



# TOTAL DOSE RADIATION TEST REPORT

**Part Type : AD9243**

**Package : 44-Pin MQFP**

**14-Bit, 3.0 MSPS A/D Converter**

**Analog Devices**

**Report Reference : ESA\_QCA991201T\_C**

**Issue : 01**

**Date : December 23<sup>rd</sup> 1999**

**ESA Contract No 13602/99/NL/GD dated 18/06/99**

European Space Agency Contract Report

The work described in this report was done under ESA contract.  
Responsibility for the contents resides in the author or organization that prepared it

**ESTEC Technical Officer: R. Harboe Sorensen**

|                          |             |            |        |                            |
|--------------------------|-------------|------------|--------|----------------------------|
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| <b>Written by :</b>      | J.F. PASCAL |            | Date : |                            |
| <b>Approved by :</b>     | F.X GUERRE  |            | Date : |                            |

# TOTAL DOSE RADIATION TEST REPORT

on

## Analog Devices AD9243 14-Bit A/D Converter.

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| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

## 1 Abstract

Under ESA/ESTEC contract n° 13602/99/NL/GD dated 18/06/99 covering "Radiation Pre-screening of High-resolution High-speed ADC's", three different 14-bit Analog to Digital converters were radiation assessed. Results from these assessments, primarily focused on the radiation sensitivity of the ADC's to Total Ionizing Dose (TID) and Single Event Effects (SEE), are reported in individual TID and SEE reports. Below summary table lists manufacturer and evaluated types, and gives references to the various reports issued.

| <b>Manufacturer</b>    | <b>Type</b> | <b>TID Report</b> | <b>SEE Report</b> |
|------------------------|-------------|-------------------|-------------------|
| Analog Devices         | AD9243      | ESA_QCA991201T_C  | ESA_QCA991201S_C  |
| Linear Technology      | LTC1414     | ESA_QCA991202T_C  | ESA_QCA991202S_C  |
| National Semiconductor | ADC14161    | ESA_QCA991203T_C  | ESA_QCA991203S_C  |

|                          |                               |                |                                  |
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## 2 Introduction

A total dose radiation evaluation test of the Analog Devices AD9243 14-Bit A/D Converter has been performed with an accumulated dose of about 50 Krad(Si) at two different dose rates of 300 rad(Si)/hour and 1000 rad(Si)/hour respectively, in response to European Space Agency contract reference : 13602/99/NL/GD dated 18/06/99.

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 commercial samples procured from Analog Devices.

Test has been performed in accordance with Hirex proposal HRX/99.4366 issue 01.

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

SEE results for this device type can be found in SEE radiation test report: ESA\_QCA991201S\_C.

## 3 Applicable and Reference Documents

### 3.1 Applicable Documents

- ESA/SCC Basic specification N° 22900 issue 4.
- Analog Devices AD9243 datasheet - Rev. A 1998.
- Hirex Engineering proposal: HRX/99.4366 issue 01.

### 3.2 Reference Documents

- SOW Radiation Pre-screening of High-resolution High-speed ADC's Ref: APP-JP/99-02-057/PS/ps.
- MIL-STD-883: test methods and procedures for microcircuits.

## 4 Test Samples

6 samples of the AD9243 device were tested (2 groups of 3 + 1 control sample). Each group was submitted to exposures at two different dose rates (a high dose rate of 1000 rad(Si)/hour and a low dose rate of 300 rad(Si)/hour respectively).

The samples were serialized before the radiation test as indicated in the following table.

| Serial Number | Allocation     |
|---------------|----------------|
| 1             | Control        |
| 2             | High Dose Rate |
| 3             | High Dose Rate |
| 4             | High Dose Rate |
| 5             | Low Dose Rate  |
| 6             | Low Dose Rate  |
| 7             | Low Dose Rate  |

Identification of the AD9243 is given below:

|                       |                        |                      |               |
|-----------------------|------------------------|----------------------|---------------|
| <b>Part Number:</b>   | AD9243AS               | <b>Mask Set:</b>     | NA            |
| <b>Top Marking:</b>   | AD9243AS 9904 AK4947.B | <b>Chip Marking:</b> | NA            |
| <b>Diffusion Lot:</b> | NA                     | <b>Wafer #:</b>      | NA            |
| <b>Date Code:</b>     | 9904                   | <b>Project:</b>      | Multi-Project |

|                          |                               |                |                                  |
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| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

## 5 Experimental Conditions

### 5.1 Radiation Source Dose Rate and Annealing

The dose exposures were performed at CERT-ONERA. 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. The irradiation conditions used for this test are provided in the following tables:

| <b>Irradiation Steps</b> | <b>Doserate</b> | <b>Annealing steps</b> | <b>Temperature</b> |
|--------------------------|-----------------|------------------------|--------------------|
| <b>krads</b>             | <b>krads/h</b>  | <b>hours</b>           | <b>°C</b>          |
| 0                        |                 |                        | 25                 |
| 7                        | 1,0             |                        | 25                 |
| 22                       | 1,0             |                        | 25                 |
| 28                       | 1,0             |                        | 25                 |
| 43.3                     | 1,0             |                        | 25                 |
| 50                       | 1,0             | 0                      | 25                 |
|                          |                 | 24                     | 25                 |
|                          |                 | 192                    | 100                |

**Table 1 : Experimental Conditions: High Dose Rate**

| <b>Irradiation Steps</b> | <b>Doserate</b> | <b>Annealing steps</b> | <b>Temperature</b> |
|--------------------------|-----------------|------------------------|--------------------|
| <b>krads</b>             | <b>krads/h</b>  | <b>hours</b>           | <b>°C</b>          |
| 0                        |                 |                        | 25                 |
| 7.2                      | 0,3             |                        | 25                 |
| 14                       | 0,3             |                        | 25                 |
| 20.5                     | 0,3             |                        | 25                 |
| 29.2                     | 0,3             |                        | 25                 |
| 50                       | 0,3             | 0                      | 25                 |
|                          |                 | 24                     | 25                 |
|                          |                 | 192                    | 100                |

**Table 2 : Experimental Conditions: Low Dose Rate**

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

## 5.2 Bias during Dose Exposures and Measurements conditions

### 5.2.1 Bias conditions

During exposures a dedicated test board was used mounted on a special board-holder made for irradiation. The test board allowed to bias the devices in accordance with the electrical circuit provided in Figure 1.

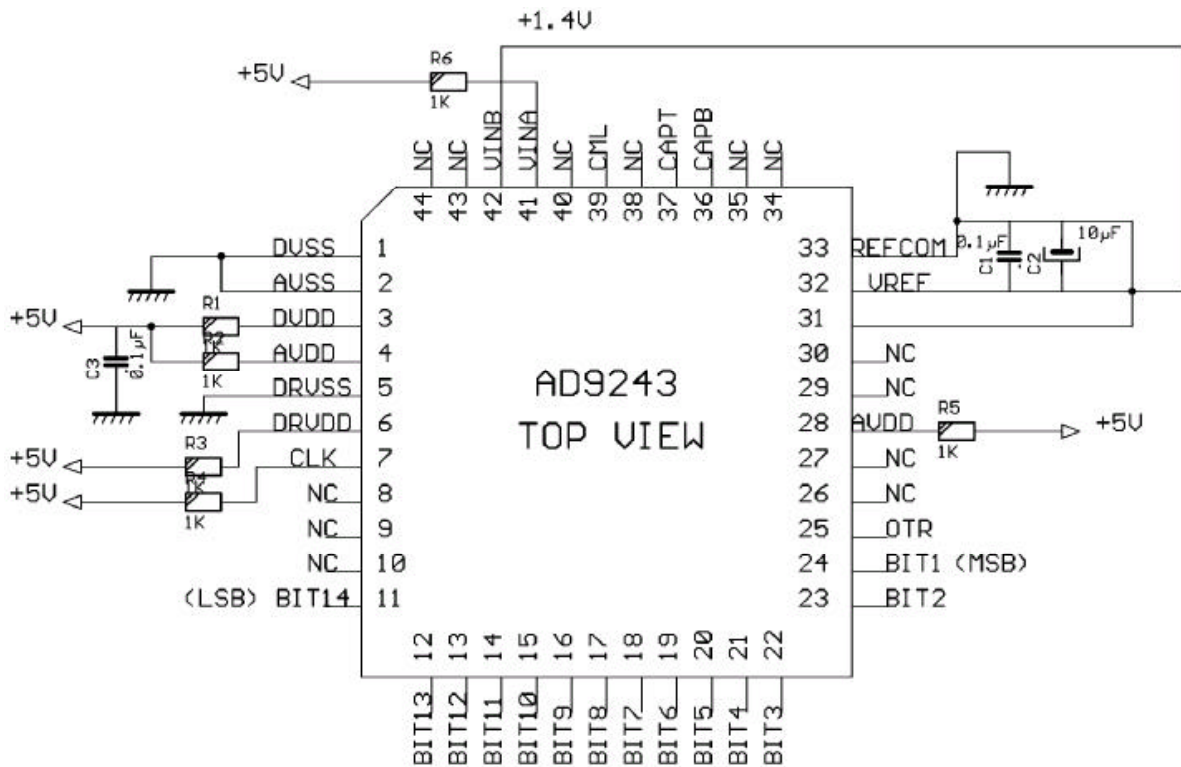


Figure 1 : Bias Conditions during Irradiation Exposures and Annealing

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
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| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

## 5.2.2 Electrical Measurements

### 5.2.2.1 Test Setup

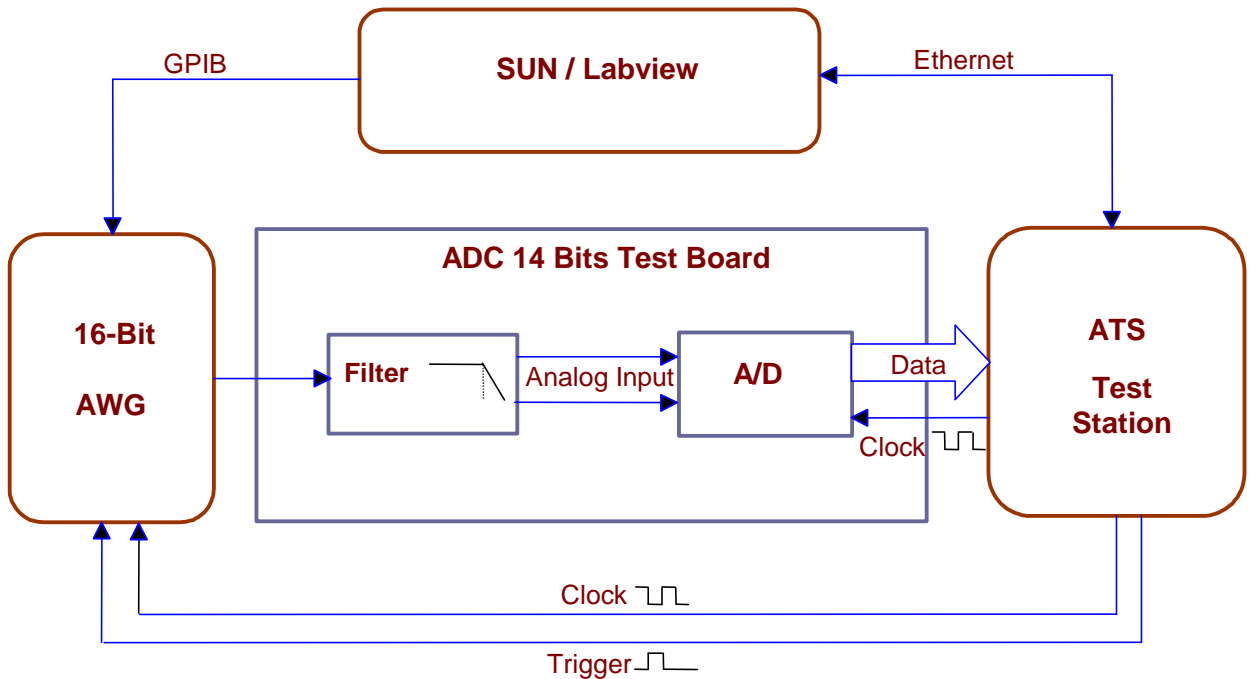
Electrical parameters test program principle for AD9243 is provided in Figure 2.

The test Setup for this ADC includes an IMS ATS Test Station, an arbitrary waveform generator (AWG), and a filter. To ensure coherent clocking to the digital tester, ADC, and AWG, the clock from the ATS is used.

The AWG has 16 bits of resolution, and provides pure enough signal to the test board thanks to internal seventh-order butterworth and third-order Chebyshev filters. Additional filtering was also implemented on the test fixture board to clean the noise and distortion from the input signal.

After input signal is generated, the ATS acquires data output by the ADC. The dedicated Labview program analyses the data and displays the results on a SUN workstation.

The combination of high-speed digital signals and sensitive high-resolution analog signals on the same DUT requires effective techniques for isolating the digital switching transients from the analog signals. With proper grounding and fixture-board layering it is possible to effectively shield signals and maintain signal integrity. In addition minimizing grounding problems is required and was ensured by carefully selecting and connecting the socket and by using the correct decoupling methods. These constraints have led to the design of a specific multilayer test board (See photo of this board in figure 3).



**Figure 2 : AD9243 test program principle**

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
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| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

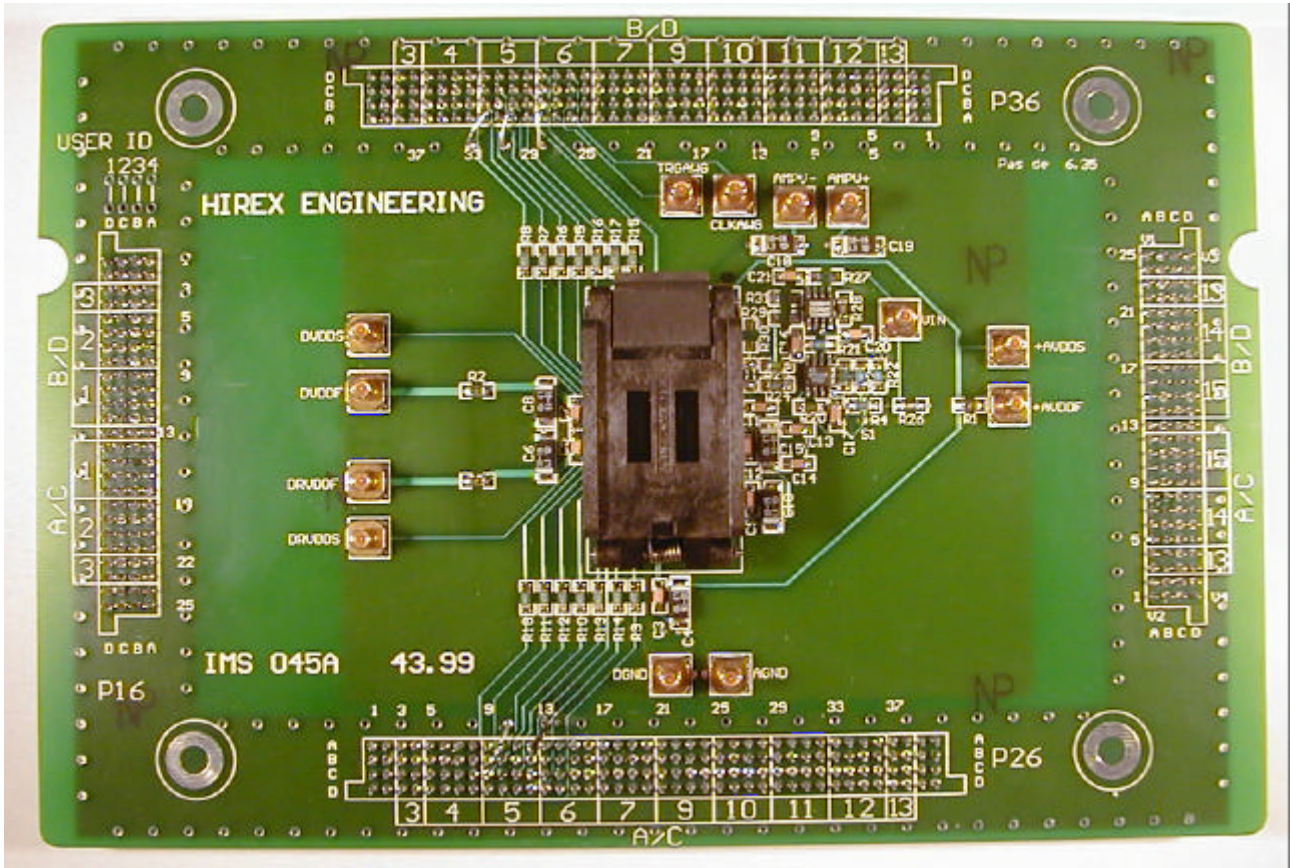


Figure 3 : AD9243 Test Fixture Board



|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
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| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

