

TOTAL DOSE RADIATION TEST REPORT

ESA study: "Survey of Critical Components for 150 kRad Power Systems"

ESTEC Contract N° 22831/09/NL/AF refers




Contract extension up to 400 kRad as per CCN: ATGSP-CN-0004 IS. 3

Final Report

<p>Part Type : OLH7000</p> <p>Package : CERDIP-8</p> <p>Description : Linear Optocoupler</p> <p>Manufacturer : Isolink Inc</p>
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Alter Technology Purchase Order N° ATGSP-TL-09-JC-CO-9 dated 11/27/2009

Alter Technology Project Manager: David NUNEZ

Hirex reference :	HRX/TID/1020	Issue : 01	Date :	January 20 th , 2012
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Hirex Engineering	Total Dose Radiation Test Report		Ref.:	HRX/TID/1020
	OLH7000	Isolink Inc	Issue:	01

TOTAL DOSE RADIATION TEST REPORT
on
Isolink Inc
OLH7000
Linear Optocoupler

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1 Introduction

In the scope of the ESA study: “Survey of Critical Components for 150 kRad Power Systems”, a total dose characterization test of the Isolink Inc OLH7000, Linear Optocoupler has been performed with an accumulated dose of about 416.7 Krad(Si) at different dose rates of 36, 100 & 300 rad(Si)/hour, in response to Alter Technology purchase order reference ATGSP-TL-09-JC-CO-9.

An Interim report, HRX/TID/0936 Issue 01, corresponding to the irradiation up to 155.7 Krad(Si) steps has been already provided.

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 Alter Technology.

Test has been performed in accordance with Hirex Engineering Radiation Test Plan HRX/SPE/0240 issue 3 dated 09/24/2010.

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 Radiation Test Plan: HRX/SPE/0240 issue 3 dated 09/24/2010
- Alter Technology Proposal: ATGSP-OF-648/2009 Issue 1
- Minutes of Meeting: MM-SRP-ATG-0001 dated 29/10/2009
- Hirex internal specification: Total Ionizing dose test general procedure.

2.2 Reference Documents

- Isolink Inc OLH7000 Hermetic Linear Optocoupler datasheet

3 Test Samples

13 samples of the OLH7000 device were tested (6 ON + 6 OFF + 1 control sample).

12 samples (including the 6 samples already submitted to protons test: see report HRX/TID/0883) have been biased according to the flow diagram given in Figure 1.

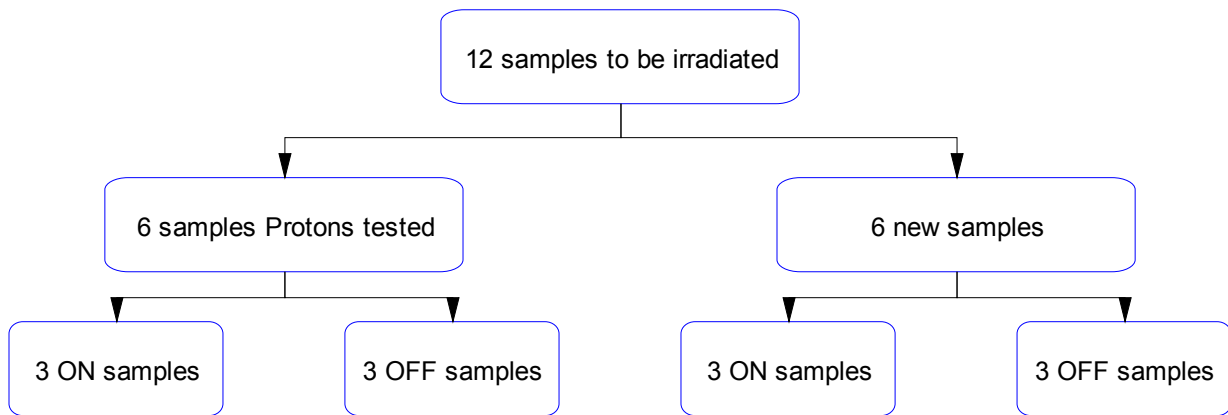


Figure 1 : Samples bias flow diagram

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Samples were allocated into the bias conditions during exposures and annealing as provided in the following table. The different samples groups are also identified for an easier plots reading.

SN attributed by Hirex	Samples Allocation	Samples Group Naming
111	Control sample	REF
112	Biased ON	ON_PROTON
113	Biased ON	ON_PROTON
114	Biased ON	ON_PROTON
115	Biased OFF	OFF_PROTON
116	Biased OFF	OFF_PROTON
117	Biased OFF	OFF_PROTON
118	Biased OFF	OFF_TID
121	Biased OFF	OFF_TID
122	Biased OFF	OFF_TID
123	Biased ON	ON_TID
124	Biased ON	ON_TID
125	Biased ON	ON_TID

Identification of the OLH7000 is given below:

Part Number: OLH7000

Top Marking: ISOLINK OLH7000-0011 delta 0721

Bottom Marking: -

Date Code: 0721

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4 Experimental Conditions

4.1 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.

The dose received by the devices has been controlled 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
kRad	kRad	Rad/h	Hours	°C
0	0			
10	10.8	36		Room
20	20.7	36		Room
50	55.6	36		Room
100	102.6	36		Room
150	155.7	100 [1]		Room
200	212.4	300 [1]		Room
250	268.2	300 [1]		Room
300	322.2	300 [1]		Room
350	374.2	300 [1]		Room
400	416.7	300 [1]		Room
-	-	-	24	Room
-	-	-	168	100

Note [1]: Due to the maintenance period planned at UCL at the end of December and in order to perform subsequent requested exposures steps up to 400 Krad(Si), the dose rate of several steps have been changed, in agreement with ESA, from 36 rad(Si)/h to 100 rad(Si)/h and from 100 rad(Si)/h to 300 rad(Si)/h as indicated.

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4.2 Bias during Dose Exposures and Measurements conditions

4.2.1 Bias conditions

During exposures test board allowed to bias 6 samples in accordance with the electrical circuit provided in Figure 2.
 6 other samples were biased OFF with all pins connected to ground.

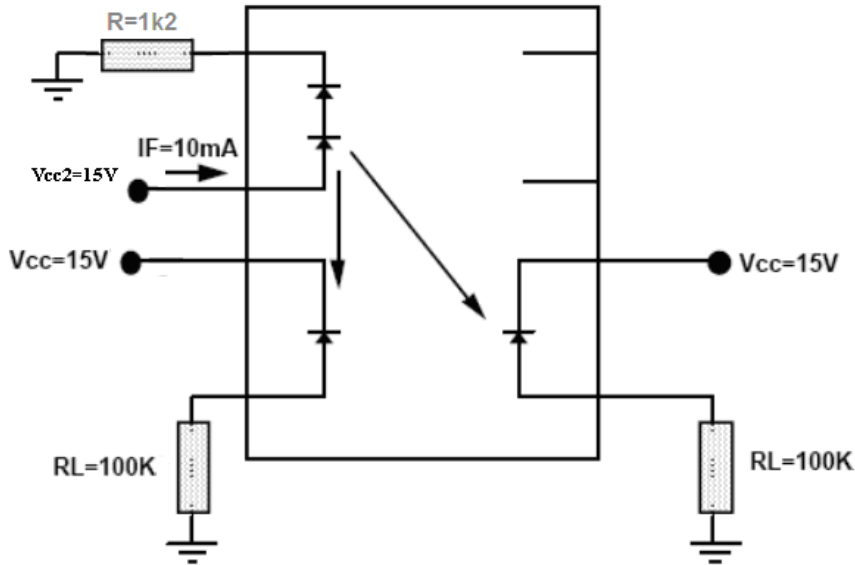


Figure 2 : Bias Conditions during Irradiation Exposures

4.2.2 Electrical Measurements

Electrical parameters test program principle for OLH7000 is provided in Figure 3.

A HP4142 DC tester was used to perform required measurements

A dedicated test fixture was designed to ensure proper measurement conditions. In addition a faraday cage was used to ensure optimum conditions for low level measurements.

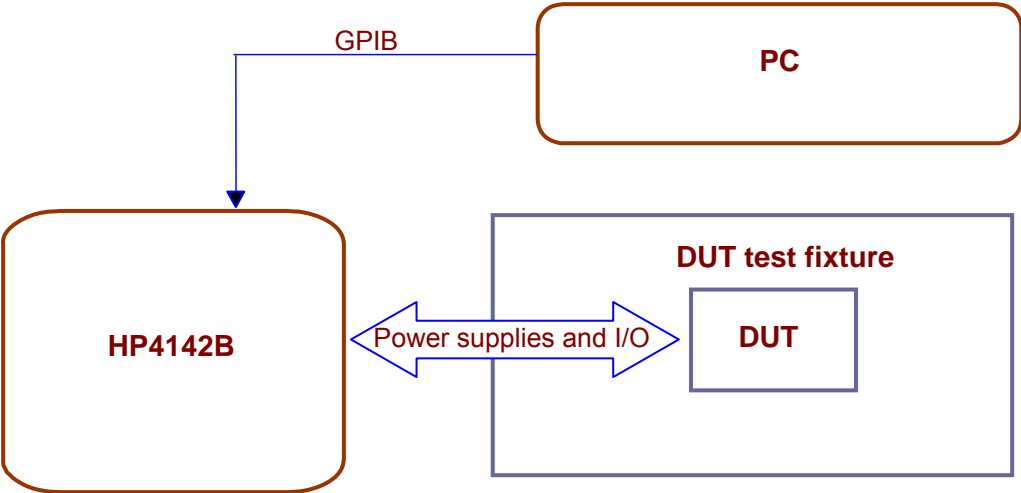


Figure 3 : OLH7000 test program principle

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Electrical parameters test conditions and limits used for performing this test are given in Table 1.

Parameters	Description	Conditions	Spec			Unit	Temp.
			Min	Typ	Max		
VF	Forward Voltage	IF = 10 mA	-	2.5	3.3	V	Room
VR	Reverse Voltage	IR = 100µA	5	-	-	V	Room
ID	Dark Current	VR = 15 V, IF = 0 mA	-	1	25	nA	Room
VOC	Open Circuit Voltage	IF = 10 mA	-	0.5	-	V	Room
K1	Servo Current Gain (IP1/IF)	IF = 10 mA Vdet = -15 V	0.003 5	0.005 0	0.006 5	-	Room
			-	-	-		-35°C &+100°C [1]
IP1	Servo Current	IF = 10 mA Vdet = -15 V	-	50	-	µA	Room
			-	-	-		-35°C &+100°C [1]
K2	Forward Current Gain (IP2/IF)	IF = 10 mA Vdet = -15 V	0.003 5	0.005 0	0.006 5	-	Room
			-	-	-		-35°C &+100°C [1]
IP2	Forward Current	IF = 10 mA Vdet = -15 V	-	50	-	µA	Room
			-	-	-		-35°C &+100°C [1]
K3	Transfer Gain (K2/K1)	IF = 10 mA Vdet = -15 V	0.75	1	1.25	-	Room
			-	-	-		-35°C &+100°C [1]

[1]: These parameters have been measured at Room temperature at all steps of testing, and also at 100°C and -35°C at initial step and after Annealing. No limit applicable at high and low temperatures.

Table 1 : Measured electrical parameters

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5 Conclusion

A Total Ionizing Dose characterization test was carried out by Hirex Engineering under Alter Technology contract on the Isolink Inc OLH7000 Linear Optocoupler in Cerdip-8 package.

12 samples plus one control sample were used during testing. They were exposed to radiation using different dose rates of 36, 100 & 300 rad(Si)/hour at room temperature.

TID samples have been tested for some parameters at high temperature (100°C) and at low temperature (-35°C). Corresponding electrical measurements are provided in Appendix 1.

Forward Current Gain parameters K1 and K2 were found above maximum specification limits specified at initial measurements step. After exposures, K1 and K2 were still greater than maximum specified values. No significant drift was observed all along exposure and annealing.

All other parameters remained within specification limits all along testing.

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6 Test Results

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

Statistics are provided separately for biased ON & biased OFF samples of each group.

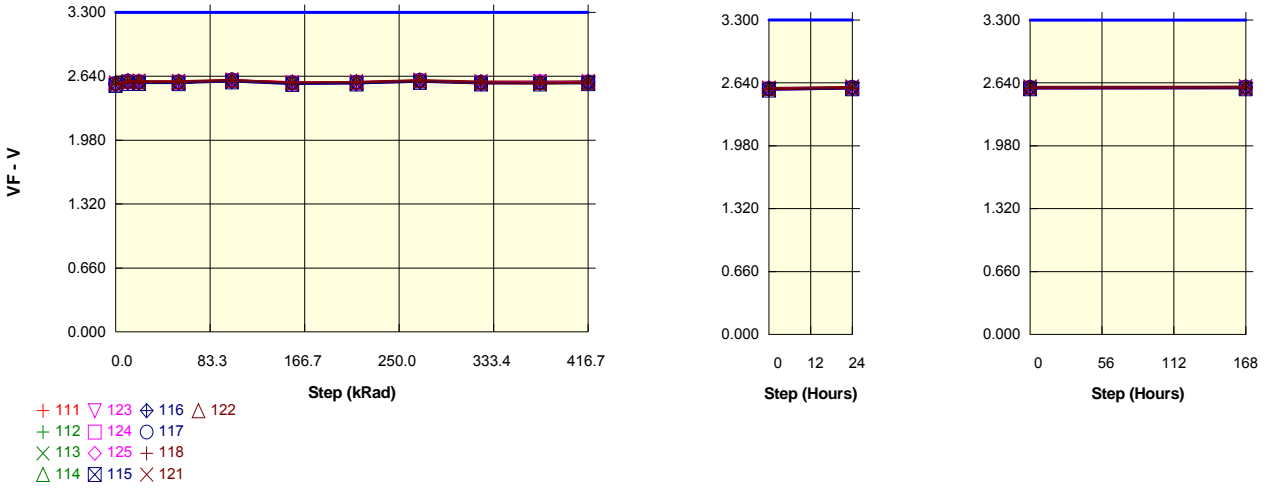
For each parameter, a drift calculation table is provided computing the drift between a given exposure step with respect to initial readings:

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

For the particular case of transistors, drift calculation table for Hfe parameters will refer to 1/Hfe:

$$\Delta(1/hFE) = (1/hFE_{\text{POSTRAD}}) - (1/hFE_{\text{PRERAD}})$$

Parameter : Forward Voltage : VF
 Test conditions : IF = 10mA
 Unit : V
 Spec Limit Max : 3.300
 Spec limits are represented in bold lines on the graphic.



Measurements

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	2.572	2.601	2.585	2.588	2.602	2.586	2.582	2.582	2.588	2.587	2.580	2.594	2.605
ON PROTON samples													
112	2.558	2.586	2.582	2.586	2.598	2.573	2.578	2.595	2.579	2.580	2.593	2.592	2.597
113	2.563	2.589	2.586	2.586	2.600	2.574	2.582	2.597	2.580	2.587	2.583	2.593	2.598
114	2.560	2.587	2.582	2.577	2.596	2.573	2.574	2.593	2.576	2.586	2.582	2.589	2.594
Statistics													
Min	2.558	2.586	2.582	2.577	2.596	2.573	2.574	2.593	2.576	2.580	2.582	2.589	2.594
Max	2.563	2.589	2.586	2.586	2.600	2.574	2.582	2.597	2.580	2.587	2.593	2.593	2.598
Average	2.560	2.587	2.583	2.583	2.598	2.573	2.578	2.595	2.578	2.584	2.586	2.591	2.597
Sigma	0.002	0.001	0.002	0.004	0.002	0.000	0.003	0.002	0.002	0.003	0.005	0.002	0.002

Drift Calculation

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON PROTON samples													
112	-	28.8E-03	24.4E-03	28.0E-03	40.0E-03	15.2E-03	20.8E-03	37.6E-03	21.2E-03	22.8E-03	35.2E-03	34.0E-03	39.2E-03
113	-	26.0E-03	22.8E-03	22.0E-03	36.8E-03	11.2E-03	19.2E-03	34.4E-03	17.6E-03	24.4E-03	20.0E-03	30.4E-03	35.6E-03
114	-	27.6E-03	22.4E-03	17.6E-03	36.0E-03	13.6E-03	14.8E-03	33.6E-03	16.0E-03	26.0E-03	22.4E-03	29.6E-03	34.8E-03
Average	-	27.5E-03	23.2E-03	22.5E-03	37.6E-03	13.3E-03	18.3E-03	35.2E-03	18.3E-03	24.4E-03	25.9E-03	31.3E-03	36.5E-03
Sigma	-	1.1E-03	864.1E-06	4.3E-03	1.7E-03	1.6E-03	2.5E-03	1.7E-03	2.2E-03	1.3E-03	6.7E-03	1.9E-03	1.9E-03

Measurements

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	2.572	2.601	2.585	2.588	2.602	2.586	2.582	2.582	2.588	2.587	2.580	2.594	2.605
ON TID samples													
123	2.548	2.573	2.570	2.572	2.583	2.558	2.563	2.580	2.561	2.569	2.566	2.577	2.580
124	2.560	2.582	2.581	2.580	2.595	2.568	2.574	2.592	2.572	2.582	2.580	2.588	2.590
125	2.574	2.595	2.590	2.590	2.607	2.583	2.585	2.603	2.586	2.590	2.590	2.600	2.602
Statistics													
Min	2.548	2.573	2.570	2.572	2.583	2.558	2.563	2.580	2.561	2.569	2.566	2.577	2.580
Max	2.574	2.595	2.590	2.590	2.607	2.583	2.585	2.603	2.586	2.590	2.590	2.600	2.602
Average	2.561	2.584	2.580	2.581	2.595	2.570	2.574	2.592	2.573	2.580	2.579	2.588	2.591
Sigma	0.010	0.009	0.008	0.007	0.010	0.010	0.009	0.009	0.010	0.009	0.010	0.010	0.009

Drift Calculation

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON TID samples													
123	-	24.8E-03	21.2E-03	23.6E-03	34.8E-03	10.0E-03	14.4E-03	32.0E-03	12.8E-03	20.4E-03	18.0E-03	28.4E-03	31.2E-03
124	-	22.0E-03	20.8E-03	20.0E-03	34.4E-03	8.0E-03	13.6E-03	31.2E-03	12.0E-03	21.2E-03	19.6E-03	27.2E-03	30.0E-03
125	-	21.2E-03	16.0E-03	15.6E-03	32.8E-03	8.8E-03	11.2E-03	28.8E-03	12.0E-03	15.6E-03	16.0E-03	26.4E-03	27.6E-03
Average	-	22.7E-03	19.3E-03	19.7E-03	34.0E-03	8.9E-03	13.1E-03	30.7E-03	12.3E-03	19.1E-03	17.9E-03	27.3E-03	29.6E-03
Sigma	-	1.5E-03	2.4E-03	3.3E-03	864.0E-06	822.0E-06	1.4E-03	1.4E-03	377.1E-06	2.5E-03	1.5E-03	822.0E-06	1.5E-03

Measurements

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
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	OLH7000					Isolink Inc					Issue:	01

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	2.572	2.601	2.585	2.588	2.602	2.586	2.582	2.582	2.588	2.587	2.580	2.594	2.605
OFF PROTON samples													
115	2.546	2.568	2.566	2.564	2.582	2.555	2.561	2.577	2.562	2.562	2.563	2.576	2.578
116	2.554	2.578	2.575	2.570	2.590	2.564	2.567	2.585	2.567	2.570	2.574	2.583	2.586
117	2.566	2.589	2.583	2.581	2.602	2.574	2.579	2.598	2.576	2.574	2.579	2.596	2.598
Statistics													
Min	2.546	2.568	2.566	2.564	2.582	2.555	2.561	2.577	2.562	2.562	2.563	2.576	2.578
Max	2.566	2.589	2.583	2.581	2.602	2.574	2.579	2.598	2.576	2.574	2.579	2.596	2.598
Average	2.555	2.578	2.575	2.572	2.591	2.565	2.569	2.587	2.568	2.568	2.572	2.585	2.587
Sigma	0.008	0.009	0.007	0.007	0.008	0.008	0.007	0.008	0.006	0.005	0.007	0.008	0.008

