-	8.0E-03	-23.0E-03	-5.0E-03	-21.0E-03	-39.0E-03	6.0E-03	-26.0E-03	-15.0E-03
11	-	-45.0E-03	-57.0E-03	-12.0E-03	-19.0E-03	-27.0E-03	-22.0E-03	-3.0E-03	-24.0E-03
Average	-	-22.2E-03	-20.6E-03	-6.4E-03	-13.2E-03	-12.2E-03	-8.2E-03	-3.2E-03	-9.8E-03
Sigma	-	23.1E-03	20.6E-03	22.3E-03	18.1E-03	35.5E-03	14.6E-03	34.2E-03	22.6E-03

Parameter : Effective Number of bit : ENOB_5VIN6
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.66	11.65	11.64	11.68	11.66	11.67	11.67	11.66	11.66
ON samples									
2	11.73	11.72	11.69	11.76	11.74	11.74	11.72	11.75	11.73
3	11.72	11.70	11.69	11.71	11.70	11.76	11.72	11.72	11.72
4	11.68	11.71	11.71	11.76	11.72	11.65	11.70	11.69	11.69
5	11.75	11.69	11.70	11.73	11.71	11.68	11.70	11.69	11.70
6	11.69	11.72	11.70	11.73	11.69	11.71	11.71	11.71	11.71
Statistics									
Min	11.68	11.69	11.69	11.71	11.69	11.65	11.70	11.69	11.69
Max	11.75	11.72	11.71	11.76	11.74	11.76	11.72	11.75	11.73
Average	11.71	11.71	11.70	11.74	11.71	11.71	11.71	11.71	11.71
Sigma	0.03	0.01	0.01	0.02	0.02	0.04	0.01	0.02	0.01

Drift Calculation

ENOB_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-8.0E-03	-41.0E-03	27.0E-03	13.0E-03	9.0E-03	-6.0E-03	21.0E-03	-4.0E-03
3	-	-17.0E-03	-31.0E-03	-6.0E-03	-17.0E-03	45.0E-03	-3.0E-03	-3.0E-03	-2.0E-03
4	-	32.0E-03	28.0E-03	83.0E-03	40.0E-03	-29.0E-03	22.0E-03	9.0E-03	12.0E-03
5	-	-58.0E-03	-48.0E-03	-13.0E-03	-33.0E-03	-66.0E-03	-35.0E-03	-52.0E-03	-43.0E-03
6	-	30.0E-03	19.0E-03	47.0E-03	5.0E-03	27.0E-03	21.0E-03	21.0E-03	27.0E-03
Average	-	-4.2E-03	-14.6E-03	27.6E-03	1.6E-03	-2.8E-03	-200.0E-06	-800.0E-06	-2.0E-03
Sigma	-	33.3E-03	31.7E-03	35.3E-03	25.1E-03	40.0E-03	21.0E-03	27.1E-03	23.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

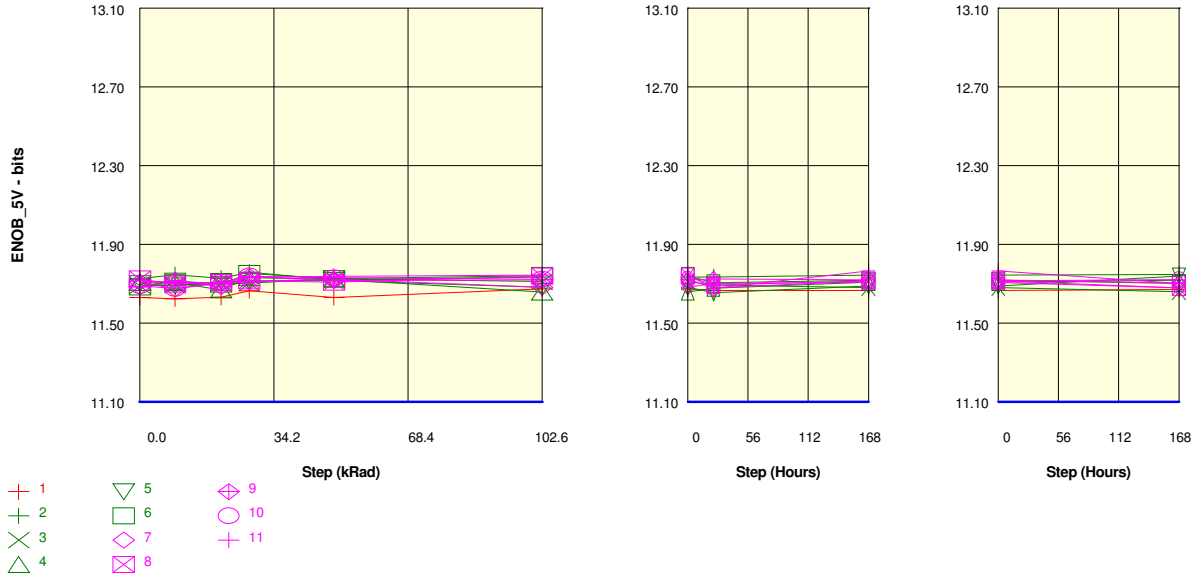
Measurements

ENOB_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.66	11.65	11.64	11.68	11.66	11.67	11.67	11.66	11.66
OFF samples									
7	11.75	11.71	11.69	11.72	11.69	11.71	11.69	11.70	11.68
8	11.72	11.70	11.65	11.72	11.70	11.73	11.69	11.75	11.70
9	11.71	11.72	11.71	11.73	11.73	11.71	11.73	11.75	11.71
10	11.70	11.69	11.70	11.73	11.70	11.72	11.71	11.69	11.71
11	11.73	11.76	11.72	11.72	11.72	11.75	11.71	11.76	11.73
Statistics									
Min	11.70	11.69	11.65	11.72	11.69	11.71	11.69	11.69	11.68
Max	11.75	11.76	11.72	11.73	11.73	11.75	11.73	11.76	11.73
Average	11.72	11.72	11.69	11.72	11.71	11.72	11.71	11.73	11.70
Sigma	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.03	0.02

Drift Calculation

ENOB_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-38.0E-03	-61.0E-03	-32.0E-03	-61.0E-03	-44.0E-03	-61.0E-03	-51.0E-03	-70.0E-03
8	-	-16.0E-03	-67.0E-03	-3.0E-03	-17.0E-03	8.0E-03	-29.0E-03	30.0E-03	-23.0E-03
9	-	12.0E-03	1000.0E-06	19.0E-03	21.0E-03	1000.0E-06	24.0E-03	38.0E-03	0.0E+00
10	-	-10.0E-03	-2.0E-03	31.0E-03	3.0E-03	19.0E-03	13.0E-03	-10.0E-03	6.0E-03
11	-	28.0E-03	-10.0E-03	-6.0E-03	-4.0E-03	26.0E-03	-20.0E-03	32.0E-03	7.0E-03
Average	-	-4.8E-03	-27.8E-03	1.8E-03	-11.6E-03	2.0E-03	-14.6E-03	7.8E-03	-16.0E-03
Sigma	-	22.9E-03	29.8E-03	21.8E-03	27.6E-03	24.6E-03	30.5E-03	34.0E-03	29.1E-03

Parameter : Effective Number of bit : ENOB_5VIN7
 Test conditions : fIN=40.2kHz. -0.02dBFS ; INX => X= 0 to 7
 Unit : bits
 Spec Limit Min : 11.10
 Spec limits are represented in bold lines on the graphic.



Measurements

ENOB_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	11.63	11.62	11.63	11.67	11.63	11.67	11.67	11.67	11.67
ON samples									
2	11.73	11.75	11.73	11.76	11.72	11.74	11.74	11.74	11.75
3	11.69	11.69	11.70	11.70	11.73	11.71	11.69	11.68	11.66
4	11.71	11.71	11.67	11.73	11.72	11.66	11.68	11.71	11.72
5	11.70	11.69	11.71	11.71	11.72	11.68	11.65	11.69	11.74
6	11.68	11.71	11.70	11.75	11.73	11.74	11.71	11.72	11.70
Statistics									
Min	11.68	11.69	11.67	11.70	11.72	11.66	11.65	11.68	11.66
Max	11.73	11.75	11.73	11.76	11.73	11.74	11.74	11.74	11.75
Average	11.70	11.71	11.70	11.73	11.72	11.71	11.69	11.71	11.71
Sigma	0.02	0.02	0.02	0.02	0.00	0.03	0.03	0.02	0.03

Drift Calculation

ENOB_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	19.0E-03	1000.0E-06	32.0E-03	-7.0E-03	8.0E-03	8.0E-03	17.0E-03	20.0E-03
3	-	4.0E-03	11.0E-03	15.0E-03	38.0E-03	22.0E-03	4.0E-03	-8.0E-03	-29.0E-03
4	-	0.0E+00	-36.0E-03	25.0E-03	17.0E-03	-48.0E-03	-29.0E-03	2.0E-03	13.0E-03
5	-	-11.0E-03	11.0E-03	13.0E-03	16.0E-03	-18.0E-03	-47.0E-03	-12.0E-03	39.0E-03
6	-	31.0E-03	15.0E-03	70.0E-03	44.0E-03	59.0E-03	22.0E-03	35.0E-03	19.0E-03
Average	-	8.6E-03	400.0E-06	31.0E-03	21.6E-03	4.6E-03	-8.4E-03	6.8E-03	12.4E-03
Sigma	-	14.8E-03	18.8E-03	20.7E-03	18.1E-03	36.2E-03	25.5E-03	17.3E-03	22.5E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

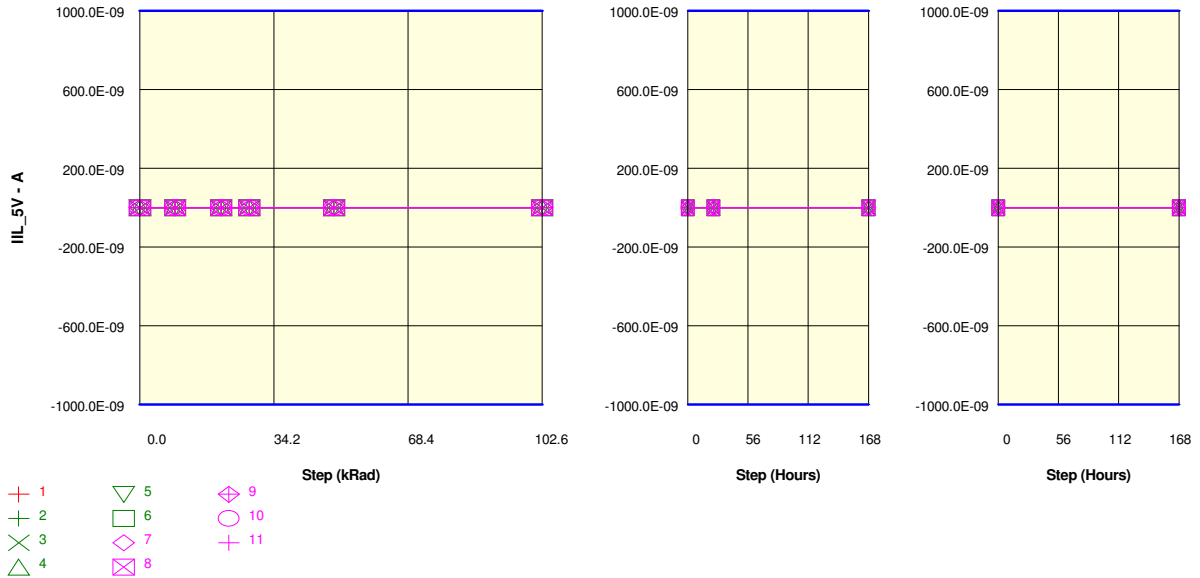
ENOB_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	11.63	11.62	11.63	11.67	11.63	11.67	11.67	11.67	11.67
OFF samples									
7	11.71	11.67	11.70	11.71	11.72	11.68	11.70	11.71	11.68
8	11.72	11.70	11.71	11.72	11.71	11.74	11.69	11.71	11.68
9	11.69	11.72	11.69	11.74	11.72	11.72	11.73	11.72	11.70
10	11.69	11.68	11.71	11.74	11.73	11.72	11.68	11.72	11.72
11	11.72	11.71	11.70	11.74	11.74	11.75	11.68	11.77	11.70
Statistics									
Min	11.69	11.67	11.69	11.71	11.71	11.68	11.68	11.71	11.68
Max	11.72	11.72	11.71	11.74	11.74	11.75	11.73	11.77	11.72
Average	11.70	11.70	11.70	11.73	11.72	11.72	11.70	11.72	11.70
Sigma	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02

Drift Calculation

ENOB_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-35.0E-03	-5.0E-03	2.0E-03	14.0E-03	-26.0E-03	-7.0E-03	-2.0E-03	-29.0E-03
8	-	-25.0E-03	-17.0E-03	-9.0E-03	-16.0E-03	15.0E-03	-31.0E-03	-10.0E-03	-44.0E-03
9	-	33.0E-03	-1000.0E-06	52.0E-03	30.0E-03	35.0E-03	39.0E-03	34.0E-03	18.0E-03
10	-	-14.0E-03	19.0E-03	49.0E-03	41.0E-03	33.0E-03	-10.0E-03	25.0E-03	32.0E-03
11	-	-7.0E-03	-13.0E-03	20.0E-03	23.0E-03	30.0E-03	-38.0E-03	50.0E-03	-13.0E-03
Average	-	-9.6E-03	-3.4E-03	22.8E-03	18.4E-03	17.4E-03	-9.4E-03	19.4E-03	-7.2E-03
Sigma	-	23.3E-03	12.5E-03	24.5E-03	19.3E-03	22.8E-03	27.0E-03	22.4E-03	28.4E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Input Leakage Current Low : IIL_5VCS/
 Test conditions : Vin=0V
 Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

IIL_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12
ON samples									
2	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
3	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12
4	-50.0E-12	-150.0E-12	-150.0E-12	-50.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12
5	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
6	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12
Statistics									
Min	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12
Max	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
Average	-110.0E-12	-110.0E-12	-120.0E-12	-100.0E-12	-130.0E-12	-120.0E-12	-120.0E-12	-120.0E-12	-110.0E-12
Sigma	37.4E-12	37.4E-12	24.5E-12	31.6E-12	24.5E-12	24.5E-12	24.5E-12	24.5E-12	20.0E-12

Drift Calculation

IIL_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-50.0E-12	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
3	-	50.0E-12	50.0E-12	50.0E-12	0.0E+00	50.0E-12	0.0E+00	0.0E+00	50.0E-12
4	-	-100.0E-12	-100.0E-12	0.0E+00	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
5	-	50.0E-12	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	0.0E+00
6	-	50.0E-12	0.0E+00	50.0E-12	50.0E-12	0.0E+00	50.0E-12	50.0E-12	0.0E+00
Average	-	1.3E-27	-10.0E-12	10.0E-12	-20.0E-12	-10.0E-12	-10.0E-12	-10.0E-12	-1.3E-27
Sigma	-	63.2E-12	49.0E-12	37.4E-12	51.0E-12	49.0E-12	49.0E-12	37.4E-12	31.6E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

IIL_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12
OFF samples									
7	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
8	-50.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
9	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12
10	-50.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
11	-50.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
Statistics									
Min	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
Max	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12
Average	-70.0E-12	-110.0E-12	-140.0E-12	-130.0E-12	-120.0E-12	-120.0E-12	-100.0E-12	-110.0E-12	-90.0E-12
Sigma	24.5E-12	20.0E-12	20.0E-12	24.5E-12	24.5E-12	24.5E-12	0.0E+00	20.0E-12	20.0E-12

Drift Calculation

IIL_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
8	-	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
9	-	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	50.0E-12
10	-	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
11	-	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
Average	-	-40.0E-12	-70.0E-12	-60.0E-12	-50.0E-12	-50.0E-12	-30.0E-12	-40.0E-12	-20.0E-12
Sigma	-	37.4E-12	24.5E-12	49.0E-12	31.6E-12	44.7E-12	24.5E-12	37.4E-12	40.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Input Leakage Current Low : IIL_5VDIN

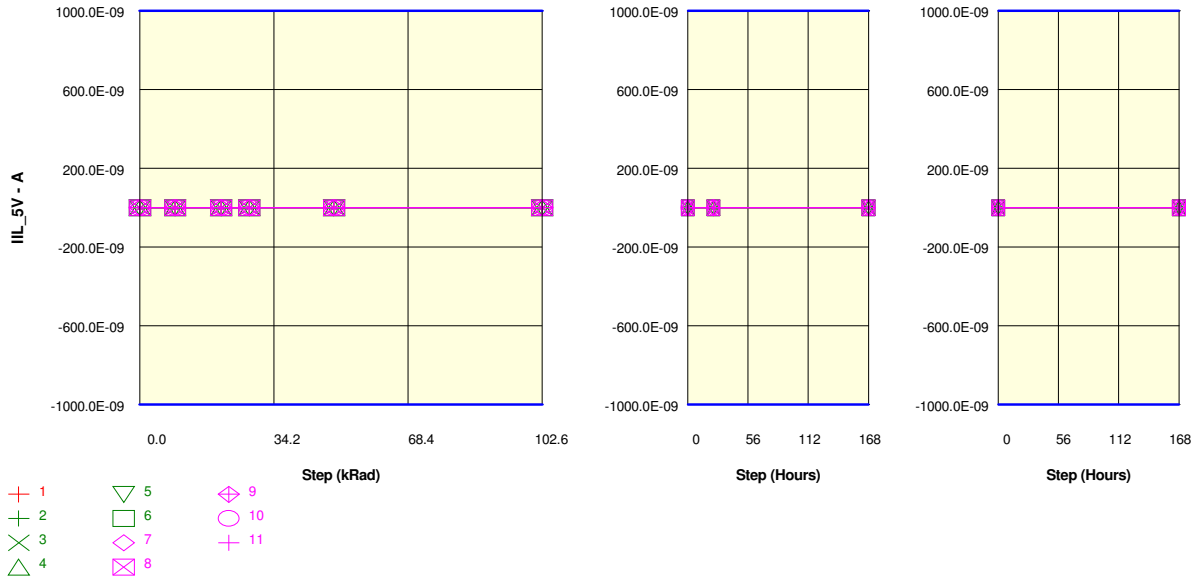
Test conditions : Vin=0V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIL_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-100.0E-12
ON samples									
2	-100.0E-12	-100.0E-12	-50.0E-12	0.0E+00	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
3	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-200.0E-12	-100.0E-12	-100.0E-12	-150.0E-12
4	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12
5	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-150.0E-12	-150.0E-12
6	-100.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	0.0E+00	-150.0E-12
Statistics									
Min	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-200.0E-12	-150.0E-12	-150.0E-12	-150.0E-12
Max	-100.0E-12	-100.0E-12	-50.0E-12	0.0E+00	-100.0E-12	-100.0E-12	-50.0E-12	0.0E+00	-100.0E-12
Average	-100.0E-12	-110.0E-12	-80.0E-12	-90.0E-12	-110.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-130.0E-12
Sigma	0.0E+00	20.0E-12	24.5E-12	49.0E-12	20.0E-12	31.6E-12	31.6E-12	54.8E-12	24.5E-12

Drift Calculation

IIL_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	50.0E-12	100.0E-12	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00
3	-	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	-100.0E-12	0.0E+00	0.0E+00	-50.0E-12
4	-	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	0.0E+00
5	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	50.0E-12	-50.0E-12	-50.0E-12
6	-	-50.0E-12	50.0E-12	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	100.0E-12	-50.0E-12
Average	-	-10.0E-12	20.0E-12	10.0E-12	-10.0E-12	-50.0E-12	1.3E-27	2.6E-27	-30.0E-12
Sigma	-	20.0E-12	24.5E-12	49.0E-12	20.0E-12	31.6E-12	31.6E-12	54.8E-12	24.5E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

IIL_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-100.0E-12
OFF samples									
7	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-100.0E-12
8	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12
9	-150.0E-12	-150.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
10	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
11	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
Statistics									
Min	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
Max	-100.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12
Average	-120.0E-12	-110.0E-12	-110.0E-12	-110.0E-12	-110.0E-12	-140.0E-12	-90.0E-12	-110.0E-12	-100.0E-12
Sigma	24.5E-12	37.4E-12	37.4E-12	37.4E-12	20.0E-12	20.0E-12	20.0E-12	37.4E-12	0.0E+00

Drift Calculation

IIL_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	50.0E-12	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	50.0E-12	0.0E+00	0.0E+00
8	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00
9	-	0.0E+00	100.0E-12	100.0E-12	50.0E-12	0.0E+00	50.0E-12	0.0E+00	50.0E-12
10	-	50.0E-12	0.0E+00	50.0E-12	50.0E-12	0.0E+00	50.0E-12	0.0E+00	50.0E-12
11	-	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00	0.0E+00
Average	-	10.0E-12	10.0E-12	10.0E-12	10.0E-12	-20.0E-12	30.0E-12	10.0E-12	20.0E-12
Sigma	-	37.4E-12	49.0E-12	58.3E-12	37.4E-12	24.5E-12	24.5E-12	20.0E-12	24.5E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Input Leakage Current Low : IIL_5VCLK