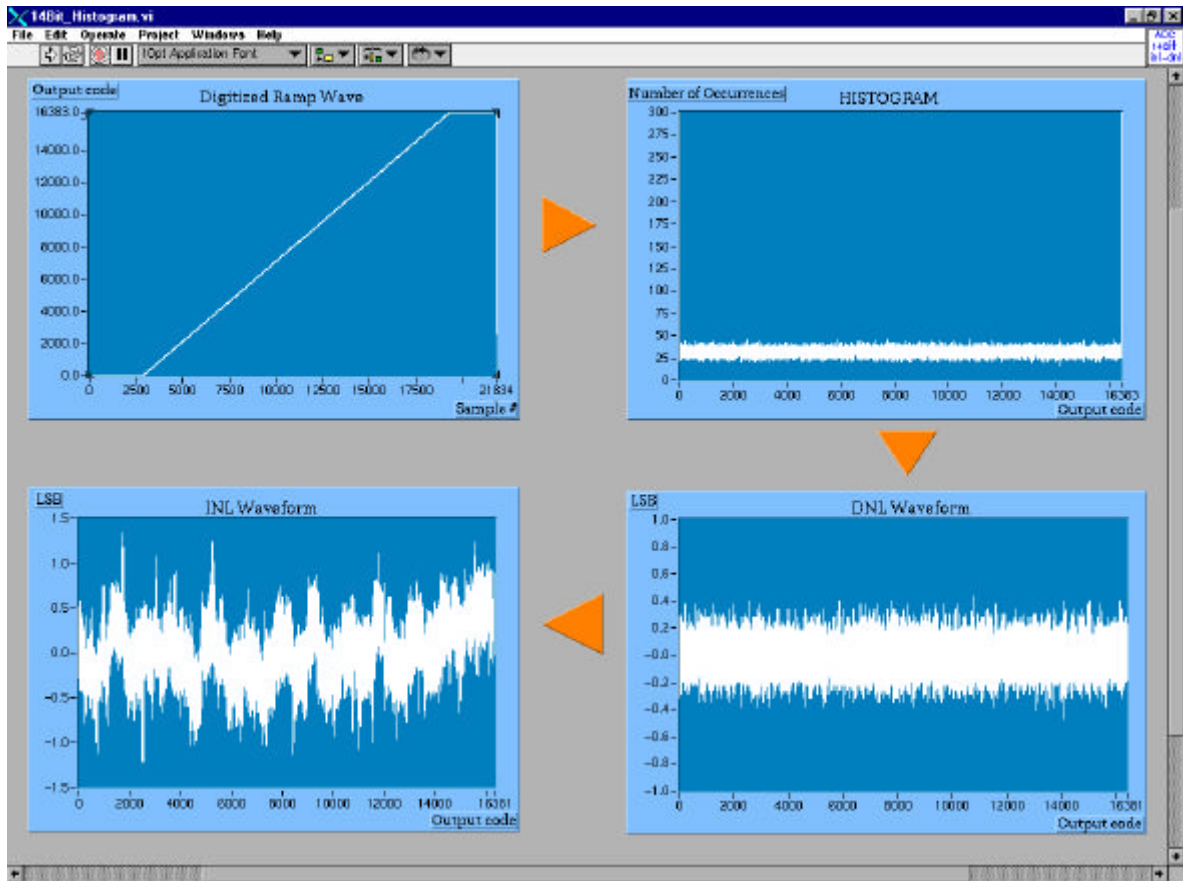
### 5.2.2.2 Conversion Characteristics Test Principle

For conversion characteristics including Differential Non Linearity, Integral Non Linearity, Offset Error, Gain Error, a histogram test technique was used.

A full scale pure ramp is input to the ADC. Thousands samples of the input signal are taken and processed by the histogram software. At the end of sampling, the histogram is plotted with possible output codes along the X axis and frequency of occurrence along Y axis. Above each possible output code, a point is plotted whose height is proportional to the total number of times that code occurred.

From histogram test data, dedicated math routines calculate the different parameter values.

An example of histogram obtained and typical waveforms for Integral and Differential Non linearities is shown on Figure 4.



**Figure 4 : Conversion Characteristics Example**

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

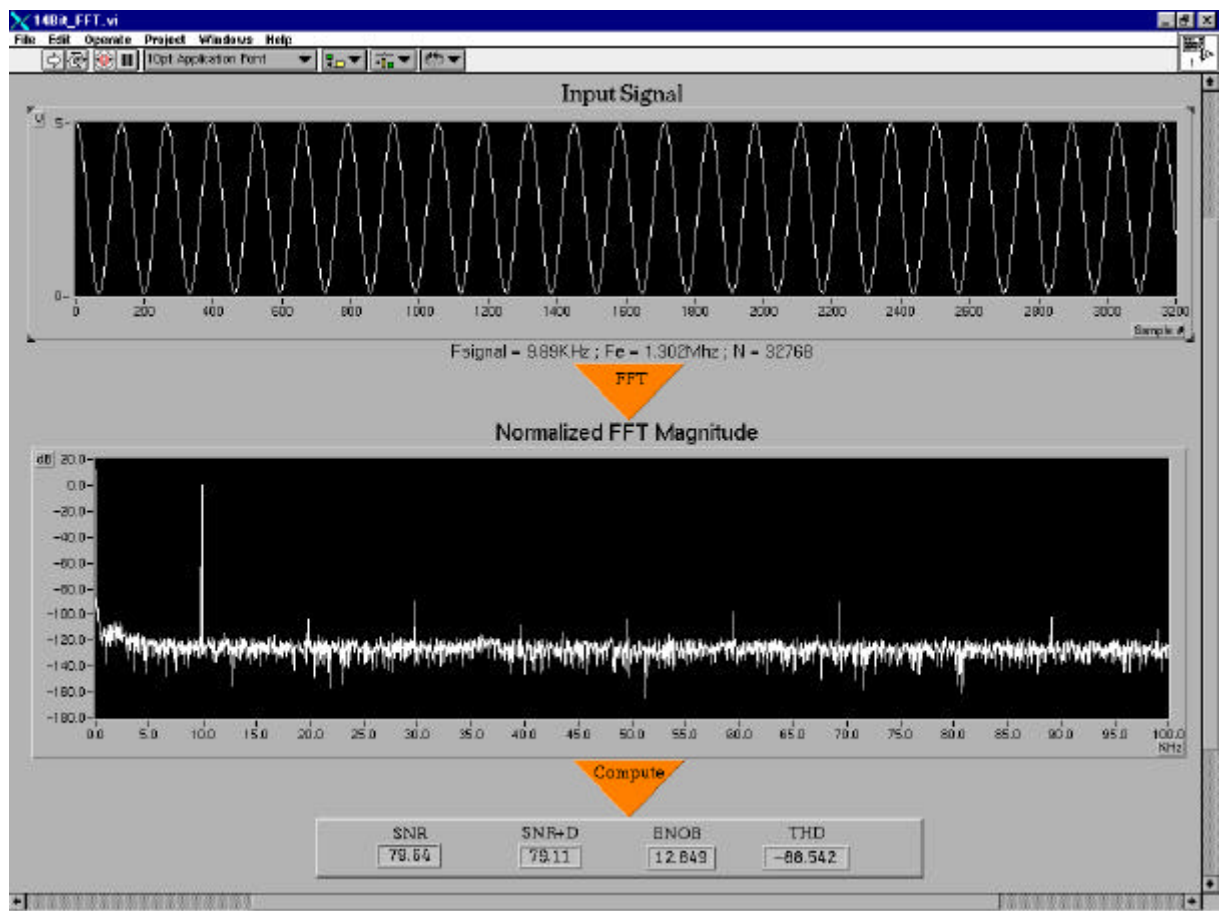
### 5.2.2.3 Dynamic Characteristics

For dynamic characteristics including Signal-to-Noise Ratio, Signal-to-Noise Plus Distortion Ratio, Effective Number of Bits, and Total Harmonic Distortion, a Fast Fourier Transform (FFT) algorithm was implemented.

A full scale sinewave of specified frequency is input to the device under test. Harmonics of the input sinewave, caused by the integral nonlinearity of the ADC, are aliased into the baseband spectrum and can be readily identified. The frequency of the input sinewave is not arbitrary and must be selected so that harmonics, aliased into baseband, do not coincide with the fundamental.

From FFT spectra test data, dedicated math routines calculate the different parameter values.

Figure 5 shows an example of results of FFT testing.



**Figure 5 : Dynamic Characteristics Example**

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
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| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

### 5.3 Electrical parameters test conditions and limits

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

| Symbol | Test Parameter                        | Test Conditions   | Min limit | Max limit | Unit  |
|--------|---------------------------------------|---|-----------|-----------|-------|
| SNR    | Signal-to-Noise Ratio                 | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 0-5V, 10KHz;<br>F <sub>sample</sub> =1.3MHz                | 76        |           | dB    |
| SNR/D  | Signal-to-Noise Plus Distortion Ratio | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 0-5V, 10KHz;<br>F <sub>sample</sub> =1.3MHz                | 75        |           | dB    |
| ENOB   | Effective Number Of Bits              | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 0-5V, 10KHz;<br>F <sub>sample</sub> =1.3MHz                | 12.3      |           | LSB   |
| THD    | Total Harmonic Distortion             | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 0-5V, 10KHz;<br>F <sub>sample</sub> =1.3MHz; Six Harmonics |           | -78       | dB    |
| INL    | Integral Nonlinearity                 | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 0-5V   |           | 2.5       | LSB   |
| DNL    | Differential Nonlinearity             | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 0-5V   |           | 1         | LSB   |
| ZE     | Zero Error                            | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 0V   | -0.3      | 0.3       | % FSR |
| GE     | Gain Error                            | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>Input signal: 5V   | -1.5      | 1.5       | % FSR |
| IAVDD  | Analog Power Supply Current           | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V;<br>F <sub>sample</sub> =1.3MHz  |           | 0.023     | A     |
| IDRVDD | Digital Output Driver Supply Current  | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V<br>F <sub>sample</sub> =1.3MHz   |           | 0.001     | A     |
| IDVDD  | Digital Supply Current                | AVDD=+5V; DVDD=+5V;<br>DRVDD=+5V<br>F <sub>sample</sub> =1.3MHz   |           | 0.005     | A     |
| Vih    | High Level Input Voltage              | AVDD=+5V; DVDD=+5V  |           | 3.5       | V     |

**Table 3 : Measured electrical parameters**

|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

| Symbol | Test Parameter                   | Test Conditions               | Min limit | Max limit | Unit |
|--------|----------------------------------|-------------------------------|-----------|-----------|------|
| Vil    | Low Level Input Voltage          | AVDD=+5V; DVDD=+5V            | 1         |           | V    |
| VOH1   | High Level Output Voltage Pin 24 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH2   | High Level Output Voltage Pin 23 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH3   | High Level Output Voltage Pin 22 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH4   | High Level Output Voltage Pin 21 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH5   | High Level Output Voltage Pin 20 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH6   | High Level Output Voltage Pin 19 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH7   | High Level Output Voltage Pin 18 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH8   | High Level Output Voltage Pin 17 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH9   | High Level Output Voltage Pin 16 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH10  | High Level Output Voltage Pin 15 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH11  | High Level Output Voltage Pin 14 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH12  | High Level Output Voltage Pin 13 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH13  | High Level Output Voltage Pin 12 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOH14  | High Level Output Voltage Pin 11 | AVDD=+5V; DVDD=+5V; IOH=500uA | 2.4       |           | V    |
| VOL1   | Low Level Output Voltage Pin 24  | AVDD=+5V; DVDD=+5V; IOL=1.6mA |           | 0.4       | V    |

**Table 3 : Measured electrical parameters (continued)**

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
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| Symbol | Test Parameter                     | Test Conditions                  | Min limit | Max limit | Unit |
|--------|------------------------------------|----------------------------------|-----------|-----------|------|
| VOL2   | Low Level Output Voltage<br>Pin 23 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL3   | Low Level Output Voltage<br>Pin 22 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL4   | Low Level Output Voltage<br>Pin 21 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL5   | Low Level Output Voltage<br>Pin 20 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL6   | Low Level Output Voltage<br>Pin 19 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL7   | Low Level Output Voltage<br>Pin 18 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL8   | Low Level Output Voltage<br>Pin 17 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL9   | Low Level Output Voltage<br>Pin 16 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL10  | Low Level Output Voltage<br>Pin 15 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL11  | Low Level Output Voltage<br>Pin 14 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL12  | Low Level Output Voltage<br>Pin 13 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL13  | Low Level Output Voltage<br>Pin 12 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |
| VOL14  | Low Level Output Voltage<br>Pin 11 | AVDD=+5V; DVDD=+5V;<br>IOL=1.6mA |           | 0.4       | V    |

**Table 3 : Measured electrical parameters (continued)**

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
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## 6 Conclusion

A Total Ionizing Dose assessment was carried out by Hirex Engineering under ESA contract on the Analog Devices AD9243 14-Bit Analog to Digital Converter.

2 groups of 3 samples each plus one control sample were used during testing. The first group was exposed to radiation using a dose rate of 1000 rad(Si)/hour. The second group of 3 samples was exposed to radiation using a lower dose rate of 300 rad(Si)/hour. All devices were irradiated and tested at room temperature.

At high dose rate, one piece was marginally out of specification on Zero Error parameter, at 22 krad(Si), but recovered at subsequent steps.

IDRVDD exhibited some increase for one sample after annealing.

The most affected parameter is IDVDD the digital supply current that went out of specification limits at 43 Krad(Si), but recovered during annealing steps.

All other measured parameters remained within specification limits all along testing.

At low dose rate, Integral Non Linearity was out of specification limit at 29 krad(Si) on one piece, and only a partial recovery was observed during 24 hours annealing step.

Differential Non Linearity was also beyond specification limit at 20 Krad(Si) on one sample, but this sample recovered normal values during subsequent steps.

As for high dose rate, IDRVDD has shown one piece out of specification at 50 Krad(Si) and a complete recovery was recorded during annealing.

IDVDD was also the most affected parameter, but at 50Krad(Si), and a total recovery was observed during annealing.

All other measured parameters remained within specification limits all along testing.

No significant changes were recorded depending on the dose rate conditions, and all devices remained functional with good parametric performances at any stages during testing.

Some Time Dependent Effects (TDE) were recorded during this evaluation, leading most of the time to a recovery of affected parameters.

This device has shown a good resistance to radiation total dose induced effects.

Details on test results can be found in Appendix 1 and Appendix 2 for high dose rate and low dose rate respectively.

|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
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| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

**APPENDIX 1 : TEST RESULTS - HIGH DOSE RATE**

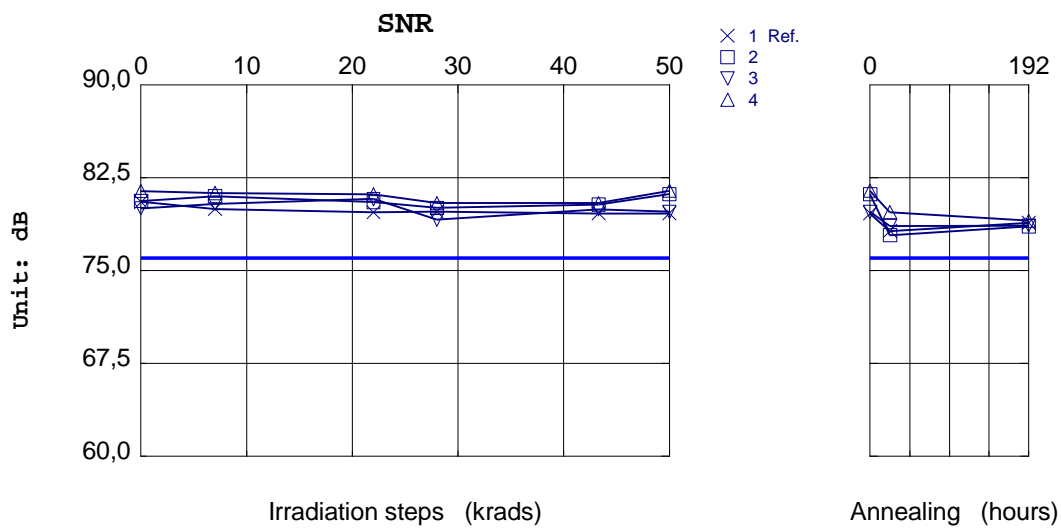
|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

Test results including tables and graphics are provided in this section for each measured parameter corresponding to a high dose rate exposure.