Drift Calculation

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	22.0E-03	20.8E-03	18.4E-03	36.0E-03	9.6E-03	15.6E-03	31.6E-03	16.0E-03	16.4E-03	17.6E-03	30.4E-03	32.4E-03
116	-	24.0E-03	21.6E-03	16.0E-03	36.0E-03	10.8E-03	13.2E-03	31.6E-03	13.6E-03	16.0E-03	20.0E-03	29.2E-03	32.0E-03
117	-	22.8E-03	16.8E-03	15.2E-03	36.0E-03	8.0E-03	12.8E-03	31.6E-03	10.4E-03	7.6E-03	13.2E-03	30.0E-03	32.4E-03
Average	-	22.9E-03	19.7E-03	16.5E-03	36.0E-03	9.5E-03	13.9E-03	31.6E-03	13.3E-03	13.3E-03	16.9E-03	29.9E-03	32.3E-03
Sigma	-	821.9E-06	2.1E-03	1.4E-03	537.7E-12	1.1E-03	1.2E-03	268.8E-12	2.3E-03	4.1E-03	2.8E-03	499.0E-06	188.7E-06

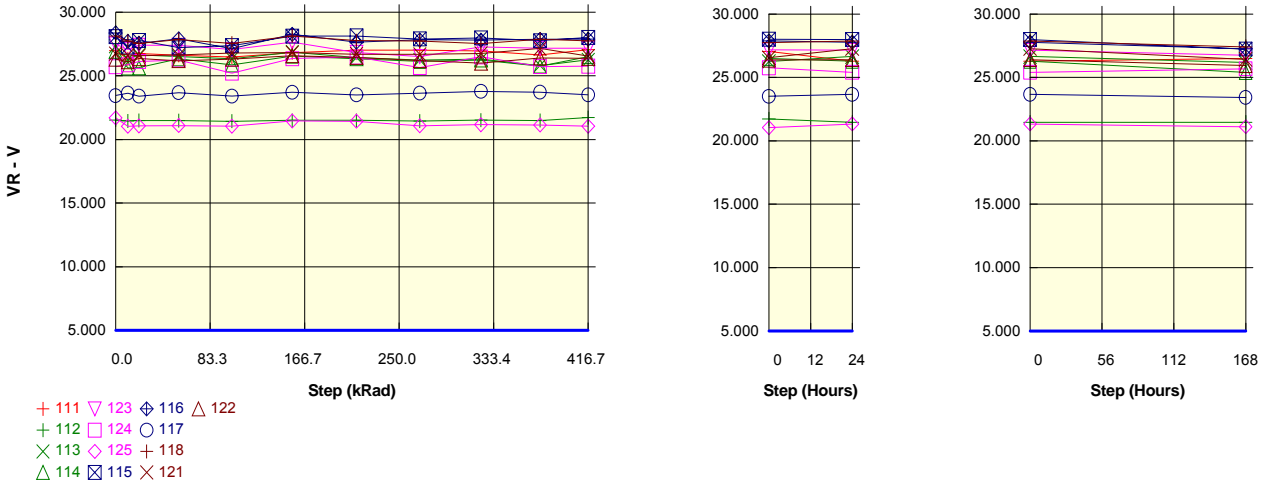
Measurements

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	2.572	2.601	2.585	2.588	2.602	2.586	2.582	2.582	2.588	2.587	2.580	2.594	2.605
OFF TID samples													
118	2.557	2.579	2.574	2.576	2.590	2.570	2.572	2.586	2.566	2.560	2.571	2.584	2.587
121	2.577	2.587	2.596	2.594	2.609	2.578	2.590	2.606	2.591	2.590	2.590	2.604	2.606
122	2.573	2.594	2.589	2.587	2.604	2.580	2.584	2.601	2.582	2.576	2.579	2.597	2.599
Statistics													
Min	2.557	2.579	2.574	2.576	2.590	2.570	2.572	2.586	2.566	2.560	2.571	2.584	2.587
Max	2.577	2.594	2.596	2.594	2.609	2.580	2.590	2.606	2.591	2.590	2.590	2.604	2.606
Average	2.569	2.587	2.586	2.585	2.601	2.576	2.582	2.598	2.580	2.576	2.580	2.595	2.597
Sigma	0.009	0.006	0.009	0.007	0.008	0.004	0.007	0.009	0.010	0.012	0.008	0.008	0.008

Drift Calculation

VF	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	22.0E-03	17.2E-03	18.4E-03	32.4E-03	12.4E-03	15.2E-03	28.8E-03	8.8E-03	3.2E-03	14.0E-03	26.4E-03	30.0E-03
121	-	10.4E-03	18.8E-03	16.8E-03	32.4E-03	1.6E-03	13.2E-03	29.6E-03	14.0E-03	13.6E-03	13.6E-03	26.8E-03	29.2E-03
122	-	20.4E-03	15.6E-03	14.0E-03	30.4E-03	6.4E-03	10.4E-03	27.6E-03	8.8E-03	2.8E-03	6.0E-03	24.0E-03	26.0E-03
Average	-	17.6E-03	17.2E-03	16.4E-03	31.7E-03	6.8E-03	12.9E-03	28.7E-03	10.5E-03	6.5E-03	11.2E-03	25.7E-03	28.4E-03
Sigma	-	5.1E-03	1.3E-03	1.8E-03	942.8E-06	4.4E-03	2.0E-03	821.9E-06	2.5E-03	5.0E-03	3.7E-03	1.2E-03	1.7E-03

Parameter : Reverse Voltage : VR
 Test conditions : IR = 100µA
 Unit : V
 Spec Limit Min : 5.000
 Spec limits are represented in bold lines on the graphic.



Measurements

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	26.979	26.322	26.755	26.610	26.478	26.813	27.021	27.021	26.953	26.633	27.054	26.281	26.503
ON PROTON samples													
112	21.531	21.466	21.490	21.490	21.431	21.504	21.508	21.450	21.522	21.498	21.721	21.465	21.468
113	27.325	26.302	26.642	26.519	26.346	26.866	26.446	26.245	26.320	25.810	26.260	26.659	26.177
114	26.922	25.624	25.642	26.334	25.861	26.558	26.344	26.137	26.244	25.767	26.503	26.278	25.402
Statistics													
Min	21.531	21.466	21.490	21.490	21.431	21.504	21.508	21.450	21.522	21.498	21.721	21.465	21.468
Max	27.325	26.302	26.642	26.519	26.346	26.866	26.446	26.245	26.320	25.810	26.503	26.659	26.177
Average	25.259	24.464	24.591	24.781	24.546	24.976	24.766	24.610	24.695	24.358	24.828	24.801	24.349
Sigma	2.641	2.138	2.230	2.329	2.211	2.458	2.304	2.235	2.244	2.023	2.199	2.364	2.061

Drift Calculation

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON PROTON samples													
112	-	-65.6E-03	-40.8E-03	-41.6E-03	-100.0E-03	-27.2E-03	-23.2E-03	-81.6E-03	-9.6E-03	-33.6E-03	189.6E-03	-66.4E-03	-63.2E-03
113	-	-1.0E+00	-683.2E-03	-805.6E-03	-978.4E-03	-459.2E-03	-878.4E-03	-1.1E+00	-1.0E+00	-1.5E+00	-1.1E+00	-665.6E-03	-1.1E+00
114	-	-1.3E+00	-1.3E+00	-587.2E-03	-1.1E+00	-363.2E-03	-577.6E-03	-784.8E-03	-677.6E-03	-1.2E+00	-418.4E-03	-644.0E-03	-1.5E+00
Average	-	-795.5E-03	-667.7E-03	-478.1E-03	-713.1E-03	-283.2E-03	-493.1E-03	-648.8E-03	-564.0E-03	-901.1E-03	-431.2E-03	-458.7E-03	-910.4E-03
Sigma	-	528.1E-03	505.7E-03	321.3E-03	434.8E-03	185.2E-03	354.2E-03	418.8E-03	414.2E-03	630.8E-03	512.2E-03	277.5E-03	618.0E-03

Measurements

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	26.979	26.322	26.755	26.610	26.478	26.813	27.021	27.021	26.953	26.633	27.054	26.281	26.503
ON TID samples													
123	27.501	27.062	27.408	27.395	27.072	27.650	26.843	26.522	27.269	27.169	27.179	27.150	26.752
124	25.719	25.874	26.124	26.245	25.214	26.356	26.478	25.654	26.497	25.734	25.765	25.408	25.690
125	21.708	21.041	21.068	21.094	21.046	21.467	21.434	21.076	21.167	21.133	21.052	21.335	21.118
Statistics													
Min	21.708	21.041	21.068	21.094	21.046	21.467	21.434	21.076	21.167	21.133	21.052	21.335	21.118
Max	27.501	27.062	27.408	27.395	27.072	27.650	26.843	26.522	27.269	27.169	27.179	27.150	26.752
Average	24.976	24.659	24.867	24.911	24.444	25.158	24.919	24.417	24.978	24.678	24.665	24.631	24.520
Sigma	2.423	2.604	2.737	2.740	2.519	2.662	2.468	2.389	2.713	2.575	2.619	2.436	2.444

Drift Calculation

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON TID samples													
123	-	-439.2E-03	-92.8E-03	-105.6E-03	-428.8E-03	148.8E-03	-657.6E-03	-978.4E-03	-232.0E-03	-332.0E-03	-321.6E-03	-351.2E-03	-748.8E-03
124	-	155.2E-03	404.8E-03	525.6E-03	-505.6E-03	636.8E-03	759.2E-03	-65.6E-03	777.6E-03	14.4E-03	45.6E-03	-311.2E-03	-29.6E-03
125	-	-667.2E-03	-640.0E-03	-613.6E-03	-661.6E-03	-240.8E-03	-273.6E-03	-632.0E-03	-540.8E-03	-575.2E-03	-656.0E-03	-372.8E-03	-589.6E-03
Average	-	-317.1E-03	-109.3E-03	-64.5E-03	-532.0E-03	181.6E-03	-57.3E-03	-558.7E-03	1.6E-03	-297.6E-03	-310.7E-03	-345.1E-03	-456.0E-03
Sigma	-	346.7E-03	426.7E-03	466.0E-03	96.9E-03	359.0E-03	598.3E-03	376.2E-03	563.0E-03	241.9E-03	286.5E-03	25.5E-03	308.4E-03

Hirex Engineering	Total Dose Radiation Test Report										Ref.:	HRX/TID/1020
	OLH7000					Isolink Inc					Issue:	01

Measurements

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	26.979	26.322	26.755	26.610	26.478	26.813	27.021	27.021	26.953	26.633	27.054	26.281	26.503
OFF PROTON samples													
115	28.082	27.276	27.786	27.210	27.378	28.122	28.138	27.896	27.978	27.768	28.012	27.992	27.242
116	28.378	27.714	27.561	27.905	27.137	28.265	27.646	27.832	27.810	27.870	27.889	27.781	27.258
117	23.450	23.638	23.400	23.680	23.414	23.707	23.502	23.638	23.786	23.726	23.515	23.670	23.422
Statistics													
Min	23.450	23.638	23.400	23.680	23.414	23.707	23.502	23.638	23.786	23.726	23.515	23.670	23.422
Max	28.378	27.714	27.786	27.905	27.378	28.265	28.138	27.896	27.978	27.870	28.012	27.992	27.258
Average	26.637	26.209	26.249	26.265	25.976	26.698	26.429	26.455	26.525	26.454	26.472	26.481	25.974
Sigma	2.256	1.827	2.017	1.850	1.814	2.116	2.080	1.993	1.938	1.930	2.091	1.989	1.805

Drift Calculation

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	-805.6E-03	-295.2E-03	-871.2E-03	-704.0E-03	40.8E-03	56.8E-03	-185.6E-03	-103.2E-03	-313.6E-03	-69.6E-03	-89.6E-03	-840.0E-03
116	-	-664.8E-03	-817.6E-03	-473.6E-03	-1.2E+00	-113.6E-03	-732.0E-03	-546.4E-03	-568.8E-03	-508.8E-03	-489.6E-03	-597.6E-03	-1.1E+00
117	-	188.0E-03	-50.4E-03	229.6E-03	-36.0E-03	256.8E-03	51.2E-03	187.2E-03	336.0E-03	275.2E-03	64.8E-03	220.0E-03	-28.8E-03
Average	-	-427.5E-03	-387.7E-03	-371.7E-03	-660.5E-03	61.3E-03	-208.0E-03	-181.6E-03	-112.0E-03	-182.4E-03	-164.8E-03	-155.7E-03	-663.2E-03
Sigma	-	439.0E-03	320.0E-03	455.1E-03	493.1E-03	151.9E-03	370.5E-03	299.5E-03	369.4E-03	333.2E-03	236.1E-03	337.0E-03	463.0E-03

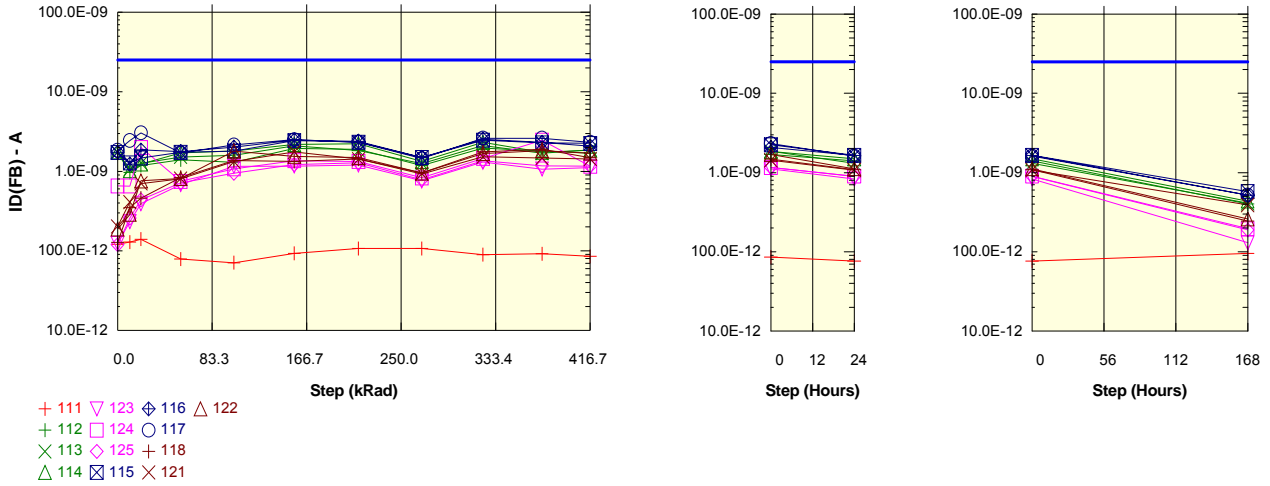
Measurements

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	26.979	26.322	26.755	26.610	26.478	26.813	27.021	27.021	26.953	26.633	27.054	26.281	26.503
OFF TID samples													
118	28.123	27.733	27.545	27.859	27.557	28.140	27.768	27.725	27.531	27.874	27.747	27.866	27.422
121	26.750	26.632	26.589	26.632	26.806	26.830	26.702	26.696	26.762	27.152	26.550	27.277	26.427
122	26.313	26.113	26.356	26.192	26.313	26.590	26.442	26.198	25.999	26.402	26.373	26.410	25.936
Statistics													
Min	26.313	26.113	26.356	26.192	26.313	26.590	26.442	26.198	25.999	26.402	26.373	26.410	25.936
Max	28.123	27.733	27.545	27.859	27.557	28.140	27.768	27.725	27.531	27.874	27.747	27.866	27.422
Average	27.062	26.826	26.830	26.894	26.892	27.186	26.971	26.873	26.764	27.143	26.890	27.185	26.595
Sigma	0.771	0.675	0.514	0.705	0.511	0.681	0.574	0.636	0.625	0.601	0.610	0.598	0.618

Drift Calculation

VR	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	-390.4E-03	-578.4E-03	-264.0E-03	-566.4E-03	16.8E-03	-355.2E-03	-398.4E-03	-592.0E-03	-249.6E-03	-376.0E-03	-256.8E-03	-700.8E-03
121	-	-117.6E-03	-160.8E-03	-117.6E-03	56.8E-03	80.0E-03	-48.0E-03	-53.6E-03	12.0E-03	402.4E-03	-199.2E-03	527.2E-03	-322.4E-03
122	-	-200.0E-03	43.2E-03	-120.8E-03	0.0E+00	276.8E-03	129.6E-03	-114.4E-03	-313.6E-03	89.6E-03	60.0E-03	97.6E-03	-376.8E-03
Average	-	-236.0E-03	-232.0E-03	-167.5E-03	-169.9E-03	124.5E-03	-91.2E-03	-188.8E-03	-297.9E-03	80.8E-03	-171.7E-03	122.7E-03	-466.7E-03
Sigma	-	114.2E-03	258.7E-03	68.3E-03	281.3E-03	110.7E-03	200.3E-03	150.3E-03	246.8E-03	266.3E-03	179.1E-03	320.6E-03	167.0E-03

Parameter : Dark Current (feedback diode) : ID(FB)
 Test conditions : VR = 15V ; IF = 0mA
 Unit : A
 Spec Limit Max : 25.0E-09
 Spec limits are represented in bold lines on the graphic.



Measurements

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	121.4E-12	129.0E-12	140.2E-12	79.1E-12	71.1E-12	92.9E-12	107.3E-12	107.3E-12	89.7E-12	92.2E-12	85.7E-12	76.5E-12	95.7E-12
ON PROTON samples													
112	1.7E-09	971.4E-12	1.2E-09	1.4E-09	1.3E-09	1.9E-09	1.9E-09	1.2E-09	2.0E-09	1.8E-09	1.7E-09	1.4E-09	402.1E-12
113	1.8E-09	1.1E-09	1.3E-09	1.5E-09	1.6E-09	2.1E-09	1.8E-09	1.3E-09	2.1E-09	1.7E-09	1.9E-09	1.3E-09	410.8E-12
114	1.8E-09	1.0E-09	1.2E-09	1.7E-09	1.8E-09	2.2E-09	2.2E-09	1.3E-09	2.3E-09	1.7E-09	1.9E-09	1.5E-09	437.0E-12
Statistics													
Min	1.7E-09	971.4E-12	1.2E-09	1.4E-09	1.3E-09	1.9E-09	1.8E-09	1.2E-09	2.0E-09	1.7E-09	1.7E-09	1.3E-09	402.1E-12
Max	1.8E-09	1.1E-09	1.3E-09	1.7E-09	1.8E-09	2.2E-09	2.2E-09	1.3E-09	2.3E-09	1.8E-09	1.9E-09	1.5E-09	437.0E-12
Average	1.7E-09	1.0E-09	1.2E-09	1.5E-09	1.6E-09	2.1E-09	2.0E-09	1.3E-09	2.1E-09	1.7E-09	1.8E-09	1.4E-09	416.6E-12
Sigma	24.0E-12	33.7E-12	31.9E-12	128.7E-12	210.9E-12	96.0E-12	173.4E-12	62.5E-12	143.4E-12	49.0E-12	76.3E-12	75.6E-12	14.8E-12

Drift Calculation

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON PROTON samples													
112	-	-730.4E-12	-517.4E-12	-308.2E-12	-406.0E-12	243.4E-12	185.8E-12	-519.2E-12	256.4E-12	105.8E-12	-7.2E-12	-298.2E-12	-1.3E-09
113	-	-697.6E-12	-490.4E-12	-234.2E-12	-160.6E-12	338.0E-12	77.2E-12	-499.2E-12	354.8E-12	-63.6E-12	110.0E-12	-447.2E-12	-1.3E-09
114	-	-741.4E-12	-518.0E-12	-47.2E-12	56.8E-12	424.2E-12	468.6E-12	-418.2E-12	554.4E-12	-13.8E-12	96.8E-12	-264.4E-12	-1.3E-09
Average	-	-723.1E-12	-508.6E-12	-196.5E-12	-169.9E-12	335.2E-12	243.9E-12	-478.9E-12	388.5E-12	9.5E-12	66.5E-12	-336.6E-12	-1.3E-09
Sigma	-	18.6E-12	12.9E-12	109.8E-12	189.1E-12	73.8E-12	165.0E-12	43.7E-12	124.0E-12	71.1E-12	52.4E-12	79.4E-12	16.9E-12