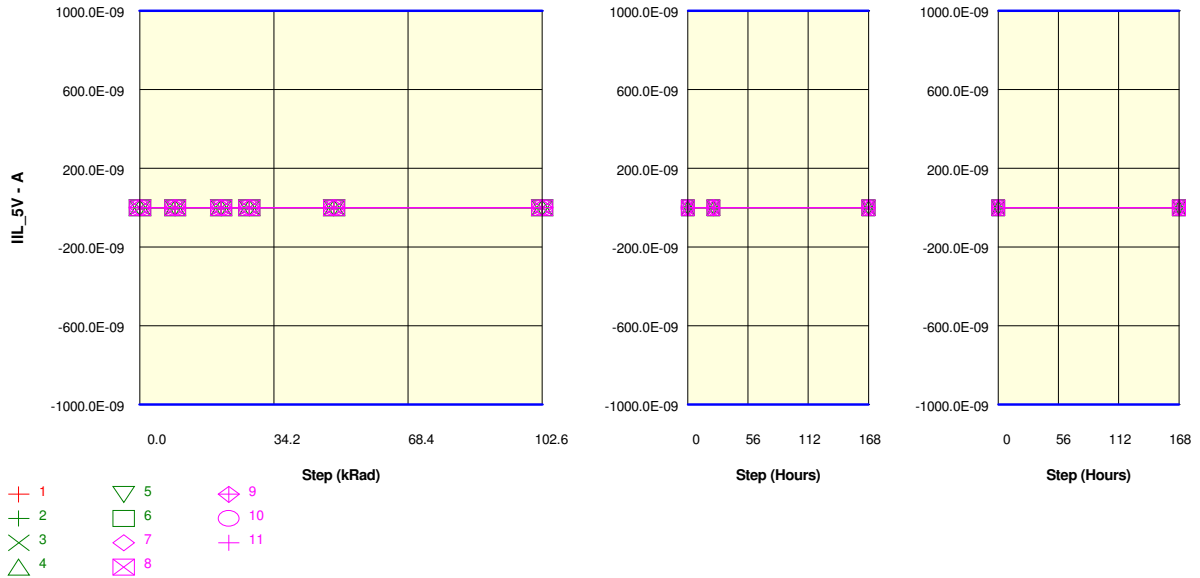
Test conditions : Vin=0V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIL_5VCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
ON samples									
2	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	0.0E+00	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
3	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12
4	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
5	0.0E+00	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-150.0E-12
6	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-50.0E-12	-100.0E-12
Statistics									
Min	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12
Max	0.0E+00	-100.0E-12	-100.0E-12	-100.0E-12	0.0E+00	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12
Average	-80.0E-12	-110.0E-12	-120.0E-12	-130.0E-12	-80.0E-12	-140.0E-12	-110.0E-12	-100.0E-12	-110.0E-12
Sigma	40.0E-12	20.0E-12	24.5E-12	24.5E-12	40.0E-12	20.0E-12	20.0E-12	44.7E-12	20.0E-12

Drift Calculation

IIL_5VCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	0.0E+00	-50.0E-12	100.0E-12	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00
3	-	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00
4	-	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	0.0E+00	0.0E+00
5	-	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-150.0E-12
6	-	0.0E+00	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	50.0E-12	0.0E+00
Average	-	-30.0E-12	-40.0E-12	-50.0E-12	0.0E+00	-60.0E-12	-30.0E-12	-20.0E-12	-30.0E-12
Sigma	-	40.0E-12	37.4E-12	31.6E-12	63.2E-12	20.0E-12	40.0E-12	40.0E-12	60.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

IIL_5VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
OFF samples									
7	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12
8	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-50.0E-12
9	-100.0E-12	-50.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12
10	0.0E+00	-100.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12
11	-100.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
Statistics									
Min	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12
Max	0.0E+00	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
Average	-70.0E-12	-100.0E-12	-130.0E-12	-120.0E-12	-120.0E-12	-130.0E-12	-110.0E-12	-100.0E-12	-70.0E-12
Sigma	40.0E-12	31.6E-12	24.5E-12	24.5E-12	40.0E-12	24.5E-12	37.4E-12	0.0E+00	24.5E-12

Drift Calculation

IIL_5VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-50.0E-12	-50.0E-12	0.0E+00	50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
8	-	-50.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	0.0E+00
9	-	50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	0.0E+00	0.0E+00
10	-	-100.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12
11	-	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	50.0E-12	0.0E+00	50.0E-12
Average	-	-30.0E-12	-60.0E-12	-50.0E-12	-50.0E-12	-60.0E-12	-40.0E-12	-30.0E-12	0.0E+00
Sigma	-	51.0E-12	20.0E-12	54.8E-12	70.7E-12	37.4E-12	58.3E-12	40.0E-12	31.6E-12

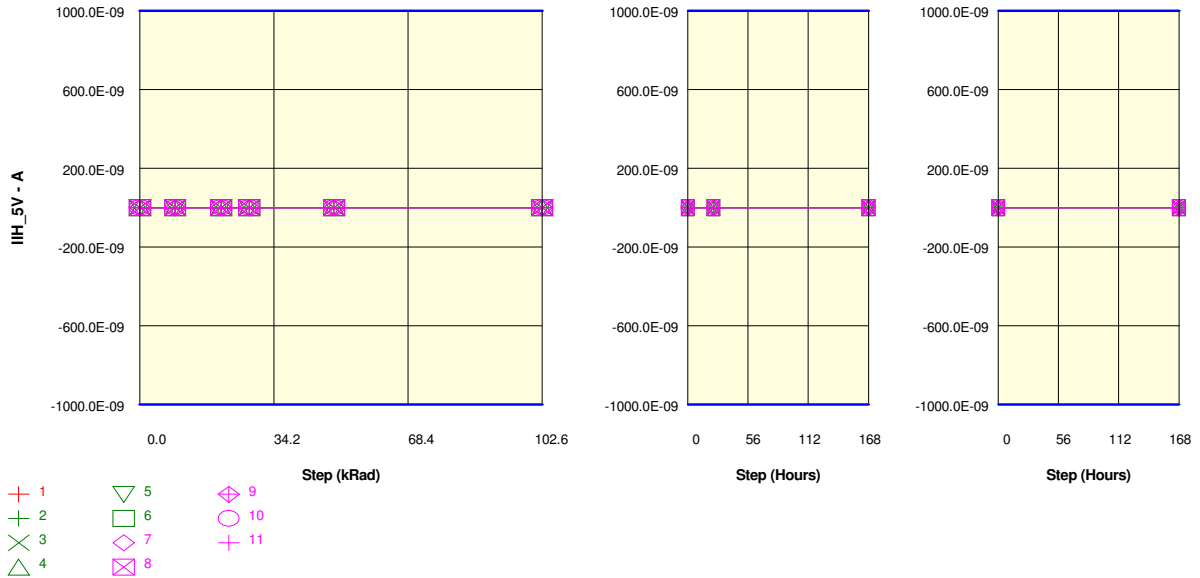
Parameter : Input Leakage Current High : IIH_5VCS/
 Test conditions : Vin=5V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIH_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	500.0E-12	450.0E-12	550.0E-12	600.0E-12	500.0E-12	500.0E-12	450.0E-12	450.0E-12	500.0E-12
ON samples									
2	550.0E-12	550.0E-12	550.0E-12	500.0E-12	500.0E-12	450.0E-12	500.0E-12	450.0E-12	500.0E-12
3	500.0E-12	450.0E-12	550.0E-12	500.0E-12	650.0E-12	450.0E-12	550.0E-12	450.0E-12	400.0E-12
4	450.0E-12	450.0E-12	450.0E-12	500.0E-12	450.0E-12	550.0E-12	600.0E-12	450.0E-12	500.0E-12
5	600.0E-12	550.0E-12	500.0E-12	550.0E-12	500.0E-12	450.0E-12	550.0E-12	400.0E-12	500.0E-12
6	550.0E-12	500.0E-12	500.0E-12	500.0E-12	550.0E-12	500.0E-12	550.0E-12	500.0E-12	500.0E-12
Statistics									
Min	450.0E-12	450.0E-12	450.0E-12	500.0E-12	450.0E-12	500.0E-12	400.0E-12	400.0E-12	400.0E-12
Max	600.0E-12	550.0E-12	550.0E-12	550.0E-12	650.0E-12	550.0E-12	600.0E-12	500.0E-12	500.0E-12
Average	530.0E-12	500.0E-12	510.0E-12	510.0E-12	530.0E-12	480.0E-12	550.0E-12	450.0E-12	480.0E-12
Sigma	51.0E-12	44.7E-12	37.4E-12	20.0E-12	67.8E-12	40.0E-12	31.6E-12	31.6E-12	40.0E-12

Drift Calculation

IIH_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12
3	-	-50.0E-12	50.0E-12	0.0E+00	150.0E-12	-50.0E-12	50.0E-12	-50.0E-12	-100.0E-12
4	-	0.0E+00	0.0E+00	50.0E-12	0.0E+00	100.0E-12	150.0E-12	0.0E+00	50.0E-12
5	-	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-200.0E-12	-100.0E-12
6	-	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12
Average	-	-30.0E-12	-20.0E-12	-20.0E-12	20.7E-27	-50.0E-12	20.0E-12	-80.0E-12	-50.0E-12
Sigma	-	24.5E-12	51.0E-12	40.0E-12	83.7E-12	83.7E-12	74.8E-12	67.8E-12	54.8E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

IIH_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	500.0E-12	450.0E-12	550.0E-12	600.0E-12	500.0E-12	500.0E-12	450.0E-12	450.0E-12	500.0E-12
OFF samples									
7	400.0E-12	600.0E-12	450.0E-12	600.0E-12	550.0E-12	550.0E-12	400.0E-12	500.0E-12	600.0E-12
8	450.0E-12	500.0E-12	600.0E-12	550.0E-12	500.0E-12	550.0E-12	600.0E-12	500.0E-12	500.0E-12
9	550.0E-12	500.0E-12	500.0E-12	500.0E-12	650.0E-12	550.0E-12	400.0E-12	500.0E-12	450.0E-12
10	550.0E-12	650.0E-12	550.0E-12	550.0E-12	500.0E-12	450.0E-12	600.0E-12	650.0E-12	500.0E-12
11	450.0E-12	500.0E-12	500.0E-12	450.0E-12	600.0E-12	550.0E-12	500.0E-12	650.0E-12	500.0E-12
Statistics									
Min	400.0E-12	500.0E-12	450.0E-12	450.0E-12	500.0E-12	450.0E-12	400.0E-12	500.0E-12	450.0E-12
Max	550.0E-12	650.0E-12	600.0E-12	600.0E-12	650.0E-12	550.0E-12	600.0E-12	650.0E-12	600.0E-12
Average	480.0E-12	550.0E-12	520.0E-12	530.0E-12	560.0E-12	530.0E-12	500.0E-12	560.0E-12	510.0E-12
Sigma	60.0E-12	63.2E-12	51.0E-12	51.0E-12	58.3E-12	40.0E-12	89.4E-12	73.5E-12	49.0E-12

Drift Calculation

IIH_5VCS/	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	200.0E-12	50.0E-12	200.0E-12	150.0E-12	150.0E-12	0.0E+00	100.0E-12	200.0E-12
8	-	50.0E-12	150.0E-12	100.0E-12	50.0E-12	100.0E-12	150.0E-12	50.0E-12	50.0E-12
9	-	-50.0E-12	-50.0E-12	-50.0E-12	100.0E-12	0.0E+00	-150.0E-12	-50.0E-12	-100.0E-12
10	-	100.0E-12	0.0E+00	0.0E+00	-50.0E-12	-100.0E-12	50.0E-12	100.0E-12	-50.0E-12
11	-	50.0E-12	50.0E-12	0.0E+00	150.0E-12	100.0E-12	50.0E-12	200.0E-12	50.0E-12
Average	-	70.0E-12	40.0E-12	50.0E-12	80.0E-12	50.0E-12	20.0E-12	80.0E-12	30.0E-12
Sigma	-	81.2E-12	66.3E-12	89.4E-12	74.8E-12	89.4E-12	98.0E-12	81.2E-12	103.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Input Leakage Current High : IIH_5VDIN

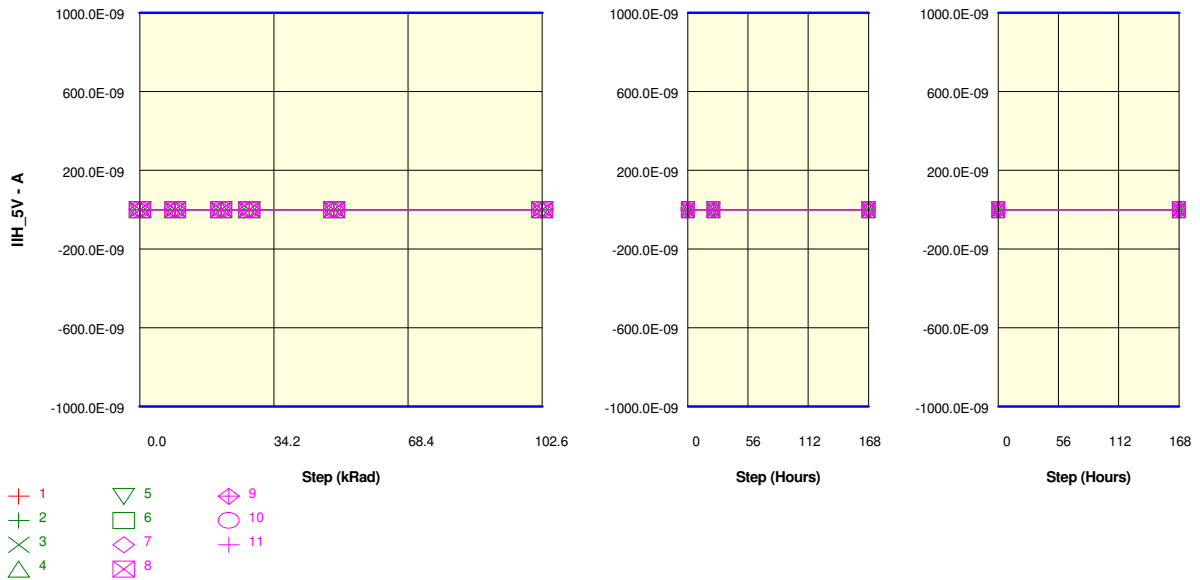
Test conditions : Vin=5V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIH_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	350.0E-12	350.0E-12	400.0E-12	250.0E-12	450.0E-12	350.0E-12	400.0E-12	350.0E-12	400.0E-12
ON samples									
2	350.0E-12	300.0E-12	350.0E-12	350.0E-12	350.0E-12	400.0E-12	350.0E-12	450.0E-12	350.0E-12
3	350.0E-12	400.0E-12	350.0E-12	450.0E-12	350.0E-12	250.0E-12	450.0E-12	400.0E-12	400.0E-12
4	400.0E-12	400.0E-12	300.0E-12	350.0E-12	300.0E-12	350.0E-12	300.0E-12	400.0E-12	400.0E-12
5	350.0E-12	400.0E-12	400.0E-12	300.0E-12	300.0E-12	400.0E-12	350.0E-12	400.0E-12	450.0E-12
6	400.0E-12	400.0E-12	350.0E-12	450.0E-12	400.0E-12	400.0E-12	350.0E-12	350.0E-12	350.0E-12
Statistics									
Min	350.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	250.0E-12	300.0E-12	350.0E-12	350.0E-12
Max	400.0E-12	400.0E-12	400.0E-12	450.0E-12	400.0E-12	400.0E-12	450.0E-12	450.0E-12	450.0E-12
Average	370.0E-12	380.0E-12	350.0E-12	380.0E-12	340.0E-12	360.0E-12	360.0E-12	400.0E-12	390.0E-12
Sigma	24.5E-12	40.0E-12	31.6E-12	60.0E-12	37.4E-12	58.3E-12	49.0E-12	31.6E-12	37.4E-12

Drift Calculation

IIH_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	50.0E-12	0.0E+00	100.0E-12	0.0E+00
3	-	50.0E-12	0.0E+00	100.0E-12	0.0E+00	-100.0E-12	100.0E-12	50.0E-12	50.0E-12
4	-	0.0E+00	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	0.0E+00	0.0E+00
5	-	50.0E-12	50.0E-12	-50.0E-12	-50.0E-12	50.0E-12	0.0E+00	50.0E-12	100.0E-12
6	-	0.0E+00	-50.0E-12	50.0E-12	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12
Average	-	10.0E-12	-20.0E-12	10.0E-12	-30.0E-12	-10.0E-12	-10.0E-12	30.0E-12	20.0E-12
Sigma	-	37.4E-12	51.0E-12	58.3E-12	40.0E-12	58.3E-12	66.3E-12	51.0E-12	51.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

IIH_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	350.0E-12	350.0E-12	400.0E-12	250.0E-12	450.0E-12	350.0E-12	400.0E-12	350.0E-12	400.0E-12
OFF samples									
7	350.0E-12	350.0E-12	250.0E-12	300.0E-12	350.0E-12	350.0E-12	450.0E-12	350.0E-12	400.0E-12
8	350.0E-12	350.0E-12	350.0E-12	350.0E-12	500.0E-12	350.0E-12	350.0E-12	350.0E-12	350.0E-12
9	350.0E-12	350.0E-12	350.0E-12	350.0E-12	400.0E-12	400.0E-12	450.0E-12	400.0E-12	300.0E-12
10	400.0E-12	400.0E-12	450.0E-12	400.0E-12	400.0E-12	400.0E-12	350.0E-12	350.0E-12	300.0E-12
11	350.0E-12	300.0E-12	450.0E-12	400.0E-12	350.0E-12	350.0E-12	400.0E-12	350.0E-12	350.0E-12
Statistics									
Min	350.0E-12	300.0E-12	250.0E-12	300.0E-12	350.0E-12	350.0E-12	350.0E-12	350.0E-12	300.0E-12
Max	400.0E-12	400.0E-12	450.0E-12	400.0E-12	500.0E-12	400.0E-12	450.0E-12	400.0E-12	400.0E-12
Average	360.0E-12	350.0E-12	370.0E-12	360.0E-12	400.0E-12	370.0E-12	400.0E-12	360.0E-12	340.0E-12
Sigma	20.0E-12	31.6E-12	74.8E-12	37.4E-12	54.8E-12	24.5E-12	44.7E-12	20.0E-12	37.4E-12

Drift Calculation

IIH_5VDIN	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	0.0E+00	-100.0E-12	-50.0E-12	0.0E+00	0.0E+00	100.0E-12	0.0E+00	50.0E-12
8	-	0.0E+00	0.0E+00	0.0E+00	150.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00
9	-	0.0E+00	0.0E+00	0.0E+00	50.0E-12	50.0E-12	100.0E-12	50.0E-12	-50.0E-12
10	-	0.0E+00	50.0E-12	0.0E+00	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	-100.0E-12
11	-	-50.0E-12	100.0E-12	50.0E-12	0.0E+00	0.0E+00	50.0E-12	0.0E+00	0.0E+00
Average	-	-10.0E-12	10.0E-12	10.3E-27	40.0E-12	10.0E-12	40.0E-12	0.0E+00	-20.0E-12
Sigma	-	20.0E-12	66.3E-12	31.6E-12	58.3E-12	20.0E-12	58.3E-12	31.6E-12	51.0E-12

Parameter : Input Leakage Current High : IIH_5VSCLK

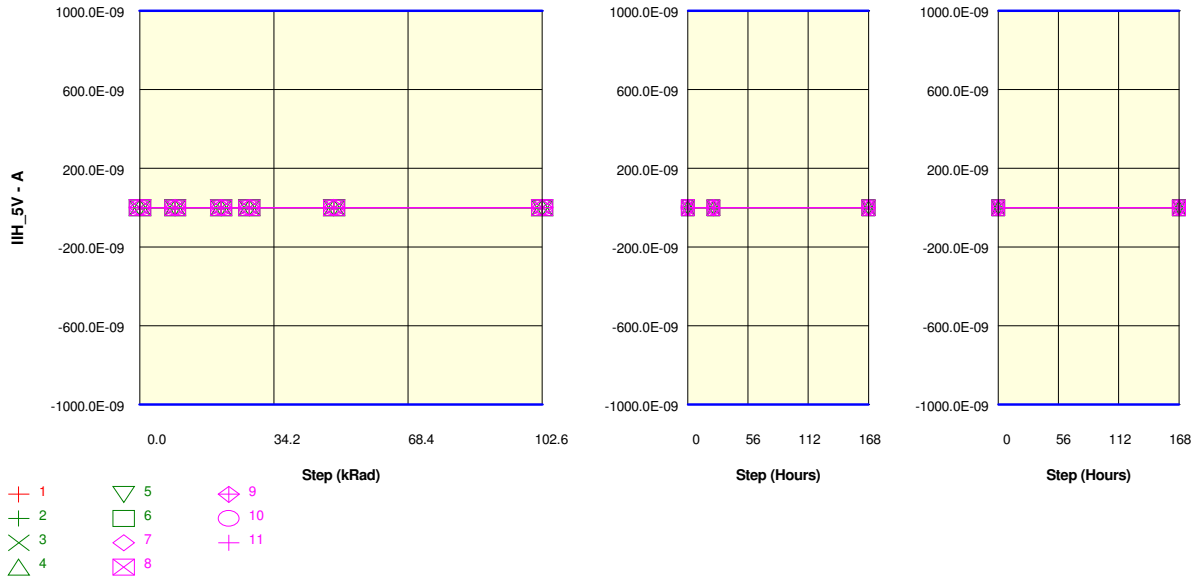
Test conditions : Vin=5V

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IIH_5VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	350.0E-12	250.0E-12	300.0E-12	250.0E-12	300.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12
ON samples									
2	300.0E-12	250.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12	300.0E-12
3	250.0E-12	300.0E-12	300.0E-12	250.0E-12	250.0E-12	400.0E-12	300.0E-12	300.0E-12	300.0E-12
4	350.0E-12	400.0E-12	250.0E-12	300.0E-12	400.0E-12	400.0E-12	300.0E-12	300.0E-12	300.0E-12
5	300.0E-12	400.0E-12	250.0E-12	350.0E-12	300.0E-12	300.0E-12	250.0E-12	250.0E-12	400.0E-12
6	400.0E-12	300.0E-12	250.0E-12	300.0E-12	350.0E-12	300.0E-12	250.0E-12	400.0E-12	200.0E-12
Statistics									
Min	250.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	250.0E-12	200.0E-12
Max	400.0E-12	400.0E-12	300.0E-12	350.0E-12	400.0E-12	400.0E-12	300.0E-12	400.0E-12	400.0E-12
Average	320.0E-12	330.0E-12	270.0E-12	300.0E-12	320.0E-12	340.0E-12	280.0E-12	310.0E-12	300.0E-12
Sigma	51.0E-12	60.0E-12	24.5E-12	31.6E-12	51.0E-12	49.0E-12	24.5E-12	49.0E-12	63.2E-12