**Parameter: Signal-to-Noise Ratio: SNR**  
**VDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fample=1.3MHz**  
Unit= dB  
Spec limit min: 76  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 8,054E +01 | 7,997E +01 | 7,971E +01 | 7,976E +01 | 7,961E +01 | 7,961E +01 | 7,819E +01 |
| 2          | 8,061E +01 | 8,100E +01 | 8,052E +01 | 8,007E +01 | 8,032E +01 | 8,116E +01 | 7,785E +01 |
| 3          | 8,001E +01 | 8,038E +01 | 8,078E +01 | 7,911E +01 | 7,994E +01 | 7,974E +01 | 7,859E +01 |
| 4          | 8,142E +01 | 8,126E +01 | 8,115E +01 | 8,045E +01 | 8,044E +01 | 8,144E +01 | 7,971E +01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 8,001E +01 | 8,038E +01 | 8,052E +01 | 7,911E +01 | 7,994E +01 | 7,974E +01 | 7,785E +01 |
| Max        | 8,142E +01 | 8,126E +01 | 8,115E +01 | 8,045E +01 | 8,044E +01 | 8,144E +01 | 7,971E +01 |
| Mean       | 8,068E +01 | 8,088E +01 | 8,082E +01 | 7,987E +01 | 8,023E +01 | 8,078E +01 | 7,872E +01 |
| Sigma      | 7,059E -01 | 4,527E -01 | 3,208E -01 | 6,913E -01 | 2,619E -01 | 9,145E -01 | 9,380E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 7,885E +01 |
| 2          | 7,856E +01 |
| 3          | 7,862E +01 |
| 4          | 7,902E +01 |
| Statistics |            |
| Min        | 7,856E +01 |
| Max        | 7,902E +01 |
| Mean       | 7,873E +01 |
| Sigma      | 2,513E -01 |





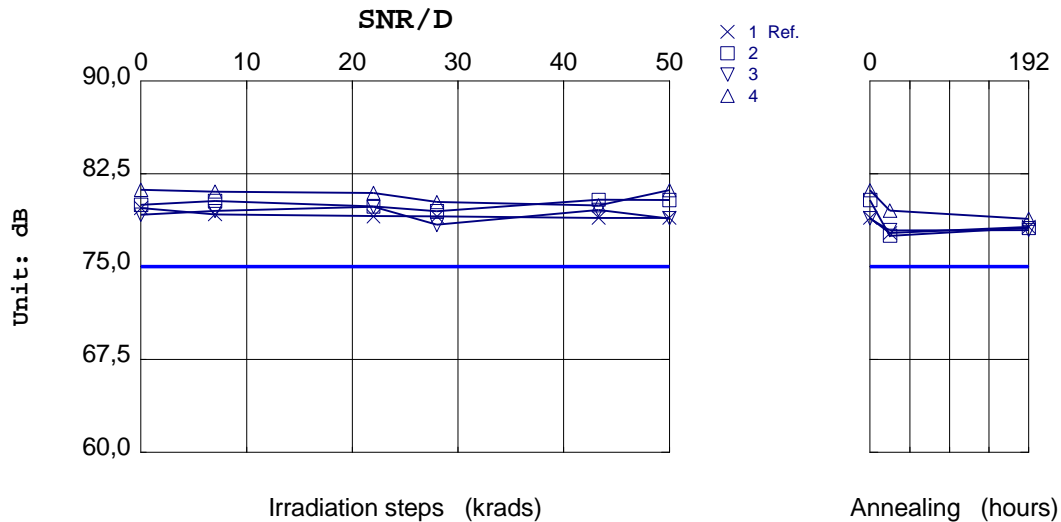
|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Signal-to-Noise Plus Distortion Ratio: SNR/D**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**

Unit= dB  
Spec limit min: 75  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 7,973E +01 | 7,922E +01 | 7,907E +01 | 7,905E +01 | 7,893E +01 | 7,893E +01 | 7,770E +01 |
| 2          | 7,998E +01 | 8,030E +01 | 7,984E +01 | 7,947E +01 | 8,040E +01 | 8,036E +01 | 7,748E +01 |
| 3          | 7,918E +01 | 7,948E +01 | 7,982E +01 | 7,837E +01 | 7,958E +01 | 7,889E +01 | 7,793E +01 |
| 4          | 8,120E +01 | 8,105E +01 | 8,095E +01 | 8,020E +01 | 7,994E +01 | 8,116E +01 | 7,952E +01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 7,918E +01 | 7,948E +01 | 7,982E +01 | 7,837E +01 | 7,958E +01 | 7,889E +01 | 7,748E +01 |
| Max        | 8,120E +01 | 8,105E +01 | 8,095E +01 | 8,020E +01 | 8,040E +01 | 8,116E +01 | 7,952E +01 |
| Mean       | 8,012E +01 | 8,028E +01 | 8,020E +01 | 7,935E +01 | 7,997E +01 | 8,014E +01 | 7,831E +01 |
| Sigma      | 1,019E +00 | 7,822E -01 | 6,461E -01 | 9,243E -01 | 4,103E -01 | 1,152E +00 | 1,072E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 7,820E +01 |
| 2          | 7,811E +01 |
| 3          | 7,796E +01 |
| 4          | 7,886E +01 |
| Statistics |            |
| Min        | 7,796E +01 |
| Max        | 7,886E +01 |
| Mean       | 7,831E +01 |
| Sigma      | 4,848E -01 |

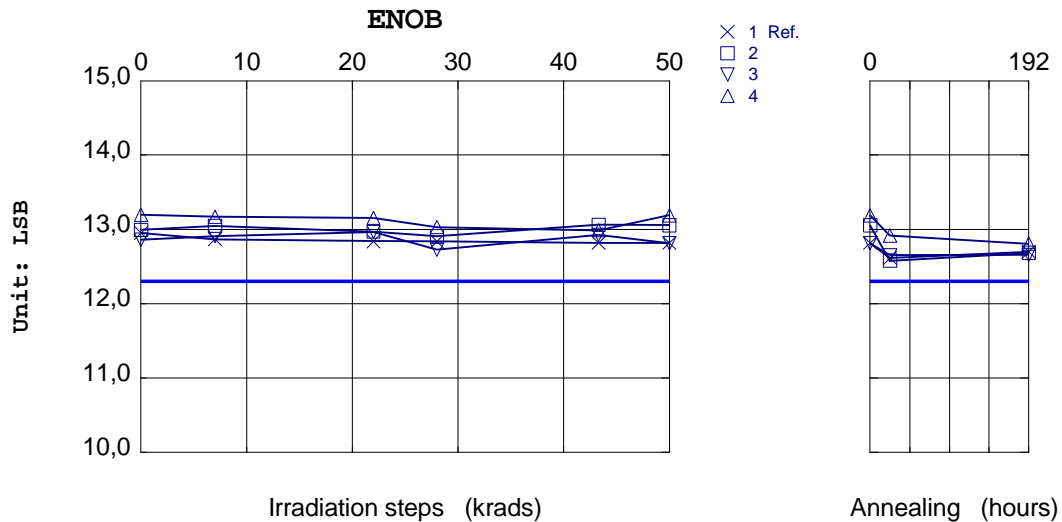


|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Effective Number Of Bits: ENOB**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**  
Unit= LSB  
Spec limit min: 12.3  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,295E +01 | 1,287E +01 | 1,284E +01 | 1,284E +01 | 1,282E +01 | 1,282E +01 | 1,262E +01 |
| 2          | 1,299E +01 | 1,305E +01 | 1,297E +01 | 1,291E +01 | 1,306E +01 | 1,306E +01 | 1,258E +01 |
| 3          | 1,286E +01 | 1,291E +01 | 1,297E +01 | 1,273E +01 | 1,293E +01 | 1,281E +01 | 1,265E +01 |
| 4          | 1,320E +01 | 1,317E +01 | 1,316E +01 | 1,303E +01 | 1,299E +01 | 1,319E +01 | 1,292E +01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,286E +01 | 1,291E +01 | 1,297E +01 | 1,273E +01 | 1,293E +01 | 1,281E +01 | 1,258E +01 |
| Max        | 1,320E +01 | 1,317E +01 | 1,315E +01 | 1,303E +01 | 1,306E +01 | 1,319E +01 | 1,292E +01 |
| Mean       | 1,302E +01 | 1,304E +01 | 1,303E +01 | 1,289E +01 | 1,299E +01 | 1,302E +01 | 1,272E +01 |
| Sigma      | 1,693E -01 | 1,300E -01 | 1,077E -01 | 1,535E -01 | 6,816E -02 | 1,912E -01 | 1,777E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,270E +01 |
| 2          | 1,268E +01 |
| 3          | 1,266E +01 |
| 4          | 1,281E +01 |
| Statistics |            |
| Min        | 1,266E +01 |
| Max        | 1,281E +01 |
| Mean       | 1,272E +01 |
| Sigma      | 8,073E -02 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Total Harmonic Distortion: THD**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz; Six Harmonics**

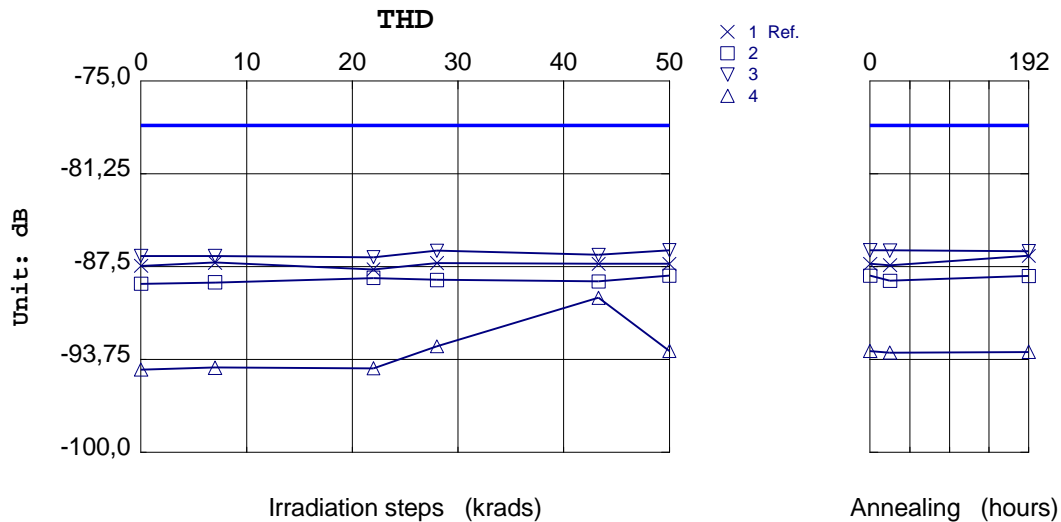
Unit= dB

Spec limit max: -78

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial     | 7 krad      | 22 krad     | 28 krad     | 43,3 krad   | 50 krad     | 24 hours    |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Serial #   |             |             |             |             |             |             |             |
| 1 Ref.     | -8,745E +01 | -8,724E +01 | -8,769E +01 | -8,726E +01 | -8,731E +01 | -8,731E +01 | -8,741E +01 |
| 2          | -8,866E +01 | -8,857E +01 | -8,827E +01 | -8,840E +01 | -8,850E +01 | -8,811E +01 | -8,845E +01 |
| 3          | -8,679E +01 | -8,679E +01 | -8,687E +01 | -8,643E +01 | -8,672E +01 | -8,641E +01 | -8,642E +01 |
| 4          | -9,443E +01 | -9,430E +01 | -9,435E +01 | -9,287E +01 | -8,960E +01 | -9,319E +01 | -9,329E +01 |
| Statistics |             |             |             |             |             |             |             |
| Min        | -9,443E +01 | -9,430E +01 | -9,435E +01 | -9,287E +01 | -8,960E +01 | -9,319E +01 | -9,329E +01 |
| Max        | -8,679E +01 | -8,679E +01 | -8,687E +01 | -8,643E +01 | -8,671E +01 | -8,640E +01 | -8,642E +01 |
| Mean       | -8,996E +01 | -8,988E +01 | -8,983E +01 | -8,923E +01 | -8,827E +01 | -8,923E +01 | -8,939E +01 |
| Sigma      | 3,985E +00  | 3,924E +00  | 3,981E +00  | 3,299E +00  | 1,457E +00  | 3,528E +00  | 3,531E +00  |

| Test Step  | 192 hours   |
|------------|-------------|
| Serial #   |             |
| 1 Ref.     | -8,677E +01 |
| 2          | -8,814E +01 |
| 3          | -8,646E +01 |
| 4          | -9,324E +01 |
| Statistics |             |
| Min        | -9,324E +01 |
| Max        | -8,646E +01 |
| Mean       | -8,928E +01 |
| Sigma      | 3,531E +00  |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Integral Nonlinearity: INL**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V**

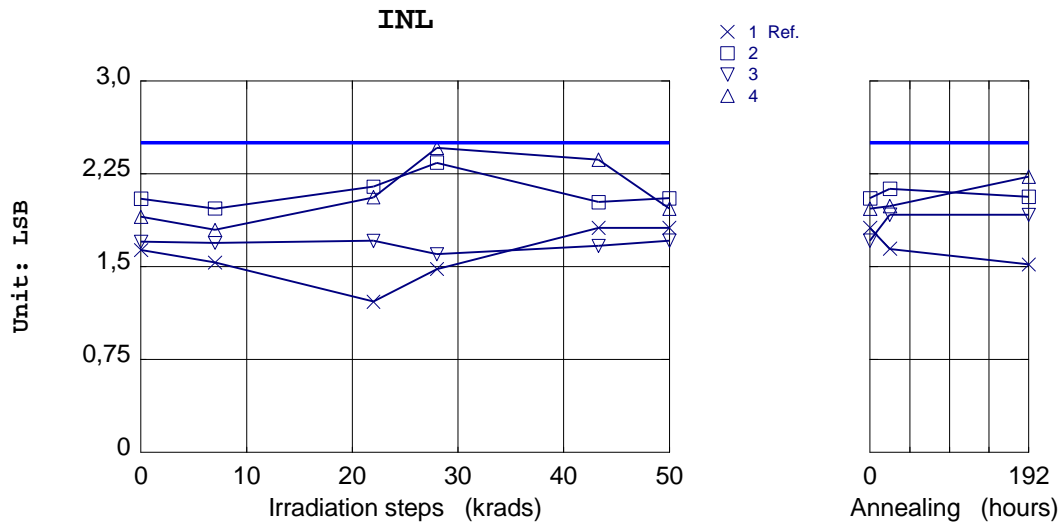
Unit= LSB

Spec limit max: 2.5

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,633E +00 | 1,532E +00 | 1,216E +00 | 1,480E +00 | 1,812E +00 | 1,812E +00 | 1,644E +00 |
| 2          | 2,048E +00 | 1,968E +00 | 2,145E +00 | 2,339E +00 | 2,020E +00 | 2,051E +00 | 2,128E +00 |
| 3          | 1,701E +00 | 1,691E +00 | 1,707E +00 | 1,600E +00 | 1,667E +00 | 1,709E +00 | 1,918E +00 |
| 4          | 1,902E +00 | 1,796E +00 | 2,060E +00 | 2,459E +00 | 2,363E +00 | 1,967E +00 | 1,988E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,701E +00 | 1,691E +00 | 1,707E +00 | 1,600E +00 | 1,667E +00 | 1,709E +00 | 1,918E +00 |
| Max        | 2,048E +00 | 1,968E +00 | 2,145E +00 | 2,459E +00 | 2,363E +00 | 2,051E +00 | 2,128E +00 |
| Mean       | 1,884E +00 | 1,818E +00 | 1,971E +00 | 2,133E +00 | 2,017E +00 | 1,909E +00 | 2,011E +00 |
| Sigma      | 1,742E -01 | 1,398E -01 | 2,323E -01 | 4,652E -01 | 3,480E -01 | 1,782E -01 | 1,069E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,518E +00 |
| 2          | 2,063E +00 |
| 3          | 1,917E +00 |
| 4          | 2,226E +00 |
| Statistics |            |
| Min        | 1,917E +00 |
| Max        | 2,226E +00 |
| Mean       | 2,069E +00 |
| Sigma      | 1,546E -01 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Differential Nonlinearity: DNL**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V**

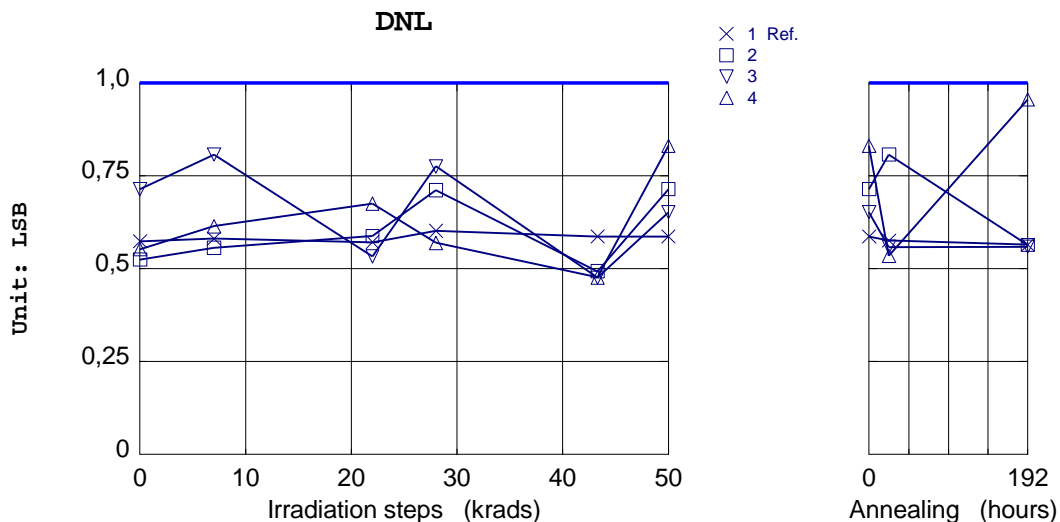
Unit= LSB

Spec limit max: 1

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 5,733E -01 | 5,804E -01 | 5,711E -01 | 6,017E -01 | 5,863E -01 | 5,863E -01 | 5,755E -01 |
| 2          | 5,244E -01 | 5,558E -01 | 5,877E -01 | 7,110E -01 | 4,926E -01 | 7,135E -01 | 8,069E -01 |
| 3          | 7,132E -01 | 8,070E -01 | 5,326E -01 | 7,750E -01 | 4,754E -01 | 6,517E -01 | 5,583E -01 |
| 4          | 5,518E -01 | 6,140E -01 | 6,749E -01 | 5,689E -01 | 4,759E -01 | 8,305E -01 | 5,346E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 5,244E -01 | 5,558E -01 | 5,326E -01 | 5,689E -01 | 4,754E -01 | 6,517E -01 | 5,346E -01 |
| Max        | 7,132E -01 | 8,070E -01 | 6,749E -01 | 7,750E -01 | 4,926E -01 | 8,305E -01 | 8,069E -01 |
| Mean       | 5,965E -01 | 6,589E -01 | 5,984E -01 | 6,850E -01 | 4,813E -01 | 7,319E -01 | 6,333E -01 |
| Sigma      | 1,020E -01 | 1,315E -01 | 7,175E -02 | 1,055E -01 | 9,786E -03 | 9,080E -02 | 1,508E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 5,644E -01 |
| 2          | 5,638E -01 |
| 3          | 5,589E -01 |
| 4          | 9,552E -01 |
| Statistics |            |
| Min        | 5,589E -01 |
| Max        | 9,552E -01 |
| Mean       | 6,926E -01 |
| Sigma      | 2,274E -01 |