Measurements

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	121.4E-12	129.0E-12	140.2E-12	79.1E-12	71.1E-12	92.9E-12	107.3E-12	107.3E-12	89.7E-12	92.2E-12	85.7E-12	76.5E-12	95.7E-12
ON TID samples													
123	124.0E-12	232.7E-12	393.3E-12	684.0E-12	1.2E-09	1.2E-09	1.2E-09	760.5E-12	1.3E-09	1.1E-09	1.1E-09	829.8E-12	130.1E-12
124	655.3E-12	653.4E-12	2.0E-09	749.6E-12	1.1E-09	1.4E-09	1.3E-09	830.3E-12	1.5E-09	2.5E-09	1.2E-09	900.5E-12	195.7E-12
125	119.7E-12	258.7E-12	438.1E-12	716.2E-12	944.2E-12	1.2E-09	1.3E-09	785.8E-12	1.4E-09	1.2E-09	1.2E-09	895.3E-12	188.9E-12
Statistics													
Min	119.7E-12	232.7E-12	393.3E-12	684.0E-12	944.2E-12	1.2E-09	1.2E-09	760.5E-12	1.3E-09	1.1E-09	1.1E-09	829.8E-12	130.1E-12
Max	655.3E-12	653.4E-12	2.0E-09	749.6E-12	1.2E-09	1.4E-09	1.3E-09	830.3E-12	1.5E-09	2.5E-09	1.2E-09	900.5E-12	195.7E-12
Average	299.7E-12	381.6E-12	943.1E-12	716.6E-12	1.1E-09	1.2E-09	1.3E-09	792.2E-12	1.4E-09	1.6E-09	1.1E-09	875.2E-12	171.6E-12
Sigma	251.5E-12	192.5E-12	746.0E-12	26.8E-12	87.3E-12	82.7E-12	53.5E-12	28.9E-12	60.7E-12	635.7E-12	24.3E-12	32.2E-12	29.5E-12

Drift Calculation

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON TID samples													
123	-	108.7E-12	269.3E-12	560.0E-12	1.0E-09	1.0E-09	1.1E-09	636.6E-12	1.2E-09	942.0E-12	987.8E-12	705.8E-12	6.1E-12
124	-	-1.9E-12	1.3E-09	94.3E-12	420.1E-12	704.7E-12	674.3E-12	175.0E-12	795.3E-12	1.8E-09	506.9E-12	245.1E-12	-459.6E-12
125	-	139.0E-12	318.4E-12	596.5E-12	824.5E-12	1.1E-09	1.2E-09	666.1E-12	1.2E-09	1.0E-09	1.0E-09	775.6E-12	69.2E-12
Average	-	82.0E-12	643.4E-12	417.0E-12	758.9E-12	946.8E-12	970.4E-12	492.6E-12	1.1E-09	1.3E-09	846.5E-12	575.5E-12	-128.1E-12
Sigma	-	60.6E-12	494.7E-12	228.6E-12	254.1E-12	172.6E-12	212.3E-12	224.9E-12	195.2E-12	385.3E-12	241.3E-12	235.4E-12	235.8E-12

Hirex Engineering	Total Dose Radiation Test Report									Ref.:	HRX/TID/1020		
	OLH7000					Isolink Inc				Issue:	01		

Measurements

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	121.4E-12	129.0E-12	140.2E-12	79.1E-12	71.1E-12	92.9E-12	107.3E-12	107.3E-12	89.7E-12	92.2E-12	85.7E-12	76.5E-12	95.7E-12
OFF PROTON samples													
115	1.7E-09	1.3E-09	1.5E-09	1.7E-09	1.8E-09	2.4E-09	2.3E-09	1.5E-09	2.5E-09	2.3E-09	2.2E-09	1.6E-09	576.1E-12
116	1.7E-09	1.2E-09	1.9E-09	1.8E-09	2.0E-09	2.5E-09	2.4E-09	1.5E-09	2.5E-09	2.3E-09	2.1E-09	1.6E-09	519.5E-12
117	1.8E-09	2.4E-09	3.0E-09	1.7E-09	2.1E-09	2.5E-09	2.3E-09	1.4E-09	2.6E-09	2.6E-09	2.3E-09	1.6E-09	520.4E-12
Statistics													
Min	1.7E-09	1.2E-09	1.5E-09	1.7E-09	1.8E-09	2.4E-09	2.3E-09	1.4E-09	2.5E-09	2.3E-09	2.1E-09	1.6E-09	519.5E-12
Max	1.8E-09	2.4E-09	3.0E-09	1.8E-09	2.1E-09	2.5E-09	2.4E-09	1.5E-09	2.6E-09	2.6E-09	2.3E-09	1.6E-09	576.1E-12
Average	1.8E-09	1.7E-09	2.1E-09	1.7E-09	2.0E-09	2.5E-09	2.3E-09	1.5E-09	2.5E-09	2.4E-09	2.2E-09	1.6E-09	538.7E-12
Sigma	49.5E-12	560.1E-12	667.5E-12	26.5E-12	146.7E-12	27.5E-12	28.7E-12	23.7E-12	61.6E-12	147.9E-12	101.0E-12	13.1E-12	26.4E-12

Drift Calculation

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	-444.4E-12	-247.2E-12	17.8E-12	73.2E-12	713.6E-12	611.2E-12	-224.0E-12	736.2E-12	561.0E-12	526.8E-12	-72.2E-12	-1.1E-09
116	-	-504.8E-12	115.2E-12	25.6E-12	275.2E-12	728.2E-12	645.2E-12	-248.6E-12	792.2E-12	573.8E-12	337.2E-12	-101.4E-12	-1.2E-09
117	-	609.6E-12	1.2E-09	-131.8E-12	314.4E-12	666.8E-12	487.4E-12	-390.0E-12	772.8E-12	776.4E-12	485.8E-12	-217.2E-12	-1.3E-09
Average	-	-113.2E-12	358.3E-12	-29.5E-12	220.9E-12	702.9E-12	581.3E-12	-287.5E-12	767.1E-12	637.1E-12	449.9E-12	-130.3E-12	-1.2E-09
Sigma	-	511.7E-12	618.1E-12	72.4E-12	105.7E-12	26.2E-12	67.8E-12	73.1E-12	23.2E-12	98.7E-12	81.5E-12	62.6E-12	69.4E-12

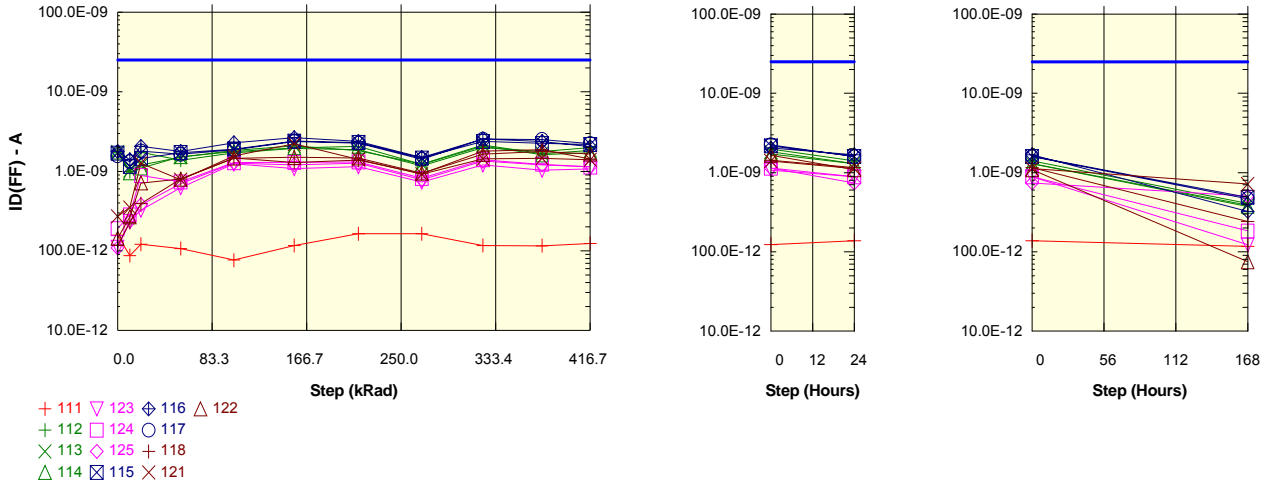
Measurements

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	121.4E-12	129.0E-12	140.2E-12	79.1E-12	71.1E-12	92.9E-12	107.3E-12	107.3E-12	89.7E-12	92.2E-12	85.7E-12	76.5E-12	95.7E-12
OFF TID samples													
118	128.3E-12	349.3E-12	459.4E-12	839.4E-12	1.4E-09	1.3E-09	1.4E-09	955.3E-12	1.8E-09	1.9E-09	1.5E-09	1.1E-09	244.3E-12
121	203.1E-12	410.6E-12	702.7E-12	808.1E-12	1.3E-09	1.8E-09	1.4E-09	927.2E-12	1.5E-09	1.5E-09	1.4E-09	1.1E-09	390.4E-12
122	188.0E-12	287.4E-12	758.3E-12	811.8E-12	1.8E-09	1.5E-09	1.5E-09	951.4E-12	1.7E-09	1.8E-09	1.7E-09	1.1E-09	259.6E-12
Statistics													
Min	128.3E-12	287.4E-12	459.4E-12	808.1E-12	1.3E-09	1.3E-09	1.4E-09	927.2E-12	1.5E-09	1.5E-09	1.4E-09	1.1E-09	244.3E-12
Max	203.1E-12	410.6E-12	758.3E-12	839.4E-12	1.8E-09	1.8E-09	1.5E-09	955.3E-12	1.8E-09	1.9E-09	1.7E-09	1.1E-09	390.4E-12
Average	173.1E-12	349.1E-12	640.1E-12	819.8E-12	1.5E-09	1.5E-09	1.4E-09	944.6E-12	1.7E-09	1.7E-09	1.5E-09	1.1E-09	298.1E-12
Sigma	32.3E-12	50.3E-12	129.8E-12	13.9E-12	214.7E-12	170.3E-12	29.3E-12	12.4E-12	97.1E-12	186.9E-12	113.7E-12	16.5E-12	65.6E-12

Drift Calculation

ID(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	221.0E-12	331.0E-12	711.0E-12	1.2E-09	1.2E-09	1.3E-09	827.0E-12	1.6E-09	1.8E-09	1.3E-09	961.9E-12	116.0E-12
121	-	207.5E-12	499.6E-12	605.0E-12	1.1E-09	1.6E-09	1.2E-09	724.1E-12	1.3E-09	1.3E-09	1.2E-09	873.7E-12	187.3E-12
122	-	99.4E-12	570.3E-12	623.8E-12	1.6E-09	1.4E-09	1.3E-09	763.4E-12	1.5E-09	1.6E-09	1.5E-09	928.6E-12	71.6E-12
Average	-	176.0E-12	467.0E-12	646.6E-12	1.3E-09	1.4E-09	1.3E-09	771.5E-12	1.5E-09	1.6E-09	1.4E-09	921.4E-12	125.0E-12
Sigma	-	54.4E-12	100.4E-12	46.2E-12	209.0E-12	140.4E-12	34.8E-12	42.4E-12	126.5E-12	213.1E-12	112.8E-12	36.4E-12	47.7E-12

Parameter : Dark Current (feedforward diode) : ID(FF)
 Test conditions : VR = 15V ; IF = 0mA
 Unit : A
 Spec Limit Max : 25.0E-09
 Spec limits are represented in bold lines on the graphic.



Measurements

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	157.0E-12	87.0E-12	121.1E-12	107.2E-12	76.6E-12	116.7E-12	164.4E-12	164.4E-12	116.7E-12	115.9E-12	123.9E-12	138.3E-12	117.6E-12
ON PROTON samples													
112	1.7E-09	991.0E-12	1.7E-09	1.4E-09	1.7E-09	1.9E-09	1.9E-09	1.2E-09	2.0E-09	1.8E-09	2.0E-09	1.4E-09	407.6E-12
113	1.8E-09	1.0E-09	1.2E-09	1.5E-09	1.8E-09	2.1E-09	1.8E-09	1.2E-09	2.1E-09	1.7E-09	1.8E-09	1.3E-09	388.6E-12
114	1.7E-09	956.2E-12	1.1E-09	1.5E-09	1.8E-09	2.0E-09	2.1E-09	1.2E-09	2.1E-09	1.6E-09	1.7E-09	1.3E-09	374.0E-12
Statistics													
Min	1.7E-09	956.2E-12	1.1E-09	1.4E-09	1.7E-09	1.9E-09	1.8E-09	1.2E-09	2.0E-09	1.6E-09	1.7E-09	1.3E-09	374.0E-12
Max	1.8E-09	1.0E-09	1.7E-09	1.5E-09	1.8E-09	2.1E-09	2.1E-09	1.2E-09	2.1E-09	1.8E-09	2.0E-09	1.4E-09	407.6E-12
Average	1.7E-09	991.4E-12	1.3E-09	1.5E-09	1.8E-09	2.0E-09	1.9E-09	1.2E-09	2.1E-09	1.7E-09	1.8E-09	1.3E-09	390.1E-12
Sigma	6.1E-12	28.9E-12	28.4E-12	63.5E-12	49.9E-12	59.2E-12	104.0E-12	26.4E-12	61.1E-12	68.6E-12	109.4E-12	50.9E-12	13.8E-12

Drift Calculation

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON PROTON samples													
112	-	-746.4E-12	8.8E-12	-355.8E-12	-31.0E-12	211.6E-12	142.2E-12	-563.0E-12	247.8E-12	43.4E-12	245.0E-12	-334.8E-12	-1.3E-09
113	-	-724.6E-12	-554.6E-12	-247.4E-12	77.0E-12	334.8E-12	63.4E-12	-515.2E-12	381.8E-12	-82.4E-12	79.0E-12	-452.8E-12	-1.4E-09
114	-	-792.6E-12	-648.2E-12	-223.0E-12	19.0E-12	228.8E-12	312.0E-12	-527.4E-12	329.2E-12	-132.6E-12	-33.6E-12	-457.8E-12	-1.4E-09
Average	-	-754.5E-12	-398.0E-12	-275.4E-12	21.7E-12	258.4E-12	172.5E-12	-535.2E-12	319.6E-12	-57.2E-12	96.8E-12	-415.1E-12	-1.4E-09
Sigma	-	28.4E-12	290.2E-12	57.7E-12	44.1E-12	54.5E-12	103.7E-12	20.3E-12	55.1E-12	74.0E-12	114.4E-12	56.8E-12	19.1E-12

Measurements

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	157.0E-12	87.0E-12	121.1E-12	107.2E-12	76.6E-12	116.7E-12	164.4E-12	164.4E-12	116.7E-12	115.9E-12	123.9E-12	138.3E-12	117.6E-12
ON TID samples													
123	110.9E-12	234.8E-12	324.3E-12	624.3E-12	1.2E-09	1.1E-09	1.1E-09	731.8E-12	1.2E-09	1.0E-09	1.1E-09	884.3E-12	122.5E-12
124	189.9E-12	284.0E-12	884.1E-12	737.9E-12	1.3E-09	1.3E-09	1.3E-09	816.3E-12	1.4E-09	1.2E-09	1.1E-09	884.0E-12	183.4E-12
125	109.2E-12	236.3E-12	379.8E-12	703.4E-12	1.3E-09	1.2E-09	1.3E-09	781.9E-12	1.3E-09	1.2E-09	1.1E-09	741.1E-12	505.4E-12
Statistics													
Min	109.2E-12	234.8E-12	324.3E-12	624.3E-12	1.2E-09	1.1E-09	1.1E-09	731.8E-12	1.2E-09	1.0E-09	1.1E-09	741.1E-12	122.5E-12
Max	189.9E-12	284.0E-12	884.1E-12	737.9E-12	1.3E-09	1.3E-09	1.3E-09	816.3E-12	1.4E-09	1.2E-09	1.1E-09	884.3E-12	505.4E-12
Average	136.7E-12	251.7E-12	529.4E-12	688.5E-12	1.3E-09	1.2E-09	1.2E-09	776.7E-12	1.3E-09	1.2E-09	1.1E-09	836.5E-12	270.5E-12
Sigma	37.7E-12	22.9E-12	251.8E-12	47.6E-12	19.5E-12	87.5E-12	71.6E-12	34.7E-12	81.5E-12	86.1E-12	29.2E-12	67.5E-12	168.0E-12

Drift Calculation

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON TID samples													
123	-	123.9E-12	213.4E-12	513.4E-12	1.1E-09	971.9E-12	1.0E-09	620.9E-12	1.1E-09	921.7E-12	964.7E-12	773.4E-12	11.7E-12
124	-	94.1E-12	694.1E-12	547.9E-12	1.1E-09	1.1E-09	1.1E-09	626.3E-12	1.2E-09	1.0E-09	946.3E-12	694.1E-12	-6.5E-12
125	-	127.1E-12	270.6E-12	594.3E-12	1.2E-09	1.1E-09	1.2E-09	672.8E-12	1.2E-09	1.1E-09	1.0E-09	631.9E-12	396.2E-12
Average	-	115.0E-12	392.7E-12	551.9E-12	1.1E-09	1.1E-09	1.1E-09	640.0E-12	1.2E-09	1.0E-09	980.2E-12	699.8E-12	133.8E-12
Sigma	-	14.9E-12	214.4E-12	33.1E-12	26.2E-12	61.9E-12	53.1E-12	23.3E-12	61.8E-12	71.4E-12	35.7E-12	57.9E-12	185.7E-12

Hirex Engineering	Total Dose Radiation Test Report									Ref.:	HRX/TID/1020
	OLH7000				Isolink Inc					Issue:	01

Measurements

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	157.0E-12	87.0E-12	121.1E-12	107.2E-12	76.6E-12	116.7E-12	164.4E-12	164.4E-12	116.7E-12	115.9E-12	123.9E-12	138.3E-12	117.6E-12
OFF PROTON samples													
115	1.7E-09	1.2E-09	1.5E-09	1.7E-09	1.9E-09	2.4E-09	2.3E-09	1.5E-09	2.4E-09	2.2E-09	2.2E-09	1.6E-09	487.6E-12
116	1.8E-09	1.4E-09	2.1E-09	1.8E-09	2.3E-09	2.6E-09	2.4E-09	1.5E-09	2.6E-09	2.4E-09	2.0E-09	1.7E-09	323.0E-12
117	1.6E-09	1.3E-09	1.8E-09	1.6E-09	1.9E-09	2.4E-09	2.3E-09	1.4E-09	2.5E-09	2.5E-09	2.2E-09	1.6E-09	466.7E-12
Statistics													
Min	1.6E-09	1.2E-09	1.5E-09	1.6E-09	1.9E-09	2.4E-09	2.3E-09	1.4E-09	2.4E-09	2.2E-09	2.0E-09	1.6E-09	323.0E-12
Max	1.8E-09	1.4E-09	2.1E-09	1.8E-09	2.3E-09	2.6E-09	2.4E-09	1.5E-09	2.6E-09	2.5E-09	2.2E-09	1.7E-09	487.6E-12
Average	1.7E-09	1.3E-09	1.8E-09	1.7E-09	2.0E-09	2.5E-09	2.3E-09	1.5E-09	2.5E-09	2.4E-09	2.1E-09	1.6E-09	425.8E-12
Sigma	85.8E-12	101.9E-12	248.1E-12	56.5E-12	192.4E-12	126.7E-12	51.5E-12	28.0E-12	79.6E-12	110.8E-12	80.8E-12	39.9E-12	73.2E-12

Drift Calculation

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	-545.8E-12	-247.8E-12	19.4E-12	204.2E-12	698.8E-12	604.8E-12	-232.8E-12	681.8E-12	542.2E-12	470.0E-12	-95.8E-12	-1.2E-09
116	-	-378.0E-12	281.6E-12	-1.8E-12	514.6E-12	874.2E-12	609.0E-12	-288.6E-12	777.8E-12	592.6E-12	265.0E-12	-95.2E-12	-1.5E-09
117	-	-247.2E-12	229.4E-12	68.4E-12	296.0E-12	799.0E-12	692.4E-12	-147.8E-12	978.2E-12	944.8E-12	667.4E-12	22.0E-12	-1.1E-09
Average	-	-390.3E-12	87.7E-12	28.7E-12	338.3E-12	790.7E-12	635.4E-12	-223.1E-12	812.6E-12	693.2E-12	467.5E-12	-56.3E-12	-1.3E-09
Sigma	-	122.2E-12	238.2E-12	29.4E-12	130.2E-12	71.8E-12	40.3E-12	57.9E-12	123.5E-12	179.1E-12	164.3E-12	55.4E-12	146.8E-12