Drift Calculation

IIH_5VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-50.0E-12	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
3	-	50.0E-12	50.0E-12	0.0E+00	0.0E+00	150.0E-12	50.0E-12	50.0E-12	50.0E-12
4	-	50.0E-12	-100.0E-12	-50.0E-12	50.0E-12	50.0E-12	-50.0E-12	-50.0E-12	-50.0E-12
5	-	100.0E-12	-50.0E-12	50.0E-12	0.0E+00	0.0E+00	-50.0E-12	-50.0E-12	100.0E-12
6	-	-100.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	0.0E+00	-200.0E-12
Average	-	10.0E-12	-50.0E-12	-20.0E-12	0.0E+00	20.0E-12	-40.0E-12	-10.0E-12	-20.0E-12
Sigma	-	73.5E-12	70.7E-12	51.0E-12	31.6E-12	81.2E-12	66.3E-12	37.4E-12	103.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT				Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor			Issue:	02

Measurements

IIH_5VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	350.0E-12	250.0E-12	300.0E-12	250.0E-12	300.0E-12	250.0E-12	250.0E-12	250.0E-12	250.0E-12
OFF samples									
7	300.0E-12	400.0E-12	300.0E-12	300.0E-12	300.0E-12	400.0E-12	250.0E-12	250.0E-12	300.0E-12
8	400.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	350.0E-12	300.0E-12	250.0E-12	250.0E-12
9	400.0E-12	300.0E-12	350.0E-12	300.0E-12	300.0E-12	300.0E-12	250.0E-12	250.0E-12	300.0E-12
10	300.0E-12	300.0E-12	300.0E-12	300.0E-12	350.0E-12	350.0E-12	300.0E-12	250.0E-12	200.0E-12
11	250.0E-12	350.0E-12	250.0E-12	400.0E-12	400.0E-12	400.0E-12	400.0E-12	300.0E-12	300.0E-12
Statistics									
Min	250.0E-12	250.0E-12	250.0E-12	300.0E-12	250.0E-12	300.0E-12	250.0E-12	250.0E-12	200.0E-12
Max	400.0E-12	400.0E-12	350.0E-12	400.0E-12	400.0E-12	400.0E-12	400.0E-12	300.0E-12	300.0E-12
Average	330.0E-12	320.0E-12	290.0E-12	320.0E-12	320.0E-12	360.0E-12	300.0E-12	260.0E-12	270.0E-12
Sigma	60.0E-12	51.0E-12	37.4E-12	40.0E-12	51.0E-12	37.4E-12	54.8E-12	20.0E-12	40.0E-12

Drift Calculation

IIH_5VSCLK	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	100.0E-12	0.0E+00	0.0E+00	0.0E+00	100.0E-12	-50.0E-12	-50.0E-12	0.0E+00
8	-	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-100.0E-12	-150.0E-12	-150.0E-12
9	-	-100.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12
10	-	0.0E+00	0.0E+00	0.0E+00	50.0E-12	50.0E-12	0.0E+00	-50.0E-12	-100.0E-12
11	-	100.0E-12	0.0E+00	150.0E-12	150.0E-12	150.0E-12	150.0E-12	50.0E-12	50.0E-12
Average	-	-10.0E-12	-40.0E-12	-10.0E-12	-10.0E-12	30.0E-12	-30.0E-12	-70.0E-12	-60.0E-12
Sigma	-	102.0E-12	58.3E-12	91.7E-12	106.8E-12	92.7E-12	103.0E-12	74.8E-12	73.5E-12

Parameter : Input Leakage Current Low : Ileak_5VIN7

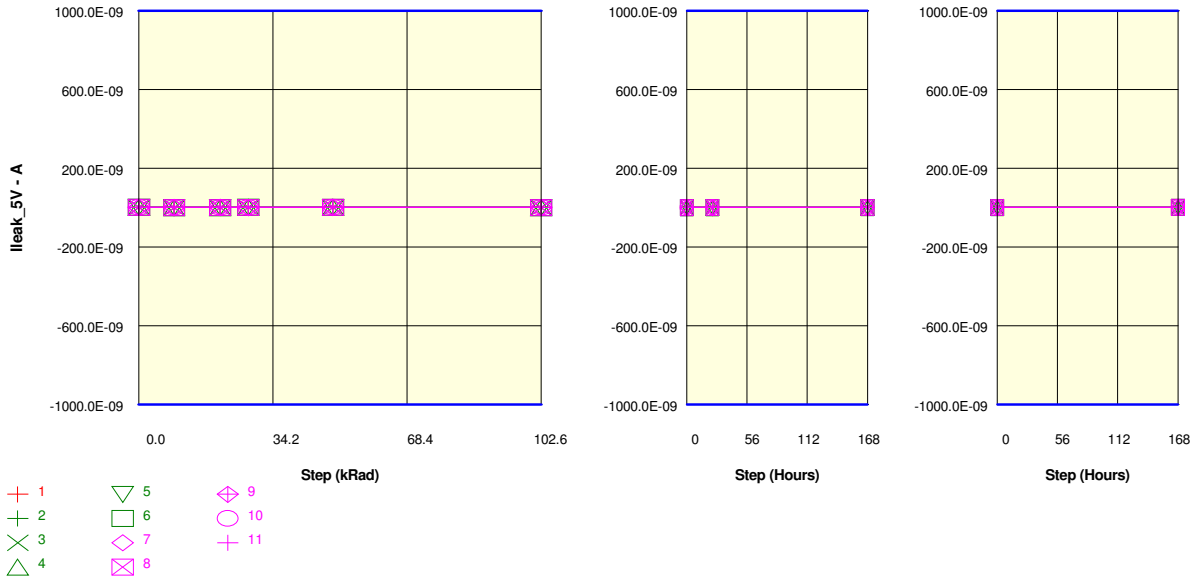
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.4E-09	900.0E-12	1.3E-09	1.1E-09	1.4E-09	750.0E-12	850.0E-12	950.0E-12	1.6E-09
ON samples									
2	1.3E-09	800.0E-12	1.2E-09	950.0E-12	2.1E-09	1.0E-09	1.1E-09	1.3E-09	1.7E-09
3	1.5E-09	1.0E-09	1.3E-09	1.8E-09	2.0E-09	1.1E-09	1.3E-09	1.8E-09	1.8E-09
4	1.4E-09	950.0E-12	1.1E-09	1.4E-09	1.6E-09	900.0E-12	900.0E-12	1.1E-09	1.6E-09
5	1.8E-09	950.0E-12	1.3E-09	1.7E-09	1.3E-09	800.0E-12	1.0E-09	1.0E-09	1.2E-09
6	1.5E-09	950.0E-12	1.1E-09	1.4E-09	1.8E-09	1.1E-09	1.1E-09	1.3E-09	1.7E-09
Statistics									
Min	1.3E-09	800.0E-12	1.1E-09	950.0E-12	1.3E-09	800.0E-12	900.0E-12	1.0E-09	1.2E-09
Max	1.8E-09	1.0E-09	1.3E-09	1.8E-09	2.1E-09	1.1E-09	1.3E-09	1.8E-09	1.8E-09
Average	1.5E-09	930.0E-12	1.2E-09	1.5E-09	1.7E-09	980.0E-12	1.1E-09	1.3E-09	1.6E-09
Sigma	168.5E-12	67.8E-12	103.0E-12	296.6E-12	267.2E-12	116.6E-12	115.8E-12	283.9E-12	205.9E-12

Drift Calculation

Ileak_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-500.0E-12	-150.0E-12	-350.0E-12	750.0E-12	-300.0E-12	-250.0E-12	0.0E+00	350.0E-12
3	-	-500.0E-12	-200.0E-12	300.0E-12	450.0E-12	-400.0E-12	-250.0E-12	300.0E-12	300.0E-12
4	-	-450.0E-12	-350.0E-12	0.0E+00	200.0E-12	-500.0E-12	-500.0E-12	-350.0E-12	200.0E-12
5	-	-850.0E-12	-500.0E-12	-100.0E-12	-500.0E-12	-1.0E-09	-800.0E-12	-800.0E-12	-600.0E-12
6	-	-500.0E-12	-350.0E-12	-50.0E-12	350.0E-12	-350.0E-12	-350.0E-12	-200.0E-12	250.0E-12
Average	-	-560.0E-12	-310.0E-12	-40.0E-12	250.0E-12	-510.0E-12	-430.0E-12	-210.0E-12	100.0E-12
Sigma	-	146.3E-12	124.1E-12	208.3E-12	415.9E-12	253.8E-12	206.4E-12	366.6E-12	353.6E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

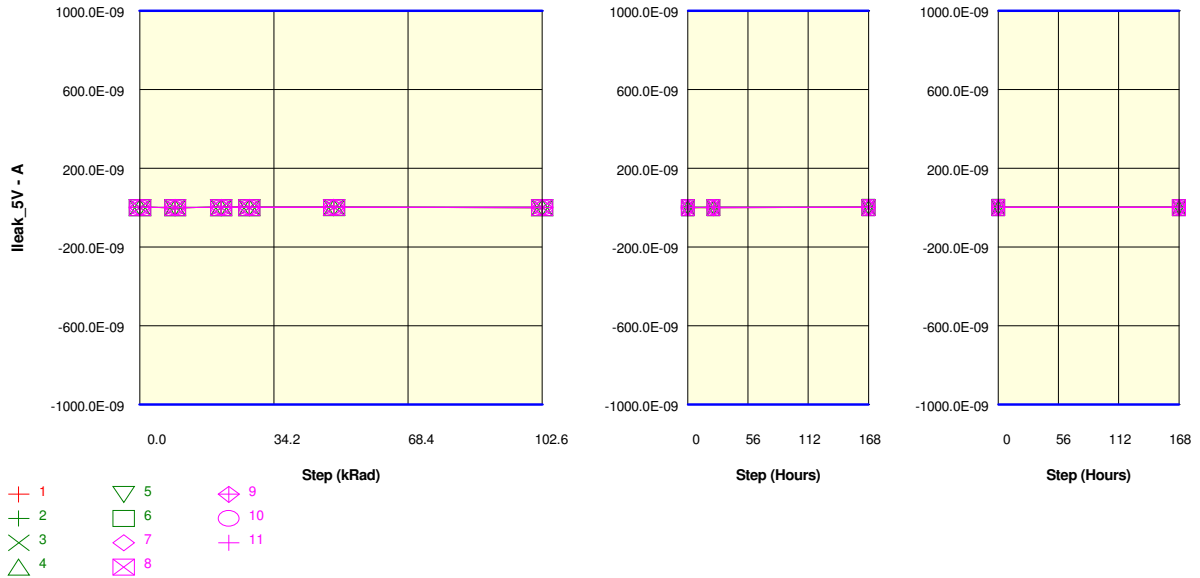
Ileak_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.4E-09	900.0E-12	1.3E-09	1.1E-09	1.4E-09	750.0E-12	850.0E-12	950.0E-12	1.6E-09
OFF samples									
7	1.5E-09	800.0E-12	900.0E-12	1.0E-09	1.8E-09	950.0E-12	850.0E-12	1.5E-09	1.4E-09
8	1.5E-09	800.0E-12	1.3E-09	1.3E-09	1.6E-09	800.0E-12	1.2E-09	1.3E-09	1.4E-09
9	1.3E-09	850.0E-12	1.4E-09	900.0E-12	1.6E-09	950.0E-12	1.1E-09	1.4E-09	1.3E-09
10	1.5E-09	900.0E-12	1.4E-09	1.1E-09	1.7E-09	1.0E-09	950.0E-12	1.0E-09	1.6E-09
11	1.7E-09	1.2E-09	1.2E-09	1.4E-09	1.6E-09	1.0E-09	1.0E-09	1.1E-09	1.7E-09
Statistics									
Min	1.3E-09	800.0E-12	900.0E-12	900.0E-12	1.6E-09	800.0E-12	850.0E-12	1.0E-09	1.3E-09
Max	1.7E-09	1.2E-09	1.4E-09	1.4E-09	1.8E-09	1.0E-09	1.2E-09	1.5E-09	1.7E-09
Average	1.5E-09	900.0E-12	1.2E-09	1.1E-09	1.7E-09	940.0E-12	1.0E-09	1.2E-09	1.5E-09
Sigma	128.1E-12	130.4E-12	177.2E-12	185.5E-12	63.2E-12	73.5E-12	115.8E-12	188.1E-12	165.5E-12

Drift Calculation

Ileak_5VIN7	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-700.0E-12	-600.0E-12	-500.0E-12	250.0E-12	-550.0E-12	-650.0E-12	0.0E+00	-150.0E-12
8	-	-700.0E-12	-250.0E-12	-200.0E-12	100.0E-12	-700.0E-12	-300.0E-12	-200.0E-12	-100.0E-12
9	-	-450.0E-12	100.0E-12	-400.0E-12	300.0E-12	-350.0E-12	-250.0E-12	50.0E-12	-50.0E-12
10	-	-550.0E-12	-100.0E-12	-350.0E-12	250.0E-12	-450.0E-12	-500.0E-12	-450.0E-12	150.0E-12
11	-	-550.0E-12	-550.0E-12	-300.0E-12	-100.0E-12	-700.0E-12	-700.0E-12	-650.0E-12	0.0E+00
Average	-	-590.0E-12	-280.0E-12	-350.0E-12	160.0E-12	-550.0E-12	-480.0E-12	-250.0E-12	-30.0E-12
Sigma	-	97.0E-12	265.7E-12	100.0E-12	146.3E-12	137.8E-12	180.6E-12	266.5E-12	103.0E-12

Parameter : Input Leakage Current Low : Ileak_5VIN6
 Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.0E-09	700.0E-12	800.0E-12	900.0E-12	1.2E-09	600.0E-12	550.0E-12	800.0E-12	1.3E-09
ON samples									
2	1.1E-09	700.0E-12	1.0E-09	950.0E-12	1.4E-09	1.0E-09	1.3E-09	1.5E-09	1.2E-09
3	1.3E-09	700.0E-12	1.1E-09	800.0E-12	1.5E-09	1.3E-09	1.1E-09	1.4E-09	1.2E-09
4	1.1E-09	650.0E-12	850.0E-12	850.0E-12	1.3E-09	700.0E-12	600.0E-12	900.0E-12	1.3E-09
5	1.3E-09	800.0E-12	800.0E-12	800.0E-12	1.2E-09	700.0E-12	800.0E-12	1.0E-09	1.0E-09
6	900.0E-12	550.0E-12	800.0E-12	800.0E-12	1.2E-09	1.1E-09	1.4E-09	1.7E-09	1.1E-09
Statistics									
Min	900.0E-12	550.0E-12	800.0E-12	800.0E-12	1.2E-09	700.0E-12	600.0E-12	900.0E-12	1.0E-09
Max	1.3E-09	800.0E-12	1.1E-09	950.0E-12	1.5E-09	1.3E-09	1.4E-09	1.7E-09	1.3E-09
Average	1.1E-09	680.0E-12	910.0E-12	840.0E-12	1.3E-09	950.0E-12	1.0E-09	1.3E-09	1.2E-09
Sigma	140.0E-12	81.2E-12	120.0E-12	58.3E-12	139.3E-12	228.0E-12	278.2E-12	283.9E-12	100.0E-12

Drift Calculation

Ileak_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-400.0E-12	-100.0E-12	-150.0E-12	300.0E-12	-100.0E-12	150.0E-12	350.0E-12	100.0E-12
3	-	-600.0E-12	-200.0E-12	-500.0E-12	200.0E-12	0.0E+00	-250.0E-12	100.0E-12	-150.0E-12
4	-	-450.0E-12	-250.0E-12	-250.0E-12	150.0E-12	-400.0E-12	-500.0E-12	-200.0E-12	200.0E-12
5	-	-450.0E-12	-450.0E-12	-450.0E-12	-100.0E-12	-550.0E-12	-450.0E-12	-250.0E-12	-250.0E-12
6	-	-350.0E-12	-100.0E-12	-100.0E-12	250.0E-12	150.0E-12	450.0E-12	750.0E-12	200.0E-12
Average	-	-450.0E-12	-220.0E-12	-290.0E-12	160.0E-12	-180.0E-12	-120.0E-12	150.0E-12	20.0E-12
Sigma	-	83.7E-12	128.8E-12	159.4E-12	139.3E-12	258.1E-12	365.5E-12	370.1E-12	186.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Ileak_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.0E-09	700.0E-12	800.0E-12	900.0E-12	1.2E-09	600.0E-12	550.0E-12	800.0E-12	1.3E-09
OFF samples									
7	1.1E-09	700.0E-12	900.0E-12	900.0E-12	1.4E-09	750.0E-12	600.0E-12	1.2E-09	1.1E-09
8	1.1E-09	700.0E-12	950.0E-12	800.0E-12	1.3E-09	850.0E-12	700.0E-12	850.0E-12	1.1E-09
9	1.1E-09	550.0E-12	950.0E-12	1.1E-09	1.2E-09	800.0E-12	800.0E-12	850.0E-12	900.0E-12
10	1.2E-09	600.0E-12	750.0E-12	900.0E-12	1.0E-09	650.0E-12	750.0E-12	850.0E-12	1.1E-09
11	1.1E-09	900.0E-12	850.0E-12	1.2E-09	1.3E-09	650.0E-12	800.0E-12	750.0E-12	1.1E-09
Statistics									
Min	1.1E-09	550.0E-12	750.0E-12	800.0E-12	1.0E-09	650.0E-12	600.0E-12	750.0E-12	900.0E-12
Max	1.2E-09	900.0E-12	950.0E-12	1.2E-09	1.4E-09	850.0E-12	800.0E-12	1.2E-09	1.1E-09
Average	1.1E-09	690.0E-12	880.0E-12	970.0E-12	1.2E-09	740.0E-12	730.0E-12	890.0E-12	1.0E-09
Sigma	37.4E-12	120.0E-12	74.8E-12	140.0E-12	132.7E-12	80.0E-12	74.8E-12	135.6E-12	67.8E-12

Drift Calculation

Ileak_5VIN6	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-400.0E-12	-200.0E-12	-200.0E-12	300.0E-12	-350.0E-12	-500.0E-12	50.0E-12	-50.0E-12
8	-	-350.0E-12	-100.0E-12	-250.0E-12	200.0E-12	-200.0E-12	-350.0E-12	-200.0E-12	0.0E+00
9	-	-550.0E-12	-150.0E-12	-50.0E-12	100.0E-12	-300.0E-12	-300.0E-12	-250.0E-12	-200.0E-12
10	-	-550.0E-12	-400.0E-12	-250.0E-12	-150.0E-12	-500.0E-12	-400.0E-12	-300.0E-12	-50.0E-12
11	-	-150.0E-12	-200.0E-12	150.0E-12	250.0E-12	-400.0E-12	-250.0E-12	-300.0E-12	0.0E+00
Average	-	-400.0E-12	-210.0E-12	-120.0E-12	140.0E-12	-350.0E-12	-360.0E-12	-200.0E-12	-60.0E-12
Sigma	-	148.3E-12	102.0E-12	153.6E-12	159.4E-12	100.0E-12	86.0E-12	130.4E-12	73.5E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Input Leakage Current Low : Ileak_5VIN5