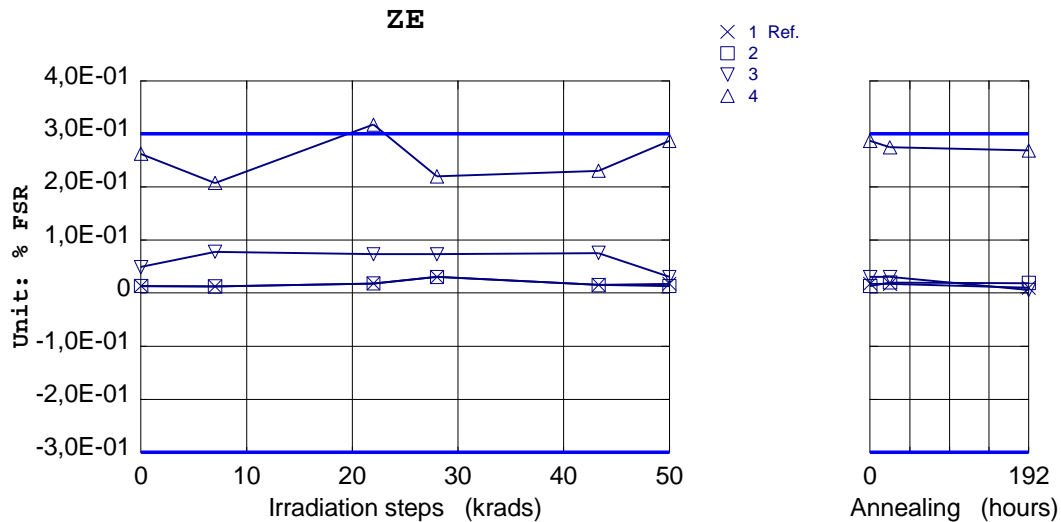
|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Zero Error: ZE**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0V**

Unit= % FSR  
Spec limit max: 0.3  
Spec limit min: -0.3  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,328E -02 | 1,233E -02 | 1,831E -02 | 3,050E -02 | 1,561E -02 | 1,753E -02 | 1,723E -02 |
| 2          | 1,328E -02 | 1,233E -02 | 1,831E -02 | 3,050E -02 | 1,526E -02 | 1,325E -02 | 1,981E -02 |
| 3          | 4,883E -02 | 7,777E -02 | 7,324E -02 | 7,320E -02 | 7,567E -02 | 3,052E -02 | 3,052E -02 |
| 4          | 2,625E -01 | 2,075E -01 | 3,174E -01 | 2,199E -01 | 2,305E -01 | 2,869E -01 | 2,747E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,328E -02 | 1,233E -02 | 1,831E -02 | 3,050E -02 | 1,526E -02 | 1,325E -02 | 1,981E -02 |
| Max        | 2,625E -01 | 2,075E -01 | 3,174E -01 | 2,199E -01 | 2,305E -01 | 2,869E -01 | 2,747E -01 |
| Mean       | 1,082E -01 | 9,921E -02 | 1,363E -01 | 1,079E -01 | 1,072E -01 | 1,102E -01 | 1,083E -01 |
| Sigma      | 1,348E -01 | 9,935E -02 | 1,592E -01 | 9,934E -02 | 1,110E -01 | 1,532E -01 | 1,441E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,011E -02 |
| 2          | 1,897E -02 |
| 3          | 6,104E -03 |
| 4          | 2,686E -01 |
| Statistics |            |
| Min        | 6,104E -03 |
| Max        | 2,686E -01 |
| Mean       | 9,788E -02 |
| Sigma      | 1,480E -01 |



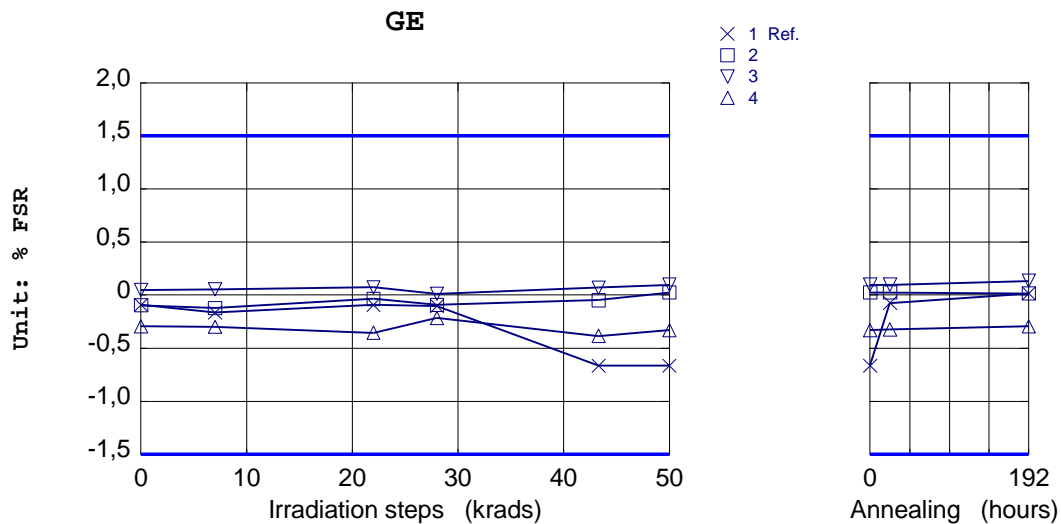
|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Gain Error: GE**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 5V**

Unit= % FSR  
Spec limit max: 1.5  
Spec limit min: -1.5  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial     | 7 krad      | 22 krad     | 28 krad     | 43,3 krad   | 50 krad     | 24 hours    |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Serial #   |             |             |             |             |             |             |             |
| 1 Ref.     | -9,155E -02 | -1,648E -01 | -9,155E -02 | -1,040E -01 | -6,653E -01 | -6,650E -01 | -7,320E -02 |
| 2          | -9,766E -02 | -1,221E -01 | -3,662E -02 | -9,160E -02 | -4,767E -02 | 2,441E -02  | 2,441E -02  |
| 3          | 4,883E -02  | 5,493E -02  | 7,324E -02  | 1,220E -02  | 7,019E -02  | 9,766E -02  | 9,766E -02  |
| 4          | -2,930E -01 | -2,991E -01 | -3,540E -01 | -2,155E -01 | -3,850E -01 | -3,296E -01 | -3,235E -01 |
| Statistics |             |             |             |             |             |             |             |
| Min        | -2,930E -01 | -2,991E -01 | -3,540E -01 | -2,155E -01 | -3,850E -01 | -3,296E -01 | -3,235E -01 |
| Max        | 4,883E -02  | 5,493E -02  | 7,324E -02  | 1,220E -02  | 7,019E -02  | 9,766E -02  | 9,766E -02  |
| Mean       | -1,139E -01 | -1,221E -01 | -1,058E -01 | -9,830E -02 | -1,208E -01 | -6,917E -02 | -6,714E -02 |
| Sigma      | 1,715E -01  | 1,770E -01  | 2,219E -01  | 1,140E -01  | 2,363E -01  | 2,285E -01  | 2,250E -01  |

| Test Step  | 192 hours   |
|------------|-------------|
| Serial #   |             |
| 1 Ref.     | 1,560E -02  |
| 2          | 1,532E -02  |
| 3          | 1,343E -01  |
| 4          | -2,930E -01 |
| Statistics |             |
| Min        | -2,930E -01 |
| Max        | 1,343E -01  |
| Mean       | -4,779E -02 |
| Sigma      | 2,205E -01  |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Analog Power Supply Current: IAVDD**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Fsample=1.3MHz**

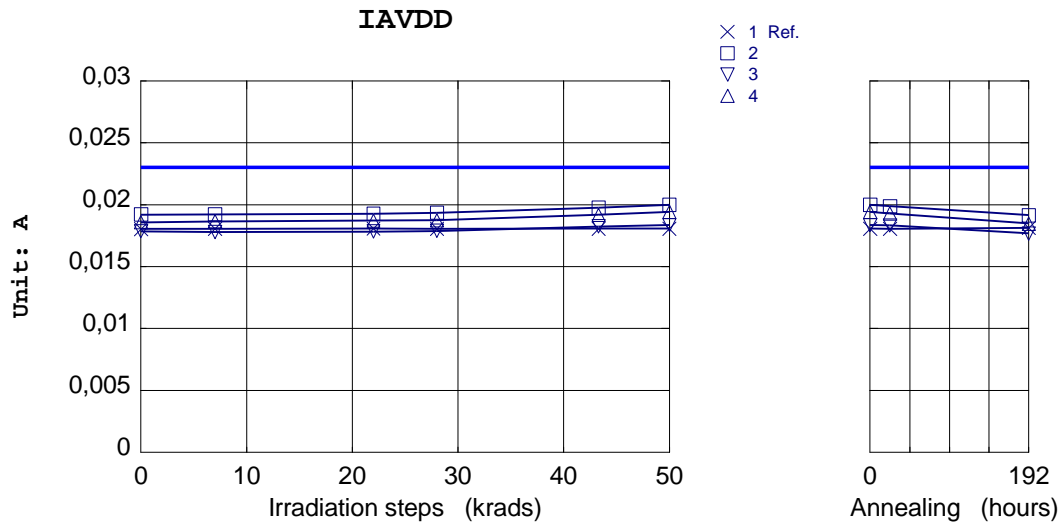
Unit= A

Spec limit max: 0.023

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,803E -02 | 1,805E -02 | 1,806E -02 | 1,805E -02 | 1,806E -02 | 1,806E -02 | 1,805E -02 |
| 2          | 1,920E -02 | 1,922E -02 | 1,926E -02 | 1,934E -02 | 1,976E -02 | 1,998E -02 | 1,987E -02 |
| 3          | 1,784E -02 | 1,779E -02 | 1,783E -02 | 1,788E -02 | 1,824E -02 | 1,836E -02 | 1,832E -02 |
| 4          | 1,857E -02 | 1,864E -02 | 1,872E -02 | 1,874E -02 | 1,917E -02 | 1,942E -02 | 1,928E -02 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,784E -02 | 1,779E -02 | 1,783E -02 | 1,788E -02 | 1,824E -02 | 1,836E -02 | 1,832E -02 |
| Max        | 1,920E -02 | 1,922E -02 | 1,926E -02 | 1,934E -02 | 1,976E -02 | 1,998E -02 | 1,987E -02 |
| Mean       | 1,854E -02 | 1,855E -02 | 1,860E -02 | 1,865E -02 | 1,906E -02 | 1,925E -02 | 1,916E -02 |
| Sigma      | 6,795E -04 | 7,179E -04 | 7,229E -04 | 7,355E -04 | 7,643E -04 | 8,262E -04 | 7,825E -04 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,811E -02 |
| 2          | 1,914E -02 |
| 3          | 1,767E -02 |
| 4          | 1,846E -02 |
| Statistics |            |
| Min        | 1,767E -02 |
| Max        | 1,914E -02 |
| Mean       | 1,842E -02 |
| Sigma      | 7,318E -04 |





|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Digital Output Driver Supply Current: IDRVD**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Fsample=1.3MHz**

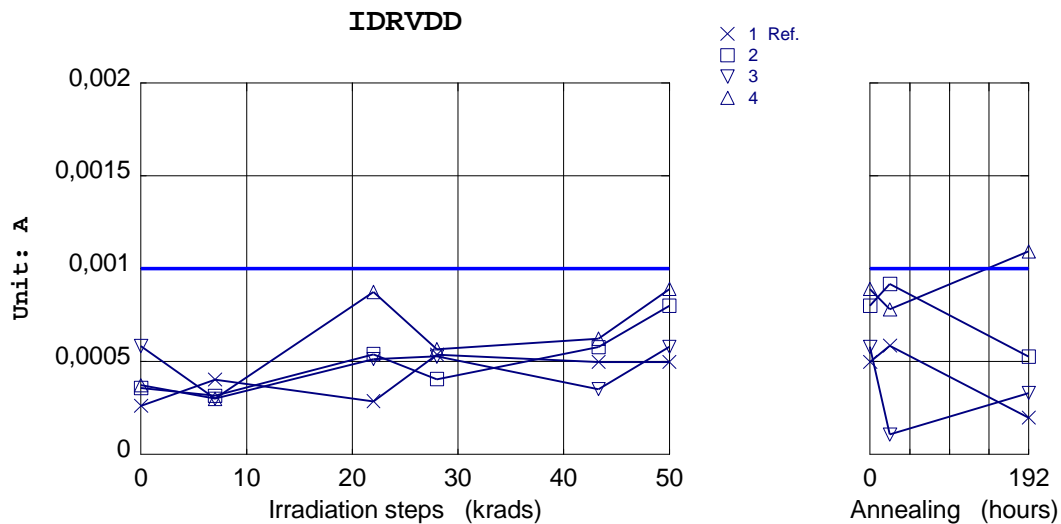
Unit= A

Spec limit max: 0.001

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,610E -04 | 4,026E -04 | 2,859E -04 | 5,370E -04 | 4,968E -04 | 4,968E -04 | 5,850E -04 |
| 2          | 3,570E -04 | 3,161E -04 | 5,392E -04 | 4,044E -04 | 5,773E -04 | 7,993E -04 | 9,165E -04 |
| 3          | 5,830E -04 | 2,996E -04 | 5,128E -04 | 5,267E -04 | 3,512E -04 | 5,791E -04 | 1,069E -04 |
| 4          | 3,715E -04 | 2,989E -04 | 8,746E -04 | 5,653E -04 | 6,228E -04 | 8,897E -04 | 7,809E -04 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 3,570E -04 | 2,989E -04 | 5,128E -04 | 4,044E -04 | 3,512E -04 | 5,791E -04 | 1,069E -04 |
| Max        | 5,830E -04 | 3,161E -04 | 8,746E -04 | 5,653E -04 | 6,228E -04 | 8,897E -04 | 9,165E -04 |
| Mean       | 4,371E -04 | 3,048E -04 | 6,422E -04 | 4,988E -04 | 5,171E -04 | 7,560E -04 | 6,014E -04 |
| Sigma      | 1,265E -04 | 9,724E -06 | 2,017E -04 | 8,401E -05 | 1,455E -04 | 1,597E -04 | 4,336E -04 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,969E -04 |
| 2          | 5,264E -04 |
| 3          | 3,301E -04 |
| 4          | 1,092E -03 |
| Statistics |            |
| Min        | 3,301E -04 |
| Max        | 1,092E -03 |
| Mean       | 6,495E -04 |
| Sigma      | 3,956E -04 |



|                          |                               |                |                |                    |
|--------------------------|-------------------------------|----------------|----------------|--------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071 |
|                          |                               |                |                | Issue : 01         |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                    |

Parameter: Digital Supply Current: IDVDD  
 AVDD=+5V; DVDD=+5V; DRVDD=+5V; Fsample=1.3MHz

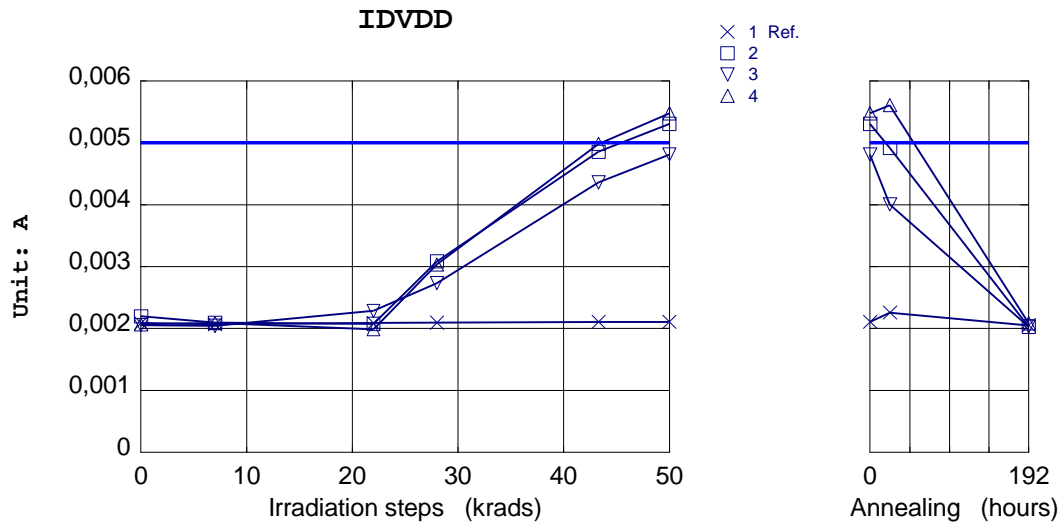
Unit= A

Spec limit max: 0.005

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,088E -03 | 2,067E -03 | 2,087E -03 | 2,095E -03 | 2,106E -03 | 2,106E -03 | 2,256E -03 |
| 2          | 2,197E -03 | 2,092E -03 | 2,075E -03 | 3,083E -03 | 4,855E -03 | 5,305E -03 | 4,915E -03 |
| 3          | 2,056E -03 | 2,043E -03 | 2,285E -03 | 2,732E -03 | 4,360E -03 | 4,811E -03 | 4,004E -03 |
| 4          | 2,068E -03 | 2,086E -03 | 1,986E -03 | 3,033E -03 | 4,980E -03 | 5,476E -03 | 5,606E -03 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,056E -03 | 2,043E -03 | 1,986E -03 | 2,732E -03 | 4,360E -03 | 4,811E -03 | 4,004E -03 |
| Max        | 2,197E -03 | 2,092E -03 | 2,285E -03 | 3,083E -03 | 4,980E -03 | 5,476E -03 | 5,606E -03 |
| Mean       | 2,107E -03 | 2,074E -03 | 2,115E -03 | 2,949E -03 | 4,731E -03 | 5,198E -03 | 4,842E -03 |
| Sigma      | 7,806E -05 | 2,707E -05 | 1,535E -04 | 1,898E -04 | 3,277E -04 | 3,453E -04 | 8,034E -04 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,050E -03 |
| 2          | 2,029E -03 |
| 3          | 2,031E -03 |
| 4          | 2,085E -03 |
| Statistics |            |
| Min        | 2,029E -03 |
| Max        | 2,085E -03 |
| Mean       | 2,048E -03 |
| Sigma      | 3,172E -05 |



|                          |                               |                |                |                    |
|--------------------------|-------------------------------|----------------|----------------|--------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071 |
|                          |                               |                |                | Issue : 01         |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                    |