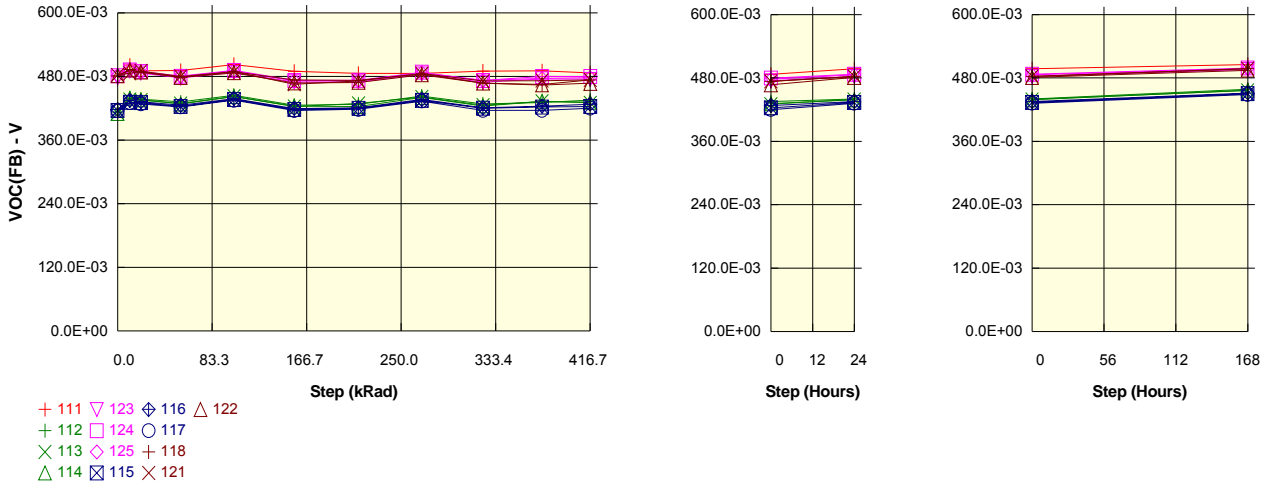
Measurements

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	157.0E-12	87.0E-12	121.1E-12	107.2E-12	76.6E-12	116.7E-12	164.4E-12	164.4E-12	116.7E-12	115.9E-12	123.9E-12	138.3E-12	117.6E-12
OFF TID samples													
118	117.7E-12	228.4E-12	392.7E-12	803.4E-12	1.5E-09	1.3E-09	1.4E-09	932.9E-12	1.8E-09	1.9E-09	1.4E-09	1.2E-09	240.9E-12
121	270.9E-12	351.3E-12	1.3E-09	785.9E-12	1.6E-09	2.2E-09	1.4E-09	918.4E-12	1.4E-09	1.5E-09	1.4E-09	1.1E-09	717.3E-12
122	144.6E-12	267.6E-12	713.0E-12	798.8E-12	1.5E-09	1.5E-09	1.5E-09	948.8E-12	1.6E-09	1.8E-09	1.7E-09	1.1E-09	74.9E-12
Statistics													
Min	117.7E-12	228.4E-12	392.7E-12	785.9E-12	1.5E-09	1.3E-09	1.4E-09	918.4E-12	1.4E-09	1.5E-09	1.4E-09	1.1E-09	74.9E-12
Max	270.9E-12	351.3E-12	1.3E-09	803.4E-12	1.6E-09	2.2E-09	1.5E-09	948.8E-12	1.8E-09	1.9E-09	1.7E-09	1.2E-09	717.3E-12
Average	177.8E-12	282.4E-12	788.4E-12	796.0E-12	1.5E-09	1.7E-09	1.4E-09	933.4E-12	1.6E-09	1.7E-09	1.5E-09	1.1E-09	344.3E-12
Sigma	66.8E-12	51.3E-12	357.9E-12	7.4E-12	41.7E-12	395.2E-12	36.6E-12	12.4E-12	148.4E-12	173.5E-12	111.4E-12	25.4E-12	272.3E-12

Drift Calculation

ID(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	110.6E-12	274.9E-12	685.6E-12	1.4E-09	1.2E-09	1.3E-09	815.1E-12	1.7E-09	1.8E-09	1.3E-09	1.0E-09	123.1E-12
121	-	80.3E-12	988.7E-12	515.0E-12	1.3E-09	1.9E-09	1.1E-09	647.5E-12	1.2E-09	1.2E-09	1.1E-09	846.9E-12	446.3E-12
122	-	123.0E-12	568.4E-12	654.2E-12	1.3E-09	1.4E-09	1.3E-09	804.2E-12	1.5E-09	1.6E-09	1.5E-09	944.2E-12	-69.7E-12
Average	-	104.7E-12	610.7E-12	618.3E-12	1.3E-09	1.5E-09	1.2E-09	755.6E-12	1.4E-09	1.5E-09	1.3E-09	941.4E-12	166.6E-12
Sigma	-	17.9E-12	292.9E-12	74.2E-12	28.4E-12	328.5E-12	79.0E-12	76.6E-12	213.2E-12	240.3E-12	153.9E-12	76.1E-12	212.9E-12

Parameter : Open Circuit Voltage (feedback diode) : VOC(FB)
 Test conditions : IF = 10mA
 Unit : V
 No spec limit specified.



Measurements

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	480.6E-03	501.6E-03	490.6E-03	491.2E-03	502.7E-03	490.0E-03	486.0E-03	486.0E-03	490.4E-03	490.9E-03	487.0E-03	497.4E-03	505.6E-03
ON_PROTON samples													
112	412.8E-03	439.2E-03	437.2E-03	431.8E-03	444.4E-03	425.8E-03	427.9E-03	442.9E-03	428.4E-03	431.1E-03	435.2E-03	439.9E-03	458.6E-03
113	410.8E-03	436.7E-03	435.6E-03	429.1E-03	442.6E-03	423.6E-03	429.4E-03	441.2E-03	426.0E-03	433.2E-03	430.5E-03	439.5E-03	456.5E-03
114	410.1E-03	439.1E-03	436.2E-03	428.1E-03	442.1E-03	424.1E-03	423.6E-03	440.5E-03	424.4E-03	433.2E-03	431.4E-03	438.6E-03	456.9E-03
Statistics													
Min	410.1E-03	436.7E-03	435.6E-03	428.1E-03	442.1E-03	423.6E-03	423.6E-03	440.5E-03	424.4E-03	431.1E-03	430.5E-03	438.6E-03	456.5E-03
Max	412.8E-03	439.2E-03	437.2E-03	431.8E-03	444.4E-03	425.8E-03	427.9E-03	442.9E-03	428.4E-03	433.2E-03	435.2E-03	439.9E-03	458.6E-03
Average	411.2E-03	438.3E-03	436.3E-03	429.7E-03	443.0E-03	424.5E-03	427.0E-03	441.6E-03	426.3E-03	432.5E-03	432.3E-03	439.3E-03	457.3E-03
Sigma	1.1E-03	1.2E-03	680.7E-06	1.6E-03	1.0E-03	938.8E-06	2.4E-03	1.0E-03	1.6E-03	971.2E-06	2.0E-03	548.8E-06	919.7E-06

Drift Calculation

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_PROTON samples													
112	-	26.5E-03	24.5E-03	19.0E-03	31.7E-03	13.0E-03	15.1E-03	30.2E-03	15.7E-03	18.4E-03	22.4E-03	27.2E-03	45.8E-03
113	-	25.8E-03	24.8E-03	18.3E-03	31.7E-03	12.8E-03	18.5E-03	30.4E-03	15.2E-03	22.4E-03	19.7E-03	28.6E-03	45.6E-03
114	-	29.0E-03	26.0E-03	18.0E-03	32.0E-03	14.0E-03	13.5E-03	30.4E-03	14.3E-03	23.0E-03	21.2E-03	28.5E-03	46.8E-03
Average	-	27.1E-03	25.1E-03	18.4E-03	31.8E-03	13.3E-03	15.7E-03	30.3E-03	15.1E-03	21.3E-03	21.1E-03	28.1E-03	46.1E-03
Sigma	-	1.4E-03	679.1E-06	439.4E-06	123.6E-06	531.0E-06	2.1E-03	113.1E-06	563.2E-06	2.1E-03	1.1E-03	663.2E-06	487.7E-06

Measurements

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	480.6E-03	501.6E-03	490.6E-03	491.2E-03	502.7E-03	490.0E-03	486.0E-03	486.0E-03	490.4E-03	490.9E-03	487.0E-03	497.4E-03	505.6E-03
ON_TID samples													
123	477.5E-03	490.5E-03	486.6E-03	477.2E-03	487.5E-03	469.9E-03	469.9E-03	484.6E-03	469.3E-03	475.5E-03	475.0E-03	483.1E-03	496.0E-03
124	481.6E-03	492.6E-03	489.7E-03	480.6E-03	491.4E-03	472.4E-03	472.9E-03	488.0E-03	472.4E-03	480.0E-03	479.8E-03	487.3E-03	499.0E-03
125	481.7E-03	492.3E-03	487.6E-03	480.2E-03	490.4E-03	472.3E-03	471.8E-03	487.1E-03	472.4E-03	476.2E-03	477.6E-03	485.9E-03	497.6E-03
Statistics													
Min	477.5E-03	490.5E-03	486.6E-03	477.2E-03	487.5E-03	469.9E-03	469.9E-03	484.6E-03	469.3E-03	475.5E-03	475.0E-03	483.1E-03	496.0E-03
Max	481.7E-03	492.6E-03	489.7E-03	480.6E-03	491.4E-03	472.4E-03	472.9E-03	488.0E-03	472.4E-03	480.0E-03	479.8E-03	487.3E-03	499.0E-03
Average	480.3E-03	491.8E-03	487.9E-03	479.3E-03	489.8E-03	471.5E-03	471.5E-03	486.6E-03	471.3E-03	477.2E-03	477.5E-03	485.4E-03	497.6E-03
Sigma	1.9E-03	910.4E-06	1.3E-03	1.5E-03	1.7E-03	1.1E-03	1.2E-03	1.4E-03	1.5E-03	2.0E-03	2.0E-03	1.7E-03	1.2E-03

Drift Calculation

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_TID samples													
123	-	13.0E-03	9.0E-03	-280.0E-06	10.0E-03	-7.6E-03	-7.6E-03	7.1E-03	-8.2E-03	-2.0E-03	-2.6E-03	5.6E-03	18.5E-03
124	-	11.0E-03	8.1E-03	-960.0E-06	9.8E-03	-9.2E-03	-8.7E-03	6.4E-03	-9.2E-03	-1.6E-03	-1.8E-03	5.7E-03	17.4E-03
125	-	10.6E-03	5.9E-03	-1.5E-03	8.8E-03	-9.4E-03	-9.9E-03	5.4E-03	-9.3E-03	-5.5E-03	-4.1E-03	4.2E-03	16.0E-03
Average	-	11.5E-03	7.7E-03	-920.0E-06	9.5E-03	-8.7E-03	-8.7E-03	6.3E-03	-8.9E-03	-3.0E-03	-2.8E-03	5.2E-03	17.3E-03
Sigma	-	1.0E-03	1.3E-03	507.0E-06	539.6E-06	813.5E-06	947.3E-06	692.3E-06	481.1E-06	1.7E-03	962.2E-06	652.4E-06	1.0E-03

Hirex Engineering	Total Dose Radiation Test Report										Ref.:	HRX/TID/1020
	OLH7000					Isolink Inc					Issue:	01

Measurements

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	480.6E-03	501.6E-03	490.6E-03	491.2E-03	502.7E-03	490.0E-03	486.0E-03	486.0E-03	490.4E-03	490.9E-03	487.0E-03	497.4E-03	505.6E-03
OFF PROTON samples													
115	415.9E-03	431.2E-03	430.8E-03	423.5E-03	436.6E-03	417.7E-03	420.0E-03	434.9E-03	420.2E-03	422.3E-03	423.6E-03	433.9E-03	450.3E-03
116	417.9E-03	434.8E-03	432.6E-03	425.6E-03	438.3E-03	419.7E-03	421.3E-03	436.6E-03	421.0E-03	424.0E-03	427.8E-03	435.6E-03	451.7E-03
117	415.8E-03	430.4E-03	428.4E-03	422.7E-03	435.3E-03	415.6E-03	418.0E-03	433.5E-03	416.2E-03	416.1E-03	420.2E-03	432.2E-03	448.8E-03
Statistics													
Min	415.8E-03	430.4E-03	428.4E-03	422.7E-03	435.3E-03	415.6E-03	418.0E-03	433.5E-03	416.2E-03	416.1E-03	420.2E-03	432.2E-03	448.8E-03
Max	417.9E-03	434.8E-03	432.6E-03	425.6E-03	438.3E-03	419.7E-03	421.3E-03	436.6E-03	421.0E-03	424.0E-03	427.8E-03	435.6E-03	451.7E-03
Average	416.5E-03	432.1E-03	430.6E-03	423.9E-03	436.7E-03	417.7E-03	419.7E-03	435.0E-03	419.2E-03	420.8E-03	423.9E-03	433.9E-03	450.3E-03
Sigma	972.3E-06	1.9E-03	1.8E-03	1.2E-03	1.2E-03	1.6E-03	1.4E-03	1.3E-03	2.1E-03	3.4E-03	3.1E-03	1.4E-03	1.2E-03

Drift Calculation

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	15.3E-03	14.9E-03	7.6E-03	20.7E-03	1.8E-03	4.1E-03	19.0E-03	4.4E-03	6.4E-03	7.7E-03	18.0E-03	34.4E-03
116	-	17.0E-03	14.8E-03	7.7E-03	20.4E-03	1.8E-03	3.4E-03	18.8E-03	3.2E-03	6.2E-03	9.9E-03	17.7E-03	33.8E-03
117	-	14.6E-03	12.6E-03	7.0E-03	19.6E-03	-120.0E-06	2.2E-03	17.8E-03	480.0E-06	320.0E-06	4.5E-03	16.4E-03	33.0E-03
Average	-	15.6E-03	14.1E-03	7.4E-03	20.2E-03	1.2E-03	3.2E-03	18.5E-03	2.7E-03	4.3E-03	7.3E-03	17.4E-03	33.8E-03
Sigma	-	978.3E-06	1.0E-03	341.0E-06	475.9E-06	914.7E-06	777.2E-06	549.4E-06	1.6E-03	2.8E-03	2.2E-03	672.8E-06	573.5E-06

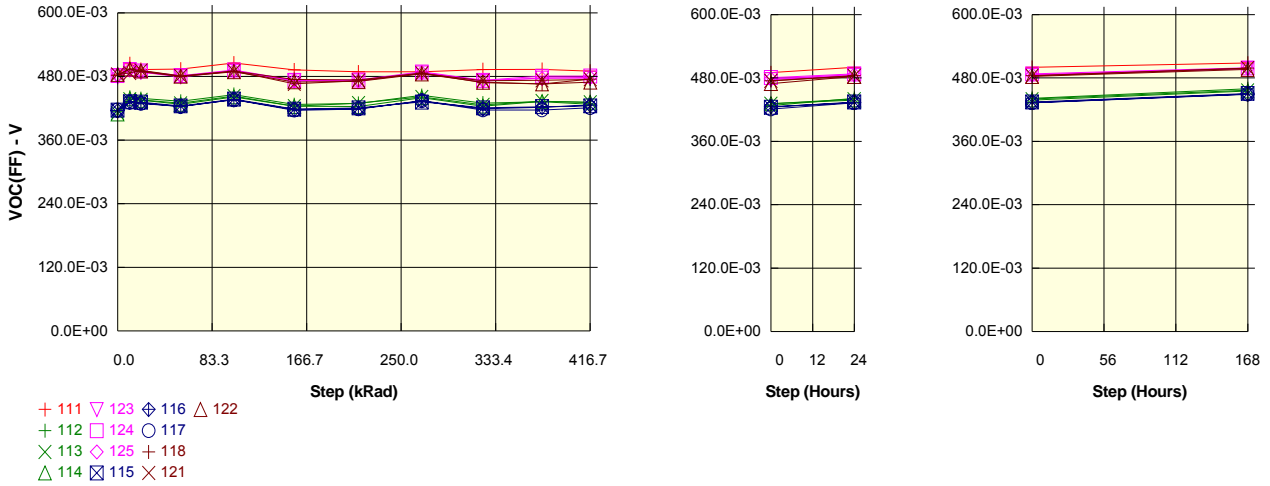
Measurements

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	480.6E-03	501.6E-03	490.6E-03	491.2E-03	502.7E-03	490.0E-03	486.0E-03	486.0E-03	490.4E-03	490.9E-03	487.0E-03	497.4E-03	505.6E-03
OFF TID samples													
118	481.2E-03	493.3E-03	488.2E-03	478.9E-03	488.8E-03	473.5E-03	472.5E-03	485.2E-03	467.3E-03	464.7E-03	473.6E-03	483.2E-03	497.8E-03
121	482.9E-03	486.0E-03	490.4E-03	479.9E-03	489.2E-03	465.4E-03	471.6E-03	485.4E-03	471.5E-03	472.3E-03	473.6E-03	483.3E-03	497.6E-03
122	481.5E-03	492.3E-03	488.5E-03	478.3E-03	487.0E-03	468.0E-03	468.8E-03	483.1E-03	467.4E-03	464.2E-03	467.2E-03	481.1E-03	494.6E-03
Statistics													
Min	481.2E-03	486.0E-03	488.2E-03	478.3E-03	487.0E-03	465.4E-03	468.8E-03	483.1E-03	467.3E-03	464.2E-03	467.2E-03	481.1E-03	494.6E-03
Max	482.9E-03	493.3E-03	490.4E-03	479.9E-03	489.2E-03	473.5E-03	472.5E-03	485.4E-03	471.5E-03	472.3E-03	473.6E-03	483.3E-03	497.8E-03
Average	481.9E-03	490.5E-03	489.0E-03	479.0E-03	488.3E-03	469.0E-03	471.0E-03	484.6E-03	468.7E-03	467.1E-03	471.5E-03	482.5E-03	496.7E-03
Sigma	740.7E-06	3.2E-03	1.0E-03	677.5E-06	956.8E-06	3.4E-03	1.6E-03	1.0E-03	2.0E-03	3.7E-03	3.0E-03	1.0E-03	1.5E-03

Drift Calculation

VOC(FB)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	12.1E-03	7.0E-03	-2.3E-03	7.6E-03	-7.7E-03	-8.7E-03	4.0E-03	-13.9E-03	-16.4E-03	-7.5E-03	2.0E-03	16.6E-03
121	-	3.2E-03	7.6E-03	-3.0E-03	6.3E-03	-17.4E-03	-11.3E-03	2.6E-03	-11.4E-03	-10.6E-03	-9.2E-03	400.0E-06	14.8E-03
122	-	10.8E-03	7.0E-03	-3.2E-03	5.4E-03	-13.5E-03	-12.7E-03	1.6E-03	-14.1E-03	-17.3E-03	-14.3E-03	-440.0E-06	13.1E-03
Average	-	8.7E-03	7.2E-03	-2.8E-03	6.4E-03	-12.9E-03	-10.9E-03	2.7E-03	-13.1E-03	-14.8E-03	-10.4E-03	653.3E-06	14.8E-03
Sigma	-	3.9E-03	273.9E-06	403.1E-06	889.0E-06	4.0E-03	1.7E-03	1.0E-03	1.2E-03	3.0E-03	2.9E-03	1.0E-03	1.5E-03

Parameter : Open Circuit Voltage (feedforward diode) : VOC(FF)
 Test conditions : IF = 10mA
 Unit : V
 No spec limit specified.