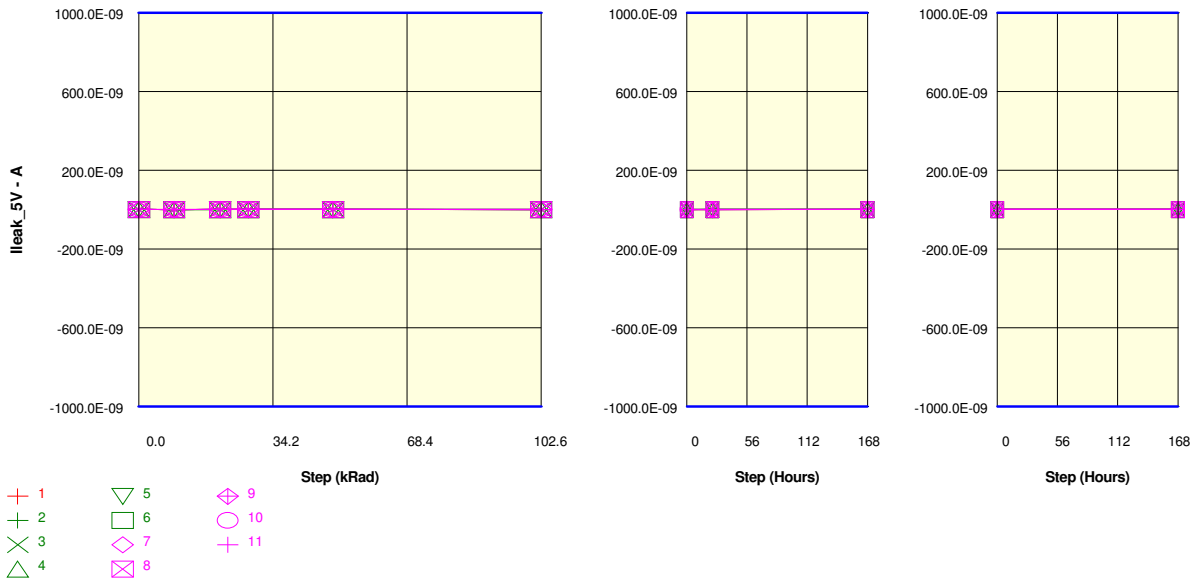
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	1.1E-09	450.0E-12	950.0E-12	900.0E-12	1.2E-09	550.0E-12	500.0E-12	950.0E-12	1.1E-09
ON samples									
2	1.1E-09	550.0E-12	650.0E-12	900.0E-12	1.2E-09	700.0E-12	1.1E-09	1.2E-09	950.0E-12
3	900.0E-12	500.0E-12	1.3E-09	850.0E-12	1.3E-09	700.0E-12	800.0E-12	1.1E-09	1.0E-09
4	1.1E-09	450.0E-12	700.0E-12	1.1E-09	1.1E-09	600.0E-12	600.0E-12	750.0E-12	1.3E-09
5	1.4E-09	600.0E-12	1.0E-09	900.0E-12	1.1E-09	850.0E-12	800.0E-12	800.0E-12	1.1E-09
6	1.3E-09	500.0E-12	950.0E-12	950.0E-12	1.1E-09	900.0E-12	1.2E-09	1.1E-09	1.2E-09
Statistics									
Min	900.0E-12	450.0E-12	650.0E-12	850.0E-12	1.1E-09	600.0E-12	600.0E-12	750.0E-12	950.0E-12
Max	1.4E-09	600.0E-12	1.3E-09	1.1E-09	1.3E-09	900.0E-12	1.2E-09	1.2E-09	1.3E-09
Average	1.1E-09	520.0E-12	920.0E-12	930.0E-12	1.2E-09	750.0E-12	890.0E-12	970.0E-12	1.1E-09
Sigma	156.8E-12	51.0E-12	233.7E-12	67.8E-12	89.4E-12	109.5E-12	205.9E-12	169.1E-12	107.7E-12

Drift Calculation

Ileak_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-550.0E-12	-450.0E-12	-200.0E-12	100.0E-12	-400.0E-12	0.0E+00	100.0E-12	-150.0E-12
3	-	-400.0E-12	400.0E-12	-50.0E-12	400.0E-12	-200.0E-12	-100.0E-12	150.0E-12	100.0E-12
4	-	-600.0E-12	-350.0E-12	0.0E+00	50.0E-12	-450.0E-12	-450.0E-12	-300.0E-12	200.0E-12
5	-	-750.0E-12	-350.0E-12	-450.0E-12	-250.0E-12	-500.0E-12	-550.0E-12	-550.0E-12	-300.0E-12
6	-	-750.0E-12	-300.0E-12	-300.0E-12	-200.0E-12	-350.0E-12	-100.0E-12	-200.0E-12	-100.0E-12
Average	-	-610.0E-12	-210.0E-12	-200.0E-12	20.0E-12	-380.0E-12	-240.0E-12	-160.0E-12	-50.0E-12
Sigma	-	131.9E-12	308.9E-12	164.3E-12	233.7E-12	103.0E-12	217.7E-12	259.6E-12	178.9E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

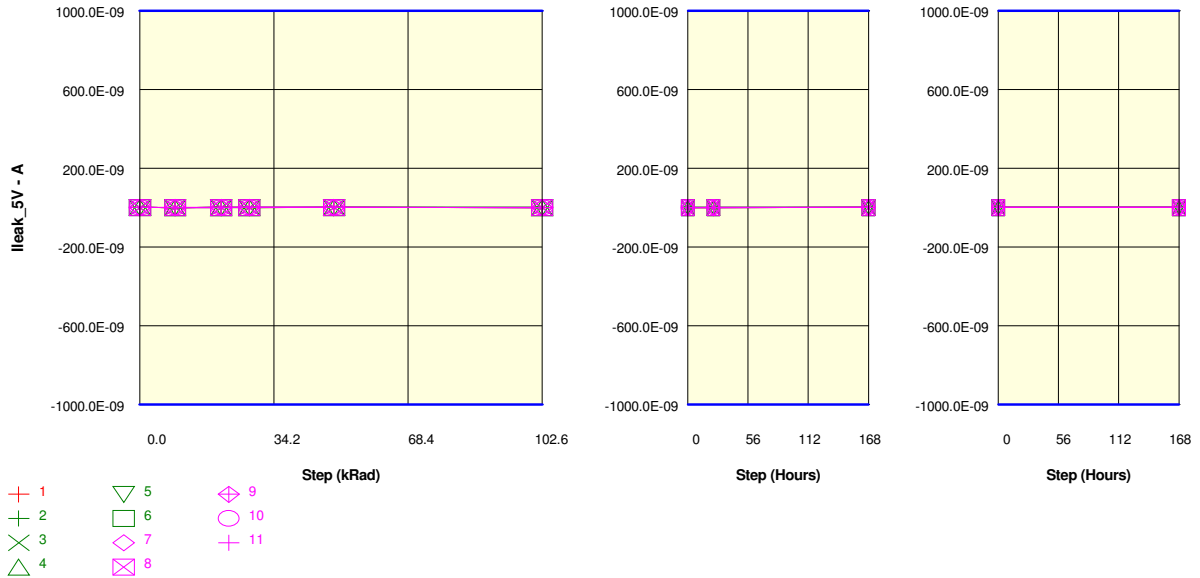
Ileak_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	1.1E-09	450.0E-12	950.0E-12	900.0E-12	1.2E-09	550.0E-12	500.0E-12	950.0E-12	1.1E-09
OFF samples									
7	1.0E-09	500.0E-12	850.0E-12	1.3E-09	1.1E-09	700.0E-12	900.0E-12	850.0E-12	1.2E-09
8	1.0E-09	500.0E-12	1.0E-09	900.0E-12	1.1E-09	800.0E-12	650.0E-12	950.0E-12	1.1E-09
9	850.0E-12	500.0E-12	800.0E-12	1.0E-09	1.1E-09	650.0E-12	600.0E-12	750.0E-12	1.1E-09
10	1.1E-09	650.0E-12	900.0E-12	1.1E-09	1.1E-09	800.0E-12	750.0E-12	850.0E-12	1.2E-09
11	900.0E-12	800.0E-12	1.1E-09	1.2E-09	1.3E-09	550.0E-12	650.0E-12	1.3E-09	1.1E-09
Statistics									
Min	850.0E-12	500.0E-12	800.0E-12	900.0E-12	1.1E-09	550.0E-12	600.0E-12	750.0E-12	1.1E-09
Max	1.1E-09	800.0E-12	1.1E-09	1.3E-09	1.3E-09	800.0E-12	900.0E-12	1.3E-09	1.2E-09
Average	960.0E-12	590.0E-12	930.0E-12	1.1E-09	1.1E-09	700.0E-12	710.0E-12	930.0E-12	1.1E-09
Sigma	73.5E-12	120.0E-12	107.7E-12	136.4E-12	80.0E-12	94.9E-12	106.8E-12	172.0E-12	60.0E-12

Drift Calculation

Ileak_5VIN5	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-500.0E-12	-150.0E-12	300.0E-12	100.0E-12	-300.0E-12	-100.0E-12	-150.0E-12	200.0E-12
8	-	-500.0E-12	0.0E+00	-100.0E-12	100.0E-12	-200.0E-12	-350.0E-12	-50.0E-12	100.0E-12
9	-	-350.0E-12	-50.0E-12	150.0E-12	250.0E-12	-200.0E-12	-250.0E-12	-100.0E-12	250.0E-12
10	-	-400.0E-12	-150.0E-12	0.0E+00	50.0E-12	-250.0E-12	-300.0E-12	-200.0E-12	150.0E-12
11	-	-100.0E-12	200.0E-12	250.0E-12	400.0E-12	-350.0E-12	-250.0E-12	350.0E-12	150.0E-12
Average	-	-370.0E-12	-30.0E-12	120.0E-12	180.0E-12	-260.0E-12	-250.0E-12	-30.0E-12	170.0E-12
Sigma	-	147.0E-12	128.8E-12	150.3E-12	128.8E-12	58.3E-12	83.7E-12	196.5E-12	51.0E-12

Parameter : Input Leakage Current Low : Ileak_5VIN4
 Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	900.0E-12	450.0E-12	750.0E-12	650.0E-12	950.0E-12	500.0E-12	600.0E-12	800.0E-12	1.1E-09
ON samples									
2	900.0E-12	500.0E-12	850.0E-12	900.0E-12	1.1E-09	800.0E-12	850.0E-12	1.3E-09	950.0E-12
3	900.0E-12	450.0E-12	800.0E-12	700.0E-12	1.3E-09	900.0E-12	900.0E-12	1.2E-09	1.0E-09
4	1.2E-09	400.0E-12	900.0E-12	850.0E-12	1.2E-09	550.0E-12	600.0E-12	850.0E-12	1.1E-09
5	1.2E-09	500.0E-12	750.0E-12	1.1E-09	1.0E-09	500.0E-12	650.0E-12	1.0E-09	1.0E-09
6	850.0E-12	500.0E-12	550.0E-12	700.0E-12	1.1E-09	850.0E-12	850.0E-12	1.2E-09	900.0E-12
Statistics									
Min	850.0E-12	400.0E-12	550.0E-12	700.0E-12	1.0E-09	500.0E-12	600.0E-12	850.0E-12	900.0E-12
Max	1.2E-09	500.0E-12	900.0E-12	1.1E-09	1.3E-09	900.0E-12	900.0E-12	1.3E-09	1.1E-09
Average	1.0E-09	470.0E-12	770.0E-12	840.0E-12	1.1E-09	720.0E-12	770.0E-12	1.1E-09	990.0E-12
Sigma	144.9E-12	40.0E-12	120.8E-12	131.9E-12	107.7E-12	163.1E-12	120.8E-12	158.1E-12	66.3E-12

Drift Calculation

Ileak_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-400.0E-12	-50.0E-12	0.0E+00	200.0E-12	-100.0E-12	-50.0E-12	400.0E-12	50.0E-12
3	-	-450.0E-12	-100.0E-12	-200.0E-12	400.0E-12	0.0E+00	0.0E+00	300.0E-12	100.0E-12
4	-	-800.0E-12	-300.0E-12	-350.0E-12	0.0E+00	-650.0E-12	-600.0E-12	-350.0E-12	-100.0E-12
5	-	-650.0E-12	-400.0E-12	-100.0E-12	-150.0E-12	-650.0E-12	-500.0E-12	-150.0E-12	-150.0E-12
6	-	-350.0E-12	-300.0E-12	-150.0E-12	200.0E-12	0.0E+00	0.0E+00	300.0E-12	50.0E-12
Average	-	-530.0E-12	-230.0E-12	-160.0E-12	130.0E-12	-280.0E-12	-230.0E-12	100.0E-12	-10.0E-12
Sigma	-	169.1E-12	132.7E-12	115.8E-12	188.7E-12	304.3E-12	263.8E-12	295.0E-12	97.0E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Ileak_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	900.0E-12	450.0E-12	750.0E-12	650.0E-12	950.0E-12	500.0E-12	600.0E-12	800.0E-12	1.1E-09
OFF samples									
7	950.0E-12	400.0E-12	700.0E-12	900.0E-12	1.1E-09	850.0E-12	950.0E-12	1.1E-09	1.1E-09
8	900.0E-12	550.0E-12	800.0E-12	800.0E-12	1.1E-09	700.0E-12	750.0E-12	1.0E-09	1.0E-09
9	900.0E-12	350.0E-12	650.0E-12	800.0E-12	950.0E-12	500.0E-12	450.0E-12	900.0E-12	1.1E-09
10	1.0E-09	450.0E-12	750.0E-12	1.1E-09	1.1E-09	700.0E-12	550.0E-12	800.0E-12	1.0E-09
11	800.0E-12	800.0E-12	850.0E-12	1.0E-09	1.0E-09	600.0E-12	600.0E-12	1.0E-09	1.0E-09
Statistics									
Min	800.0E-12	350.0E-12	650.0E-12	800.0E-12	950.0E-12	500.0E-12	450.0E-12	800.0E-12	1.0E-09
Max	1.0E-09	800.0E-12	850.0E-12	1.1E-09	1.1E-09	850.0E-12	950.0E-12	1.1E-09	1.1E-09
Average	910.0E-12	510.0E-12	750.0E-12	920.0E-12	1.0E-09	670.0E-12	660.0E-12	950.0E-12	1.0E-09
Sigma	66.3E-12	159.4E-12	70.7E-12	116.6E-12	51.0E-12	116.6E-12	174.4E-12	89.4E-12	40.0E-12

Drift Calculation

Ileak_5VIN4	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-550.0E-12	-250.0E-12	-50.0E-12	100.0E-12	-100.0E-12	0.0E+00	100.0E-12	150.0E-12
8	-	-350.0E-12	-100.0E-12	-100.0E-12	200.0E-12	-200.0E-12	-150.0E-12	100.0E-12	100.0E-12
9	-	-550.0E-12	-250.0E-12	-100.0E-12	50.0E-12	-400.0E-12	-450.0E-12	0.0E+00	150.0E-12
10	-	-550.0E-12	-250.0E-12	100.0E-12	50.0E-12	-300.0E-12	-450.0E-12	-200.0E-12	0.0E+00
11	-	0.0E+00	50.0E-12	200.0E-12	200.0E-12	-200.0E-12	-200.0E-12	200.0E-12	200.0E-12
Average	-	-400.0E-12	-160.0E-12	10.0E-12	120.0E-12	-240.0E-12	-250.0E-12	40.0E-12	120.0E-12
Sigma	-	214.5E-12	120.0E-12	120.0E-12	67.8E-12	102.0E-12	176.1E-12	135.6E-12	67.8E-12

Parameter : Input Leakage Current Low : Ileak_5VIN3

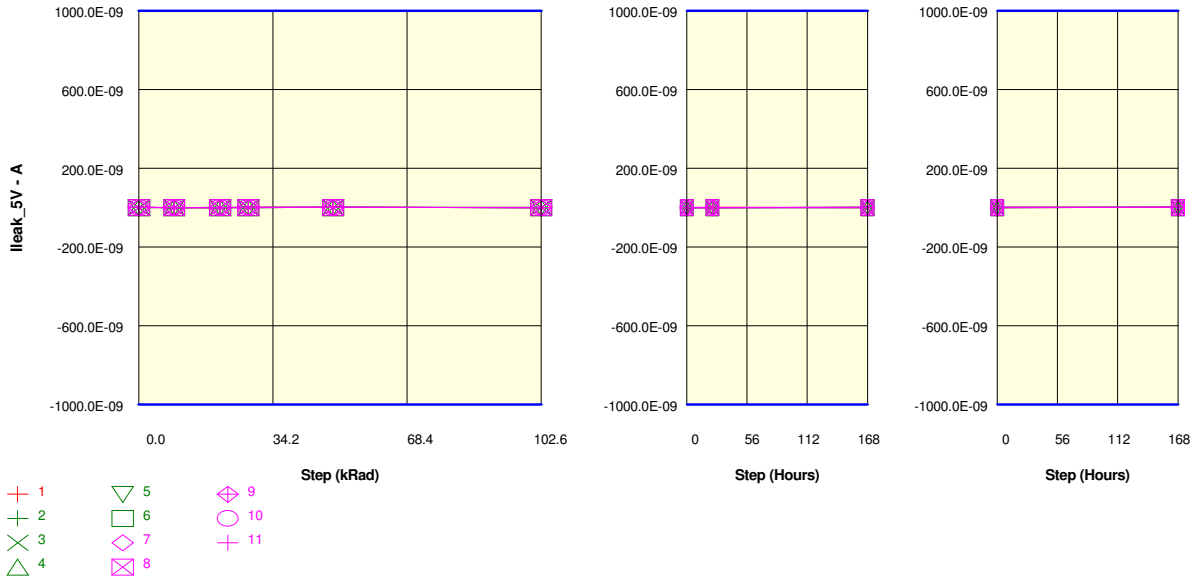
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	850.0E-12	450.0E-12	700.0E-12	850.0E-12	800.0E-12	350.0E-12	850.0E-12	700.0E-12	900.0E-12
ON samples									
2	850.0E-12	400.0E-12	650.0E-12	550.0E-12	850.0E-12	650.0E-12	550.0E-12	850.0E-12	800.0E-12
3	750.0E-12	450.0E-12	800.0E-12	850.0E-12	1.0E-09	800.0E-12	650.0E-12	850.0E-12	800.0E-12
4	950.0E-12	350.0E-12	450.0E-12	900.0E-12	950.0E-12	500.0E-12	500.0E-12	600.0E-12	800.0E-12
5	900.0E-12	400.0E-12	900.0E-12	650.0E-12	850.0E-12	500.0E-12	450.0E-12	700.0E-12	800.0E-12
6	650.0E-12	400.0E-12	700.0E-12	700.0E-12	850.0E-12	650.0E-12	600.0E-12	850.0E-12	850.0E-12
Statistics									
Min	650.0E-12	350.0E-12	450.0E-12	550.0E-12	850.0E-12	500.0E-12	450.0E-12	600.0E-12	800.0E-12
Max	950.0E-12	450.0E-12	900.0E-12	900.0E-12	1.0E-09	800.0E-12	650.0E-12	850.0E-12	850.0E-12
Average	820.0E-12	400.0E-12	700.0E-12	730.0E-12	900.0E-12	620.0E-12	550.0E-12	770.0E-12	810.0E-12
Sigma	107.7E-12	31.6E-12	151.7E-12	128.8E-12	63.2E-12	112.2E-12	70.7E-12	103.0E-12	20.0E-12

Drift Calculation

Ileak_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-450.0E-12	-200.0E-12	-300.0E-12	0.0E+00	-200.0E-12	-300.0E-12	0.0E+00	-50.0E-12
3	-	-300.0E-12	50.0E-12	100.0E-12	250.0E-12	50.0E-12	-100.0E-12	100.0E-12	50.0E-12
4	-	-600.0E-12	-500.0E-12	-50.0E-12	0.0E+00	-450.0E-12	-450.0E-12	-350.0E-12	-150.0E-12
5	-	-500.0E-12	0.0E+00	-250.0E-12	-50.0E-12	-400.0E-12	-450.0E-12	-200.0E-12	-100.0E-12
6	-	-250.0E-12	50.0E-12	50.0E-12	200.0E-12	0.0E+00	-50.0E-12	200.0E-12	200.0E-12
Average	-	-420.0E-12	-120.0E-12	-90.0E-12	80.0E-12	-200.0E-12	-270.0E-12	-50.0E-12	-10.0E-12
Sigma	-	128.8E-12	211.2E-12	159.4E-12	120.8E-12	202.5E-12	169.1E-12	200.0E-12	124.1E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