**Parameter: High Level Input Voltage: Vih**  
**AVDD=+5V; DVDD=+5V**

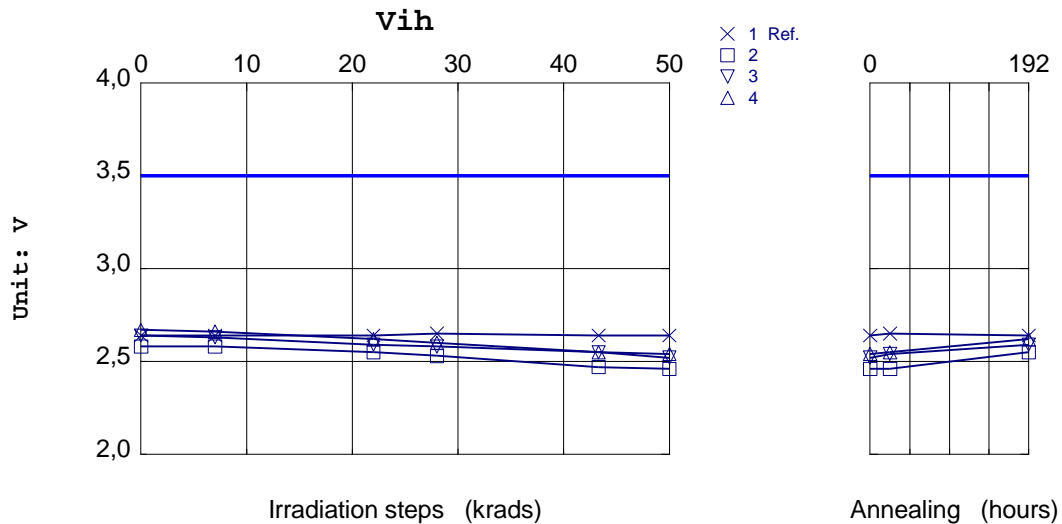
Unit= V

Spec limit max: 3.5

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,640E +00 | 2,640E +00 | 2,640E +00 | 2,650E +00 | 2,640E +00 | 2,640E +00 | 2,650E +00 |
| 2          | 2,580E +00 | 2,580E +00 | 2,550E +00 | 2,530E +00 | 2,470E +00 | 2,460E +00 | 2,460E +00 |
| 3          | 2,640E +00 | 2,630E +00 | 2,590E +00 | 2,580E +00 | 2,550E +00 | 2,520E +00 | 2,540E +00 |
| 4          | 2,670E +00 | 2,660E +00 | 2,620E +00 | 2,600E +00 | 2,550E +00 | 2,540E +00 | 2,550E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,580E +00 | 2,580E +00 | 2,550E +00 | 2,530E +00 | 2,470E +00 | 2,460E +00 | 2,460E +00 |
| Max        | 2,670E +00 | 2,660E +00 | 2,620E +00 | 2,600E +00 | 2,550E +00 | 2,540E +00 | 2,550E +00 |
| Mean       | 2,630E +00 | 2,623E +00 | 2,587E +00 | 2,570E +00 | 2,523E +00 | 2,507E +00 | 2,517E +00 |
| Sigma      | 4,583E -02 | 4,041E -02 | 3,512E -02 | 3,606E -02 | 4,619E -02 | 4,163E -02 | 4,933E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,640E +00 |
| 2          | 2,550E +00 |
| 3          | 2,590E +00 |
| 4          | 2,620E +00 |
| Statistics |            |
| Min        | 2,550E +00 |
| Max        | 2,620E +00 |
| Mean       | 2,587E +00 |
| Sigma      | 3,512E -02 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Input Voltage: Vil**

**AVDD=+5V; DVDD=+5V**

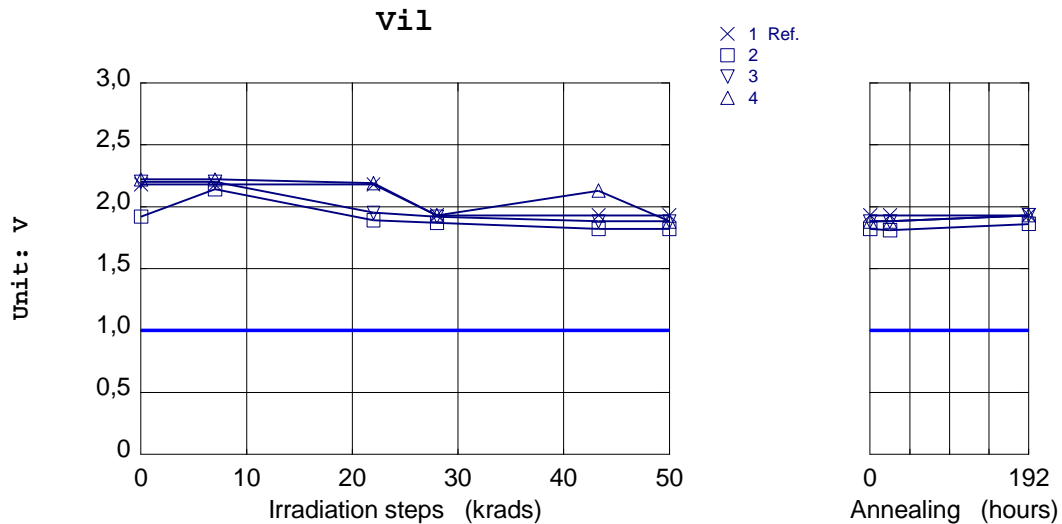
Unit= V

Spec limit min: 1

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,180E +00 | 2,180E +00 | 2,180E +00 | 1,930E +00 | 1,930E +00 | 1,930E +00 | 1,930E +00 |
| 2          | 1,920E +00 | 2,140E +00 | 1,890E +00 | 1,870E +00 | 1,820E +00 | 1,820E +00 | 1,810E +00 |
| 3          | 2,200E +00 | 2,200E +00 | 1,950E +00 | 1,920E +00 | 1,880E +00 | 1,880E +00 | 1,880E +00 |
| 4          | 2,220E +00 | 2,220E +00 | 2,190E +00 | 1,930E +00 | 2,130E +00 | 1,880E +00 | 1,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,920E +00 | 2,140E +00 | 1,890E +00 | 1,870E +00 | 1,820E +00 | 1,820E +00 | 1,810E +00 |
| Max        | 2,220E +00 | 2,220E +00 | 2,190E +00 | 1,930E +00 | 2,130E +00 | 1,880E +00 | 1,880E +00 |
| Mean       | 2,113E +00 | 2,187E +00 | 2,010E +00 | 1,907E +00 | 1,943E +00 | 1,860E +00 | 1,857E +00 |
| Sigma      | 1,677E -01 | 4,163E -02 | 1,587E -01 | 3,215E -02 | 1,644E -01 | 3,464E -02 | 4,041E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,930E +00 |
| 2          | 1,860E +00 |
| 3          | 1,930E +00 |
| 4          | 1,930E +00 |
| Statistics |            |
| Min        | 1,860E +00 |
| Max        | 1,930E +00 |
| Mean       | 1,907E +00 |
| Sigma      | 4,041E -02 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 24: VOH1  
AVDD=+5V; DVDD=+5V; IOH=500uA

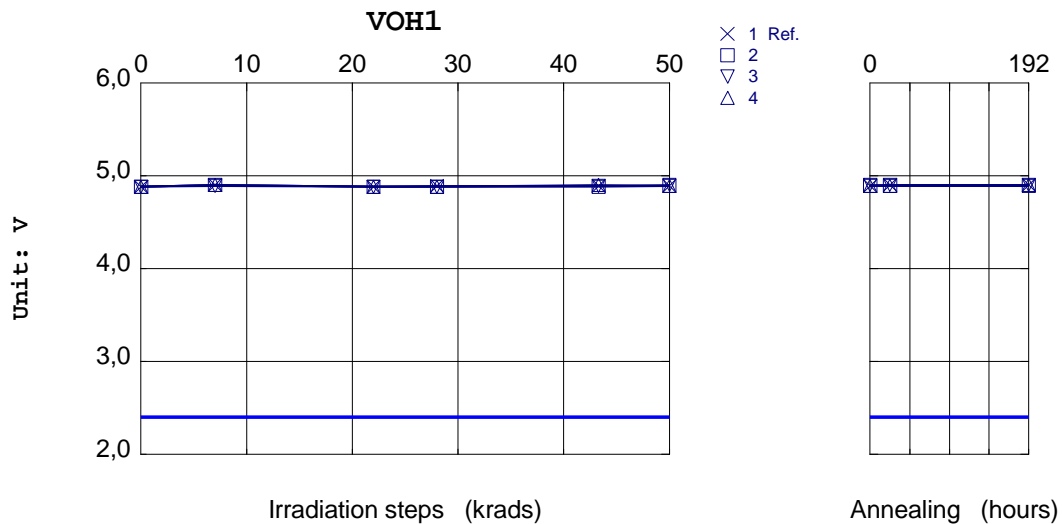
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 |
| 2          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 |
| 3          | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 |
| 4          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 |
| Max        | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,880E +00 | 4,897E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,893E +00 | 4,893E +00 |
| Sigma      | 0,000E +00 | 5,774E -03 | 0,000E +00 | 0,000E +00 | 1,000E -02 | 5,774E -03 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,890E +00 |
| 3          | 4,900E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,890E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,897E +00 |
| Sigma      | 5,774E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 23: VOH2  
AVDD=+5V; DVDD=+5V; IOH=500uA

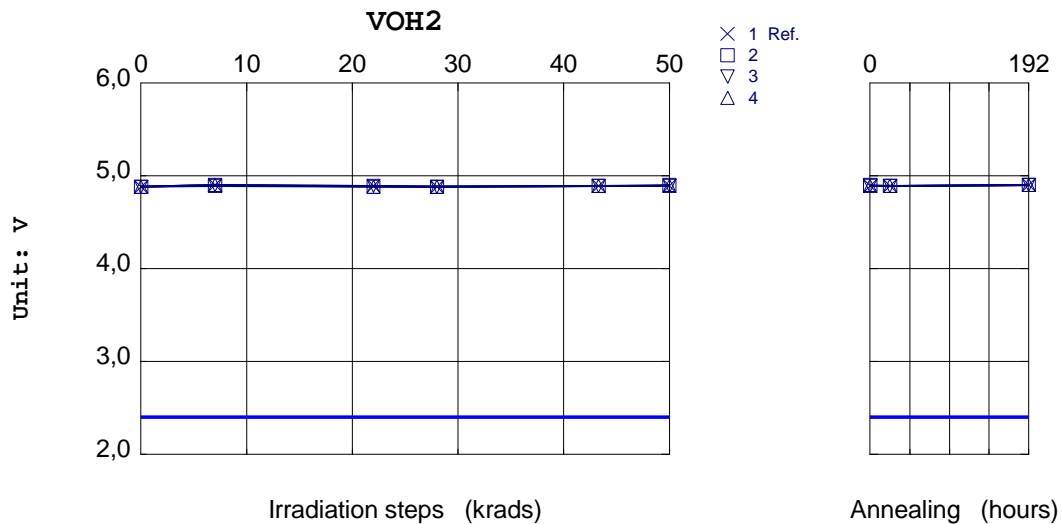
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 2          | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 4          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| Max        | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| Mean       | 4,880E +00 | 4,897E +00 | 4,883E +00 | 4,880E +00 | 4,890E +00 | 4,893E +00 | 4,890E +00 |
| Sigma      | 0,000E +00 | 5,774E -03 | 5,773E -03 | 0,000E +00 | 0,000E +00 | 5,774E -03 | 0,000E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,900E +00 |
| 3          | 4,900E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,900E +00 |
| Sigma      | 0,000E +00 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 22: VOH3  
AVDD=+5V; DVDD=+5V; IOH=500uA

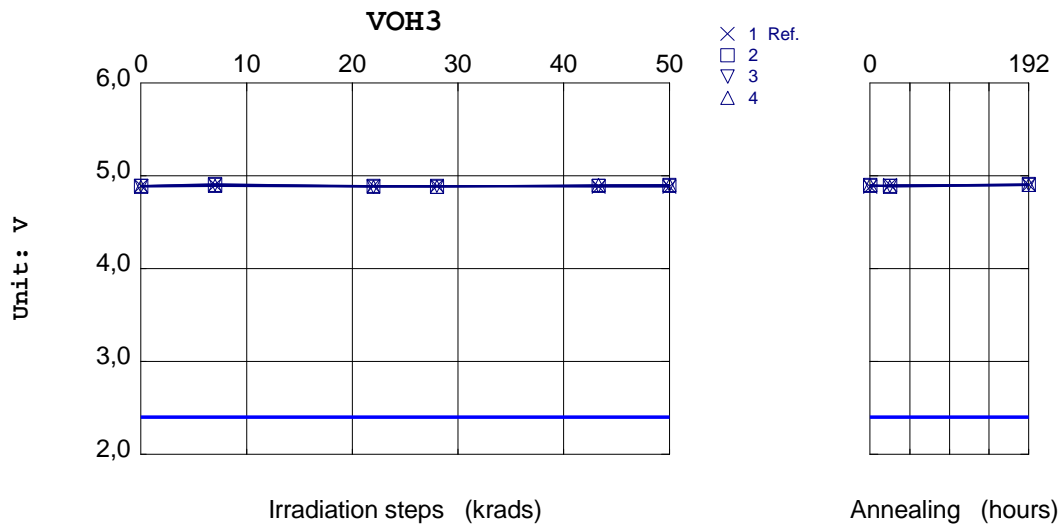
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,910E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 4          | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 |
| Max        | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Mean       | 4,887E +00 | 4,900E +00 | 4,883E +00 | 4,883E +00 | 4,893E +00 | 4,897E +00 | 4,887E +00 |
| Sigma      | 5,773E -03 | 1,000E -02 | 5,773E -03 | 5,773E -03 | 5,774E -03 | 5,774E -03 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,900E +00 |
| 3          | 4,910E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,910E +00 |
| Mean       | 4,903E +00 |
| Sigma      | 5,773E -03 |



|                          |                               |                |                |                    |
|--------------------------|-------------------------------|----------------|----------------|--------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071 |
|                          |                               |                |                | Issue : 01         |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                    |

**Parameter: High Level Output Voltage Pin 21: VOH4**  
**AVDD=+5V; DVDD=+5V; IOH=500uA**

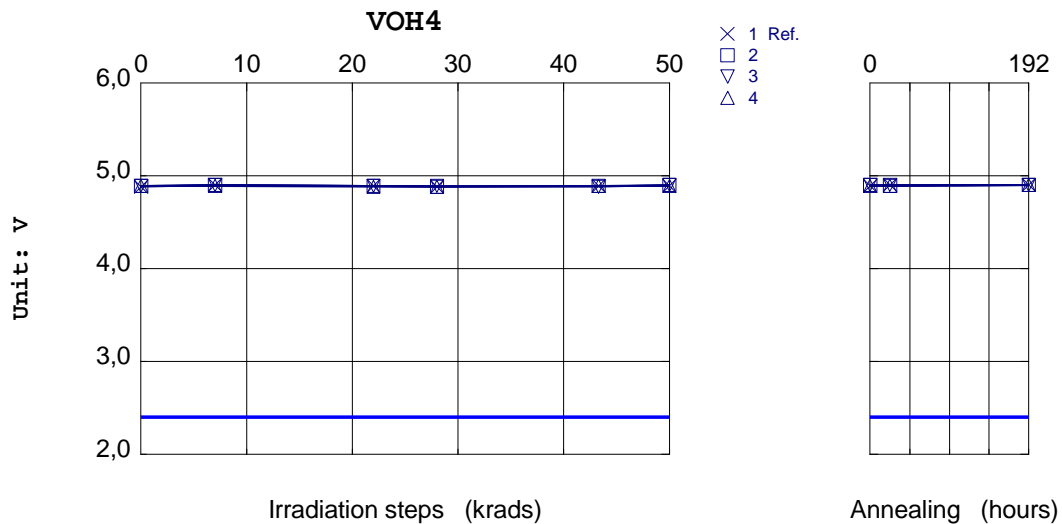
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 |
| 4          | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,890E +00 | 4,897E +00 | 4,887E +00 | 4,883E +00 | 4,887E +00 | 4,897E +00 | 4,893E +00 |
| Sigma      | 0,000E +00 | 5,774E -03 | 5,773E -03 | 5,773E -03 | 5,773E -03 | 5,774E -03 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,900E +00 |
| 3          | 4,900E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,900E +00 |
| Sigma      | 0,000E +00 |





|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 20: VOH5  
AVDD=+5V; DVDD=+5V; IOH=500uA