Measurements

VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	483.3E-03	504.2E-03	493.2E-03	493.9E-03	505.3E-03	492.6E-03	488.6E-03	488.6E-03	493.0E-03	493.5E-03	490.1E-03	500.2E-03	508.2E-03
ON PROTON samples													
112	414.2E-03	440.6E-03	438.6E-03	433.3E-03	446.0E-03	427.1E-03	429.2E-03	444.3E-03	429.7E-03	432.4E-03	427.8E-03	441.4E-03	459.8E-03
113	411.2E-03	437.0E-03	436.0E-03	429.6E-03	443.1E-03	423.9E-03	429.7E-03	441.6E-03	426.3E-03	433.6E-03	431.2E-03	440.0E-03	456.6E-03
114	409.5E-03	438.0E-03	435.3E-03	427.6E-03	441.8E-03	423.7E-03	423.2E-03	440.2E-03	424.1E-03	432.9E-03	431.4E-03	438.4E-03	455.5E-03
Statistics													
Min	409.5E-03	437.0E-03	435.3E-03	427.6E-03	441.8E-03	423.7E-03	423.2E-03	440.2E-03	424.1E-03	432.4E-03	427.8E-03	438.4E-03	455.5E-03
Max	414.2E-03	440.6E-03	438.6E-03	433.3E-03	446.0E-03	427.1E-03	429.7E-03	444.3E-03	429.7E-03	433.6E-03	431.4E-03	441.4E-03	459.8E-03
Average	411.6E-03	438.6E-03	436.7E-03	430.2E-03	443.6E-03	424.9E-03	427.4E-03	442.0E-03	426.7E-03	433.0E-03	430.1E-03	439.9E-03	457.3E-03
Sigma	1.9E-03	1.5E-03	1.4E-03	2.4E-03	1.7E-03	1.5E-03	3.0E-03	1.7E-03	2.3E-03	458.8E-06	1.7E-03	1.2E-03	1.8E-03

Drift Calculation

VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON PROTON samples													
112	-	26.4E-03	24.4E-03	19.1E-03	31.8E-03	12.9E-03	15.0E-03	30.1E-03	15.5E-03	18.2E-03	13.6E-03	27.2E-03	45.6E-03
113	-	25.8E-03	24.8E-03	18.4E-03	31.8E-03	12.7E-03	18.4E-03	30.3E-03	15.1E-03	22.3E-03	20.0E-03	28.7E-03	45.4E-03
114	-	28.6E-03	25.8E-03	18.1E-03	32.3E-03	14.2E-03	13.7E-03	30.7E-03	14.6E-03	23.4E-03	21.9E-03	28.9E-03	46.0E-03
Average	-	26.9E-03	25.0E-03	18.5E-03	32.0E-03	13.3E-03	15.7E-03	30.4E-03	15.1E-03	21.3E-03	18.5E-03	28.3E-03	45.7E-03
Sigma	-	1.2E-03	593.6E-06	439.4E-06	247.3E-06	674.4E-06	2.0E-03	264.0E-06	359.3E-06	2.2E-03	3.6E-03	749.3E-06	264.0E-06

Measurements

VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	483.3E-03	504.2E-03	493.2E-03	493.9E-03	505.3E-03	492.6E-03	488.6E-03	488.6E-03	493.0E-03	493.5E-03	490.1E-03	500.2E-03	508.2E-03
ON TID samples													
123	479.4E-03	492.4E-03	488.4E-03	479.3E-03	489.7E-03	471.8E-03	471.7E-03	486.4E-03	471.0E-03	477.2E-03	477.1E-03	485.0E-03	498.0E-03
124	481.8E-03	493.2E-03	490.5E-03	481.7E-03	492.2E-03	472.9E-03	473.5E-03	488.7E-03	472.9E-03	480.6E-03	480.7E-03	487.8E-03	499.2E-03
125	482.1E-03	492.9E-03	488.2E-03	480.8E-03	490.9E-03	472.5E-03	471.9E-03	487.4E-03	472.6E-03	476.4E-03	478.2E-03	486.2E-03	497.9E-03
Statistics													
Min	479.4E-03	492.4E-03	488.2E-03	479.3E-03	489.7E-03	471.8E-03	471.7E-03	486.4E-03	471.0E-03	476.4E-03	477.1E-03	485.0E-03	497.9E-03
Max	482.1E-03	493.2E-03	490.5E-03	481.7E-03	492.2E-03	472.9E-03	473.5E-03	488.7E-03	472.9E-03	480.6E-03	480.7E-03	487.8E-03	499.2E-03
Average	481.1E-03	492.8E-03	489.1E-03	480.6E-03	490.9E-03	472.4E-03	472.4E-03	487.5E-03	472.2E-03	478.0E-03	478.7E-03	486.3E-03	498.4E-03
Sigma	1.2E-03	361.2E-06	1.0E-03	971.2E-06	1.0E-03	460.7E-06	786.8E-06	919.3E-06	821.3E-06	1.8E-03	1.5E-03	1.2E-03	566.6E-06

Drift Calculation

VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON TID samples													
123	-	13.0E-03	9.1E-03	-40.0E-06	10.3E-03	-7.6E-03	-7.6E-03	7.1E-03	-8.3E-03	-2.2E-03	-2.2E-03	5.6E-03	18.6E-03
124	-	11.4E-03	8.6E-03	-160.0E-06	10.4E-03	-8.9E-03	-8.4E-03	6.8E-03	-8.9E-03	-1.3E-03	-1.1E-03	6.0E-03	17.3E-03
125	-	10.8E-03	6.1E-03	-1.4E-03	8.8E-03	-9.6E-03	-10.2E-03	5.2E-03	-9.5E-03	-5.8E-03	-4.0E-03	4.1E-03	15.8E-03
Average	-	11.7E-03	7.9E-03	-520.0E-06	9.8E-03	-8.7E-03	-8.7E-03	6.4E-03	-8.9E-03	-3.1E-03	-2.4E-03	5.2E-03	17.3E-03
Sigma	-	942.1E-06	1.3E-03	596.0E-06	736.1E-06	862.4E-06	1.1E-03	816.7E-06	489.9E-06	1.9E-03	1.2E-03	808.6E-06	1.2E-03

Hirex Engineering	Total Dose Radiation Test Report									Ref.:	HRX/TID/1020	
	OLH7000					Isolink Inc				Issue:	01	

Measurements

VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	483.3E-03	504.2E-03	493.2E-03	493.9E-03	505.3E-03	492.6E-03	488.6E-03	488.6E-03	493.0E-03	493.5E-03	490.1E-03	500.2E-03	508.2E-03
OFF PROTON samples													
115	416.7E-03	432.1E-03	431.8E-03	424.5E-03	437.5E-03	418.5E-03	420.7E-03	431.8E-03	421.0E-03	423.1E-03	424.7E-03	434.6E-03	450.8E-03
116	415.6E-03	432.4E-03	430.2E-03	423.4E-03	436.3E-03	417.6E-03	419.2E-03	434.6E-03	419.0E-03	421.9E-03	425.9E-03	433.6E-03	449.6E-03
117	416.6E-03	431.2E-03	429.2E-03	423.6E-03	436.2E-03	416.4E-03	418.7E-03	434.1E-03	417.0E-03	416.8E-03	421.2E-03	433.0E-03	449.4E-03
Statistics													
Min	415.6E-03	431.2E-03	429.2E-03	423.4E-03	436.2E-03	416.4E-03	418.7E-03	431.8E-03	417.0E-03	416.8E-03	421.2E-03	433.0E-03	449.4E-03
Max	416.7E-03	432.4E-03	431.8E-03	424.5E-03	437.5E-03	418.5E-03	420.7E-03	434.6E-03	421.0E-03	423.1E-03	425.9E-03	434.6E-03	450.8E-03
Average	416.3E-03	431.9E-03	430.4E-03	423.8E-03	436.6E-03	417.5E-03	419.5E-03	433.5E-03	419.0E-03	420.6E-03	423.9E-03	433.7E-03	450.0E-03
Sigma	481.1E-06	512.6E-06	1.0E-03	500.0E-06	596.0E-06	869.6E-06	870.9E-06	1.2E-03	1.6E-03	2.7E-03	2.0E-03	680.6E-06	625.7E-06

Drift Calculation

VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	15.4E-03	15.1E-03	7.8E-03	20.8E-03	1.8E-03	4.0E-03	15.2E-03	4.3E-03	6.4E-03	8.0E-03	18.0E-03	34.2E-03
116	-	16.8E-03	14.6E-03	7.7E-03	20.6E-03	2.0E-03	3.5E-03	18.9E-03	3.3E-03	6.3E-03	10.3E-03	17.9E-03	34.0E-03
117	-	14.6E-03	12.6E-03	7.0E-03	19.5E-03	-280.0E-06	2.0E-03	17.5E-03	320.0E-06	160.0E-06	4.6E-03	16.4E-03	32.8E-03
Average	-	15.6E-03	14.1E-03	7.5E-03	20.3E-03	1.2E-03	3.2E-03	17.2E-03	2.6E-03	4.3E-03	7.6E-03	17.4E-03	33.6E-03
Sigma	-	904.1E-06	1.1E-03	389.6E-06	569.5E-06	1.0E-03	847.3E-06	1.5E-03	1.7E-03	2.9E-03	2.3E-03	745.0E-06	599.6E-06

Measurements

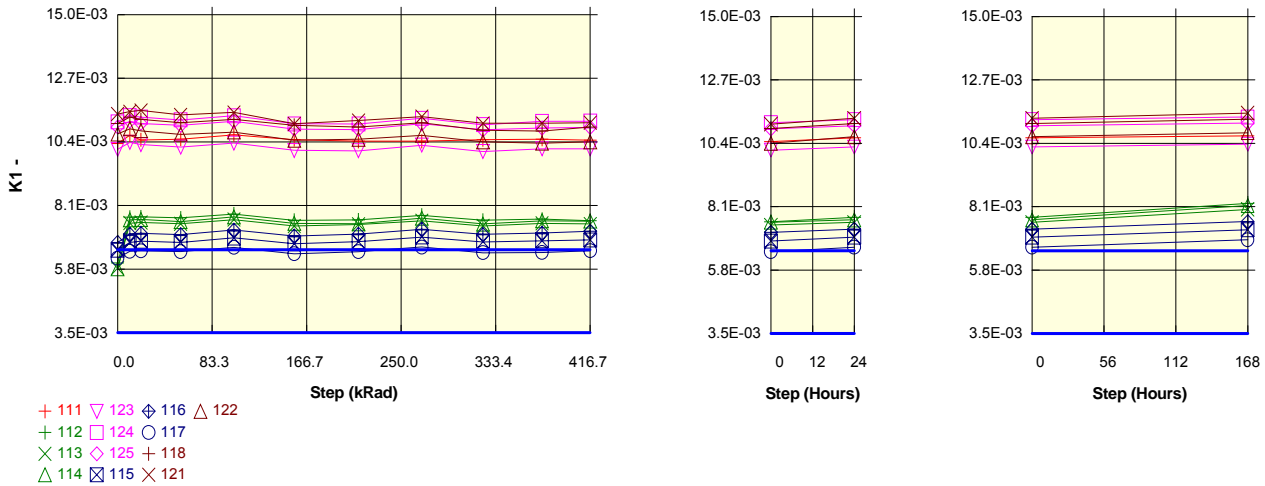
VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	483.3E-03	504.2E-03	493.2E-03	493.9E-03	505.3E-03	492.6E-03	488.6E-03	488.6E-03	493.0E-03	493.5E-03	490.1E-03	500.2E-03	508.2E-03
OFF TID samples													
118	482.3E-03	494.3E-03	489.3E-03	480.2E-03	490.2E-03	474.7E-03	473.7E-03	486.4E-03	468.4E-03	465.8E-03	475.1E-03	484.4E-03	498.8E-03
121	483.9E-03	486.9E-03	491.4E-03	481.0E-03	490.2E-03	466.2E-03	472.3E-03	486.1E-03	472.2E-03	473.0E-03	474.6E-03	484.0E-03	498.4E-03
122	483.6E-03	494.4E-03	490.7E-03	480.4E-03	489.0E-03	469.8E-03	470.6E-03	484.9E-03	469.1E-03	466.0E-03	469.3E-03	482.9E-03	496.4E-03
Statistics													
Min	482.3E-03	486.9E-03	489.3E-03	480.2E-03	489.0E-03	466.2E-03	470.6E-03	484.9E-03	468.4E-03	465.8E-03	469.3E-03	482.9E-03	496.4E-03
Max	483.9E-03	494.4E-03	491.4E-03	481.0E-03	490.2E-03	474.7E-03	473.7E-03	486.4E-03	472.2E-03	473.0E-03	475.1E-03	484.4E-03	498.8E-03
Average	483.3E-03	491.9E-03	490.5E-03	480.5E-03	489.8E-03	470.2E-03	472.2E-03	485.8E-03	469.9E-03	468.3E-03	473.0E-03	483.8E-03	497.9E-03
Sigma	679.1E-06	3.5E-03	894.6E-06	321.7E-06	546.8E-06	3.5E-03	1.3E-03	635.8E-06	1.6E-03	3.3E-03	2.6E-03	635.8E-06	1.1E-03

Drift Calculation

VOC(FF)	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	12.0E-03	7.0E-03	-2.1E-03	7.9E-03	-7.6E-03	-8.6E-03	4.1E-03	-13.9E-03	-16.5E-03	-7.2E-03	2.0E-03	16.5E-03
121	-	3.0E-03	7.6E-03	-2.9E-03	6.3E-03	-17.7E-03	-11.6E-03	2.2E-03	-11.7E-03	-10.9E-03	-9.3E-03	160.0E-06	14.6E-03
122	-	10.8E-03	7.1E-03	-3.2E-03	5.4E-03	-13.8E-03	-13.0E-03	1.3E-03	-14.5E-03	-17.6E-03	-14.3E-03	-720.0E-06	12.8E-03
Average	-	8.6E-03	7.2E-03	-2.7E-03	6.5E-03	-13.1E-03	-11.1E-03	2.5E-03	-13.4E-03	-15.0E-03	-10.3E-03	493.3E-06	14.6E-03
Sigma	-	4.0E-03	259.2E-06	457.6E-06	1.0E-03	4.1E-03	1.8E-03	1.2E-03	1.2E-03	3.0E-03	3.0E-03	1.2E-03	1.5E-03

Hirex Engineering	Total Dose Radiation Test Report			Ref.:	HRX/TID/1020
	OLH7000	Isolink Inc		Issue:	01

Parameter : Servo Current Gain : K1
 Test conditions : IF = 10mA ; VDET = -15V
 Unit :
 Spec Limit Min : 3.5E-03
 Spec Limit Max : 6.5E-03
 Spec limits are represented in bold lines on the graphic.



Measurements

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	10.3E-03	10.6E-03	10.5E-03	10.5E-03	10.7E-03	10.5E-03	10.4E-03	10.4E-03	10.5E-03	10.5E-03	10.5E-03	10.6E-03	10.7E-03
ON_PROTON samples													
112	6.0E-03	7.7E-03	7.7E-03	7.7E-03	7.8E-03	7.6E-03	7.6E-03	7.7E-03	7.6E-03	7.6E-03	7.6E-03	7.7E-03	8.2E-03
113	5.8E-03	7.5E-03	7.5E-03	7.4E-03	7.6E-03	7.4E-03	7.4E-03	7.6E-03	7.4E-03	7.5E-03	7.4E-03	7.5E-03	8.0E-03
114	5.8E-03	7.6E-03	7.6E-03	7.5E-03	7.7E-03	7.5E-03	7.4E-03	7.6E-03	7.4E-03	7.5E-03	7.5E-03	7.6E-03	8.1E-03
Statistics													
Min	5.8E-03	7.5E-03	7.5E-03	7.4E-03	7.6E-03	7.4E-03	7.4E-03	7.6E-03	7.4E-03	7.5E-03	7.4E-03	7.5E-03	8.0E-03
Max	6.0E-03	7.7E-03	7.7E-03	7.7E-03	7.8E-03	7.6E-03	7.6E-03	7.7E-03	7.6E-03	7.6E-03	7.6E-03	7.7E-03	8.2E-03
Average	5.9E-03	7.6E-03	7.6E-03	7.5E-03	7.7E-03	7.5E-03	7.5E-03	7.6E-03	7.5E-03	7.5E-03	7.5E-03	7.6E-03	8.1E-03
Sigma	98.8E-06	88.5E-06	82.2E-06	88.0E-06	82.9E-06	83.1E-06	71.2E-06	81.4E-06	85.2E-06	63.7E-06	54.0E-06	76.5E-06	89.9E-06

Drift Calculation

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_PROTON samples													
112	-	1.6E-03	1.7E-03	1.6E-03	1.8E-03	1.5E-03	1.5E-03	1.7E-03	1.5E-03	1.6E-03	1.5E-03	1.7E-03	2.2E-03
113	-	1.6E-03	1.7E-03	1.6E-03	1.8E-03	1.5E-03	1.6E-03	1.7E-03	1.5E-03	1.6E-03	1.6E-03	1.7E-03	2.2E-03
114	-	1.8E-03	1.8E-03	1.7E-03	1.9E-03	1.6E-03	1.6E-03	1.8E-03	1.6E-03	1.7E-03	1.7E-03	1.8E-03	2.3E-03
Average	-	1.7E-03	1.7E-03	1.6E-03	1.8E-03	1.6E-03	1.6E-03	1.8E-03	1.6E-03	1.6E-03	1.6E-03	1.7E-03	2.2E-03
Sigma	-	64.9E-06	61.4E-06	45.9E-06	56.5E-06	55.6E-06	33.6E-06	55.2E-06	43.2E-06	68.7E-06	84.4E-06	57.2E-06	73.8E-06

Measurements

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	10.3E-03	10.6E-03	10.5E-03	10.5E-03	10.7E-03	10.5E-03	10.4E-03	10.4E-03	10.5E-03	10.5E-03	10.5E-03	10.6E-03	10.7E-03
ON_TID samples													
123	10.1E-03	10.4E-03	10.3E-03	10.2E-03	10.4E-03	10.1E-03	10.1E-03	10.3E-03	10.1E-03	10.2E-03	10.2E-03	10.3E-03	10.4E-03
124	11.1E-03	11.4E-03	11.3E-03	11.2E-03	11.4E-03	11.1E-03	11.0E-03	11.3E-03	11.0E-03	11.1E-03	11.2E-03	11.3E-03	11.4E-03
125	10.9E-03	11.2E-03	11.1E-03	11.0E-03	11.1E-03	10.9E-03	10.8E-03	11.1E-03	10.8E-03	10.9E-03	10.9E-03	11.0E-03	11.1E-03
Statistics													
Min	10.1E-03	10.4E-03	10.3E-03	10.2E-03	10.4E-03	10.1E-03	10.1E-03	10.3E-03	10.1E-03	10.2E-03	10.2E-03	10.3E-03	10.4E-03
Max	11.1E-03	11.4E-03	11.3E-03	11.2E-03	11.4E-03	11.1E-03	11.0E-03	11.3E-03	11.0E-03	11.1E-03	11.2E-03	11.3E-03	11.4E-03
Average	10.7E-03	11.0E-03	10.9E-03	10.8E-03	11.0E-03	10.7E-03	10.7E-03	10.9E-03	10.6E-03	10.7E-03	10.7E-03	10.9E-03	11.0E-03
Sigma	432.7E-06	418.8E-06	423.6E-06	425.9E-06	425.9E-06	416.3E-06	416.9E-06	420.3E-06	418.8E-06	421.8E-06	427.6E-06	425.0E-06	423.8E-06

Drift Calculation

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_TID samples													
123	-	250.0E-06	174.0E-06	80.0E-06	230.0E-06	-38.0E-06	-50.0E-06	150.0E-06	-76.0E-06	22.0E-06	22.0E-06	138.0E-06	236.0E-06
124	-	224.0E-06	166.0E-06	68.0E-06	220.0E-06	-74.0E-06	-80.0E-06	128.0E-06	-108.0E-06	16.0E-06	22.0E-06	130.0E-06	226.0E-06
125	-	212.0E-06	130.0E-06	60.0E-06	206.0E-06	-72.0E-06	-92.0E-06	114.0E-06	-102.0E-06	-40.0E-06	-12.0E-06	104.0E-06	198.0E-06
Average	-	228.7E-06	156.7E-06	69.3E-06	218.7E-06	-61.3E-06	-74.0E-06	130.7E-06	-95.3E-06	-666.8E-09	10.7E-06	124.0E-06	220.0E-06
Sigma	-	15.9E-06	19.1E-06	8.2E-06	9.8E-06	16.5E-06	17.7E-06	14.8E-06	13.9E-06	27.9E-06	16.0E-06	14.5E-06	16.1E-06

Measurements

Hirex Engineering	Total Dose Radiation Test Report										Ref.:	HRX/TID/1020
	OLH7000					Isolink Inc					Issue:	01

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	10.3E-03	10.6E-03	10.5E-03	10.5E-03	10.7E-03	10.5E-03	10.4E-03	10.4E-03	10.5E-03	10.5E-03	10.5E-03	10.6E-03	10.7E-03
OFF PROTON samples													
115	6.5E-03	6.8E-03	6.8E-03	6.8E-03	6.9E-03	6.7E-03	6.8E-03	7.0E-03	6.8E-03	6.8E-03	6.9E-03	7.0E-03	7.3E-03
116	6.8E-03	7.1E-03	7.1E-03	7.0E-03	7.2E-03	7.0E-03	7.1E-03	7.2E-03	7.1E-03	7.1E-03	7.2E-03	7.3E-03	7.6E-03
117	6.2E-03	6.4E-03	6.5E-03	6.4E-03	6.6E-03	6.4E-03	6.4E-03	6.6E-03	6.4E-03	6.4E-03	6.5E-03	6.6E-03	6.9E-03
Statistics													
Min	6.2E-03	6.4E-03	6.5E-03	6.4E-03	6.6E-03	6.4E-03	6.4E-03	6.6E-03	6.4E-03	6.4E-03	6.5E-03	6.6E-03	6.9E-03
Max	6.8E-03	7.1E-03	7.1E-03	7.0E-03	7.2E-03	7.0E-03	7.1E-03	7.2E-03	7.1E-03	7.1E-03	7.2E-03	7.3E-03	7.6E-03
Average	6.5E-03	6.8E-03	6.8E-03	6.8E-03	6.9E-03	6.7E-03	6.8E-03	6.9E-03	6.7E-03	6.8E-03	6.8E-03	7.0E-03	7.2E-03
Sigma	235.3E-06	253.7E-06	257.3E-06	251.4E-06	255.6E-06	261.7E-06	261.5E-06	264.0E-06	272.3E-06	288.2E-06	287.1E-06	267.5E-06	270.2E-06