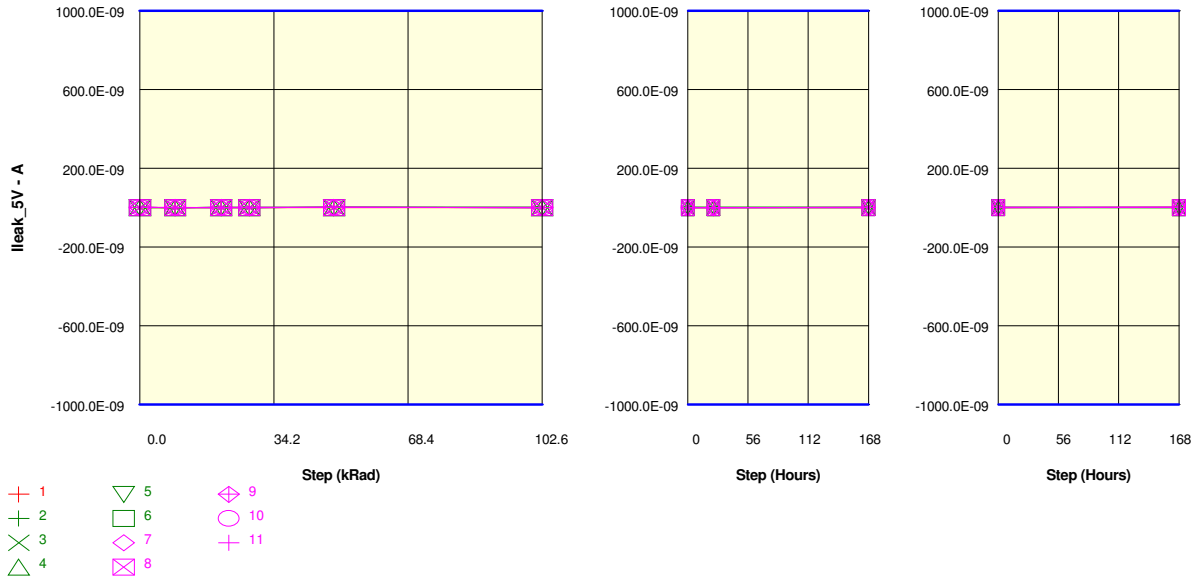
Ileak_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	850.0E-12	450.0E-12	700.0E-12	850.0E-12	800.0E-12	350.0E-12	850.0E-12	700.0E-12	900.0E-12
OFF samples									
7	700.0E-12	350.0E-12	800.0E-12	750.0E-12	900.0E-12	1.0E-09	800.0E-12	1.1E-09	950.0E-12
8	800.0E-12	600.0E-12	550.0E-12	650.0E-12	850.0E-12	550.0E-12	450.0E-12	800.0E-12	800.0E-12
9	750.0E-12	500.0E-12	550.0E-12	650.0E-12	800.0E-12	500.0E-12	400.0E-12	750.0E-12	800.0E-12
10	900.0E-12	400.0E-12	550.0E-12	850.0E-12	900.0E-12	600.0E-12	500.0E-12	550.0E-12	900.0E-12
11	850.0E-12	900.0E-12	600.0E-12	950.0E-12	900.0E-12	500.0E-12	600.0E-12	700.0E-12	900.0E-12
Statistics									
Min	700.0E-12	350.0E-12	550.0E-12	650.0E-12	800.0E-12	500.0E-12	400.0E-12	550.0E-12	800.0E-12
Max	900.0E-12	900.0E-12	800.0E-12	950.0E-12	900.0E-12	1.0E-09	800.0E-12	1.1E-09	950.0E-12
Average	800.0E-12	550.0E-12	610.0E-12	770.0E-12	870.0E-12	630.0E-12	550.0E-12	770.0E-12	870.0E-12
Sigma	70.7E-12	194.9E-12	97.0E-12	116.6E-12	40.0E-12	188.7E-12	141.4E-12	163.1E-12	60.0E-12

Drift Calculation

Ileak_5VIN3	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-350.0E-12	100.0E-12	50.0E-12	200.0E-12	300.0E-12	100.0E-12	350.0E-12	250.0E-12
8	-	-200.0E-12	-250.0E-12	-150.0E-12	50.0E-12	-250.0E-12	-350.0E-12	0.0E+00	0.0E+00
9	-	-250.0E-12	-200.0E-12	-100.0E-12	50.0E-12	-250.0E-12	-350.0E-12	0.0E+00	50.0E-12
10	-	-500.0E-12	-350.0E-12	-50.0E-12	0.0E+00	-300.0E-12	-400.0E-12	-350.0E-12	0.0E+00
11	-	50.0E-12	-250.0E-12	100.0E-12	50.0E-12	-350.0E-12	-250.0E-12	-150.0E-12	50.0E-12
Average	-	-250.0E-12	-190.0E-12	-30.0E-12	70.0E-12	-170.0E-12	-250.0E-12	-30.0E-12	70.0E-12
Sigma	-	181.7E-12	153.0E-12	92.7E-12	67.8E-12	237.9E-12	181.7E-12	229.3E-12	92.7E-12

Parameter : Input Leakage Current Low : Ileak_5VIN2
 Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A
 Spec Limit Min : -1.0E-06
 Spec Limit Max : 1.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	650.0E-12	350.0E-12	550.0E-12	650.0E-12	700.0E-12	650.0E-12	650.0E-12	500.0E-12	850.0E-12
ON samples									
2	900.0E-12	350.0E-12	800.0E-12	650.0E-12	750.0E-12	750.0E-12	900.0E-12	1.3E-09	900.0E-12
3	650.0E-12	400.0E-12	900.0E-12	800.0E-12	1.0E-09	900.0E-12	950.0E-12	1.5E-09	700.0E-12
4	800.0E-12	400.0E-12	650.0E-12	700.0E-12	850.0E-12	450.0E-12	500.0E-12	650.0E-12	650.0E-12
5	900.0E-12	400.0E-12	850.0E-12	850.0E-12	800.0E-12	450.0E-12	400.0E-12	650.0E-12	700.0E-12
6	700.0E-12	400.0E-12	550.0E-12	650.0E-12	800.0E-12	1.1E-09	1.2E-09	1.4E-09	800.0E-12
Statistics									
Min	650.0E-12	350.0E-12	550.0E-12	650.0E-12	750.0E-12	450.0E-12	400.0E-12	650.0E-12	650.0E-12
Max	900.0E-12	400.0E-12	900.0E-12	850.0E-12	1.0E-09	1.1E-09	1.2E-09	1.5E-09	900.0E-12
Average	790.0E-12	390.0E-12	750.0E-12	730.0E-12	840.0E-12	730.0E-12	780.0E-12	1.1E-09	750.0E-12
Sigma	102.0E-12	20.0E-12	130.4E-12	81.2E-12	86.0E-12	254.2E-12	283.9E-12	365.2E-12	89.4E-12

Drift Calculation

Ileak_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-550.0E-12	-100.0E-12	-250.0E-12	-150.0E-12	-150.0E-12	0.0E+00	400.0E-12	0.0E+00
3	-	-250.0E-12	250.0E-12	150.0E-12	350.0E-12	250.0E-12	300.0E-12	850.0E-12	50.0E-12
4	-	-400.0E-12	-150.0E-12	-100.0E-12	50.0E-12	-350.0E-12	-300.0E-12	-150.0E-12	-150.0E-12
5	-	-500.0E-12	-50.0E-12	-50.0E-12	-100.0E-12	-450.0E-12	-500.0E-12	-250.0E-12	-200.0E-12
6	-	-300.0E-12	-150.0E-12	-50.0E-12	100.0E-12	400.0E-12	450.0E-12	650.0E-12	100.0E-12
Average	-	-400.0E-12	-40.0E-12	-60.0E-12	50.0E-12	-60.0E-12	-10.0E-12	300.0E-12	-40.0E-12
Sigma	-	114.0E-12	149.7E-12	128.1E-12	176.1E-12	332.3E-12	355.5E-12	433.6E-12	115.8E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

Ileak_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	650.0E-12	350.0E-12	550.0E-12	650.0E-12	700.0E-12	650.0E-12	650.0E-12	500.0E-12	850.0E-12
OFF samples									
7	900.0E-12	400.0E-12	500.0E-12	650.0E-12	1.0E-09	800.0E-12	500.0E-12	800.0E-12	900.0E-12
8	800.0E-12	450.0E-12	850.0E-12	700.0E-12	900.0E-12	600.0E-12	450.0E-12	650.0E-12	750.0E-12
9	800.0E-12	350.0E-12	650.0E-12	700.0E-12	850.0E-12	450.0E-12	700.0E-12	900.0E-12	900.0E-12
10	850.0E-12	400.0E-12	750.0E-12	850.0E-12	850.0E-12	500.0E-12	400.0E-12	650.0E-12	900.0E-12
11	750.0E-12	850.0E-12	650.0E-12	800.0E-12	800.0E-12	500.0E-12	650.0E-12	750.0E-12	900.0E-12
Statistics									
Min	750.0E-12	350.0E-12	500.0E-12	650.0E-12	800.0E-12	450.0E-12	400.0E-12	650.0E-12	750.0E-12
Max	900.0E-12	850.0E-12	850.0E-12	850.0E-12	1.0E-09	800.0E-12	700.0E-12	900.0E-12	900.0E-12
Average	820.0E-12	490.0E-12	680.0E-12	740.0E-12	880.0E-12	570.0E-12	540.0E-12	750.0E-12	870.0E-12
Sigma	51.0E-12	182.8E-12	116.6E-12	73.5E-12	67.8E-12	124.9E-12	115.8E-12	94.9E-12	60.0E-12

Drift Calculation

Ileak_5VIN2	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-500.0E-12	-400.0E-12	-250.0E-12	100.0E-12	-100.0E-12	-400.0E-12	-100.0E-12	0.0E+00
8	-	-350.0E-12	50.0E-12	-100.0E-12	100.0E-12	-200.0E-12	-350.0E-12	-150.0E-12	-50.0E-12
9	-	-450.0E-12	-150.0E-12	-100.0E-12	50.0E-12	-350.0E-12	-100.0E-12	100.0E-12	100.0E-12
10	-	-450.0E-12	-100.0E-12	0.0E+00	0.0E+00	-350.0E-12	-450.0E-12	-200.0E-12	50.0E-12
11	-	100.0E-12	-100.0E-12	50.0E-12	50.0E-12	-250.0E-12	-100.0E-12	0.0E+00	150.0E-12
Average	-	-330.0E-12	-140.0E-12	-80.0E-12	60.0E-12	-250.0E-12	-280.0E-12	-70.0E-12	50.0E-12
Sigma	-	220.5E-12	146.3E-12	103.0E-12	37.4E-12	94.9E-12	150.3E-12	107.7E-12	70.7E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Input Leakage Current Low : Ileak_5VIN1

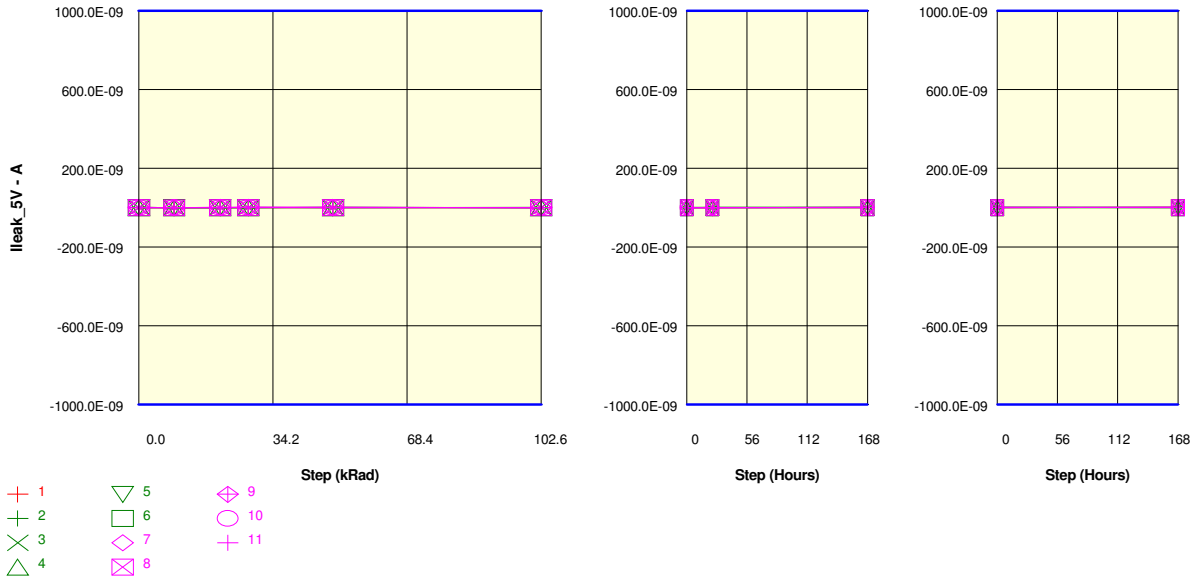
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	700.0E-12	300.0E-12	550.0E-12	500.0E-12	700.0E-12	400.0E-12	350.0E-12	550.0E-12	800.0E-12
ON samples									
2	800.0E-12	250.0E-12	650.0E-12	650.0E-12	850.0E-12	700.0E-12	800.0E-12	850.0E-12	900.0E-12
3	650.0E-12	300.0E-12	550.0E-12	550.0E-12	800.0E-12	650.0E-12	550.0E-12	850.0E-12	600.0E-12
4	850.0E-12	300.0E-12	500.0E-12	900.0E-12	550.0E-12	550.0E-12	350.0E-12	600.0E-12	600.0E-12
5	700.0E-12	450.0E-12	700.0E-12	500.0E-12	650.0E-12	450.0E-12	500.0E-12	550.0E-12	700.0E-12
6	700.0E-12	400.0E-12	500.0E-12	550.0E-12	700.0E-12	1.0E-09	850.0E-12	950.0E-12	850.0E-12
Statistics									
Min	650.0E-12	250.0E-12	500.0E-12	500.0E-12	550.0E-12	450.0E-12	350.0E-12	550.0E-12	600.0E-12
Max	850.0E-12	450.0E-12	700.0E-12	900.0E-12	850.0E-12	1.0E-09	850.0E-12	950.0E-12	900.0E-12
Average	740.0E-12	340.0E-12	580.0E-12	630.0E-12	710.0E-12	670.0E-12	610.0E-12	760.0E-12	730.0E-12
Sigma	73.5E-12	73.5E-12	81.2E-12	143.5E-12	106.8E-12	186.0E-12	188.1E-12	156.2E-12	124.9E-12

Drift Calculation

Ileak_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-550.0E-12	-150.0E-12	-150.0E-12	50.0E-12	-100.0E-12	0.0E+00	50.0E-12	100.0E-12
3	-	-350.0E-12	-100.0E-12	-100.0E-12	150.0E-12	0.0E+00	-100.0E-12	200.0E-12	-50.0E-12
4	-	-550.0E-12	-350.0E-12	50.0E-12	-300.0E-12	-300.0E-12	-500.0E-12	-250.0E-12	-250.0E-12
5	-	-250.0E-12	0.0E+00	-200.0E-12	-50.0E-12	-250.0E-12	-200.0E-12	-150.0E-12	0.0E+00
6	-	-300.0E-12	-200.0E-12	-150.0E-12	0.0E+00	300.0E-12	150.0E-12	250.0E-12	150.0E-12
Average	-	-400.0E-12	-160.0E-12	-110.0E-12	-30.0E-12	-70.0E-12	-130.0E-12	20.0E-12	-10.0E-12
Sigma	-	126.5E-12	115.8E-12	86.0E-12	150.3E-12	213.5E-12	218.2E-12	193.9E-12	139.3E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

Ileak_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	700.0E-12	300.0E-12	550.0E-12	500.0E-12	700.0E-12	400.0E-12	350.0E-12	550.0E-12	800.0E-12
OFF samples									
7	900.0E-12	450.0E-12	850.0E-12	850.0E-12	900.0E-12	550.0E-12	700.0E-12	650.0E-12	750.0E-12
8	700.0E-12	250.0E-12	900.0E-12	850.0E-12	850.0E-12	650.0E-12	650.0E-12	750.0E-12	1.0E-09
9	600.0E-12	350.0E-12	600.0E-12	800.0E-12	750.0E-12	450.0E-12	400.0E-12	1.0E-09	650.0E-12
10	750.0E-12	350.0E-12	600.0E-12	900.0E-12	650.0E-12	400.0E-12	600.0E-12	550.0E-12	850.0E-12
11	550.0E-12	550.0E-12	700.0E-12	650.0E-12	550.0E-12	600.0E-12	700.0E-12	850.0E-12	800.0E-12
Statistics									
Min	550.0E-12	250.0E-12	600.0E-12	650.0E-12	550.0E-12	400.0E-12	400.0E-12	550.0E-12	650.0E-12
Max	900.0E-12	550.0E-12	900.0E-12	900.0E-12	900.0E-12	650.0E-12	700.0E-12	1.0E-09	1.0E-09
Average	700.0E-12	390.0E-12	730.0E-12	810.0E-12	740.0E-12	530.0E-12	610.0E-12	760.0E-12	810.0E-12
Sigma	122.5E-12	102.0E-12	124.9E-12	86.0E-12	128.1E-12	92.7E-12	111.4E-12	156.2E-12	115.8E-12

Drift Calculation

Ileak_5VIN1	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-450.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-350.0E-12	-200.0E-12	-250.0E-12	-150.0E-12
8	-	-450.0E-12	200.0E-12	150.0E-12	150.0E-12	-50.0E-12	-50.0E-12	50.0E-12	300.0E-12
9	-	-250.0E-12	0.0E+00	200.0E-12	150.0E-12	-150.0E-12	-200.0E-12	400.0E-12	50.0E-12
10	-	-400.0E-12	-150.0E-12	150.0E-12	-100.0E-12	-350.0E-12	-150.0E-12	-200.0E-12	100.0E-12
11	-	0.0E+00	150.0E-12	100.0E-12	0.0E+00	50.0E-12	150.0E-12	300.0E-12	250.0E-12
Average	-	-310.0E-12	30.0E-12	110.0E-12	40.0E-12	-170.0E-12	-90.0E-12	60.0E-12	110.0E-12
Sigma	-	171.5E-12	128.8E-12	86.0E-12	97.0E-12	160.0E-12	131.9E-12	259.6E-12	159.4E-12

Parameter : Input Leakage Current Low : Ileak_5VIN0

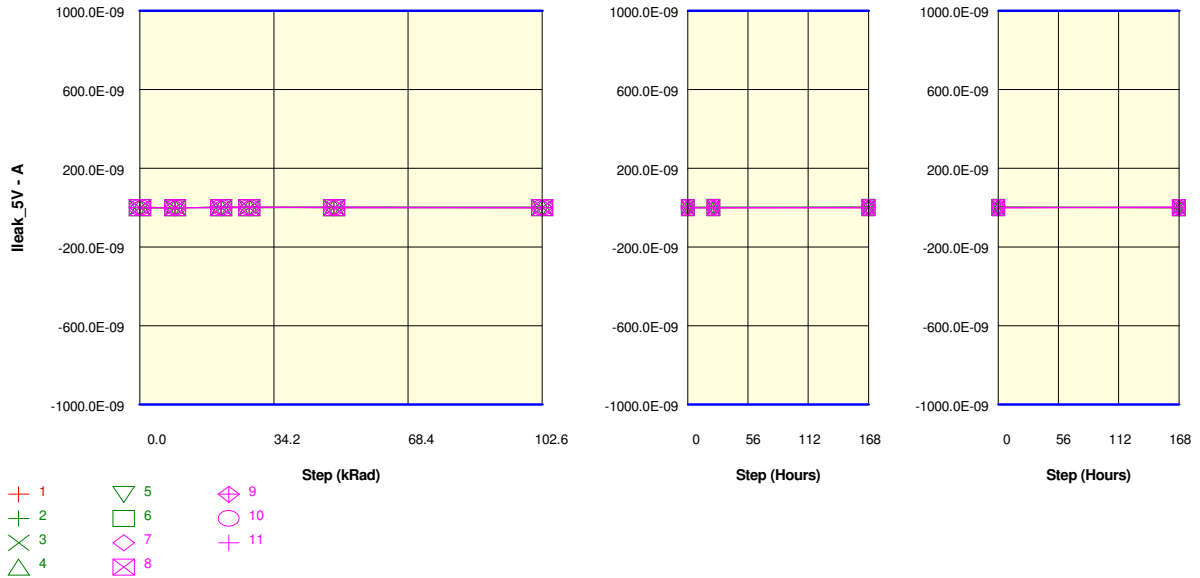
Test conditions : VIN_X=3V ; INX => X= 0 to 7

Unit : A

Spec Limit Min : -1.0E-06

Spec Limit Max : 1.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

Ileak_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	650.0E-12	300.0E-12	900.0E-12	800.0E-12	700.0E-12	400.0E-12	500.0E-12	600.0E-12	700.0E-12
ON samples									
2	650.0E-12	400.0E-12	800.0E-12	800.0E-12	850.0E-12	1.3E-09	2.5E-09	2.1E-09	650.0E-12
3	800.0E-12	300.0E-12	850.0E-12	850.0E-12	900.0E-12	1.4E-09	1.9E-09	2.1E-09	600.0E-12
4	850.0E-12	350.0E-12	800.0E-12	900.0E-12	750.0E-12	500.0E-12	500.0E-12	750.0E-12	700.0E-12
5	600.0E-12	350.0E-12	550.0E-12	700.0E-12	700.0E-12	350.0E-12	500.0E-12	800.0E-12	800.0E-12
6	650.0E-12	300.0E-12	800.0E-12	600.0E-12	800.0E-12	1.3E-09	1.6E-09	2.3E-09	800.0E-12
Statistics									
Min	600.0E-12	300.0E-12	550.0E-12	600.0E-12	700.0E-12	350.0E-12	500.0E-12	750.0E-12	600.0E-12
Max	850.0E-12	400.0E-12	850.0E-12	900.0E-12	900.0E-12	1.4E-09	2.5E-09	2.3E-09	800.0E-12
Average	710.0E-12	340.0E-12	760.0E-12	770.0E-12	800.0E-12	950.0E-12	1.4E-09	1.6E-09	710.0E-12
Sigma	97.0E-12	37.4E-12	106.8E-12	107.7E-12	70.7E-12	432.4E-12	776.1E-12	668.9E-12	80.0E-12