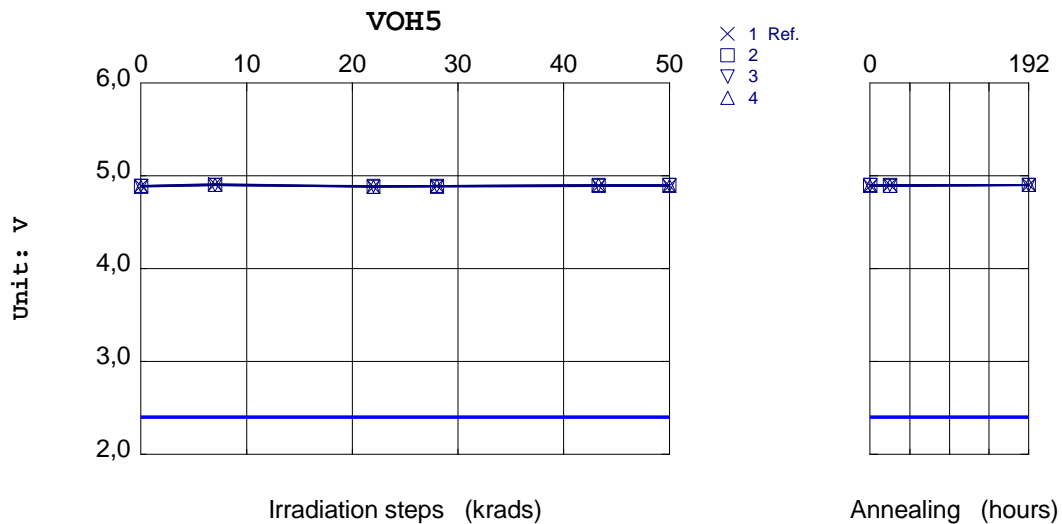
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,910E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| 4          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,887E +00 | 4,900E +00 | 4,883E +00 | 4,887E +00 | 4,897E +00 | 4,897E +00 | 4,893E +00 |
| Sigma      | 5,773E -03 | 0,000E +00 | 5,773E -03 | 5,773E -03 | 5,774E -03 | 5,774E -03 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,900E +00 |
| 3          | 4,900E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,900E +00 |
| Sigma      | 0,000E +00 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 19: VOH6  
 AVDD=+5V; DVDD=+5V; IOH=500uA

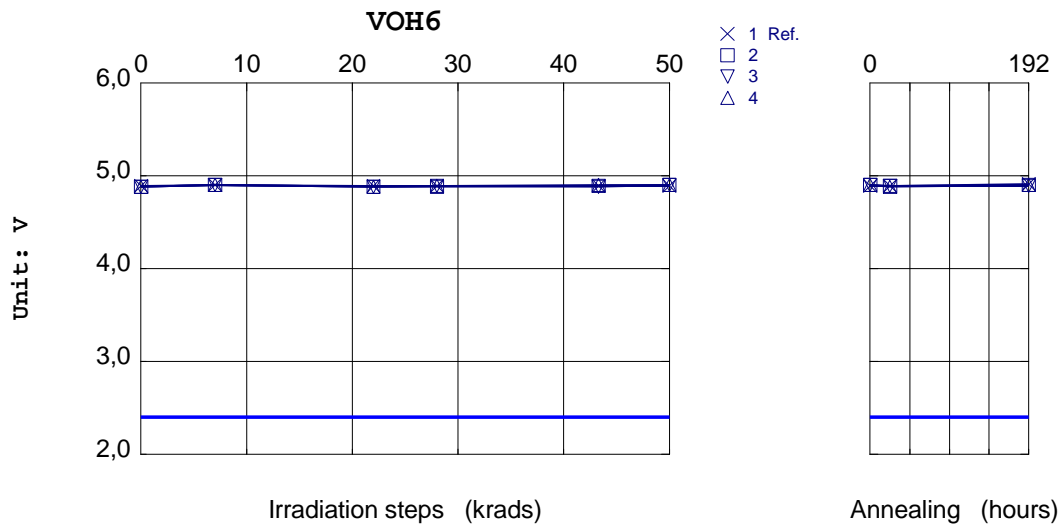
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 2          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| 4          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,880E +00 |
| Max        | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Mean       | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,887E +00 | 4,890E +00 | 4,900E +00 | 4,887E +00 |
| Sigma      | 0,000E +00 | 0,000E +00 | 0,000E +00 | 5,773E -03 | 1,000E -02 | 0,000E +00 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,910E +00 |
| 2          | 4,900E +00 |
| 3          | 4,890E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,890E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,897E +00 |
| Sigma      | 5,774E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 18: VOH7  
AVDD=+5V; DVDD=+5V; IOH=500uA

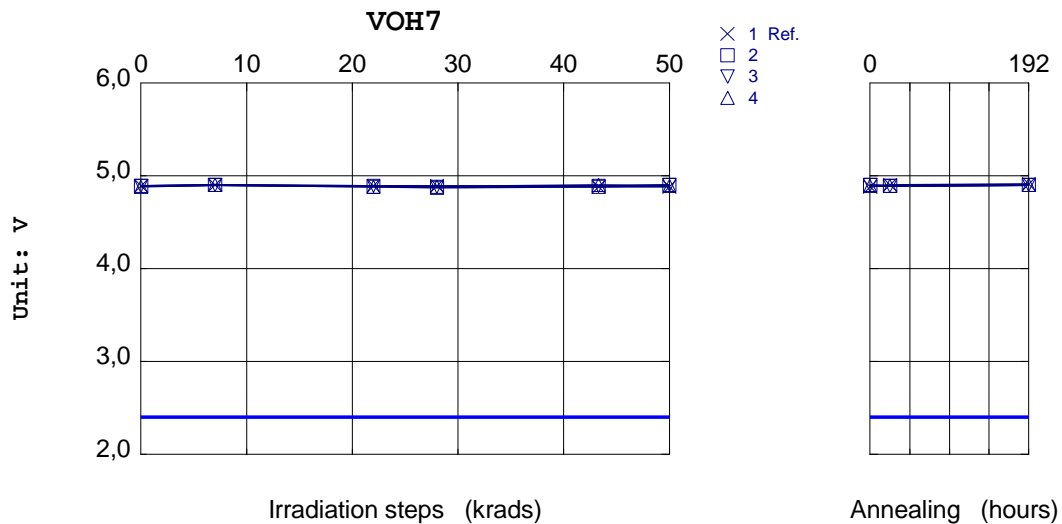
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krads    | 22 krads   | 28 krads   | 43,3 krads | 50 krads   | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,870E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 4          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,870E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Mean       | 4,887E +00 | 4,900E +00 | 4,883E +00 | 4,877E +00 | 4,890E +00 | 4,897E +00 | 4,890E +00 |
| Sigma      | 5,773E -03 | 0,000E +00 | 5,773E -03 | 5,774E -03 | 1,000E -02 | 5,774E -03 | 0,000E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,910E +00 |
| 2          | 4,900E +00 |
| 3          | 4,900E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,900E +00 |
| Sigma      | 0,000E +00 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 17: VOH8  
AVDD=+5V; DVDD=+5V; IOH=500uA

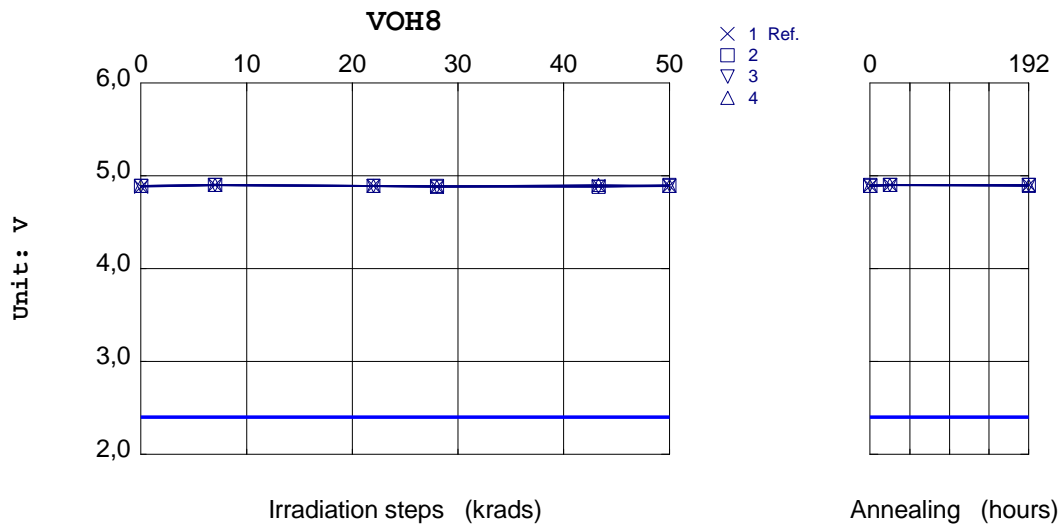
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 |
| 4          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 |
| Max        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,883E +00 | 4,887E +00 | 4,893E +00 | 4,900E +00 |
| Sigma      | 0,000E +00 | 0,000E +00 | 0,000E +00 | 5,773E -03 | 1,155E -02 | 5,774E -03 | 0,000E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,900E +00 |
| 3          | 4,900E +00 |
| 4          | 4,890E +00 |
| Statistics |            |
| Min        | 4,890E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,897E +00 |
| Sigma      | 5,774E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 16: VOH9  
AVDD=+5V; DVDD=+5V; IOH=500uA

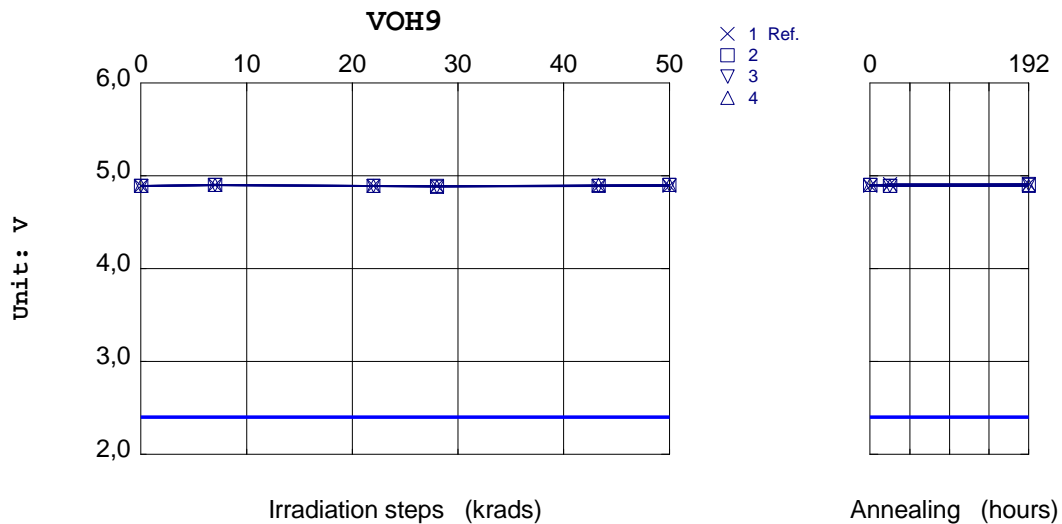
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,910E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 4          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Mean       | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,883E +00 | 4,893E +00 | 4,900E +00 | 4,890E +00 |
| Sigma      | 0,000E +00 | 0,000E +00 | 0,000E +00 | 5,773E -03 | 5,774E -03 | 0,000E +00 | 0,000E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,910E +00 |
| 2          | 4,900E +00 |
| 3          | 4,910E +00 |
| 4          | 4,890E +00 |
| Statistics |            |
| Min        | 4,890E +00 |
| Max        | 4,910E +00 |
| Mean       | 4,900E +00 |
| Sigma      | 1,000E -02 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 15: VOH10  
AVDD=+5V; DVDD=+5V; IOH=500uA

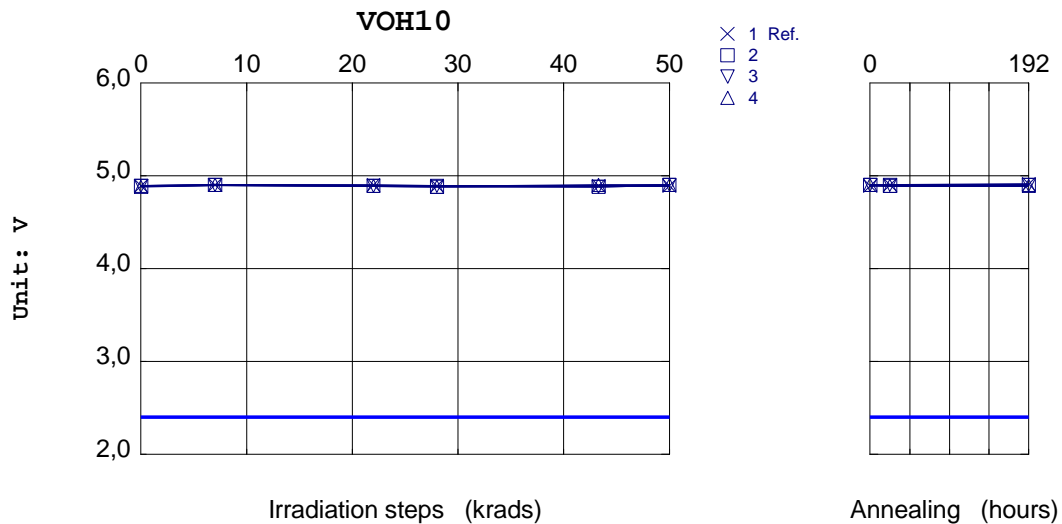
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 |
| 4          | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,887E +00 | 4,900E +00 | 4,890E +00 | 4,883E +00 | 4,887E +00 | 4,900E +00 | 4,893E +00 |
| Sigma      | 5,773E -03 | 0,000E +00 | 0,000E +00 | 5,773E -03 | 1,155E -02 | 0,000E +00 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,910E +00 |
| 2          | 4,900E +00 |
| 3          | 4,900E +00 |
| 4          | 4,890E +00 |
| Statistics |            |
| Min        | 4,890E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,897E +00 |
| Sigma      | 5,774E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 14: VOH11  
AVDD=+5V; DVDD=+5V; IOH=500uA

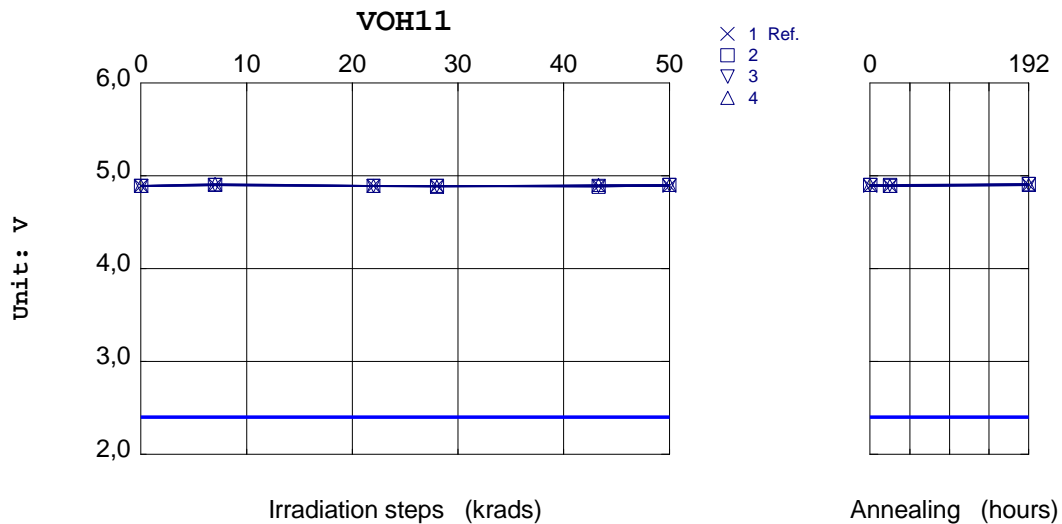
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 |
| 4          | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,890E +00 | 4,903E +00 | 4,890E +00 | 4,887E +00 | 4,890E +00 | 4,900E +00 | 4,893E +00 |
| Sigma      | 0,000E +00 | 5,773E -03 | 0,000E +00 | 5,773E -03 | 1,000E -02 | 0,000E +00 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,910E +00 |
| 3          | 4,910E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,910E +00 |
| Mean       | 4,907E +00 |
| Sigma      | 5,773E -03 |



|                          |                               |                |                |                    |
|--------------------------|-------------------------------|----------------|----------------|--------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071 |
|                          |                               |                |                | Issue : 01         |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                    |