Drift Calculation

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	271.6E-06	317.6E-06	274.4E-06	437.8E-06	227.4E-06	302.2E-06	469.2E-06	296.8E-06	331.8E-06	366.6E-06	508.4E-06	771.8E-06
116	-	294.8E-06	320.6E-06	277.2E-06	439.4E-06	226.6E-06	296.2E-06	472.4E-06	285.2E-06	332.6E-06	396.0E-06	513.6E-06	789.6E-06
117	-	249.6E-06	267.6E-06	238.2E-06	390.4E-06	163.4E-06	234.0E-06	403.6E-06	198.4E-06	207.4E-06	270.6E-06	436.2E-06	705.0E-06
Average	-	272.0E-06	301.9E-06	263.3E-06	422.5E-06	205.8E-06	277.5E-06	448.4E-06	260.1E-06	290.6E-06	344.4E-06	486.1E-06	755.5E-06
Sigma	-	18.5E-06	24.3E-06	17.8E-06	22.7E-06	30.0E-06	30.8E-06	31.7E-06	43.9E-06	58.8E-06	53.5E-06	35.3E-06	36.4E-06

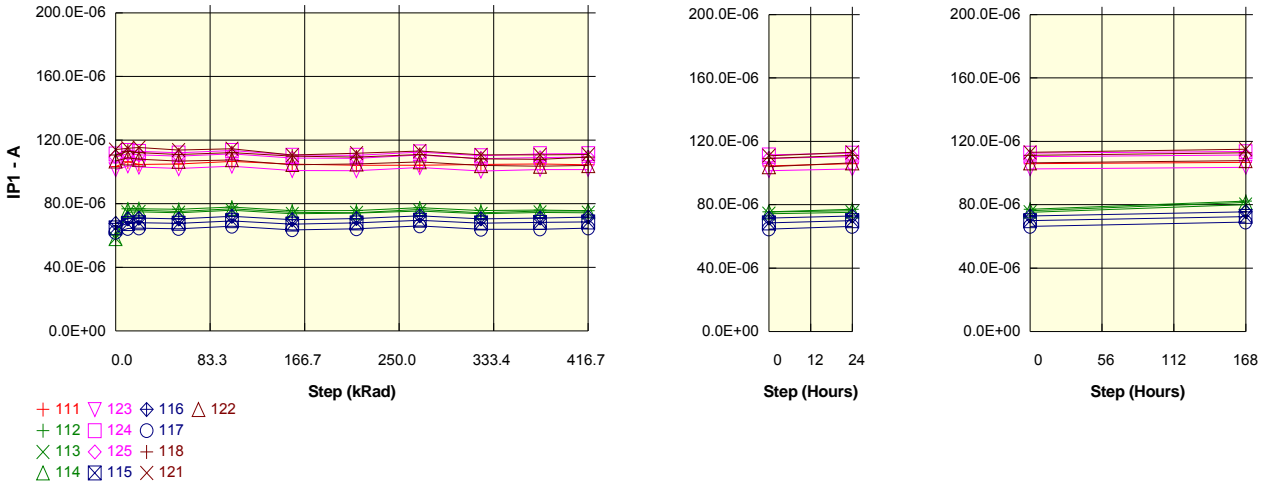
Measurements

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	10.3E-03	10.6E-03	10.5E-03	10.5E-03	10.7E-03	10.5E-03	10.4E-03	10.4E-03	10.5E-03	10.5E-03	10.5E-03	10.6E-03	10.7E-03
OFF TID samples													
118	11.1E-03	11.3E-03	11.2E-03	11.1E-03	11.2E-03	11.0E-03	10.9E-03	11.1E-03	10.8E-03	10.8E-03	10.9E-03	11.1E-03	11.3E-03
121	11.4E-03	11.5E-03	11.5E-03	11.4E-03	11.5E-03	11.1E-03	11.2E-03	11.3E-03	11.1E-03	11.1E-03	11.1E-03	11.3E-03	11.5E-03
122	10.7E-03	10.9E-03	10.8E-03	10.7E-03	10.8E-03	10.5E-03	10.5E-03	10.6E-03	10.4E-03	10.4E-03	10.4E-03	10.6E-03	10.8E-03
Statistics													
Min	10.7E-03	10.9E-03	10.8E-03	10.7E-03	10.8E-03	10.5E-03	10.5E-03	10.6E-03	10.4E-03	10.4E-03	10.4E-03	10.6E-03	10.8E-03
Max	11.4E-03	11.5E-03	11.5E-03	11.4E-03	11.5E-03	11.1E-03	11.2E-03	11.3E-03	11.1E-03	11.1E-03	11.1E-03	11.3E-03	11.5E-03
Average	11.1E-03	11.2E-03	11.2E-03	11.0E-03	11.1E-03	10.8E-03	10.9E-03	11.0E-03	10.8E-03	10.7E-03	10.8E-03	11.0E-03	11.2E-03
Sigma	293.2E-06	257.9E-06	300.2E-06	288.1E-06	292.0E-06	267.8E-06	281.0E-06	281.9E-06	276.3E-06	295.2E-06	295.5E-06	281.0E-06	297.7E-06

Drift Calculation

K1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	236.0E-06	148.0E-06	26.0E-06	148.0E-06	-64.0E-06	-124.0E-06	34.0E-06	-242.0E-06	-272.0E-06	-128.0E-06	58.0E-06	216.0E-06
121	-	86.0E-06	130.0E-06	-32.0E-06	56.0E-06	-354.0E-06	-234.0E-06	-96.0E-06	-336.0E-06	-334.0E-06	-312.0E-06	-98.0E-06	90.0E-06
122	-	186.0E-06	114.0E-06	-16.0E-06	68.0E-06	-230.0E-06	-194.0E-06	-54.0E-06	-288.0E-06	-334.0E-06	-286.0E-06	-48.0E-06	96.0E-06
Average	-	169.3E-06	130.7E-06	-7.3E-06	90.7E-06	-216.0E-06	-184.0E-06	-38.7E-06	-288.7E-06	-313.3E-06	-242.0E-06	-29.3E-06	134.0E-06
Sigma	-	62.4E-06	13.9E-06	24.5E-06	40.8E-06	118.8E-06	45.5E-06	54.2E-06	38.4E-06	29.2E-06	81.3E-06	65.0E-06	58.0E-06

Parameter : Servo Current : IP1
 Test conditions : IF = 10mA ; VDET = -15V
 Unit : A
 No spec limit specified.



Measurements

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	103.4E-06	106.4E-06	104.7E-06	105.0E-06	106.6E-06	104.8E-06	104.2E-06	104.2E-06	104.8E-06	105.0E-06	104.6E-06	106.0E-06	106.7E-06
ON_PROTON samples													
112	60.3E-06	76.8E-06	76.9E-06	76.5E-06	78.0E-06	75.7E-06	75.8E-06	77.5E-06	75.7E-06	76.1E-06	75.6E-06	77.2E-06	82.2E-06
113	58.4E-06	74.6E-06	74.9E-06	74.4E-06	75.9E-06	73.6E-06	74.2E-06	75.5E-06	73.7E-06	74.5E-06	74.4E-06	75.3E-06	80.1E-06
114	58.1E-06	75.9E-06	76.0E-06	75.2E-06	76.9E-06	74.6E-06	74.4E-06	76.4E-06	74.4E-06	75.5E-06	75.4E-06	76.2E-06	81.5E-06
Statistics													
Min	58.1E-06	74.6E-06	74.9E-06	74.4E-06	75.9E-06	73.6E-06	74.2E-06	75.5E-06	73.7E-06	74.5E-06	74.4E-06	75.3E-06	80.1E-06
Max	60.3E-06	76.8E-06	76.9E-06	76.5E-06	78.0E-06	75.7E-06	75.8E-06	77.5E-06	75.7E-06	76.1E-06	75.6E-06	77.2E-06	82.2E-06
Average	58.9E-06	75.8E-06	75.9E-06	75.4E-06	76.9E-06	74.6E-06	74.8E-06	76.5E-06	74.6E-06	75.4E-06	75.1E-06	76.3E-06	81.3E-06
Sigma	987.7E-09	884.7E-09	821.9E-09	880.1E-09	829.0E-09	830.9E-09	711.8E-09	813.9E-09	852.4E-09	636.6E-09	539.7E-09	765.2E-09	899.1E-09

Drift Calculation

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_PROTON samples													
112	-	16.5E-06	16.6E-06	16.2E-06	17.6E-06	15.3E-06	15.5E-06	17.2E-06	15.4E-06	15.8E-06	15.3E-06	16.9E-06	21.9E-06
113	-	16.3E-06	16.5E-06	16.1E-06	17.6E-06	15.3E-06	15.8E-06	17.1E-06	15.3E-06	16.2E-06	16.0E-06	17.0E-06	21.7E-06
114	-	17.8E-06	17.9E-06	17.1E-06	18.8E-06	16.5E-06	16.3E-06	18.3E-06	16.3E-06	17.4E-06	17.3E-06	18.1E-06	23.4E-06
Average	-	16.8E-06	17.0E-06	16.5E-06	18.0E-06	15.7E-06	15.9E-06	17.6E-06	15.6E-06	16.5E-06	16.2E-06	17.3E-06	22.3E-06
Sigma	-	649.2E-09	614.3E-09	459.4E-09	565.2E-09	555.9E-09	336.0E-09	551.8E-09	432.4E-09	687.3E-09	844.0E-09	571.8E-09	738.0E-09

Measurements

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	103.4E-06	106.4E-06	104.7E-06	105.0E-06	106.6E-06	104.8E-06	104.2E-06	104.2E-06	104.8E-06	105.0E-06	104.6E-06	106.0E-06	106.7E-06
ON_TID samples													
123	101.3E-06	103.8E-06	103.1E-06	102.1E-06	103.6E-06	100.9E-06	100.8E-06	102.8E-06	100.6E-06	101.5E-06	101.5E-06	102.7E-06	103.7E-06
124	111.3E-06	113.5E-06	113.0E-06	112.0E-06	113.5E-06	110.6E-06	110.5E-06	112.6E-06	110.2E-06	111.5E-06	111.5E-06	112.6E-06	113.6E-06
125	109.4E-06	111.5E-06	110.7E-06	110.0E-06	111.5E-06	108.7E-06	108.5E-06	110.5E-06	108.4E-06	109.0E-06	109.3E-06	110.4E-06	111.4E-06
Statistics													
Min	101.3E-06	103.8E-06	103.1E-06	102.1E-06	103.6E-06	100.9E-06	100.8E-06	102.8E-06	100.6E-06	101.5E-06	101.5E-06	102.7E-06	103.7E-06
Max	111.3E-06	113.5E-06	113.0E-06	112.0E-06	113.5E-06	110.6E-06	110.5E-06	112.6E-06	110.2E-06	111.5E-06	111.5E-06	112.6E-06	113.6E-06
Average	107.3E-06	109.6E-06	108.9E-06	108.0E-06	109.5E-06	106.7E-06	106.6E-06	108.6E-06	106.4E-06	107.3E-06	107.4E-06	108.6E-06	109.5E-06
Sigma	4.3E-06	4.2E-06	4.2E-06	4.3E-06	4.3E-06	4.2E-06	4.2E-06	4.2E-06	4.2E-06	4.2E-06	4.3E-06	4.3E-06	4.2E-06

Drift Calculation

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_TID samples													
123	-	2.5E-06	1.7E-06	800.0E-09	2.3E-06	-380.0E-09	-500.0E-09	1.5E-06	-760.0E-09	220.0E-09	220.0E-09	1.4E-06	2.4E-06
124	-	2.2E-06	1.7E-06	680.0E-09	2.2E-06	-740.0E-09	-800.0E-09	1.3E-06	-1.1E-06	160.0E-09	220.0E-09	1.3E-06	2.3E-06
125	-	2.1E-06	1.3E-06	600.0E-09	2.1E-06	-720.0E-09	-920.0E-09	1.1E-06	-1.0E-06	-400.0E-09	-120.0E-09	1.0E-06	2.0E-06
Average	-	2.3E-06	1.6E-06	693.3E-09	2.2E-06	-613.3E-09	-740.0E-09	1.3E-06	-953.3E-09	-6.7E-09	106.7E-09	1.2E-06	2.2E-06
Sigma	-	158.6E-09	191.4E-09	82.2E-09	98.4E-09	165.2E-09	176.6E-09	148.2E-09	138.9E-09	279.2E-09	160.3E-09	145.1E-09	160.8E-09

Hirex Engineering	Total Dose Radiation Test Report									Ref.:	HRX/TID/1020	
	OLH7000			Isolink Inc			Issue:	01				

Measurements

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	103.4E-06	106.4E-06	104.7E-06	105.0E-06	106.6E-06	104.8E-06	104.2E-06	104.2E-06	104.8E-06	105.0E-06	104.6E-06	106.0E-06	106.7E-06
OFF PROTON samples													
115	64.9E-06	67.6E-06	68.1E-06	67.7E-06	69.3E-06	67.2E-06	67.9E-06	69.6E-06	67.9E-06	68.2E-06	68.6E-06	70.0E-06	72.6E-06
116	67.7E-06	70.7E-06	70.9E-06	70.5E-06	72.1E-06	70.0E-06	70.7E-06	72.5E-06	70.6E-06	71.1E-06	71.7E-06	72.9E-06	75.6E-06
117	62.0E-06	64.5E-06	64.6E-06	64.3E-06	65.9E-06	63.6E-06	64.3E-06	66.0E-06	63.9E-06	64.0E-06	64.7E-06	66.3E-06	69.0E-06
Statistics													
Min	62.0E-06	64.5E-06	64.6E-06	64.3E-06	65.9E-06	63.6E-06	64.3E-06	66.0E-06	63.9E-06	64.0E-06	64.7E-06	66.3E-06	69.0E-06
Max	67.7E-06	70.7E-06	70.9E-06	70.5E-06	72.1E-06	70.0E-06	70.7E-06	72.5E-06	70.6E-06	71.1E-06	71.7E-06	72.9E-06	75.6E-06
Average	64.9E-06	67.6E-06	67.9E-06	67.5E-06	69.1E-06	66.9E-06	67.6E-06	69.4E-06	67.5E-06	67.8E-06	68.3E-06	69.7E-06	72.4E-06
Sigma	2.4E-06	2.5E-06	2.6E-06	2.5E-06	2.6E-06	2.6E-06	2.6E-06	2.6E-06	2.7E-06	2.9E-06	2.9E-06	2.7E-06	2.7E-06

Drift Calculation

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	2.7E-06	3.2E-06	2.7E-06	4.4E-06	2.3E-06	3.0E-06	4.7E-06	3.0E-06	3.3E-06	3.7E-06	5.1E-06	7.7E-06
116	-	2.9E-06	3.2E-06	2.8E-06	4.4E-06	2.3E-06	3.0E-06	4.7E-06	2.9E-06	3.3E-06	4.0E-06	5.1E-06	7.9E-06
117	-	2.5E-06	2.7E-06	2.4E-06	3.9E-06	1.6E-06	2.3E-06	4.0E-06	2.0E-06	2.1E-06	2.7E-06	4.4E-06	7.1E-06
Average	-	2.7E-06	3.0E-06	2.6E-06	4.2E-06	2.1E-06	2.8E-06	4.5E-06	2.6E-06	2.9E-06	3.4E-06	4.9E-06	7.6E-06
Sigma	-	184.5E-09	243.1E-09	177.6E-09	227.3E-09	299.8E-09	308.3E-09	317.1E-09	439.1E-09	588.3E-09	535.5E-09	353.2E-09	364.2E-09

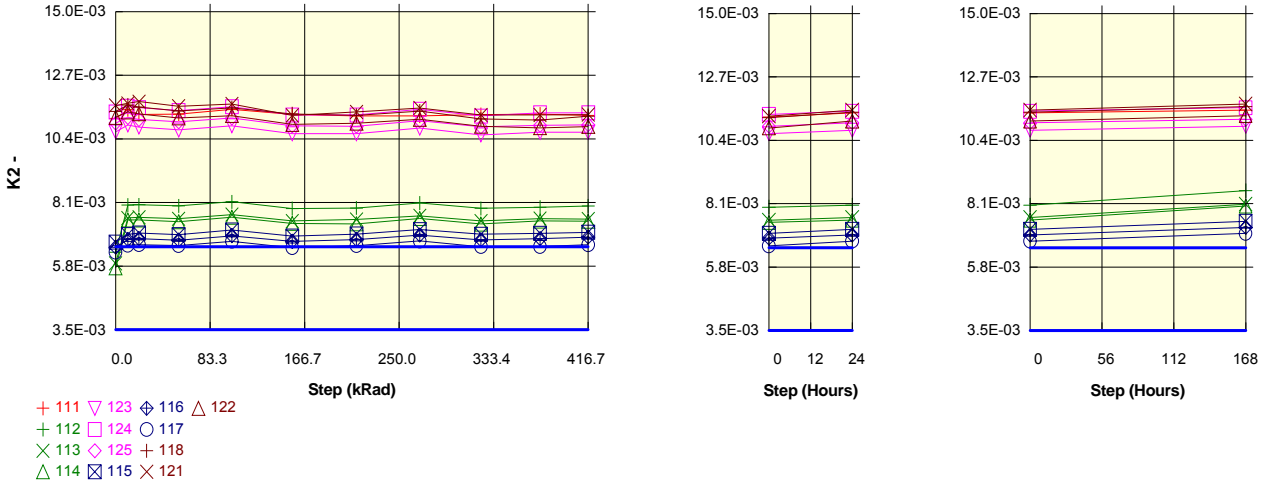
Measurements

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	103.4E-06	106.4E-06	104.7E-06	105.0E-06	106.6E-06	104.8E-06	104.2E-06	104.2E-06	104.8E-06	105.0E-06	104.6E-06	106.0E-06	106.7E-06
OFF TID samples													
118	110.6E-06	113.0E-06	112.1E-06	110.9E-06	112.1E-06	110.0E-06	109.4E-06	111.0E-06	108.2E-06	107.9E-06	109.4E-06	111.2E-06	112.8E-06
121	114.1E-06	115.0E-06	115.4E-06	113.8E-06	114.7E-06	110.6E-06	111.8E-06	113.1E-06	110.7E-06	110.8E-06	111.0E-06	113.1E-06	115.0E-06
122	106.9E-06	108.8E-06	108.1E-06	106.8E-06	107.6E-06	104.6E-06	105.0E-06	106.4E-06	104.0E-06	103.6E-06	104.1E-06	106.4E-06	107.9E-06
Statistics													
Min	106.9E-06	108.8E-06	108.1E-06	106.8E-06	107.6E-06	104.6E-06	105.0E-06	106.4E-06	104.0E-06	103.6E-06	104.1E-06	106.4E-06	107.9E-06
Max	114.1E-06	115.0E-06	115.4E-06	113.8E-06	114.7E-06	110.6E-06	111.8E-06	113.1E-06	110.7E-06	110.8E-06	111.0E-06	113.1E-06	115.0E-06
Average	110.6E-06	112.2E-06	111.9E-06	110.5E-06	111.5E-06	108.4E-06	108.7E-06	110.2E-06	107.7E-06	107.4E-06	108.1E-06	110.3E-06	111.9E-06
Sigma	2.9E-06	2.6E-06	3.0E-06	2.9E-06	2.9E-06	2.7E-06	2.8E-06	2.8E-06	2.8E-06	3.0E-06	3.0E-06	2.8E-06	3.0E-06

Drift Calculation

IP1	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	2.4E-06	1.5E-06	260.0E-09	1.5E-06	-640.0E-09	-1.2E-06	340.0E-09	-2.4E-06	-2.7E-06	-1.3E-06	580.0E-09	2.2E-06
121	-	860.0E-09	1.3E-06	-320.0E-09	560.0E-09	-3.5E-06	-2.3E-06	-960.0E-09	-3.4E-06	-3.3E-06	-3.1E-06	-980.0E-09	900.0E-09
122	-	1.9E-06	1.1E-06	-160.0E-09	680.0E-09	-2.3E-06	-1.9E-06	-540.0E-09	-2.9E-06	-3.3E-06	-2.9E-06	-480.0E-09	960.0E-09
Average	-	1.7E-06	1.3E-06	-73.3E-09	906.7E-09	-2.2E-06	-1.8E-06	-386.7E-09	-2.9E-06	-3.1E-06	-2.4E-06	-293.3E-09	1.3E-06
Sigma	-	623.6E-09	138.9E-09	244.6E-09	408.4E-09	1.2E-06	454.6E-09	541.7E-09	383.8E-09	292.3E-09	813.1E-09	650.4E-09	580.3E-09

Parameter : Forward Current Gain : K2
 Test conditions : IF = 10mA ; VDET = -15V
 Unit :
 Spec Limit Min : 3.5E-03
 Spec Limit Max : 6.5E-03
 Spec limits are represented in bold lines on the graphic.