Drift Calculation

Ileak_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-250.0E-12	150.0E-12	150.0E-12	200.0E-12	600.0E-12	1.8E-09	1.5E-09	0.0E+00
3	-	-500.0E-12	50.0E-12	50.0E-12	100.0E-12	550.0E-12	1.1E-09	1.3E-09	-200.0E-12
4	-	-500.0E-12	-50.0E-12	50.0E-12	-100.0E-12	-350.0E-12	-350.0E-12	-100.0E-12	-150.0E-12
5	-	-250.0E-12	-50.0E-12	100.0E-12	100.0E-12	-250.0E-12	-100.0E-12	200.0E-12	200.0E-12
6	-	-350.0E-12	150.0E-12	-50.0E-12	150.0E-12	650.0E-12	950.0E-12	1.6E-09	150.0E-12
Average	-	-370.0E-12	50.0E-12	60.0E-12	90.0E-12	240.0E-12	680.0E-12	880.0E-12	0.0E+00
Sigma	-	112.2E-12	89.4E-12	66.3E-12	102.0E-12	443.2E-12	796.6E-12	693.3E-12	158.1E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

Measurements

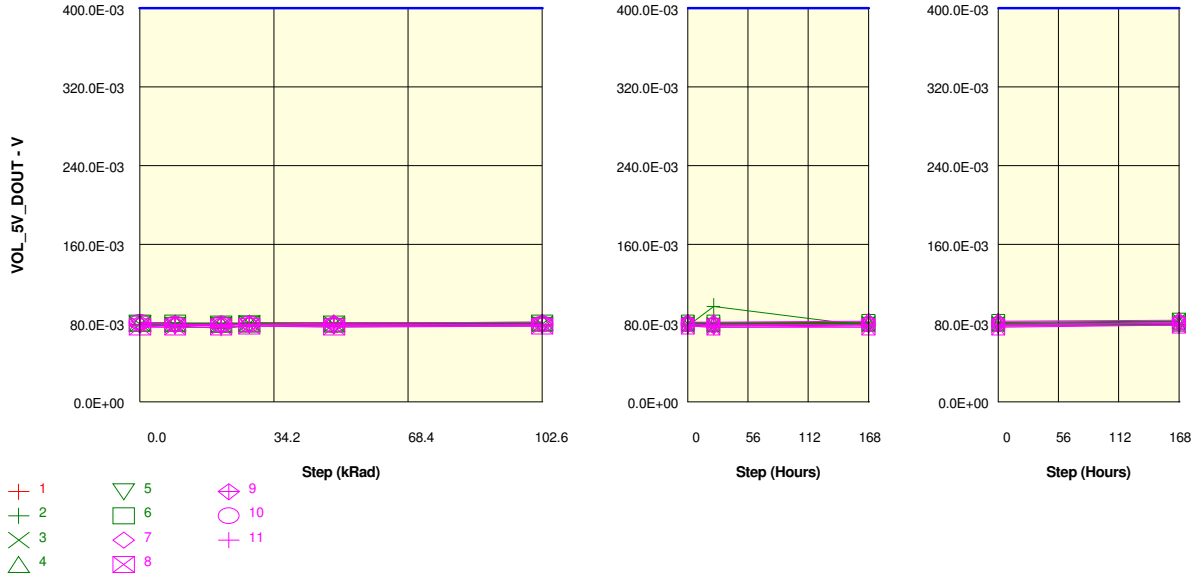
Ileak_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	650.0E-12	300.0E-12	900.0E-12	800.0E-12	700.0E-12	400.0E-12	500.0E-12	600.0E-12	700.0E-12
OFF samples									
7	700.0E-12	500.0E-12	550.0E-12	750.0E-12	850.0E-12	550.0E-12	400.0E-12	800.0E-12	850.0E-12
8	800.0E-12	350.0E-12	750.0E-12	850.0E-12	850.0E-12	750.0E-12	650.0E-12	600.0E-12	800.0E-12
9	750.0E-12	350.0E-12	650.0E-12	700.0E-12	900.0E-12	450.0E-12	400.0E-12	600.0E-12	750.0E-12
10	500.0E-12	300.0E-12	500.0E-12	900.0E-12	700.0E-12	350.0E-12	350.0E-12	650.0E-12	800.0E-12
11	650.0E-12	500.0E-12	800.0E-12	800.0E-12	650.0E-12	450.0E-12	650.0E-12	700.0E-12	700.0E-12
Statistics									
Min	500.0E-12	300.0E-12	500.0E-12	700.0E-12	650.0E-12	350.0E-12	350.0E-12	600.0E-12	700.0E-12
Max	800.0E-12	500.0E-12	800.0E-12	900.0E-12	900.0E-12	750.0E-12	650.0E-12	800.0E-12	850.0E-12
Average	680.0E-12	400.0E-12	650.0E-12	800.0E-12	790.0E-12	510.0E-12	490.0E-12	670.0E-12	780.0E-12
Sigma	103.0E-12	83.7E-12	114.0E-12	70.7E-12	97.0E-12	135.6E-12	131.9E-12	74.8E-12	51.0E-12

Drift Calculation

Ileak_5VIN0	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-200.0E-12	-150.0E-12	50.0E-12	150.0E-12	-150.0E-12	-300.0E-12	100.0E-12	150.0E-12
8	-	-450.0E-12	-50.0E-12	50.0E-12	50.0E-12	-50.0E-12	-150.0E-12	-200.0E-12	0.0E+00
9	-	-400.0E-12	-100.0E-12	-50.0E-12	150.0E-12	-300.0E-12	-350.0E-12	-150.0E-12	0.0E+00
10	-	-200.0E-12	0.0E+00	400.0E-12	200.0E-12	-150.0E-12	-150.0E-12	150.0E-12	300.0E-12
11	-	-150.0E-12	150.0E-12	150.0E-12	0.0E+00	-200.0E-12	0.0E+00	50.0E-12	50.0E-12
Average	-	-280.0E-12	-30.0E-12	120.0E-12	110.0E-12	-170.0E-12	-190.0E-12	-10.0E-12	100.0E-12
Sigma	-	120.8E-12	103.0E-12	153.6E-12	73.5E-12	81.2E-12	124.1E-12	139.3E-12	114.0E-12

Parameter : Output Low Voltage : VOL_5V_DOUT
 Test conditions : Isink=1mA

Unit : V
 Spec Limit Max : 400.0E-03
 Spec limits are represented in bold lines on the graphic.



Measurements

VOL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	79.0E-03	78.0E-03	78.0E-03	80.0E-03	80.0E-03	79.0E-03	79.0E-03	80.0E-03	79.0E-03
ON samples									
2	78.0E-03	77.0E-03	75.0E-03	77.0E-03	77.0E-03	77.0E-03	97.0E-03	77.0E-03	78.0E-03
3	79.0E-03	78.0E-03	78.0E-03	80.0E-03	79.0E-03	79.0E-03	78.0E-03	79.0E-03	82.0E-03
4	80.0E-03	80.0E-03	79.0E-03	80.0E-03	80.0E-03	81.0E-03	80.0E-03	80.0E-03	80.0E-03
5	79.0E-03	78.0E-03	78.0E-03	79.0E-03	77.0E-03	78.0E-03	77.0E-03	78.0E-03	79.0E-03
6	80.0E-03	80.0E-03	79.0E-03	79.0E-03	79.0E-03	80.0E-03	80.0E-03	81.0E-03	82.0E-03
Statistics									
Min	78.0E-03	77.0E-03	75.0E-03	77.0E-03	77.0E-03	77.0E-03	77.0E-03	77.0E-03	78.0E-03
Max	80.0E-03	80.0E-03	79.0E-03	80.0E-03	80.0E-03	81.0E-03	97.0E-03	81.0E-03	82.0E-03
Average	79.2E-03	78.6E-03	77.8E-03	79.0E-03	78.4E-03	79.0E-03	82.4E-03	79.0E-03	80.2E-03
Sigma	748.3E-06	1.2E-03	1.5E-03	1.1E-03	1.2E-03	1.4E-03	7.4E-03	1.4E-03	1.6E-03

Drift Calculation

VOL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	-1.0E-03	-3.0E-03	-1.0E-03	-1.0E-03	-1.0E-03	19.0E-03	-1.0E-03	0.0E+00
3	-	-1.0E-03	-1.0E-03	1.0E-03	0.0E+00	0.0E+00	-1.0E-03	0.0E+00	3.0E-03
4	-	0.0E+00	-1.0E-03	0.0E+00	0.0E+00	1.0E-03	0.0E+00	0.0E+00	0.0E+00
5	-	-1.0E-03	-1.0E-03	0.0E+00	-2.0E-03	-1.0E-03	-2.0E-03	-1.0E-03	0.0E+00
6	-	0.0E+00	-1.0E-03	-1.0E-03	-1.0E-03	0.0E+00	0.0E+00	1.0E-03	2.0E-03
Average	-	-600.0E-06	-1.4E-03	-200.0E-06	-800.0E-06	-200.0E-06	3.2E-03	-200.0E-06	1.0E-03
Sigma	-	489.9E-06	800.0E-06	748.3E-06	748.3E-06	748.3E-06	7.9E-03	748.3E-06	1.3E-03

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

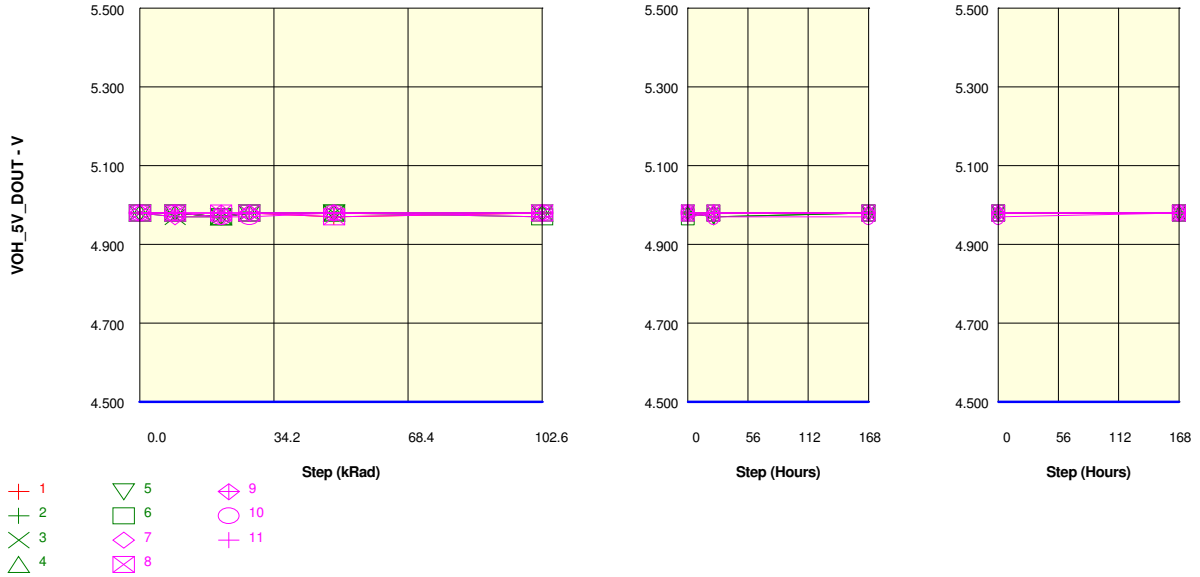
Measurements

VOL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	79.0E-03	78.0E-03	78.0E-03	80.0E-03	80.0E-03	79.0E-03	79.0E-03	80.0E-03	79.0E-03
OFF samples									
7	80.0E-03	79.0E-03	79.0E-03	79.0E-03	80.0E-03	81.0E-03	81.0E-03	82.0E-03	83.0E-03
8	76.0E-03	76.0E-03	76.0E-03	77.0E-03	76.0E-03	77.0E-03	76.0E-03	76.0E-03	78.0E-03
9	78.0E-03	78.0E-03	77.0E-03	79.0E-03	79.0E-03	79.0E-03	77.0E-03	79.0E-03	80.0E-03
10	81.0E-03	79.0E-03	79.0E-03	79.0E-03	78.0E-03	79.0E-03	78.0E-03	79.0E-03	80.0E-03
11	77.0E-03	76.0E-03	76.0E-03	77.0E-03	77.0E-03	77.0E-03	76.0E-03	77.0E-03	78.0E-03
Statistics									
Min	76.0E-03	76.0E-03	76.0E-03	77.0E-03	76.0E-03	77.0E-03	76.0E-03	76.0E-03	78.0E-03
Max	81.0E-03	79.0E-03	79.0E-03	79.0E-03	80.0E-03	81.0E-03	81.0E-03	82.0E-03	83.0E-03
Average	78.4E-03	77.6E-03	77.4E-03	78.2E-03	78.0E-03	78.6E-03	77.6E-03	78.6E-03	79.8E-03
Sigma	1.9E-03	1.4E-03	1.4E-03	979.8E-06	1.4E-03	1.5E-03	1.9E-03	2.1E-03	1.8E-03

Drift Calculation

VOL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.0E-03	-1.0E-03	-1.0E-03	0.0E+00	1.0E-03	1.0E-03	2.0E-03	3.0E-03
8	-	0.0E+00	0.0E+00	1.0E-03	0.0E+00	1.0E-03	0.0E+00	0.0E+00	2.0E-03
9	-	0.0E+00	-1.0E-03	1.0E-03	1.0E-03	1.0E-03	-1.0E-03	1.0E-03	2.0E-03
10	-	-2.0E-03	-2.0E-03	-2.0E-03	-3.0E-03	-2.0E-03	-3.0E-03	-2.0E-03	-1.0E-03
11	-	-1.0E-03	-1.0E-03	0.0E+00	0.0E+00	0.0E+00	-1.0E-03	0.0E+00	1.0E-03
Average	-	-800.0E-06	-1.0E-03	-200.0E-06	-400.0E-06	200.0E-06	-800.0E-06	200.0E-06	1.4E-03
Sigma	-	748.3E-06	632.5E-06	1.2E-03	1.4E-03	1.2E-03	1.3E-03	1.3E-03	1.4E-03

Parameter : Output High Voltage : VOH_5V_DOUT
 Test conditions : Isource=200µA
 Unit : V
 Spec Limit Min : 4.500
 Spec limits are represented in bold lines on the graphic.



Measurements

VOH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	4.980	4.980	4.970	4.980	4.970	4.980	4.980	4.980	4.980
ON samples									
2	4.980	4.980	4.970	4.980	4.980	4.980	4.970	4.980	4.980
3	4.980	4.970	4.970	4.980	4.980	4.980	4.980	4.980	4.980
4	4.980	4.980	4.970	4.980	4.980	4.980	4.980	4.980	4.980
5	4.980	4.980	4.970	4.980	4.980	4.980	4.970	4.980	4.980
6	4.980	4.980	4.970	4.980	4.980	4.970	4.980	4.980	4.980
Statistics									
Min	4.980	4.970	4.970	4.980	4.980	4.970	4.970	4.980	4.980
Max	4.980	4.980	4.970	4.980	4.980	4.980	4.980	4.980	4.980
Average	4.980	4.978	4.970	4.980	4.980	4.978	4.976	4.980	4.980
Sigma	0.000	0.004	0.000	0.000	0.000	0.004	0.005	0.000	0.000

Drift Calculation

VOH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	-10.0E-03	0.0E+00	0.0E+00	0.0E+00	-10.0E-03	0.0E+00	0.0E+00
3	-	-10.0E-03	-10.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
4	-	0.0E+00	-10.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
5	-	0.0E+00	-10.0E-03	0.0E+00	0.0E+00	0.0E+00	-10.0E-03	0.0E+00	0.0E+00
6	-	0.0E+00	-10.0E-03	0.0E+00	0.0E+00	-10.0E-03	0.0E+00	0.0E+00	0.0E+00
Average	-	-2.0E-03	-10.0E-03	0.0E+00	0.0E+00	-2.0E-03	-4.0E-03	0.0E+00	0.0E+00
Sigma	-	4.0E-03	90.2E-12	0.0E+00	0.0E+00	4.0E-03	4.9E-03	0.0E+00	0.0E+00

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

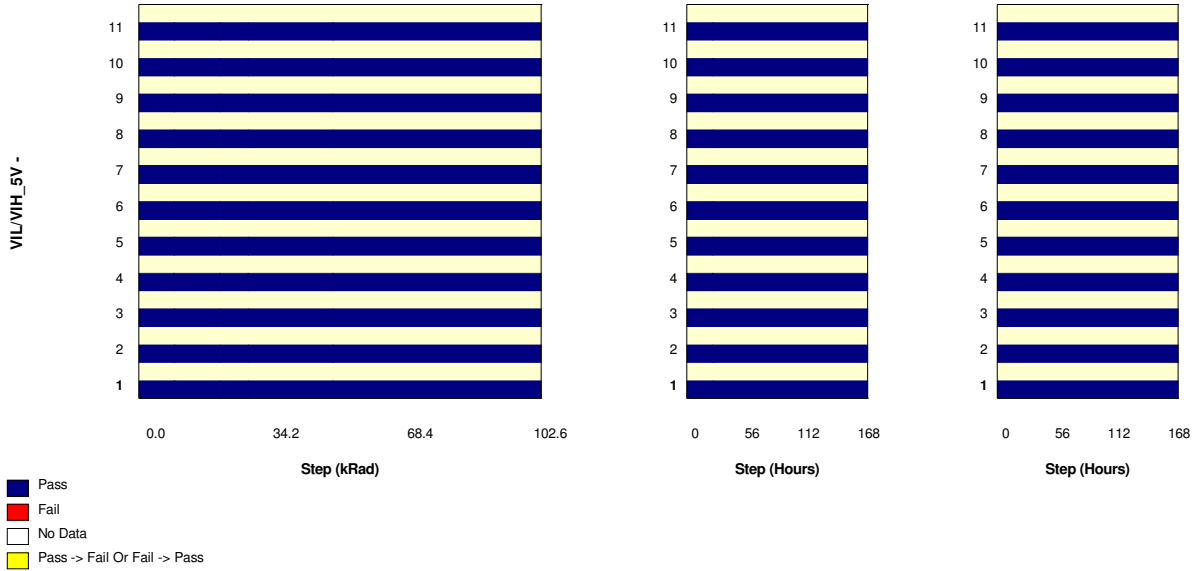
Measurements

VOH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	4.980	4.980	4.970	4.980	4.970	4.980	4.980	4.980	4.980
OFF samples									
7	4.980	4.970	4.970	4.980	4.980	4.980	4.980	4.980	4.980
8	4.980	4.980	4.980	4.980	4.970	4.980	4.980	4.980	4.980
9	4.980	4.980	4.980	4.980	4.980	4.980	4.980	4.980	4.980
10	4.980	4.980	4.970	4.970	4.980	4.980	4.970	4.970	4.980
11	4.980	4.980	4.980	4.980	4.980	4.970	4.980	4.980	4.980
Statistics									
Min	4.980	4.970	4.970	4.970	4.970	4.970	4.970	4.970	4.980
Max	4.980	4.980	4.980	4.980	4.980	4.980	4.980	4.980	4.980
Average	4.980	4.978	4.976	4.978	4.978	4.978	4.978	4.978	4.980
Sigma	0.000	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.000

Drift Calculation

VOH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-10.0E-03	-10.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
8	-	0.0E+00	0.0E+00	0.0E+00	-10.0E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00
9	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
10	-	0.0E+00	-10.0E-03	-10.0E-03	0.0E+00	0.0E+00	-10.0E-03	-10.0E-03	0.0E+00
11	-	0.0E+00	0.0E+00	0.0E+00	0.0E+00	-10.0E-03	0.0E+00	0.0E+00	0.0E+00
Average	-	-2.0E-03	-4.0E-03	-2.0E-03	-2.0E-03	-2.0E-03	-2.0E-03	-2.0E-03	0.0E+00
Sigma	-	4.0E-03	4.9E-03	4.0E-03	4.0E-03	4.0E-03	4.0E-03	4.0E-03	0.0E+00

Parameter : Input Low /High Voltage : VIL/VIH_5V
 Test conditions : GO NOGO Test. VIL=0.8V. VIH=2.4V
 Unit :
 No spec limit specified.