**Parameter: High Level Output Voltage Pin 13: VOH12**  
**AVDD=+5V; DVDD=+5V; IOH=500uA**

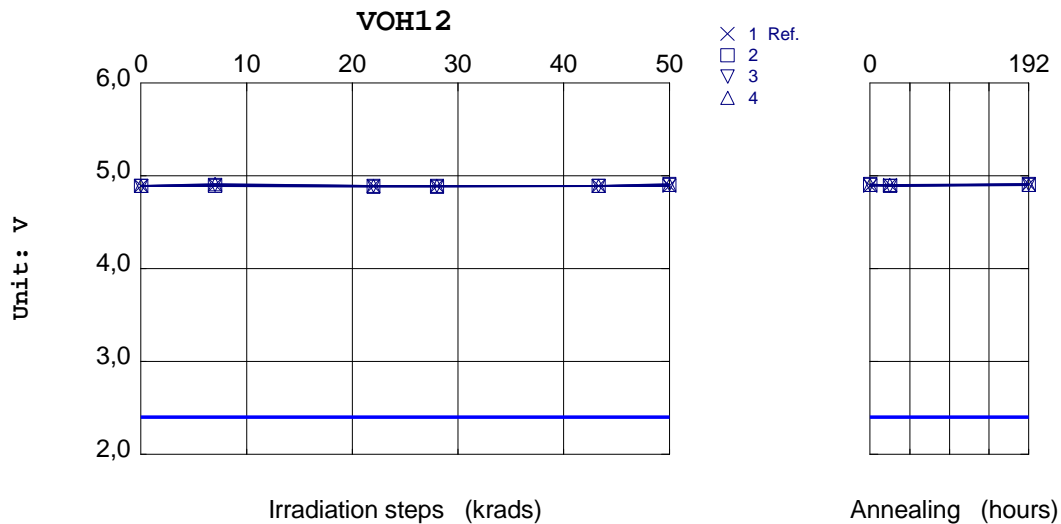
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krads    | 22 krads   | 28 krads   | 43,3 krads | 50 krads   | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 |
| 2          | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,910E +00 | 4,890E +00 |
| 4          | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,910E +00 | 4,900E +00 |
| Mean       | 4,890E +00 | 4,900E +00 | 4,887E +00 | 4,887E +00 | 4,890E +00 | 4,903E +00 | 4,893E +00 |
| Sigma      | 0,000E +00 | 1,000E -02 | 5,773E -03 | 5,773E -03 | 0,000E +00 | 5,773E -03 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,910E +00 |
| 2          | 4,900E +00 |
| 3          | 4,910E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,910E +00 |
| Mean       | 4,903E +00 |
| Sigma      | 5,773E -03 |





|                          |                               |                |                |                    |
|--------------------------|-------------------------------|----------------|----------------|--------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071 |
|                          |                               |                |                | Issue : 01         |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                    |

**Parameter: High Level Output Voltage Pin 12: VOH13**  
**AVDD=+5V; DVDD=+5V; IOH=500uA**

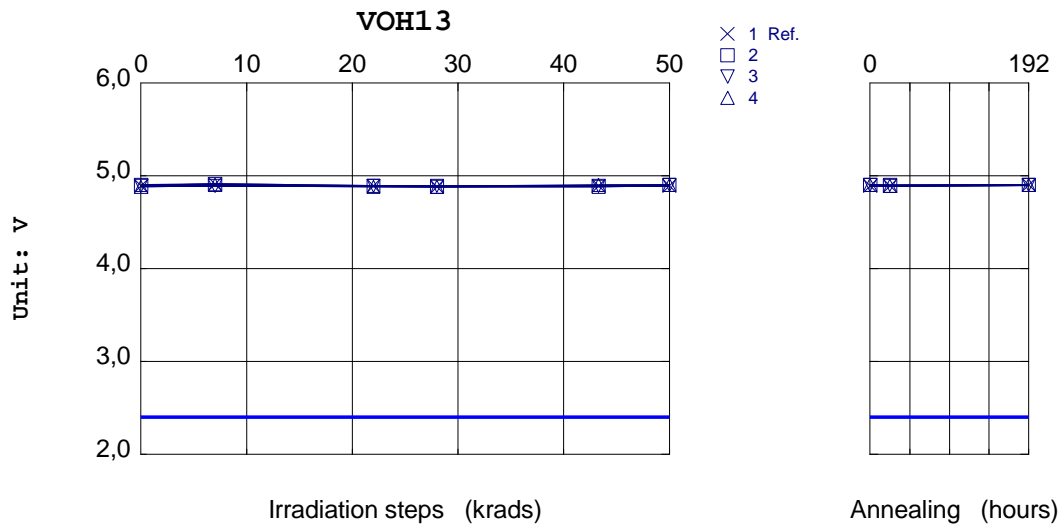
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 2          | 4,900E +00 | 4,910E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| 3          | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 |
| 4          | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 |
| Max        | 4,900E +00 | 4,910E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,890E +00 | 4,900E +00 | 4,887E +00 | 4,883E +00 | 4,890E +00 | 4,900E +00 | 4,893E +00 |
| Sigma      | 1,000E -02 | 1,000E -02 | 5,773E -03 | 5,773E -03 | 1,000E -02 | 0,000E +00 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,900E +00 |
| 3          | 4,900E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,900E +00 |
| Mean       | 4,900E +00 |
| Sigma      | 0,000E +00 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 11: VOH14  
 AVDD=+5V; DVDD=+5V; IOH=500uA

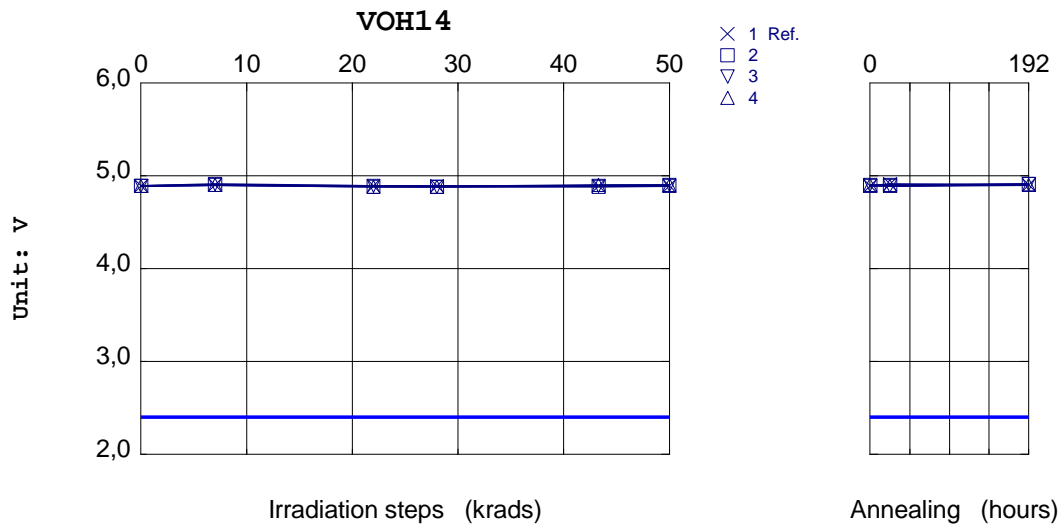
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,910E +00 |
| 2          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 |
| 3          | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 |
| 4          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 |
| Max        | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,900E +00 |
| Mean       | 4,890E +00 | 4,903E +00 | 4,883E +00 | 4,880E +00 | 4,890E +00 | 4,897E +00 | 4,893E +00 |
| Sigma      | 0,000E +00 | 5,773E -03 | 5,773E -03 | 0,000E +00 | 1,000E -02 | 5,774E -03 | 5,774E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,900E +00 |
| 2          | 4,910E +00 |
| 3          | 4,910E +00 |
| 4          | 4,900E +00 |
| Statistics |            |
| Min        | 4,900E +00 |
| Max        | 4,910E +00 |
| Mean       | 4,907E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 24: VOL1  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

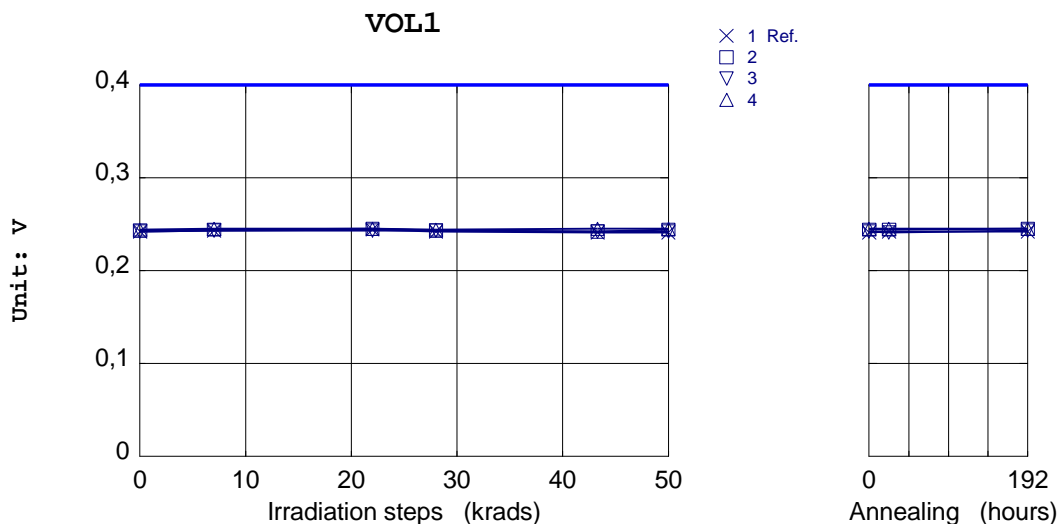
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,420E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,410E -01 | 2,410E -01 | 2,420E -01 |
| 2          | 2,430E -01 | 2,440E -01 | 2,450E -01 | 2,430E -01 | 2,420E -01 | 2,440E -01 | 2,440E -01 |
| 3          | 2,420E -01 | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 |
| 4          | 2,440E -01 | 2,450E -01 | 2,450E -01 | 2,440E -01 | 2,450E -01 | 2,450E -01 | 2,450E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,420E -01 | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 |
| Max        | 2,440E -01 | 2,450E -01 | 2,450E -01 | 2,440E -01 | 2,450E -01 | 2,450E -01 | 2,450E -01 |
| Mean       | 2,430E -01 | 2,440E -01 | 2,443E -01 | 2,433E -01 | 2,430E -01 | 2,437E -01 | 2,433E -01 |
| Sigma      | 1,000E -03 | 1,000E -03 | 1,155E -03 | 5,774E -04 | 1,732E -03 | 1,528E -03 | 2,082E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,420E -01 |
| 2          | 2,450E -01 |
| 3          | 2,430E -01 |
| 4          | 2,450E -01 |
| Statistics |            |
| Min        | 2,430E -01 |
| Max        | 2,450E -01 |
| Mean       | 2,443E -01 |
| Sigma      | 1,155E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 23: VOL2**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

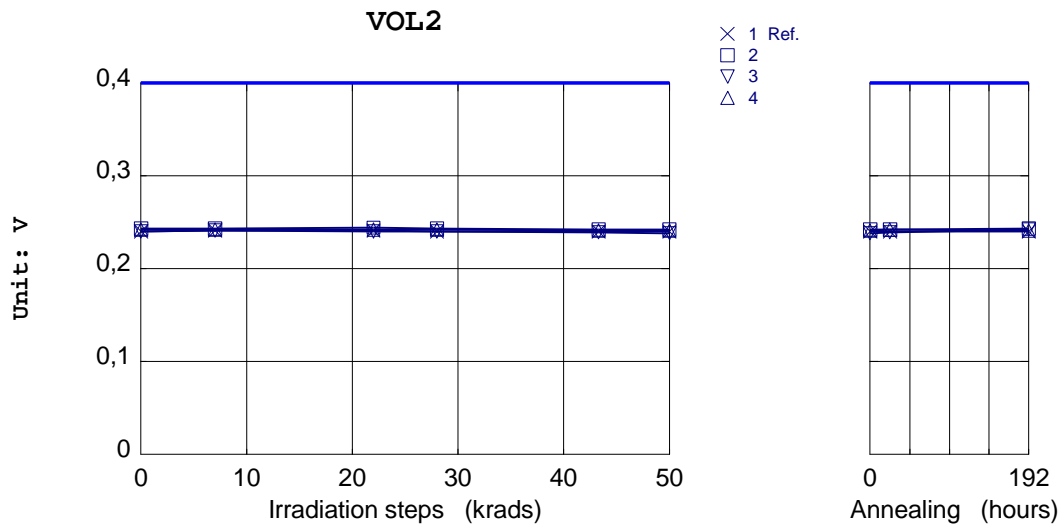
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,400E -01 | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,400E -01 | 2,400E -01 |
| 2          | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 |
| 3          | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 |
| 4          | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 | 2,410E -01 | 2,420E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 |
| Max        | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 |
| Mean       | 2,417E -01 | 2,420E -01 | 2,420E -01 | 2,417E -01 | 2,407E -01 | 2,403E -01 | 2,410E -01 |
| Sigma      | 1,528E -03 | 1,000E -03 | 2,000E -03 | 1,528E -03 | 1,528E -03 | 2,082E -03 | 1,732E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,400E -01 |
| 2          | 2,430E -01 |
| 3          | 2,420E -01 |
| 4          | 2,410E -01 |
| Statistics |            |
| Min        | 2,410E -01 |
| Max        | 2,430E -01 |
| Mean       | 2,420E -01 |
| Sigma      | 1,000E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 22: VOL3  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

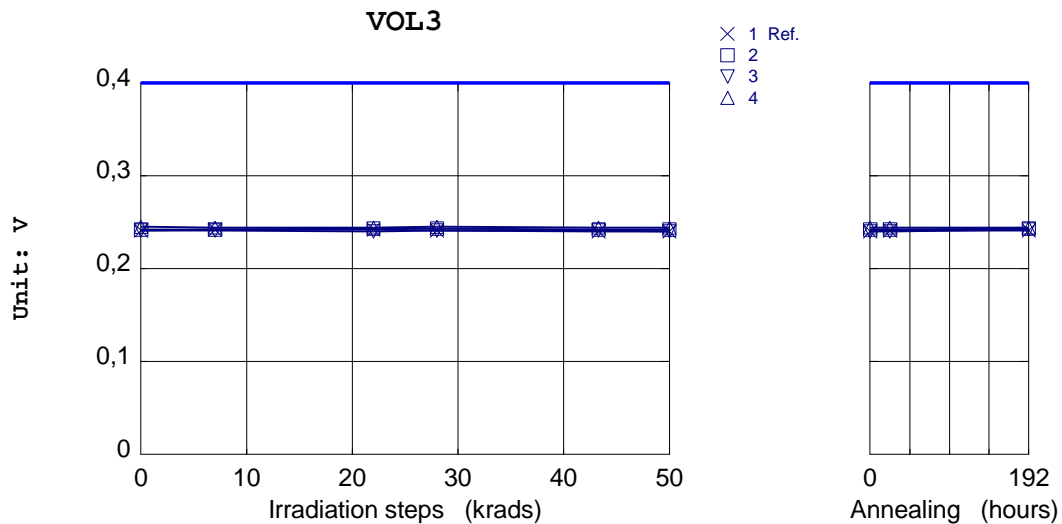
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,410E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,410E -01 |
| 2          | 2,420E -01 | 2,420E -01 | 2,430E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 |
| 3          | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 |
| 4          | 2,450E -01 | 2,440E -01 | 2,440E -01 | 2,450E -01 | 2,440E -01 | 2,440E -01 | 2,440E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 |
| Max        | 2,450E -01 | 2,440E -01 | 2,440E -01 | 2,450E -01 | 2,440E -01 | 2,440E -01 | 2,440E -01 |
| Mean       | 2,427E -01 | 2,423E -01 | 2,423E -01 | 2,430E -01 | 2,423E -01 | 2,420E -01 | 2,420E -01 |
| Sigma      | 2,082E -03 | 1,528E -03 | 2,082E -03 | 2,000E -03 | 1,528E -03 | 2,000E -03 | 2,000E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,410E -01 |
| 2          | 2,430E -01 |
| 3          | 2,420E -01 |
| 4          | 2,440E -01 |
| Statistics |            |
| Min        | 2,420E -01 |
| Max        | 2,440E -01 |
| Mean       | 2,430E -01 |
| Sigma      | 1,000E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 21: VOL4  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

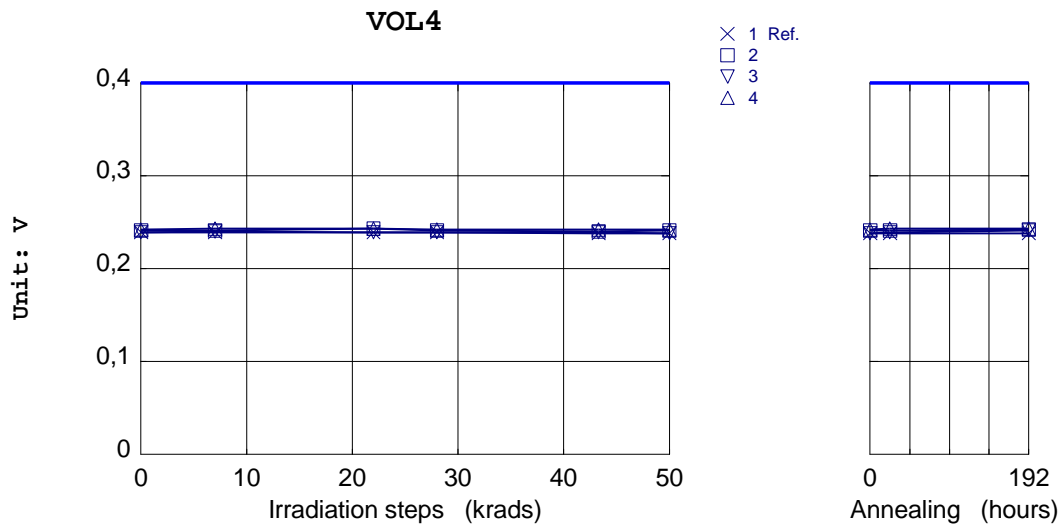
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 |
| 2          | 2,410E -01 | 2,410E -01 | 2,430E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,410E -01 |
| 3          | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 |
| 4          | 2,420E -01 | 2,430E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,430E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 |
| Max        | 2,420E -01 | 2,430E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,430E -01 |
| Mean       | 2,407E -01 | 2,413E -01 | 2,417E -01 | 2,407E -01 | 2,403E -01 | 2,403E -01 | 2,410E -01 |
| Sigma      | 1,528E -03 | 1,528E -03 | 2,309E -03 | 1,528E -03 | 1,528E -03 | 2,082E -03 | 2,000E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,380E -01 |
| 2          | 2,420E -01 |
| 3          | 2,410E -01 |
| 4          | 2,430E -01 |
| Statistics |            |
| Min        | 2,410E -01 |
| Max        | 2,430E -01 |
| Mean       | 2,420E -01 |
| Sigma      | 1,000E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 20: VOL5**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