Measurements

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	11.1E-03	11.5E-03	11.3E-03	11.3E-03	11.5E-03	11.3E-03	11.2E-03	11.2E-03	11.3E-03	11.3E-03	11.2E-03	11.4E-03	11.5E-03
ON_PROTON samples													
112	6.3E-03	8.0E-03	8.0E-03	8.0E-03	8.1E-03	7.9E-03	7.9E-03	8.1E-03	7.9E-03	7.9E-03	8.0E-03	8.1E-03	8.6E-03
113	5.9E-03	7.5E-03	7.6E-03	7.5E-03	7.7E-03	7.4E-03	7.5E-03	7.6E-03	7.4E-03	7.5E-03	7.6E-03	7.6E-03	8.1E-03
114	5.7E-03	7.5E-03	7.5E-03	7.4E-03	7.6E-03	7.3E-03	7.3E-03	7.5E-03	7.3E-03	7.4E-03	7.4E-03	7.5E-03	8.0E-03
Statistics													
Min	5.7E-03	7.5E-03	7.5E-03	7.4E-03	7.6E-03	7.3E-03	7.3E-03	7.5E-03	7.3E-03	7.4E-03	7.4E-03	7.5E-03	8.0E-03
Max	6.3E-03	8.0E-03	8.0E-03	8.0E-03	8.1E-03	7.9E-03	7.9E-03	8.1E-03	7.9E-03	7.9E-03	8.0E-03	8.1E-03	8.6E-03
Average	6.0E-03	7.7E-03	7.7E-03	7.6E-03	7.8E-03	7.6E-03	7.6E-03	7.7E-03	7.5E-03	7.6E-03	7.6E-03	7.7E-03	8.2E-03
Sigma	236.5E-06	239.4E-06	240.2E-06	249.3E-06	243.9E-06	238.1E-06	241.9E-06	242.6E-06	246.6E-06	216.8E-06	245.8E-06	237.1E-06	247.7E-06

Drift Calculation

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_PROTON samples													
112	-	1.7E-03	1.7E-03	1.7E-03	1.8E-03	1.6E-03	1.6E-03	1.8E-03	1.6E-03	1.6E-03	1.7E-03	1.8E-03	2.3E-03
113	-	1.6E-03	1.7E-03	1.6E-03	1.8E-03	1.5E-03	1.6E-03	1.7E-03	1.5E-03	1.6E-03	1.6E-03	1.7E-03	2.2E-03
114	-	1.7E-03	1.7E-03	1.7E-03	1.8E-03	1.6E-03	1.6E-03	1.8E-03	1.6E-03	1.7E-03	1.7E-03	1.8E-03	2.3E-03
Average	-	1.7E-03	1.7E-03	1.7E-03	1.8E-03	1.6E-03	1.6E-03	1.8E-03	1.6E-03	1.6E-03	1.7E-03	1.7E-03	2.2E-03
Sigma	-	40.5E-06	31.8E-06	31.4E-06	34.7E-06	34.9E-06	7.5E-06	33.4E-06	28.4E-06	34.7E-06	40.4E-06	30.4E-06	47.0E-06

Measurements

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	11.1E-03	11.5E-03	11.3E-03	11.3E-03	11.5E-03	11.3E-03	11.2E-03	11.2E-03	11.3E-03	11.3E-03	11.2E-03	11.4E-03	11.5E-03
ON_TID samples													
123	10.7E-03	10.9E-03	10.8E-03	10.7E-03	10.9E-03	10.6E-03	10.6E-03	10.8E-03	10.5E-03	10.6E-03	10.6E-03	10.8E-03	10.9E-03
124	11.4E-03	11.6E-03	11.5E-03	11.4E-03	11.6E-03	11.3E-03	11.3E-03	11.5E-03	11.2E-03	11.3E-03	11.3E-03	11.5E-03	11.6E-03
125	11.0E-03	11.2E-03	11.1E-03	11.0E-03	11.2E-03	10.9E-03	10.9E-03	11.1E-03	10.8E-03	10.9E-03	10.9E-03	11.0E-03	11.2E-03
Statistics													
Min	10.7E-03	10.9E-03	10.8E-03	10.7E-03	10.9E-03	10.6E-03	10.6E-03	10.8E-03	10.5E-03	10.6E-03	10.6E-03	10.8E-03	10.9E-03
Max	11.4E-03	11.6E-03	11.5E-03	11.4E-03	11.6E-03	11.3E-03	11.3E-03	11.5E-03	11.2E-03	11.3E-03	11.3E-03	11.5E-03	11.6E-03
Average	11.0E-03	11.2E-03	11.2E-03	11.1E-03	11.2E-03	10.9E-03	10.9E-03	11.1E-03	10.9E-03	11.0E-03	11.0E-03	11.1E-03	11.2E-03
Sigma	293.7E-06	278.6E-06	288.3E-06	286.1E-06	281.6E-06	277.1E-06	278.6E-06	278.8E-06	280.2E-06	288.9E-06	288.0E-06	285.4E-06	278.7E-06

Drift Calculation

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_TID samples													
123	-	252.0E-06	178.0E-06	74.0E-06	224.0E-06	-62.0E-06	-64.0E-06	140.0E-06	-106.0E-06	-8.0E-06	-10.0E-06	114.0E-06	256.0E-06
124	-	212.0E-06	160.0E-06	54.0E-06	192.0E-06	-104.0E-06	-104.0E-06	100.0E-06	-140.0E-06	-28.0E-06	-28.0E-06	90.0E-06	214.0E-06
125	-	204.0E-06	128.0E-06	48.0E-06	184.0E-06	-98.0E-06	-112.0E-06	88.0E-06	-134.0E-06	-80.0E-06	-56.0E-06	68.0E-06	192.0E-06
Average	-	222.7E-06	155.3E-06	58.7E-06	200.0E-06	-88.0E-06	-93.3E-06	109.3E-06	-126.7E-06	-38.7E-06	-31.3E-06	90.7E-06	220.7E-06
Sigma	-	21.0E-06	20.7E-06	11.1E-06	17.3E-06	18.5E-06	21.0E-06	22.2E-06	14.8E-06	30.3E-06	18.9E-06	18.8E-06	26.5E-06

Measurements

Hirex Engineering	Total Dose Radiation Test Report									Ref.:	HRX/TID/1020	
	OLH7000				Isolink Inc					Issue:	01	

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	11.1E-03	11.5E-03	11.3E-03	11.3E-03	11.5E-03	11.3E-03	11.2E-03	11.2E-03	11.3E-03	11.3E-03	11.2E-03	11.4E-03	11.5E-03
OFF PROTON samples													
115	6.7E-03	7.0E-03	7.0E-03	6.9E-03	7.1E-03	6.9E-03	7.0E-03	7.1E-03	7.0E-03	7.0E-03	7.0E-03	7.2E-03	7.5E-03
116	6.5E-03	6.8E-03	6.8E-03	6.7E-03	6.9E-03	6.7E-03	6.8E-03	6.9E-03	6.8E-03	6.8E-03	6.9E-03	7.0E-03	7.2E-03
117	6.3E-03	6.6E-03	6.6E-03	6.5E-03	6.7E-03	6.5E-03	6.5E-03	6.7E-03	6.5E-03	6.5E-03	6.6E-03	6.7E-03	7.0E-03
Statistics													
Min	6.3E-03	6.6E-03	6.6E-03	6.5E-03	6.7E-03	6.5E-03	6.5E-03	6.7E-03	6.5E-03	6.5E-03	6.6E-03	6.7E-03	7.0E-03
Max	6.7E-03	7.0E-03	7.0E-03	6.9E-03	7.1E-03	6.9E-03	7.0E-03	7.1E-03	7.0E-03	7.0E-03	7.0E-03	7.2E-03	7.5E-03
Average	6.5E-03	6.8E-03	6.8E-03	6.7E-03	6.9E-03	6.7E-03	6.8E-03	6.9E-03	6.8E-03	6.8E-03	6.8E-03	7.0E-03	7.2E-03
Sigma	149.7E-06	160.9E-06	172.0E-06	163.4E-06	167.0E-06	171.5E-06	173.0E-06	167.9E-06	185.4E-06	197.1E-06	186.1E-06	175.5E-06	181.4E-06

Drift Calculation

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	277.8E-06	325.2E-06	273.2E-06	435.0E-06	216.6E-06	291.6E-06	449.2E-06	284.8E-06	318.4E-06	353.4E-06	500.6E-06	793.8E-06
116	-	278.4E-06	304.0E-06	256.8E-06	412.0E-06	209.0E-06	274.4E-06	438.8E-06	262.4E-06	305.4E-06	364.8E-06	479.2E-06	756.2E-06
117	-	250.6E-06	270.6E-06	239.6E-06	392.6E-06	163.6E-06	234.6E-06	404.6E-06	197.8E-06	204.6E-06	268.2E-06	437.4E-06	716.0E-06
Average	-	268.9E-06	299.9E-06	256.5E-06	413.2E-06	196.4E-06	266.9E-06	430.9E-06	248.3E-06	276.1E-06	328.8E-06	472.4E-06	755.3E-06
Sigma	-	13.0E-06	22.5E-06	13.7E-06	17.3E-06	23.4E-06	23.9E-06	19.1E-06	36.9E-06	50.9E-06	43.1E-06	26.2E-06	31.8E-06

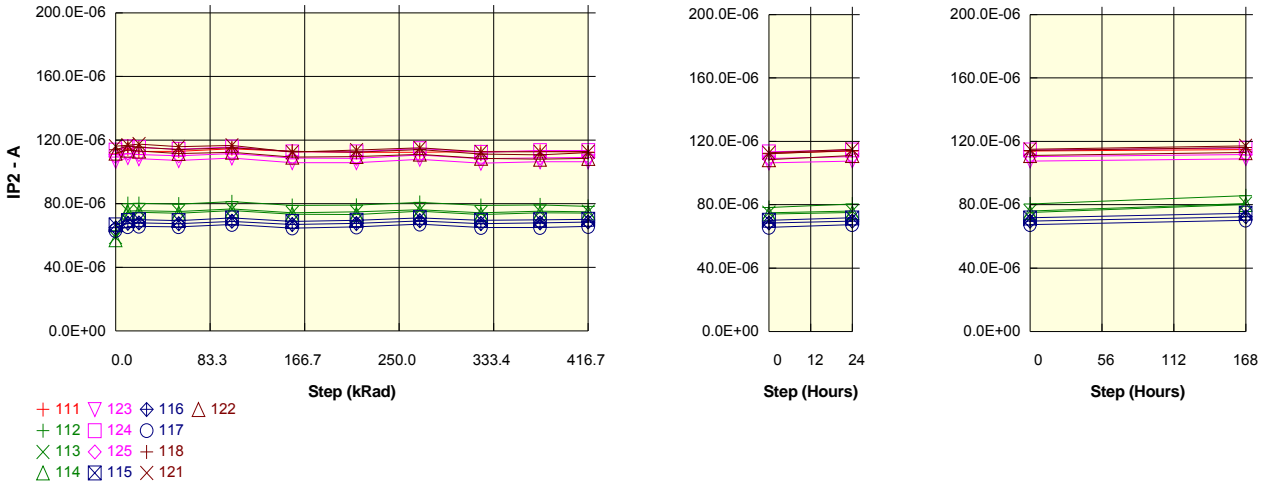
Measurements

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	11.1E-03	11.5E-03	11.3E-03	11.3E-03	11.5E-03	11.3E-03	11.2E-03	11.2E-03	11.3E-03	11.3E-03	11.2E-03	11.4E-03	11.5E-03
OFF TID samples													
118	11.4E-03	11.6E-03	11.5E-03	11.4E-03	11.5E-03	11.3E-03	11.2E-03	11.4E-03	11.1E-03	11.1E-03	11.2E-03	11.4E-03	11.6E-03
121	11.6E-03	11.7E-03	11.7E-03	11.6E-03	11.7E-03	11.2E-03	11.4E-03	11.5E-03	11.3E-03	11.3E-03	11.3E-03	11.5E-03	11.7E-03
122	11.2E-03	11.4E-03	11.3E-03	11.2E-03	11.2E-03	10.9E-03	11.0E-03	11.1E-03	10.9E-03	10.8E-03	10.8E-03	11.1E-03	11.3E-03
Statistics													
Min	11.2E-03	11.4E-03	11.3E-03	11.2E-03	11.2E-03	10.9E-03	11.0E-03	11.1E-03	10.9E-03	10.8E-03	10.8E-03	11.1E-03	11.3E-03
Max	11.6E-03	11.7E-03	11.7E-03	11.6E-03	11.7E-03	11.3E-03	11.4E-03	11.5E-03	11.3E-03	11.3E-03	11.3E-03	11.5E-03	11.7E-03
Average	11.4E-03	11.6E-03	11.5E-03	11.4E-03	11.5E-03	11.2E-03	11.2E-03	11.3E-03	11.1E-03	11.1E-03	11.1E-03	11.3E-03	11.5E-03
Sigma	173.1E-06	135.8E-06	180.7E-06	172.5E-06	176.4E-06	167.5E-06	169.9E-06	170.5E-06	168.8E-06	189.3E-06	192.8E-06	171.9E-06	180.0E-06

Drift Calculation

K2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	226.0E-06	148.0E-06	12.0E-06	126.0E-06	-94.0E-06	-150.0E-06	6.0E-06	-280.0E-06	-316.0E-06	-174.0E-06	20.0E-06	224.0E-06
121	-	78.0E-06	140.0E-06	-28.0E-06	56.0E-06	-360.0E-06	-236.0E-06	-94.0E-06	-344.0E-06	-346.0E-06	-328.0E-06	-110.0E-06	108.0E-06
122	-	188.0E-06	122.0E-06	-24.0E-06	56.0E-06	-260.0E-06	-218.0E-06	-74.0E-06	-328.0E-06	-382.0E-06	-338.0E-06	-84.0E-06	112.0E-06
Average	-	164.0E-06	136.7E-06	-13.3E-06	79.3E-06	-238.0E-06	-201.3E-06	-54.0E-06	-317.3E-06	-348.0E-06	-280.0E-06	-58.0E-06	148.0E-06
Sigma	-	62.8E-06	10.9E-06	18.0E-06	33.0E-06	109.7E-06	37.0E-06	43.2E-06	27.2E-06	27.0E-06	75.1E-06	56.2E-06	53.8E-06

Parameter : Forward Current : IP2
 Test conditions : IF = 10mA ; VDET = -15V
 Unit : A
 No spec limit specified.



Measurements

IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	111.4E-06	114.6E-06	112.8E-06	113.0E-06	114.7E-06	112.9E-06	112.3E-06	112.3E-06	112.8E-06	113.0E-06	112.5E-06	114.0E-06	114.9E-06
ON PROTON samples													
112	63.0E-06	80.1E-06	80.2E-06	79.8E-06	81.3E-06	78.9E-06	79.0E-06	80.8E-06	78.9E-06	79.3E-06	78.4E-06	80.5E-06	85.8E-06
113	59.0E-06	75.4E-06	75.7E-06	75.1E-06	76.7E-06	74.3E-06	74.9E-06	76.2E-06	74.3E-06	75.2E-06	75.0E-06	76.0E-06	80.9E-06
114	57.3E-06	74.7E-06	74.7E-06	74.1E-06	75.7E-06	73.5E-06	73.3E-06	75.3E-06	73.2E-06	74.3E-06	74.2E-06	75.1E-06	80.2E-06
Statistics													
Min	57.3E-06	74.7E-06	74.7E-06	74.1E-06	75.7E-06	73.5E-06	73.3E-06	75.3E-06	73.2E-06	74.3E-06	74.2E-06	75.1E-06	80.2E-06
Max	63.0E-06	80.1E-06	80.2E-06	79.8E-06	81.3E-06	78.9E-06	79.0E-06	80.8E-06	78.9E-06	79.3E-06	78.4E-06	80.5E-06	85.8E-06
Average	59.8E-06	76.7E-06	76.8E-06	76.3E-06	77.9E-06	75.6E-06	75.8E-06	77.4E-06	75.5E-06	76.3E-06	75.9E-06	77.2E-06	82.3E-06
Sigma	2.4E-06	2.4E-06	2.4E-06	2.5E-06	2.4E-06	2.4E-06	2.4E-06	2.4E-06	2.5E-06	2.2E-06	1.8E-06	2.4E-06	2.5E-06

Drift Calculation

IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON PROTON samples													
112	-	17.1E-06	17.2E-06	16.8E-06	18.3E-06	15.9E-06	16.1E-06	17.8E-06	15.9E-06	16.3E-06	15.4E-06	17.5E-06	22.8E-06
113	-	16.4E-06	16.6E-06	16.1E-06	17.6E-06	15.3E-06	15.9E-06	17.2E-06	15.3E-06	16.2E-06	16.0E-06	17.0E-06	21.8E-06
114	-	17.3E-06	17.3E-06	16.7E-06	18.4E-06	16.1E-06	16.0E-06	17.9E-06	15.9E-06	17.0E-06	16.9E-06	17.7E-06	22.9E-06
Average	-	16.9E-06	17.1E-06	16.5E-06	18.1E-06	15.8E-06	16.0E-06	17.6E-06	15.7E-06	16.5E-06	16.1E-06	17.4E-06	22.5E-06
Sigma	-	405.4E-09	317.9E-09	314.4E-09	346.7E-09	348.9E-09	75.2E-09	334.0E-09	283.8E-09	347.4E-09	614.5E-09	304.4E-09	469.7E-09

Measurements

IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	111.4E-06	114.6E-06	112.8E-06	113.0E-06	114.7E-06	112.9E-06	112.3E-06	112.3E-06	112.8E-06	113.0E-06	112.5E-06	114.0E-06	114.9E-06
ON TID samples													
123	106.5E-06	109.0E-06	108.3E-06	107.3E-06	108.8E-06	105.9E-06	105.9E-06	107.9E-06	105.5E-06	106.4E-06	106.4E-06	107.7E-06	109.1E-06
124	113.7E-06	115.8E-06	115.3E-06	114.2E-06	115.6E-06	112.7E-06	112.7E-06	114.7E-06	112.3E-06	113.4E-06	113.4E-06	114.6E-06	115.8E-06
125	109.7E-06	111.8E-06	111.0E-06	110.2E-06	111.6E-06	108.7E-06	108.6E-06	110.6E-06	108.4E-06	108.9E-06	109.2E-06	110.4E-06	111.6E-06
Statistics													
Min	106.5E-06	109.0E-06	108.3E-06	107.3E-06	108.8E-06	105.9E-06	105.9E-06	107.9E-06	105.5E-06	106.4E-06	106.4E-06	107.7E-06	109.1E-06
Max	113.7E-06	115.8E-06	115.3E-06	114.2E-06	115.6E-06	112.7E-06	112.7E-06	114.7E-06	112.3E-06	113.4E-06	113.4E-06	114.6E-06	115.8E-06
Average	110.0E-06	112.2E-06	111.5E-06	110.6E-06	112.0E-06	109.1E-06	109.0E-06	111.1E-06	108.7E-06	109.6E-06	109.7E-06	110.9E-06	112.2E-06
Sigma	2.9E-06	2.8E-06	2.9E-06	2.9E-06	2.8E-06	2.8E-06	2.8E-06	2.8E-06	2.8E-06	2.9E-06	2.9E-06	2.9E-06	2.8E-06

Drift Calculation

IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON TID samples													
123	-	2.5E-06	1.8E-06	740.0E-09	2.2E-06	-620.0E-09	-640.0E-09	1.4E-06	-1.1E-06	-80.0E-09	-100.0E-09	1.1E-06	2.6E-06
124	-	2.1E-06	1.6E-06	540.0E-09	1.9E-06	-1.0E-06	-1.0E-06	1.0E-06	-1.4E-06	-280.0E-09	-280.0E-09	900.0E-09	2.1E-06
125	-	2.0E-06	1.3E-06	480.0E-09	1.8E-06	-980.0E-09	-1.1E-06	880.0E-09	-1.3E-06	-800.0E-09	-560.0E-09	680.0E-09	1.9E-06
Average	-	2.2E-06	1.6E-06	586.7E-09	2.0E-06	-880.0E-09	-933.3E-09	1.1E-06	-1.3E-06	-386.7E-09	-313.3E-09	906.7E-09	2.2E-06
Sigma	-	210.0E-09	206.8E-09	111.2E-09	172.8E-09	185.5E-09	210.0E-09	222.3E-09	148.2E-09	303.5E-09	189.3E-09	187.9E-09	265.5E-09