Measurements

VIL/VIH_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
ON samples									
2	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
3	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
4	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
5	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
6	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Measurements

VIL/VIH_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
OFF samples									
7	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
8	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
9	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
10	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
11	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

Parameter : Ouptut Leakage Current Z : IOZL_5V_DOUT

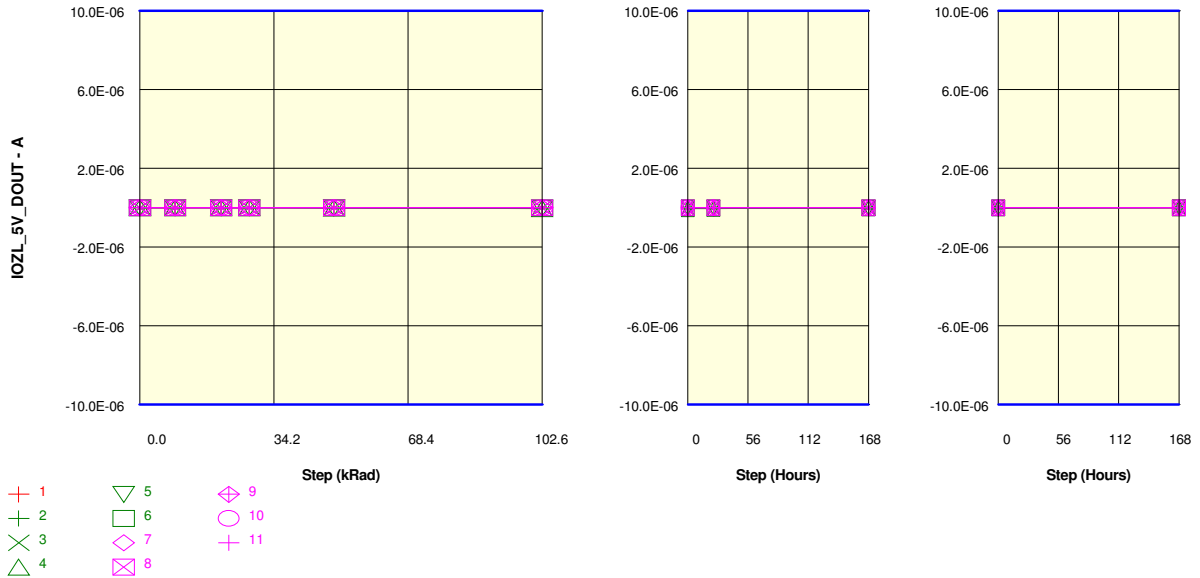
Test conditions :

Unit : A

Spec Limit Min : -10.0E-06

Spec Limit Max : 10.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IOZL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12
ON samples									
2	-100.0E-12	-100.0E-12	-100.0E-12	-500.0E-12	900.0E-12	-13.2E-09	1.9E-09	-8.3E-09	-150.0E-12
3	-50.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	350.0E-12	2.0E-09	-9.4E-09	300.0E-12	-150.0E-12
4	-100.0E-12	-150.0E-12	-150.0E-12	0.0E+00	-15.5E-09	-41.4E-09	-40.5E-09	3.9E-09	150.0E-12
5	-100.0E-12	-100.0E-12	-100.0E-12	-1.4E-09	-12.3E-09	-31.6E-09	-30.4E-09	-26.7E-09	100.0E-12
6	-100.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-600.0E-12	-400.0E-12	-250.0E-12	-150.0E-12	-150.0E-12
Statistics									
Min	-100.0E-12	-150.0E-12	-150.0E-12	-1.4E-09	-15.5E-09	-41.4E-09	-40.5E-09	-26.7E-09	-150.0E-12
Max	-50.0E-12	-100.0E-12	-100.0E-12	0.0E+00	900.0E-12	2.0E-09	1.9E-09	3.9E-09	150.0E-12
Average	-90.0E-12	-110.0E-12	-120.0E-12	-420.0E-12	-5.4E-09	-16.9E-09	-15.7E-09	-6.2E-09	-40.0E-12
Sigma	20.0E-12	20.0E-12	24.5E-12	519.2E-12	7.0E-09	17.1E-09	16.8E-09	11.0E-09	135.6E-12

Drift Calculation

IOZL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	0.0E+00	-400.0E-12	1.0E-09	-13.1E-09	2.0E-09	-8.2E-09	-50.0E-12
3	-	-50.0E-12	-100.0E-12	-50.0E-12	400.0E-12	2.0E-09	-9.4E-09	350.0E-12	-100.0E-12
4	-	-50.0E-12	-50.0E-12	100.0E-12	-15.4E-09	-41.3E-09	-40.4E-09	4.0E-09	250.0E-12
5	-	0.0E+00	0.0E+00	-1.3E-09	-12.2E-09	-31.5E-09	-30.3E-09	-26.6E-09	200.0E-12
6	-	0.0E+00	0.0E+00	0.0E+00	-500.0E-12	-300.0E-12	-150.0E-12	-50.0E-12	-50.0E-12
Average	-	-20.0E-12	-30.0E-12	-330.0E-12	-5.3E-09	-16.8E-09	-15.6E-09	-6.1E-09	50.0E-12
Sigma	-	24.5E-12	40.0E-12	513.4E-12	7.0E-09	17.1E-09	16.8E-09	11.0E-09	144.9E-12

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT				Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor		Issue:	02

Measurements

IOZL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12
OFF samples									
7	-50.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-50.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12
8	-50.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-150.0E-12
9	-150.0E-12	-200.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12
10	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12	-150.0E-12
11	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-150.0E-12
Statistics									
Min	-150.0E-12	-200.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12
Max	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-100.0E-12	-100.0E-12	-150.0E-12
Average	-100.0E-12	-140.0E-12	-140.0E-12	-140.0E-12	-100.0E-12	-140.0E-12	-120.0E-12	-110.0E-12	-150.0E-12
Sigma	44.7E-12	37.4E-12	20.0E-12	20.0E-12	31.6E-12	20.0E-12	24.5E-12	20.0E-12	0.0E+00

Drift Calculation

IOZL_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-100.0E-12	-50.0E-12	-100.0E-12	0.0E+00	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12
8	-	-50.0E-12	-100.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12	-100.0E-12
9	-	-50.0E-12	0.0E+00	0.0E+00	50.0E-12	0.0E+00	0.0E+00	50.0E-12	0.0E+00
10	-	50.0E-12	0.0E+00	0.0E+00	50.0E-12	50.0E-12	50.0E-12	0.0E+00	0.0E+00
11	-	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12	-50.0E-12	-50.0E-12	0.0E+00	-50.0E-12
Average	-	-40.0E-12	-40.0E-12	-40.0E-12	-1.3E-27	-40.0E-12	-20.0E-12	-10.0E-12	-50.0E-12
Sigma	-	49.0E-12	37.4E-12	49.0E-12	44.7E-12	58.3E-12	40.0E-12	37.4E-12	44.7E-12

Parameter : Ouptut Leakage Current Z : IOZH_5V_DOUT

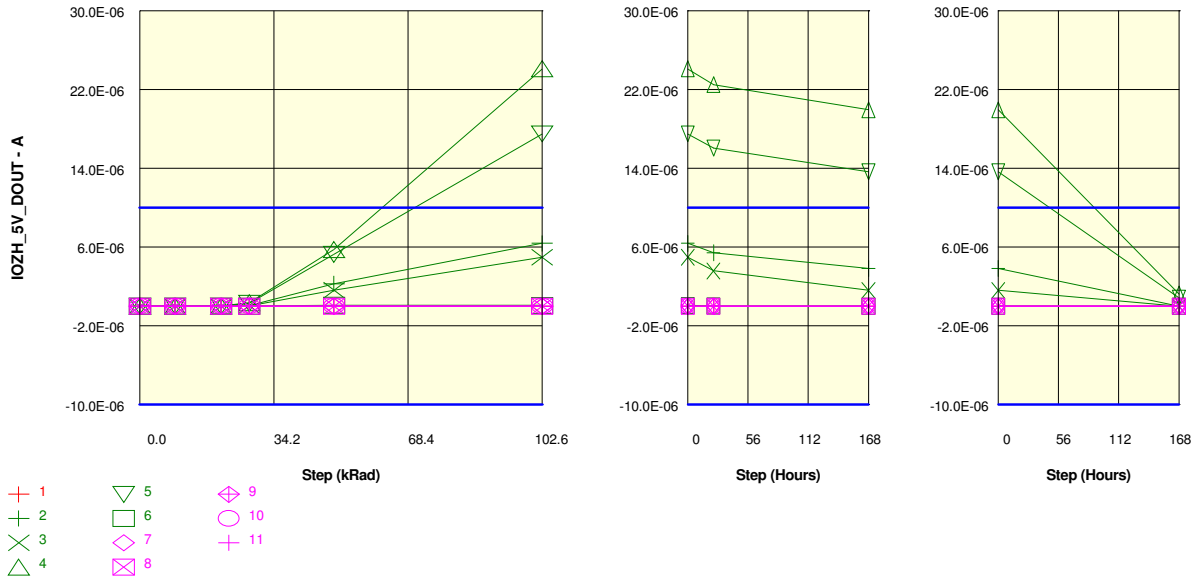
Test conditions :

Unit : A

Spec Limit Min : -10.0E-06

Spec Limit Max : 10.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IOZH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	550.0E-12	500.0E-12	400.0E-12	500.0E-12	550.0E-12	450.0E-12	450.0E-12	500.0E-12	450.0E-12
ON samples									
2	500.0E-12	500.0E-12	1.9E-09	60.7E-09	2.3E-06	6.4E-06	5.4E-06	3.8E-06	450.0E-12
3	500.0E-12	450.0E-12	1.8E-09	43.5E-09	1.6E-06	5.0E-06	3.6E-06	1.6E-06	450.0E-12
4	450.0E-12	450.0E-12	12.8E-09	354.5E-09	5.8E-06	24.1E-06	22.5E-06	20.0E-06	1.2E-06
5	500.0E-12	600.0E-12	4.7E-09	285.5E-09	5.3E-06	17.5E-06	16.1E-06	13.7E-06	833.0E-09
6	400.0E-12	500.0E-12	850.0E-12	7.2E-09	87.3E-09	74.6E-09	28.2E-09	7.4E-09	450.0E-12
Statistics									
Min	400.0E-12	450.0E-12	850.0E-12	7.2E-09	87.3E-09	74.6E-09	28.2E-09	7.4E-09	450.0E-12
Max	500.0E-12	600.0E-12	12.8E-09	354.5E-09	5.8E-06	24.1E-06	22.5E-06	20.0E-06	1.2E-06
Average	470.0E-12	500.0E-12	4.4E-09	150.3E-09	3.0E-06	10.6E-06	9.5E-06	7.8E-06	412.9E-09
Sigma	40.0E-12	54.8E-12	4.4E-09	141.4E-09	2.2E-06	8.8E-06	8.4E-06	7.7E-06	520.5E-09

Drift Calculation

IOZH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	0.0E+00	1.4E-09	60.2E-09	2.3E-06	6.4E-06	5.4E-06	3.8E-06	-50.0E-12
3	-	-50.0E-12	1.3E-09	43.0E-09	1.6E-06	5.0E-06	3.6E-06	1.6E-06	-50.0E-12
4	-	0.0E+00	12.4E-09	354.1E-09	5.7E-06	24.1E-06	22.5E-06	19.9E-06	1.2E-06
5	-	100.0E-12	4.2E-09	285.0E-09	5.3E-06	17.5E-06	16.0E-06	13.6E-06	832.5E-09
6	-	100.0E-12	450.0E-12	6.8E-09	86.9E-09	74.2E-09	27.8E-09	7.0E-09	50.0E-12
Average	-	30.0E-12	3.9E-09	149.8E-09	3.0E-06	10.6E-06	9.5E-06	7.8E-06	412.4E-09
Sigma	-	60.0E-12	4.4E-09	141.4E-09	2.2E-06	8.8E-06	8.4E-06	7.7E-06	520.5E-09

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196
	ADC128S102			National Semiconductor			Issue:	02

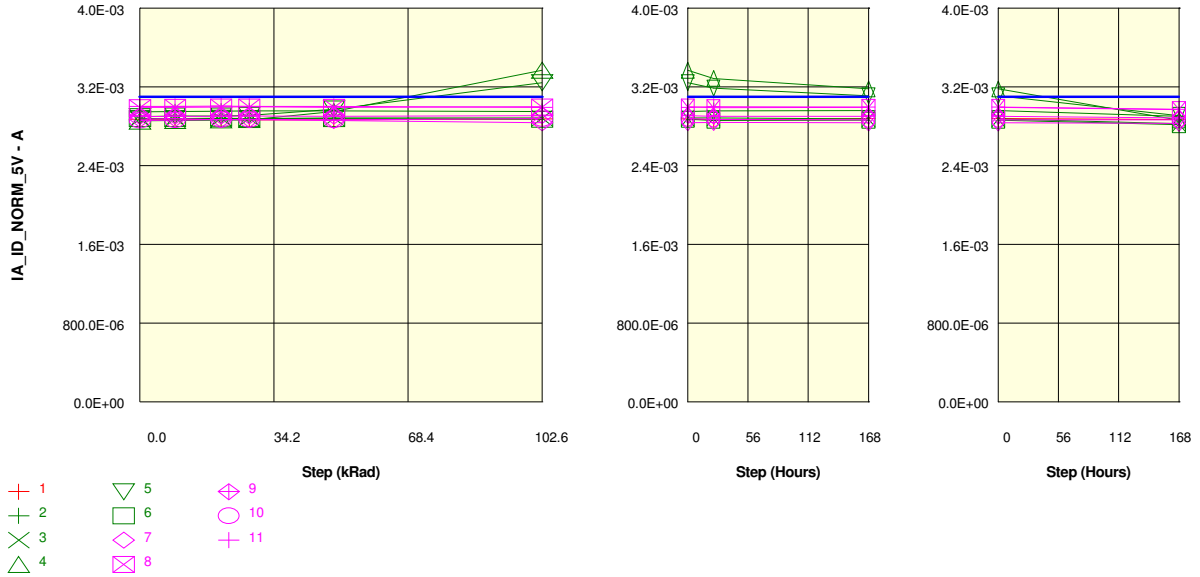
Measurements

IOZH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	550.0E-12	500.0E-12	400.0E-12	500.0E-12	550.0E-12	450.0E-12	450.0E-12	500.0E-12	450.0E-12
OFF samples									
7	600.0E-12	400.0E-12	500.0E-12	450.0E-12	450.0E-12	500.0E-12	550.0E-12	500.0E-12	450.0E-12
8	450.0E-12	400.0E-12	500.0E-12	350.0E-12	500.0E-12	500.0E-12	500.0E-12	400.0E-12	450.0E-12
9	500.0E-12	450.0E-12	600.0E-12	500.0E-12	500.0E-12	450.0E-12	400.0E-12	450.0E-12	450.0E-12
10	600.0E-12	450.0E-12	450.0E-12	450.0E-12	450.0E-12	450.0E-12	450.0E-12	450.0E-12	450.0E-12
11	400.0E-12	400.0E-12	450.0E-12	450.0E-12	450.0E-12	450.0E-12	450.0E-12	500.0E-12	450.0E-12
Statistics									
Min	400.0E-12	400.0E-12	450.0E-12	350.0E-12	450.0E-12	450.0E-12	400.0E-12	400.0E-12	450.0E-12
Max	600.0E-12	450.0E-12	600.0E-12	500.0E-12	500.0E-12	500.0E-12	550.0E-12	500.0E-12	450.0E-12
Average	510.0E-12	420.0E-12	500.0E-12	440.0E-12	470.0E-12	470.0E-12	470.0E-12	460.0E-12	450.0E-12
Sigma	80.0E-12	24.5E-12	54.8E-12	49.0E-12	24.5E-12	24.5E-12	51.0E-12	37.4E-12	2.2E-18

Drift Calculation

IOZH_5V_DOUT	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-200.0E-12	-100.0E-12	-150.0E-12	-150.0E-12	-100.0E-12	-50.0E-12	-100.0E-12	-150.0E-12
8	-	-50.0E-12	50.0E-12	-100.0E-12	50.0E-12	50.0E-12	50.0E-12	-50.0E-12	0.0E+00
9	-	-50.0E-12	100.0E-12	0.0E+00	0.0E+00	-50.0E-12	-100.0E-12	-50.0E-12	-50.0E-12
10	-	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12	-150.0E-12
11	-	0.0E+00	50.0E-12	50.0E-12	50.0E-12	50.0E-12	50.0E-12	100.0E-12	50.0E-12
Average	-	-90.0E-12	-10.0E-12	-70.0E-12	-40.0E-12	-40.0E-12	-40.0E-12	-50.0E-12	-60.0E-12
Sigma	-	73.5E-12	97.0E-12	81.2E-12	91.7E-12	80.0E-12	80.0E-12	83.7E-12	80.0E-12

Parameter : Total Supply Current Normal : IA_ID_NORM_5V
 Test conditions : fSample=1MSPS. fIN=40kHz. VIL=0V VIH=3.3V
 Unit : A
 Spec Limit Max : 3.1E-03
 Spec limits are represented in bold lines on the graphic.



Measurements

IA_ID_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03
ON samples									
2	2.9E-03	2.9E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	2.9E-03
3	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.8E-03
4	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	3.4E-03	3.3E-03	3.2E-03	2.9E-03
5	2.9E-03	2.9E-03	2.9E-03	2.9E-03	3.0E-03	3.2E-03	3.2E-03	3.1E-03	2.9E-03
6	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.8E-03
Statistics									
Min	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.8E-03
Max	2.9E-03	2.9E-03	3.0E-03	3.0E-03	3.0E-03	3.4E-03	3.3E-03	3.2E-03	2.9E-03
Average	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	3.1E-03	3.0E-03	3.0E-03	2.9E-03
Sigma	31.9E-06	30.8E-06	31.3E-06	32.3E-06	39.9E-06	203.6E-06	170.8E-06	127.1E-06	37.4E-06

Drift Calculation

IA_ID_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	1.0E-06	5.3E-06	8.7E-06	8.8E-06	2.9E-06	7.8E-06	10.8E-06	-48.0E-06
3	-	3.0E-06	6.3E-06	3.5E-06	7.4E-06	7.1E-06	8.5E-06	-200.0E-09	-49.8E-06
4	-	6.7E-06	9.3E-06	14.2E-06	95.1E-06	515.2E-06	432.9E-06	326.7E-06	9.7E-06
5	-	6.3E-06	6.7E-06	12.3E-06	76.4E-06	344.3E-06	289.2E-06	211.5E-06	10.6E-06
6	-	580.0E-09	1.6E-06	480.0E-09	-40.0E-09	-6.3E-06	-17.6E-06	-16.3E-06	-61.4E-06
Average	-	3.5E-06	5.8E-06	7.8E-06	37.5E-06	172.6E-06	144.2E-06	106.5E-06	-27.8E-06
Sigma	-	2.6E-06	2.5E-06	5.2E-06	39.9E-06	216.8E-06	183.1E-06	138.0E-06	31.3E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

IA_ID_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03
OFF samples									
7	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.8E-03	2.8E-03	2.8E-03	2.8E-03
8	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
9	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03
10	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03
11	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
Statistics									
Min	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.8E-03	2.8E-03	2.8E-03	2.8E-03
Max	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03	3.0E-03
Average	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03	2.9E-03
Sigma	60.3E-06	59.0E-06	61.0E-06	59.8E-06	61.4E-06	63.2E-06	64.2E-06	65.3E-06	57.8E-06

Drift Calculation

IA_ID_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	5.2E-06	-4.1E-06	-860.0E-09	-11.9E-06	-34.6E-06	-31.6E-06	-36.7E-06	-40.6E-06
8	-	2.2E-06	5.0E-06	5.4E-06	2.3E-06	5.9E-06	-1.1E-06	1.2E-06	-20.5E-06
9	-	4.4E-06	4.6E-06	5.4E-06	4.4E-06	10.9E-06	1.0E-06	2.8E-06	-15.6E-06
10	-	5.2E-06	10.5E-06	8.7E-06	7.2E-06	18.4E-06	10.8E-06	9.3E-06	7.4E-06
11	-	2.5E-06	5.4E-06	1.9E-06	680.0E-09	-9.4E-06	-1.9E-06	-5.3E-06	-26.1E-06
Average	-	3.9E-06	4.3E-06	4.1E-06	552.0E-09	-1.7E-06	-4.6E-06	-5.7E-06	-19.1E-06
Sigma	-	1.3E-06	4.7E-06	3.3E-06	6.6E-06	18.8E-06	14.3E-06	16.2E-06	15.7E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT		Ref.:	HRX/TID/1196
	ADC128S102	National Semiconductor	Issue:	02

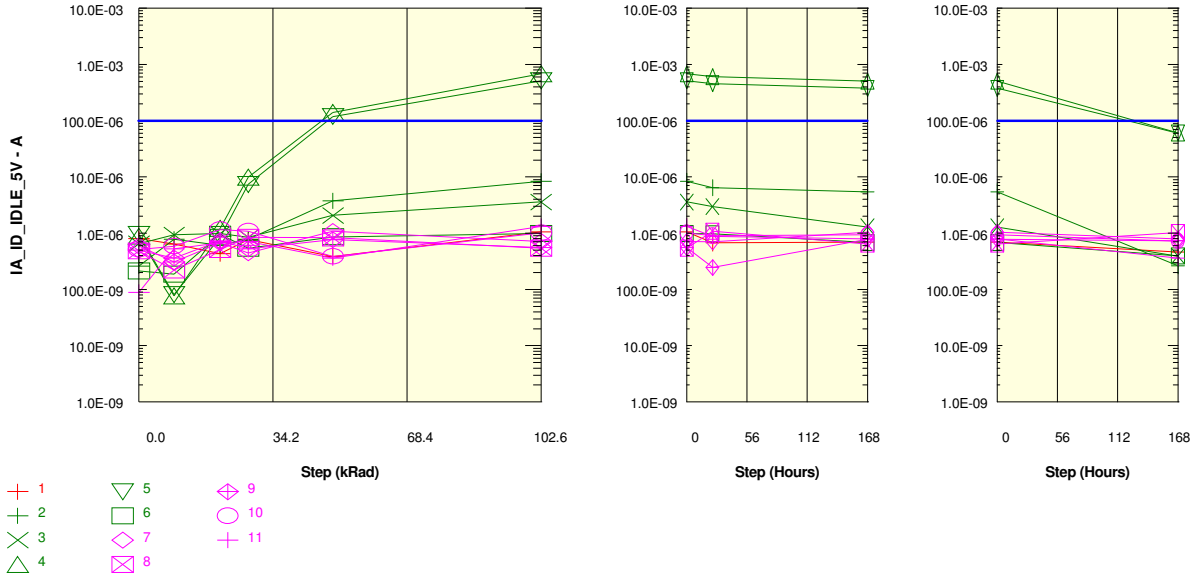
Parameter : Total supply Current Shutdown : IA_ID_IDLE_5V

Test conditions : fSCLK=0kSPS

Unit : A

Spec Limit Max : 100.0E-06

Spec limits are represented in bold lines on the graphic.