Hirex Engineering	Total Dose Radiation Test Report									Ref.:	HRX/TID/1020		
	OLH7000					Isolink Inc				Issue:	01		

Measurements

IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	111.4E-06	114.6E-06	112.8E-06	113.0E-06	114.7E-06	112.9E-06	112.3E-06	112.3E-06	112.8E-06	113.0E-06	112.5E-06	114.0E-06	114.9E-06
OFF PROTON samples													
115	66.7E-06	69.5E-06	70.0E-06	69.5E-06	71.1E-06	68.9E-06	69.6E-06	71.2E-06	69.6E-06	69.9E-06	70.3E-06	71.7E-06	74.7E-06
116	64.9E-06	67.7E-06	67.9E-06	67.4E-06	69.0E-06	67.0E-06	67.6E-06	69.3E-06	67.5E-06	67.9E-06	68.5E-06	69.7E-06	72.4E-06
117	63.1E-06	65.6E-06	65.8E-06	65.5E-06	67.0E-06	64.7E-06	65.4E-06	67.1E-06	65.0E-06	65.1E-06	65.7E-06	67.4E-06	70.2E-06
Statistics													
Min	63.1E-06	65.6E-06	65.8E-06	65.5E-06	67.0E-06	64.7E-06	65.4E-06	67.1E-06	65.0E-06	65.1E-06	65.7E-06	67.4E-06	70.2E-06
Max	66.7E-06	69.5E-06	70.0E-06	69.5E-06	71.1E-06	68.9E-06	69.6E-06	71.2E-06	69.6E-06	69.9E-06	70.3E-06	71.7E-06	74.7E-06
Average	64.9E-06	67.6E-06	67.9E-06	67.5E-06	69.0E-06	66.9E-06	67.6E-06	69.2E-06	67.4E-06	67.7E-06	68.2E-06	69.6E-06	72.4E-06
Sigma	1.5E-06	1.6E-06	1.7E-06	1.6E-06	1.7E-06	1.7E-06	1.7E-06	1.7E-06	1.9E-06	2.0E-06	1.9E-06	1.8E-06	1.8E-06

Drift Calculation

IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	2.8E-06	3.3E-06	2.7E-06	4.4E-06	2.2E-06	2.9E-06	4.5E-06	2.8E-06	3.2E-06	3.5E-06	5.0E-06	7.9E-06
116	-	2.8E-06	3.0E-06	2.6E-06	4.1E-06	2.1E-06	2.7E-06	4.4E-06	2.6E-06	3.1E-06	3.6E-06	4.8E-06	7.6E-06
117	-	2.5E-06	2.7E-06	2.4E-06	3.9E-06	1.6E-06	2.3E-06	4.0E-06	2.0E-06	2.0E-06	2.7E-06	4.4E-06	7.2E-06
Average	-	2.7E-06	3.0E-06	2.6E-06	4.1E-06	2.0E-06	2.7E-06	4.3E-06	2.5E-06	2.8E-06	3.3E-06	4.7E-06	7.6E-06
Sigma	-	129.7E-09	224.8E-09	137.2E-09	173.3E-09	234.0E-09	238.7E-09	190.5E-09	368.8E-09	508.6E-09	431.0E-09	262.5E-09	317.7E-09

Measurements

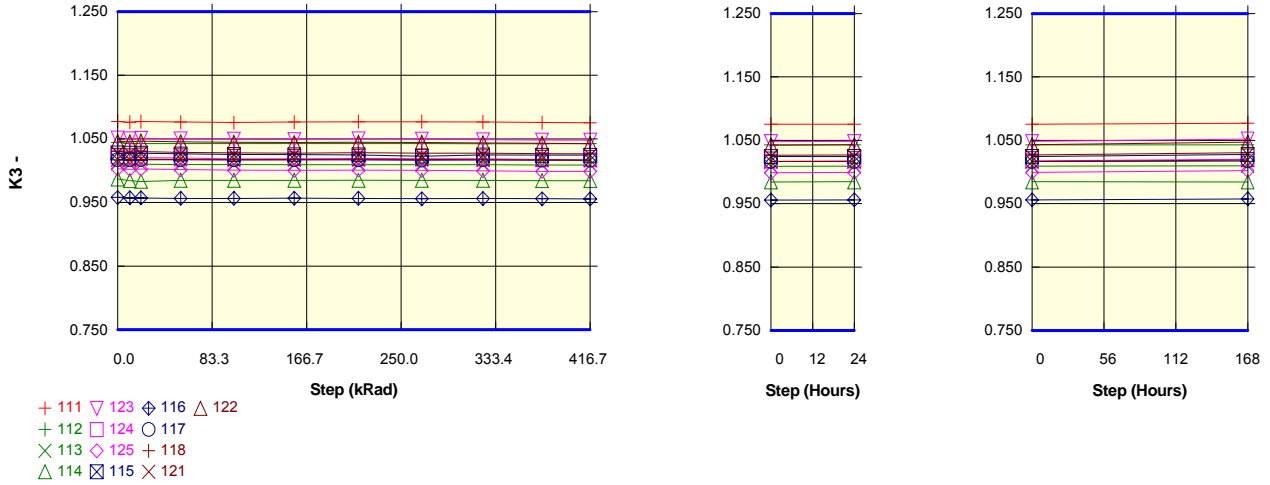
IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	111.4E-06	114.6E-06	112.8E-06	113.0E-06	114.7E-06	112.9E-06	112.3E-06	112.3E-06	112.8E-06	113.0E-06	112.5E-06	114.0E-06	114.9E-06
OFF TID samples													
118	114.0E-06	116.3E-06	115.5E-06	114.1E-06	115.3E-06	113.1E-06	112.5E-06	114.1E-06	111.2E-06	110.8E-06	112.3E-06	114.2E-06	116.2E-06
121	116.1E-06	116.9E-06	117.5E-06	115.8E-06	116.7E-06	112.5E-06	113.7E-06	115.2E-06	112.7E-06	112.6E-06	112.8E-06	115.0E-06	117.2E-06
122	111.9E-06	113.7E-06	113.1E-06	111.6E-06	112.4E-06	109.3E-06	109.7E-06	111.1E-06	108.6E-06	108.0E-06	108.5E-06	111.0E-06	113.0E-06
Statistics													
Min	111.9E-06	113.7E-06	113.1E-06	111.6E-06	112.4E-06	109.3E-06	109.7E-06	111.1E-06	108.6E-06	108.0E-06	108.5E-06	111.0E-06	113.0E-06
Max	116.1E-06	116.9E-06	117.5E-06	115.8E-06	116.7E-06	113.1E-06	113.7E-06	115.2E-06	112.7E-06	112.6E-06	112.8E-06	115.0E-06	117.2E-06
Average	114.0E-06	115.6E-06	115.4E-06	113.9E-06	114.8E-06	111.6E-06	112.0E-06	113.4E-06	110.8E-06	110.5E-06	111.2E-06	113.4E-06	115.5E-06
Sigma	1.7E-06	1.4E-06	1.8E-06	1.7E-06	1.8E-06	1.7E-06	1.7E-06	1.7E-06	1.7E-06	1.9E-06	1.9E-06	1.7E-06	1.8E-06

Drift Calculation

IP2	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	2.3E-06	1.5E-06	120.0E-09	1.3E-06	-940.0E-09	-1.5E-06	60.0E-09	-2.8E-06	-3.2E-06	-1.7E-06	200.0E-09	2.2E-06
121	-	780.0E-09	1.4E-06	-280.0E-09	560.0E-09	-3.6E-06	-2.4E-06	-940.0E-09	-3.4E-06	-3.5E-06	-3.3E-06	-1.1E-06	1.1E-06
122	-	1.9E-06	1.2E-06	-240.0E-09	560.0E-09	-2.6E-06	-2.2E-06	-740.0E-09	-3.3E-06	-3.8E-06	-3.4E-06	-840.0E-09	1.1E-06
Average	-	1.6E-06	1.4E-06	-133.3E-09	793.3E-09	-2.4E-06	-2.0E-06	-540.0E-09	-3.2E-06	-3.5E-06	-2.8E-06	-580.0E-09	1.5E-06
Sigma	-	627.6E-09	108.7E-09	179.9E-09	330.0E-09	1.1E-06	370.3E-09	432.0E-09	271.9E-09	269.8E-09	750.6E-09	561.7E-09	537.6E-09

Parameter : Transfer Gain : K3
 Test conditions : IF = 10mA ; VDET = -15V

Unit :
 Spec Limit Min : 0.750
 Spec Limit Max : 1.250
 Spec limits are represented in bold lines on the graphic.



Measurements

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	1.078	1.076	1.077	1.077	1.076	1.076	1.077	1.077	1.077	1.076	1.075	1.075	1.077
ON_PROTON samples													
112	1.044	1.043	1.043	1.043	1.043	1.043	1.043	1.043	1.043	1.042	1.043	1.043	1.043
113	1.012	1.010	1.010	1.010	1.010	1.010	1.010	1.009	1.009	1.009	1.009	1.009	1.010
114	0.987	0.985	0.983	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.984	0.985	0.985
Statistics													
Min	0.987	0.985	0.983	0.985	0.985	0.985	0.985	0.985	0.985	0.985	0.984	0.985	0.985
Max	1.044	1.043	1.043	1.043	1.043	1.043	1.043	1.043	1.043	1.042	1.043	1.043	1.043
Average	1.014	1.013	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012
Sigma	0.023	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024

Drift Calculation

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_PROTON samples													
112	-	-1.7E-03	-1.6E-03	-1.8E-03	-1.5E-03	-1.8E-03	-1.7E-03	-1.5E-03	-1.9E-03	-2.1E-03	-1.6E-03	-1.6E-03	-1.6E-03
113	-	-1.3E-03	-1.5E-03	-1.8E-03	-2.0E-03	-2.1E-03	-2.1E-03	-2.2E-03	-2.3E-03	-2.5E-03	-2.6E-03	-2.3E-03	-1.7E-03
114	-	-2.5E-03	-3.8E-03	-2.2E-03	-2.3E-03	-2.2E-03	-2.0E-03	-2.3E-03	-2.3E-03	-2.6E-03	-2.7E-03	-2.5E-03	-2.6E-03
Average	-	-1.9E-03	-2.3E-03	-1.9E-03	-1.9E-03	-2.0E-03	-2.0E-03	-2.0E-03	-2.2E-03	-2.4E-03	-2.3E-03	-2.1E-03	-2.0E-03
Sigma	-	520.8E-06	1.1E-03	209.7E-06	343.7E-06	168.2E-06	173.8E-06	361.9E-06	162.8E-06	189.4E-06	492.9E-06	371.4E-06	414.0E-06

Measurements

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111_REF	1.078	1.076	1.077	1.077	1.076	1.076	1.077	1.077	1.077	1.076	1.075	1.075	1.077
ON_TID samples													
123	1.051	1.050	1.051	1.050	1.050	1.049	1.050	1.050	1.049	1.048	1.048	1.048	1.052
124	1.022	1.020	1.021	1.020	1.019	1.019	1.020	1.019	1.019	1.018	1.017	1.018	1.020
125	1.003	1.002	1.003	1.002	1.001	1.001	1.001	1.001	1.000	0.999	0.999	1.000	1.002
Statistics													
Min	1.003	1.002	1.003	1.002	1.001	1.001	1.001	1.001	1.000	0.999	0.999	1.000	1.002
Max	1.051	1.050	1.051	1.050	1.050	1.049	1.050	1.050	1.049	1.048	1.048	1.048	1.052
Average	1.025	1.024	1.025	1.024	1.023	1.023	1.024	1.023	1.023	1.022	1.021	1.022	1.025
Sigma	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.021

Drift Calculation

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
ON_TID samples													
123	-	-1.0E-03	-478.5E-06	-989.7E-06	-1.7E-03	-2.2E-03	-1.1E-03	-1.7E-03	-2.6E-03	-3.1E-03	-3.3E-03	-3.0E-03	760.8E-06
124	-	-1.5E-03	-847.9E-06	-1.4E-03	-2.9E-03	-2.6E-03	-2.0E-03	-2.7E-03	-2.7E-03	-4.0E-03	-4.5E-03	-3.8E-03	-1.5E-03
125	-	-773.1E-06	-215.1E-06	-1.1E-03	-2.0E-03	-2.4E-03	-1.8E-03	-2.4E-03	-2.9E-03	-3.7E-03	-4.0E-03	-3.3E-03	-590.7E-06
Average	-	-1.1E-03	-513.8E-06	-1.2E-03	-2.2E-03	-2.4E-03	-1.7E-03	-2.3E-03	-2.7E-03	-3.6E-03	-3.9E-03	-3.4E-03	-438.6E-06
Sigma	-	292.2E-06	259.6E-06	164.0E-06	493.5E-06	157.1E-06	377.9E-06	419.2E-06	138.3E-06	378.2E-06	519.3E-06	321.9E-06	923.5E-06

Measurements

Hirex Engineering	Total Dose Radiation Test Report										Ref.:	HRX/TID/1020
	OLH7000					Isolink Inc					Issue:	01

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	1.078	1.076	1.077	1.077	1.076	1.076	1.077	1.077	1.077	1.076	1.075	1.075	1.077
OFF PROTON samples													
115	1.028	1.028	1.028	1.026	1.026	1.025	1.025	1.023	1.025	1.024	1.024	1.025	1.028
116	0.958	0.957	0.957	0.957	0.957	0.957	0.957	0.956	0.956	0.956	0.956	0.956	0.958
117	1.018	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017
Statistics													
Min	0.958	0.957	0.957	0.957	0.957	0.957	0.957	0.956	0.956	0.956	0.956	0.956	0.958
Max	1.028	1.028	1.028	1.026	1.026	1.025	1.025	1.023	1.025	1.024	1.024	1.025	1.028
Average	1.001	1.001	1.001	1.000	1.000	1.000	1.000	0.999	0.999	0.999	0.999	0.999	1.001
Sigma	0.031	0.031	0.031	0.031	0.031	0.031	0.031	0.030	0.031	0.031	0.031	0.031	0.031

Drift Calculation

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF PROTON samples													
115	-	-199.1E-06	-179.8E-06	-1.3E-03	-2.2E-03	-2.5E-03	-2.8E-03	-4.7E-03	-3.0E-03	-3.3E-03	-3.4E-03	-3.1E-03	76.5E-06
116	-	-565.2E-06	-438.3E-06	-1.2E-03	-1.2E-03	-1.2E-03	-1.3E-03	-1.9E-03	-1.5E-03	-1.9E-03	-2.0E-03	-1.8E-03	-22.9E-06
117	-	-529.8E-06	-268.1E-06	-437.1E-06	-714.2E-06	-423.0E-06	-550.3E-06	-930.1E-06	-642.5E-06	-1.0E-03	-1.1E-03	-982.3E-06	-212.9E-06
Average	-	-431.4E-06	-295.4E-06	-993.3E-06	-1.4E-03	-1.4E-03	-1.6E-03	-2.5E-03	-1.7E-03	-2.1E-03	-2.2E-03	-2.0E-03	-53.1E-06
Sigma	-	164.9E-06	107.3E-06	394.2E-06	597.5E-06	881.4E-06	931.7E-06	1.6E-03	964.3E-06	951.7E-06	944.7E-06	889.0E-06	120.1E-06

Measurements

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
111 REF	1.078	1.076	1.077	1.077	1.076	1.076	1.077	1.077	1.077	1.076	1.075	1.075	1.077
OFF TID samples													
118	1.030	1.029	1.030	1.029	1.028	1.028	1.028	1.028	1.028	1.027	1.027	1.027	1.030
121	1.018	1.017	1.018	1.018	1.017	1.018	1.018	1.018	1.017	1.017	1.017	1.017	1.019
122	1.046	1.046	1.046	1.046	1.045	1.044	1.045	1.045	1.044	1.043	1.042	1.043	1.047
Statistics													
Min	1.018	1.017	1.018	1.018	1.017	1.018	1.018	1.018	1.017	1.017	1.017	1.017	1.019
Max	1.046	1.046	1.046	1.046	1.045	1.044	1.045	1.045	1.044	1.043	1.042	1.043	1.047
Average	1.031	1.030	1.032	1.031	1.030	1.030	1.030	1.030	1.030	1.029	1.029	1.029	1.032
Sigma	0.012	0.012	0.012	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.012

Drift Calculation

K3	0 kRad	10.8 kRad	20.7 kRad	55.6 kRad	102.6 kRad	155.7 kRad	212.4 kRad	268.2 kRad	322.2 kRad	374.2 kRad	416.7 kRad	24 Hours	168 Hours
OFF TID samples													
118	-	-1.5E-03	-400.8E-06	-1.3E-03	-2.4E-03	-2.6E-03	-2.0E-03	-2.6E-03	-2.8E-03	-3.3E-03	-3.9E-03	-3.6E-03	127.8E-06
121	-	-827.0E-06	669.1E-06	401.0E-06	-85.5E-06	18.6E-06	188.2E-06	325.6E-06	-190.5E-06	-554.7E-06	-948.9E-06	-908.9E-06	1.4E-03
122	-	-606.1E-06	253.0E-06	-680.2E-06	-1.4E-03	-1.9E-03	-1.4E-03	-1.6E-03	-2.6E-03	-3.1E-03	-3.7E-03	-3.2E-03	1.1E-03
Average	-	-984.0E-06	173.8E-06	-537.6E-06	-1.3E-03	-1.5E-03	-1.1E-03	-1.3E-03	-1.9E-03	-2.3E-03	-2.8E-03	-2.6E-03	875.9E-06
Sigma	-	388.9E-06	440.4E-06	715.3E-06	933.8E-06	1.1E-03	937.9E-06	1.2E-03	1.2E-03	1.3E-03	1.3E-03	1.2E-03	548.6E-06

Hirex Engineering	Total Dose Radiation Test Report		Ref.:	HRX/TID/1020
	OLH7000	Isolink Inc	Issue:	01

Appendix 1 : Temperature measurements

SN	Temp [°C]	K1	IP1 [A]	K2	IP2 [A]	K3
min						
max						
118	-35	13.06E-3	130.64E-6	13.46E-3	134.64E-6	1.030619
118	100	7.61E-3	76.11E-6	7.83E-3	78.33E-6	1.029221
121	-35	13.54E-3	135.42E-6	13.78E-3	137.78E-6	1.017427
121	100	7.98E-3	79.83E-6	8.10E-3	80.99E-6	1.014506
122	-35	12.55E-3	125.48E-6	13.15E-3	131.48E-6	1.047816
122	100	7.60E-3	76.02E-6	7.93E-3	79.29E-6	1.043016
123	-35	12.08E-3	120.80E-6	12.74E-3	127.42E-6	1.054801
123	100	6.84E-3	68.39E-6	7.17E-3	71.68E-6	1.048166
124	-35	13.15E-3	131.50E-6	13.40E-3	134.04E-6	1.019316
124	100	7.80E-3	78.02E-6	7.97E-3	79.72E-6	1.021816
125	-35	13.01E-3	130.06E-6	13.05E-3	130.46E-6	1.003075
125	100	7.60E-3	75.98E-6	7.59E-3	75.90E-6	0.998868

Table 2 : Initial TID samples measurements at High and Low temperatures

SN	Temp [°C]	K1	IP1 [A]	K2	IP2 [A]	K3
min						
max						
118	-35	12.88E-3	128.82E-6	13.28E-3	132.78E-6	1.030741
118	100	7.82E-3	78.15E-6	8.05E-3	80.48E-6	1.029787
121	-35	13.28E-3	132.80E-6	13.53E-3	135.30E-6	1.018825
121	100	8.07E-3	80.72E-6	8.20E-3	82.01E-6	1.016031
122	-35	12.39E-3	123.92E-6	12.98E-3	129.82E-6	1.047611
122	100	7.64E-3	76.40E-6	7.97E-3	79.71E-6	1.043327
123	-35	11.92E-3	119.22E-6	12.57E-3	125.74E-6	1.054689
123	100	6.90E-3	69.01E-6	7.24E-3	72.36E-6	1.048604
124	-35	13.00E-3	129.98E-6	13.24E-3	132.36E-6	1.01831
124	100	7.89E-3	78.86E-6	8.05E-3	80.54E-6	1.021355
125	-35	12.81E-3	128.08E-6	12.83E-3	128.32E-6	1.001874
125	100	7.87E-3	78.69E-6	7.86E-3	78.58E-6	0.998602

Table 3 : Final TID samples measurements at High and Low temperatures