Measurements

IA_ID_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	806.0E-09	644.0E-09	431.6E-09	770.0E-09	388.0E-09	1.1E-06	672.0E-09	698.0E-09	464.0E-09
ON samples									
2	262.0E-09	777.8E-09	607.0E-09	780.2E-09	3.8E-06	8.4E-06	6.4E-06	5.5E-06	264.2E-09
3	650.0E-09	932.2E-09	984.4E-09	844.0E-09	2.1E-06	3.6E-06	3.0E-06	1.3E-06	393.2E-09
4	884.6E-09	78.0E-09	1.2E-06	9.9E-06	139.4E-06	680.1E-06	604.9E-06	506.2E-06	60.7E-06
5	954.8E-09	82.0E-09	848.0E-09	7.4E-06	118.1E-06	511.5E-06	453.9E-06	375.6E-06	60.1E-06
6	214.0E-09	188.0E-09	950.2E-09	542.0E-09	862.0E-09	990.4E-09	980.0E-09	684.2E-09	397.2E-09
Statistics									
Min	214.0E-09	78.0E-09	607.0E-09	542.0E-09	862.0E-09	990.4E-09	980.0E-09	684.2E-09	264.2E-09
Max	954.8E-09	932.2E-09	1.2E-06	9.9E-06	139.4E-06	680.1E-06	604.9E-06	506.2E-06	60.7E-06
Average	593.1E-09	411.6E-09	921.9E-09	3.9E-06	52.8E-06	240.9E-06	213.8E-06	177.8E-06	24.4E-06
Sigma	307.4E-09	367.4E-09	199.1E-09	4.0E-06	62.4E-06	294.6E-06	262.1E-06	218.7E-06	29.4E-06

Drift Calculation

IA_ID_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	515.8E-09	345.0E-09	518.2E-09	3.5E-06	8.1E-06	6.2E-06	5.2E-06	2.2E-09
3	-	282.2E-09	334.4E-09	194.0E-09	1.4E-06	2.9E-06	2.3E-06	644.6E-09	-256.8E-09
4	-	-806.6E-09	335.4E-09	9.0E-06	138.5E-06	679.2E-06	604.0E-06	505.3E-06	59.8E-06
5	-	-872.8E-09	-106.8E-09	6.4E-06	117.2E-06	510.6E-06	453.0E-06	374.6E-06	59.1E-06
6	-	-26.0E-09	736.2E-09	328.0E-09	648.0E-09	776.4E-09	766.0E-09	470.2E-09	183.2E-09
Average	-	-181.5E-09	328.8E-09	3.3E-06	52.3E-06	240.3E-06	213.3E-06	177.3E-06	23.8E-06
Sigma	-	564.6E-09	266.9E-09	3.7E-06	62.1E-06	294.4E-06	261.8E-06	218.5E-06	29.1E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

IA_ID_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	806.0E-09	644.0E-09	431.6E-09	770.0E-09	388.0E-09	1.1E-06	672.0E-09	698.0E-09	464.0E-09
OFF samples									
7	595.4E-09	310.0E-09	674.4E-09	450.0E-09	1.1E-06	713.0E-09	706.2E-09	1.0E-06	790.4E-09
8	483.4E-09	224.0E-09	516.0E-09	848.0E-09	830.0E-09	542.0E-09	1.1E-06	643.8E-09	1.0E-06
9	500.0E-09	362.0E-09	730.0E-09	526.0E-09	768.8E-09	556.0E-09	246.0E-09	781.2E-09	734.0E-09
10	518.0E-09	588.0E-09	1.2E-06	1.1E-06	386.8E-09	1.0E-06	899.8E-09	934.0E-09	725.8E-09
11	90.0E-09	526.0E-09	679.4E-09	714.0E-09	364.0E-09	1.3E-06	882.6E-09	790.8E-09	364.0E-09
Statistics									
Min	90.0E-09	224.0E-09	516.0E-09	450.0E-09	364.0E-09	542.0E-09	246.0E-09	643.8E-09	364.0E-09
Max	595.4E-09	588.0E-09	1.2E-06	1.1E-06	1.1E-06	1.3E-06	1.1E-06	1.0E-06	1.0E-06
Average	437.4E-09	402.0E-09	750.8E-09	724.4E-09	685.5E-09	830.1E-09	764.1E-09	837.6E-09	729.1E-09
Sigma	177.9E-09	135.4E-09	214.0E-09	227.8E-09	273.7E-09	299.7E-09	285.6E-09	135.9E-09	213.8E-09

Drift Calculation

IA_ID_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-285.4E-09	79.0E-09	-145.4E-09	482.6E-09	117.6E-09	110.8E-09	442.6E-09	195.0E-09
8	-	-259.4E-09	32.6E-09	364.6E-09	346.6E-09	58.6E-09	602.6E-09	160.4E-09	548.0E-09
9	-	-138.0E-09	230.0E-09	26.0E-09	268.8E-09	56.0E-09	-254.0E-09	281.2E-09	234.0E-09
10	-	70.0E-09	636.0E-09	566.0E-09	-131.2E-09	499.6E-09	381.8E-09	416.0E-09	207.8E-09
11	-	436.0E-09	589.4E-09	624.0E-09	274.0E-09	1.2E-06	792.6E-09	700.8E-09	274.0E-09
Average	-	-35.4E-09	313.4E-09	287.0E-09	248.2E-09	392.8E-09	326.8E-09	400.2E-09	291.8E-09
Sigma	-	267.0E-09	253.4E-09	300.8E-09	204.8E-09	450.9E-09	368.8E-09	181.1E-09	130.9E-09

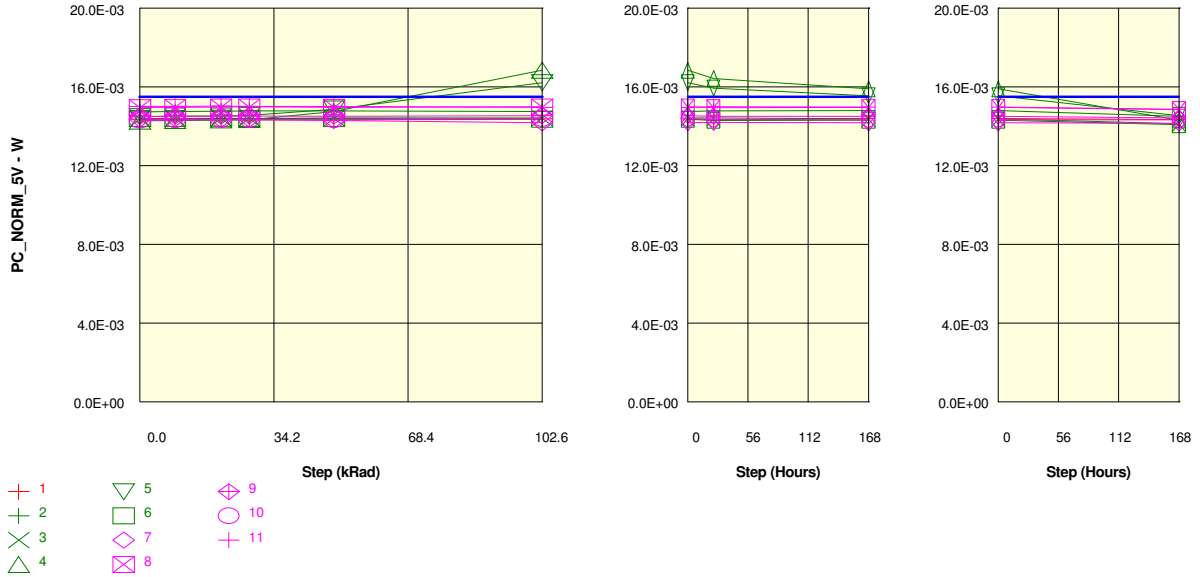
Parameter : Power Consumption Normal : PC_NORM_5V

Test conditions : fSample=1MSPS. fIN=40kHz

Unit : W

Spec Limit Max : 15.5E-03

Spec limits are represented in bold lines on the graphic.



Measurements

PC_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	14.4E-03	14.4E-03	14.4E-03	14.3E-03	14.3E-03	14.4E-03	14.3E-03	14.4E-03	14.3E-03
ON samples									
2	14.7E-03	14.7E-03	14.8E-03	14.8E-03	14.8E-03	14.8E-03	14.8E-03	14.8E-03	14.5E-03
3	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.1E-03
4	14.3E-03	14.3E-03	14.3E-03	14.3E-03	14.7E-03	16.8E-03	16.4E-03	15.9E-03	14.3E-03
5	14.5E-03	14.5E-03	14.5E-03	14.6E-03	14.9E-03	16.2E-03	15.9E-03	15.6E-03	14.5E-03
6	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.4E-03	14.3E-03	14.3E-03	14.1E-03
Statistics									
Min	14.3E-03	14.3E-03	14.3E-03	14.3E-03	14.4E-03	14.4E-03	14.3E-03	14.3E-03	14.1E-03
Max	14.7E-03	14.7E-03	14.8E-03	14.8E-03	14.9E-03	16.8E-03	16.4E-03	15.9E-03	14.5E-03
Average	14.5E-03	14.5E-03	14.5E-03	14.5E-03	14.6E-03	15.3E-03	15.2E-03	15.0E-03	14.3E-03
Sigma	159.5E-06	154.0E-06	156.6E-06	161.7E-06	199.3E-06	1.0E-03	854.2E-06	635.6E-06	187.1E-06

Drift Calculation

PC_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	5.2E-06	26.6E-06	43.4E-06	44.2E-06	14.3E-06	39.2E-06	53.9E-06	-240.2E-06
3	-	14.9E-06	31.5E-06	17.6E-06	37.0E-06	35.4E-06	42.6E-06	-1000.0E-09	-249.2E-06
4	-	33.3E-06	46.6E-06	70.9E-06	475.7E-06	2.6E-03	2.2E-03	1.6E-03	48.4E-06
5	-	31.7E-06	33.3E-06	61.6E-06	382.0E-06	1.7E-03	1.4E-03	1.1E-03	52.9E-06
6	-	2.9E-06	8.1E-06	2.4E-06	-200.0E-09	-31.3E-06	-88.0E-06	-81.6E-06	-307.2E-06
Average	-	17.6E-06	29.2E-06	39.2E-06	187.7E-06	863.2E-06	720.9E-06	532.5E-06	-139.1E-06
Sigma	-	12.8E-06	12.5E-06	25.9E-06	199.7E-06	1.1E-03	915.3E-06	689.8E-06	156.6E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT					Ref.:	HRX/TID/1196
	ADC128S102		National Semiconductor			Issue:	02

Measurements

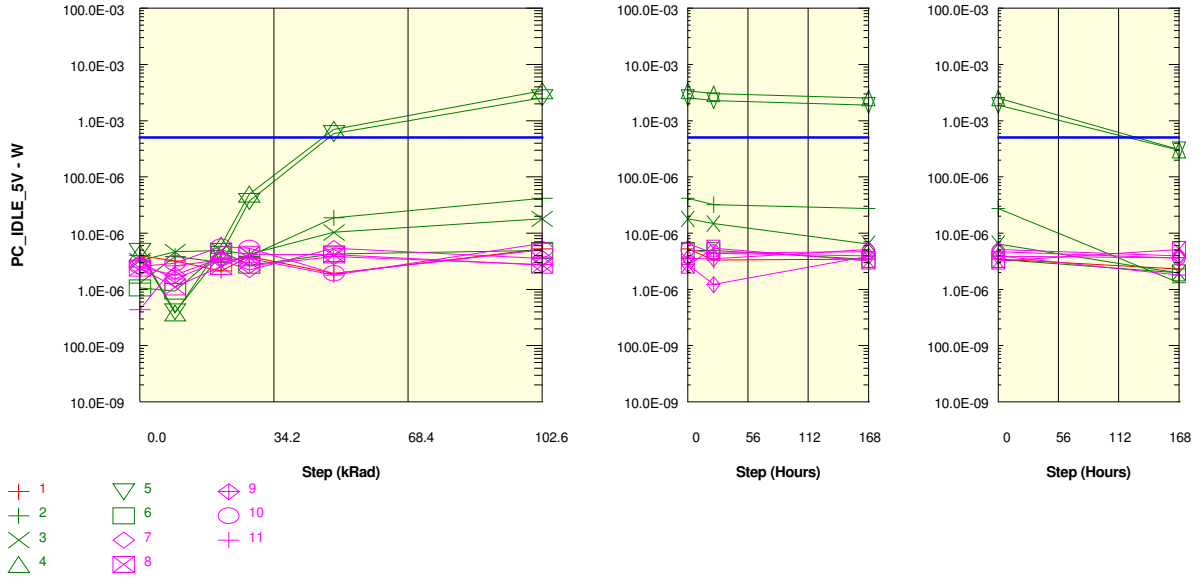
PC_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	14.4E-03	14.4E-03	14.4E-03	14.3E-03	14.3E-03	14.4E-03	14.3E-03	14.4E-03	14.3E-03
OFF samples									
7	14.4E-03	14.4E-03	14.3E-03	14.4E-03	14.3E-03	14.2E-03	14.2E-03	14.2E-03	14.2E-03
8	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	14.9E-03	15.0E-03	14.9E-03
9	14.5E-03	14.5E-03	14.5E-03	14.5E-03	14.5E-03	14.5E-03	14.5E-03	14.5E-03	14.4E-03
10	14.3E-03	14.3E-03	14.3E-03	14.3E-03	14.3E-03	14.4E-03	14.3E-03	14.3E-03	14.3E-03
11	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	14.9E-03
Statistics									
Min	14.3E-03	14.3E-03	14.3E-03	14.3E-03	14.3E-03	14.2E-03	14.2E-03	14.2E-03	14.2E-03
Max	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	15.0E-03	14.9E-03
Average	14.6E-03	14.6E-03	14.6E-03	14.6E-03	14.6E-03	14.6E-03	14.6E-03	14.6E-03	14.5E-03
Sigma	301.4E-06	294.9E-06	304.9E-06	299.2E-06	307.2E-06	315.8E-06	320.9E-06	326.5E-06	289.0E-06

Drift Calculation

PC_NORM_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	25.8E-06	-20.6E-06	-4.3E-06	-59.3E-06	-173.0E-06	-158.1E-06	-183.6E-06	-203.0E-06
8	-	10.8E-06	25.0E-06	27.0E-06	11.7E-06	29.7E-06	-5.5E-06	6.0E-06	-102.7E-06
9	-	21.8E-06	22.8E-06	26.9E-06	22.1E-06	54.7E-06	5.0E-06	13.8E-06	-77.9E-06
10	-	26.0E-06	52.3E-06	43.3E-06	35.9E-06	92.0E-06	54.0E-06	46.7E-06	37.1E-06
11	-	12.4E-06	26.9E-06	9.3E-06	3.4E-06	-46.8E-06	-9.5E-06	-26.4E-06	-130.7E-06
Average	-	19.4E-06	21.3E-06	20.4E-06	2.8E-06	-8.7E-06	-22.8E-06	-28.7E-06	-95.4E-06
Sigma	-	6.5E-06	23.5E-06	16.4E-06	32.9E-06	93.9E-06	71.3E-06	80.9E-06	78.4E-06

Parameter : Power Consumption Shutdown : PC_IDLE_5V
 Test conditions : fSCLK=0kSPS

Unit : W
 Spec Limit Max : 500.0E-06
 Spec limits are represented in bold lines on the graphic.



Measurements

PC_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1 REF	4.0E-06	3.2E-06	2.2E-06	3.9E-06	1.9E-06	5.3E-06	3.4E-06	3.5E-06	2.3E-06
ON samples									
2	1.3E-06	3.9E-06	3.0E-06	3.9E-06	18.8E-06	41.8E-06	32.2E-06	27.4E-06	1.3E-06
3	3.3E-06	4.7E-06	4.9E-06	4.2E-06	10.4E-06	18.0E-06	14.8E-06	6.5E-06	2.0E-06
4	4.4E-06	390.0E-09	6.1E-06	49.4E-06	697.0E-06	3.4E-03	3.0E-03	2.5E-03	303.4E-06
5	4.8E-06	410.0E-09	4.2E-06	36.9E-06	590.7E-06	2.6E-03	2.3E-03	1.9E-03	300.4E-06
6	1.1E-06	940.0E-09	4.8E-06	2.7E-06	4.3E-06	5.0E-06	4.9E-06	3.4E-06	2.0E-06
Statistics									
Min	1.1E-06	390.0E-09	3.0E-06	2.7E-06	4.3E-06	5.0E-06	4.9E-06	3.4E-06	1.3E-06
Max	4.8E-06	4.7E-06	6.1E-06	49.4E-06	697.0E-06	3.4E-03	3.0E-03	2.5E-03	303.4E-06
Average	3.0E-06	2.1E-06	4.6E-06	19.4E-06	264.2E-06	1.2E-03	1.1E-03	889.2E-06	121.8E-06
Sigma	1.5E-06	1.8E-06	995.5E-09	19.8E-06	311.8E-06	1.5E-03	1.3E-03	1.1E-03	147.0E-06

Drift Calculation

PC_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
ON samples									
2	-	2.6E-06	1.7E-06	2.6E-06	17.5E-06	40.5E-06	30.9E-06	26.0E-06	11.0E-09
3	-	1.4E-06	1.7E-06	970.0E-09	7.1E-06	14.7E-06	11.6E-06	3.2E-06	-1.3E-06
4	-	-4.0E-06	1.7E-06	44.9E-06	692.6E-06	3.4E-03	3.0E-03	2.5E-03	299.0E-06
5	-	-4.4E-06	-534.0E-09	32.1E-06	586.0E-06	2.6E-03	2.3E-03	1.9E-03	295.7E-06
6	-	-130.0E-09	3.7E-06	1.6E-06	3.2E-06	3.9E-06	3.8E-06	2.4E-06	916.0E-09
Average	-	-907.4E-09	1.6E-06	16.4E-06	261.3E-06	1.2E-03	1.1E-03	886.3E-06	118.9E-06
Sigma	-	2.8E-06	1.3E-06	18.5E-06	310.5E-06	1.5E-03	1.3E-03	1.1E-03	145.7E-06

Hirex Engineering	TOTAL IONIZING DOSE TEST REPORT						Ref.:	HRX/TID/1196	
	ADC128S102			National Semiconductor			Issue:	02	

Measurements

PC_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
1_REF	4.0E-06	3.2E-06	2.2E-06	3.9E-06	1.9E-06	5.3E-06	3.4E-06	3.5E-06	2.3E-06
OFF samples									
7	3.0E-06	1.6E-06	3.4E-06	2.3E-06	5.4E-06	3.6E-06	3.5E-06	5.2E-06	4.0E-06
8	2.4E-06	1.1E-06	2.6E-06	4.2E-06	4.2E-06	2.7E-06	5.4E-06	3.2E-06	5.2E-06
9	2.5E-06	1.8E-06	3.7E-06	2.6E-06	3.8E-06	2.8E-06	1.2E-06	3.9E-06	3.7E-06
10	2.6E-06	2.9E-06	5.8E-06	5.4E-06	1.9E-06	5.1E-06	4.5E-06	4.7E-06	3.6E-06
11	450.0E-09	2.6E-06	3.4E-06	3.6E-06	1.8E-06	6.6E-06	4.4E-06	4.0E-06	1.8E-06
Statistics									
Min	450.0E-09	1.1E-06	2.6E-06	2.3E-06	1.8E-06	2.7E-06	1.2E-06	3.2E-06	1.8E-06
Max	3.0E-06	2.9E-06	5.8E-06	5.4E-06	5.4E-06	6.6E-06	5.4E-06	5.2E-06	5.2E-06
Average	2.2E-06	2.0E-06	3.8E-06	3.6E-06	3.4E-06	4.2E-06	3.8E-06	4.2E-06	3.6E-06
Sigma	889.3E-09	677.2E-09	1.1E-06	1.1E-06	1.4E-06	1.5E-06	1.4E-06	679.6E-09	1.1E-06

Drift Calculation

PC_IDLE_5V	0 kRad	9 kRad	20.7 kRad	27.9 kRad	49.5 kRad	102.6 kRad	24 Hours	168 Hours	168 Hours
OFF samples									
7	-	-1.4E-06	395.0E-09	-727.0E-09	2.4E-06	588.0E-09	554.0E-09	2.2E-06	975.0E-09
8	-	-1.3E-06	163.0E-09	1.8E-06	1.7E-06	293.0E-09	3.0E-06	802.0E-09	2.7E-06
9	-	-690.0E-09	1.2E-06	130.0E-09	1.3E-06	280.0E-09	-1.3E-06	1.4E-06	1.2E-06
10	-	350.0E-09	3.2E-06	2.8E-06	-656.0E-09	2.5E-06	1.9E-06	2.1E-06	1.0E-06
11	-	2.2E-06	2.9E-06	3.1E-06	1.4E-06	6.2E-06	4.0E-06	3.5E-06	1.4E-06
Average	-	-176.8E-09	1.6E-06	1.4E-06	1.2E-06	2.0E-06	1.6E-06	2.0E-06	1.5E-06
Sigma	-	1.3E-06	1.3E-06	1.5E-06	1.0E-06	2.3E-06	1.8E-06	905.7E-09	654.7E-09