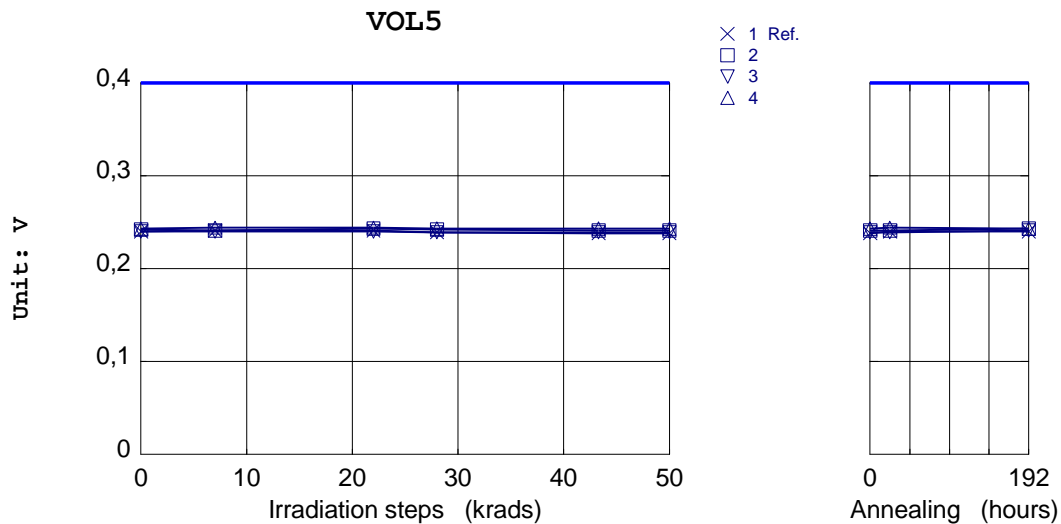
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,400E -01 | 2,410E -01 | 2,410E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,400E -01 |
| 2          | 2,420E -01 | 2,410E -01 | 2,430E -01 | 2,420E -01 | 2,410E -01 | 2,410E -01 | 2,410E -01 |
| 3          | 2,400E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 |
| 4          | 2,430E -01 | 2,440E -01 | 2,440E -01 | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,440E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,400E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 |
| Max        | 2,430E -01 | 2,440E -01 | 2,440E -01 | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,440E -01 |
| Mean       | 2,417E -01 | 2,417E -01 | 2,423E -01 | 2,413E -01 | 2,410E -01 | 2,410E -01 | 2,413E -01 |
| Sigma      | 1,528E -03 | 2,082E -03 | 2,082E -03 | 2,082E -03 | 2,000E -03 | 2,000E -03 | 2,517E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,400E -01 |
| 2          | 2,430E -01 |
| 3          | 2,410E -01 |
| 4          | 2,430E -01 |
| Statistics |            |
| Min        | 2,410E -01 |
| Max        | 2,430E -01 |
| Mean       | 2,423E -01 |
| Sigma      | 1,155E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

**Parameter: Low Level Output Voltage Pin 19: VOL6**

AVDD=+5V; DVDD=+5V; IOL=1.6mA

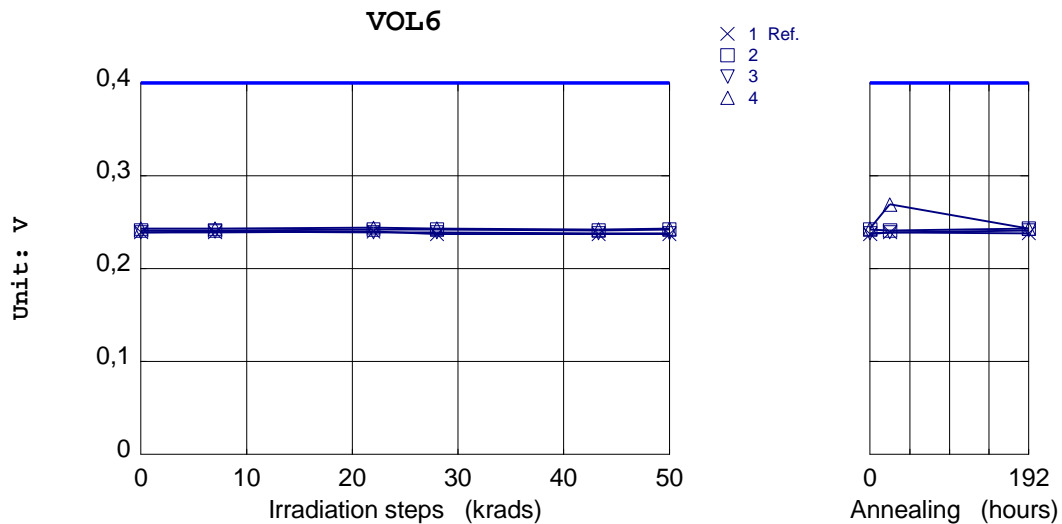
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,390E -01 | 2,390E -01 | 2,400E -01 | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,390E -01 |
| 2          | 2,410E -01 | 2,410E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 | 2,420E -01 | 2,410E -01 |
| 3          | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| 4          | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,430E -01 | 2,420E -01 | 2,430E -01 | 2,690E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| Max        | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,430E -01 | 2,420E -01 | 2,430E -01 | 2,690E -01 |
| Mean       | 2,410E -01 | 2,413E -01 | 2,417E -01 | 2,413E -01 | 2,403E -01 | 2,410E -01 | 2,497E -01 |
| Sigma      | 2,000E -03 | 1,528E -03 | 2,517E -03 | 2,082E -03 | 2,082E -03 | 2,646E -03 | 1,677E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,380E -01 |
| 2          | 2,430E -01 |
| 3          | 2,410E -01 |
| 4          | 2,430E -01 |
| Statistics |            |
| Min        | 2,410E -01 |
| Max        | 2,430E -01 |
| Mean       | 2,423E -01 |
| Sigma      | 1,155E -03 |





|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 18: VOL7  
 AVDD=+5V; DVDD=+5V; IOL=1.6mA

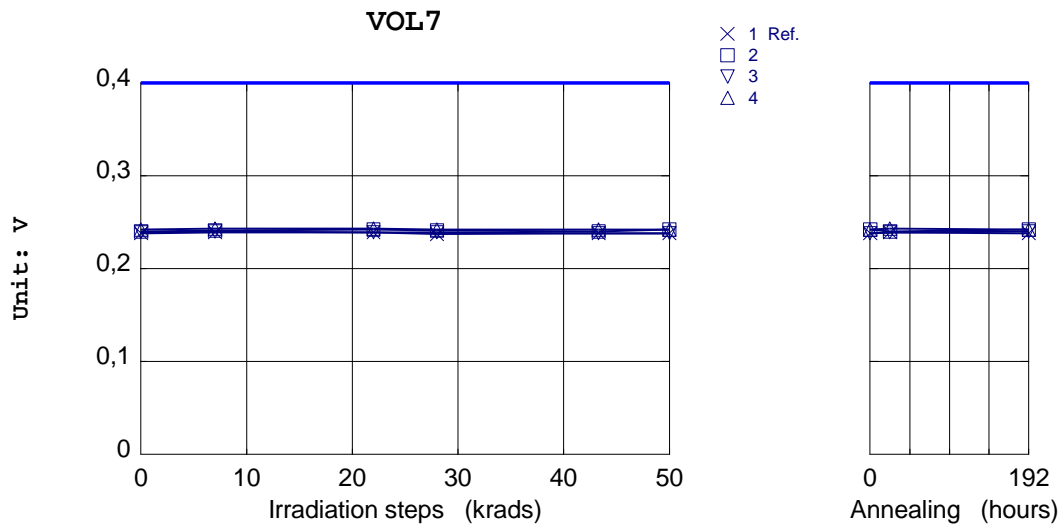
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,380E -01 | 2,390E -01 | 2,390E -01 | 2,370E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| 2          | 2,400E -01 | 2,410E -01 | 2,420E -01 | 2,410E -01 | 2,400E -01 | 2,420E -01 | 2,400E -01 |
| 3          | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| 4          | 2,420E -01 | 2,430E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,430E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| Max        | 2,420E -01 | 2,430E -01 | 2,430E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,430E -01 |
| Mean       | 2,403E -01 | 2,413E -01 | 2,413E -01 | 2,407E -01 | 2,400E -01 | 2,407E -01 | 2,407E -01 |
| Sigma      | 1,528E -03 | 1,528E -03 | 2,082E -03 | 1,528E -03 | 2,000E -03 | 2,309E -03 | 2,082E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,380E -01 |
| 2          | 2,420E -01 |
| 3          | 2,400E -01 |
| 4          | 2,420E -01 |
| Statistics |            |
| Min        | 2,400E -01 |
| Max        | 2,420E -01 |
| Mean       | 2,413E -01 |
| Sigma      | 1,155E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 17: VOL8  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

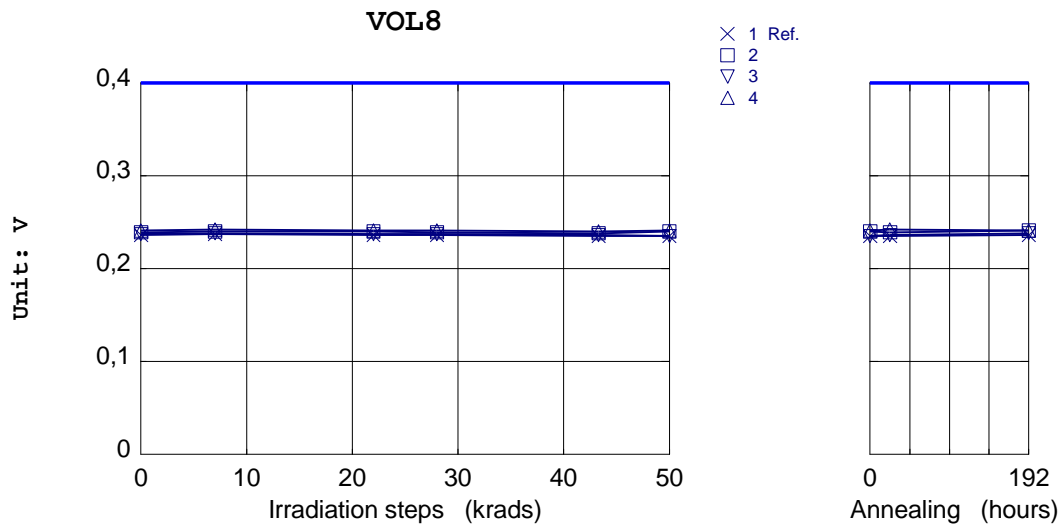
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,360E -01 | 2,370E -01 | 2,360E -01 | 2,360E -01 | 2,350E -01 | 2,350E -01 | 2,350E -01 |
| 2          | 2,390E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,380E -01 | 2,400E -01 | 2,390E -01 |
| 3          | 2,370E -01 | 2,380E -01 | 2,370E -01 | 2,370E -01 | 2,360E -01 | 2,350E -01 | 2,360E -01 |
| 4          | 2,410E -01 | 2,420E -01 | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,420E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,370E -01 | 2,380E -01 | 2,370E -01 | 2,370E -01 | 2,360E -01 | 2,350E -01 | 2,360E -01 |
| Max        | 2,410E -01 | 2,420E -01 | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,420E -01 |
| Mean       | 2,390E -01 | 2,400E -01 | 2,393E -01 | 2,390E -01 | 2,380E -01 | 2,387E -01 | 2,390E -01 |
| Sigma      | 2,000E -03 | 2,000E -03 | 2,082E -03 | 2,000E -03 | 2,000E -03 | 3,215E -03 | 3,000E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,360E -01 |
| 2          | 2,410E -01 |
| 3          | 2,380E -01 |
| 4          | 2,410E -01 |
| Statistics |            |
| Min        | 2,380E -01 |
| Max        | 2,410E -01 |
| Mean       | 2,400E -01 |
| Sigma      | 1,732E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 16: VOL9  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

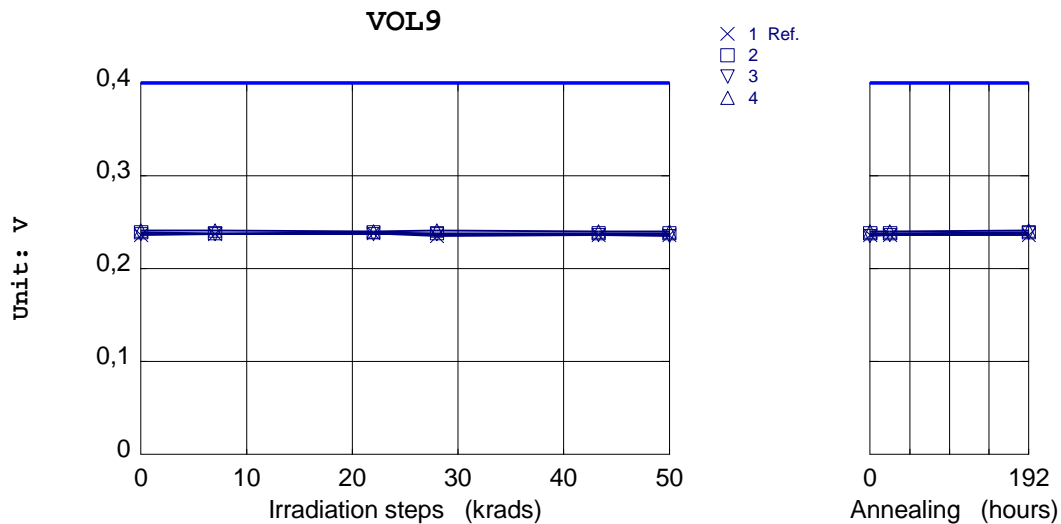
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,360E -01 | 2,370E -01 | 2,380E -01 | 2,350E -01 | 2,360E -01 | 2,360E -01 | 2,360E -01 |
| 2          | 2,390E -01 | 2,380E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 |
| 3          | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,360E -01 | 2,350E -01 | 2,360E -01 |
| 4          | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,400E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,360E -01 | 2,350E -01 | 2,360E -01 |
| Max        | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,400E -01 |
| Mean       | 2,390E -01 | 2,387E -01 | 2,387E -01 | 2,387E -01 | 2,380E -01 | 2,377E -01 | 2,380E -01 |
| Sigma      | 2,000E -03 | 2,082E -03 | 1,528E -03 | 2,082E -03 | 2,000E -03 | 2,517E -03 | 2,000E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,360E -01 |
| 2          | 2,390E -01 |
| 3          | 2,380E -01 |
| 4          | 2,410E -01 |
| Statistics |            |
| Min        | 2,380E -01 |
| Max        | 2,410E -01 |
| Mean       | 2,393E -01 |
| Sigma      | 1,528E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 15: VOL10**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

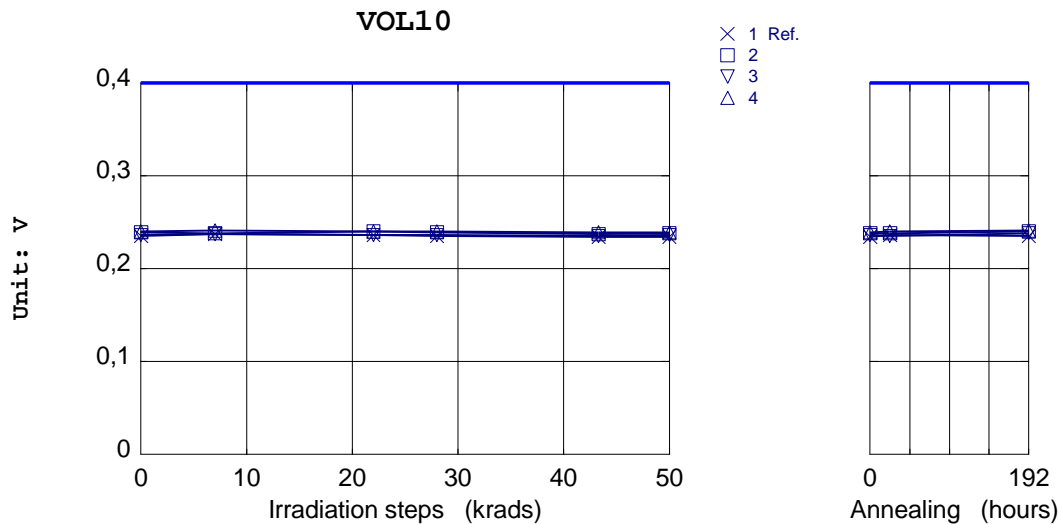
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,350E -01 | 2,370E -01 | 2,360E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,360E -01 |
| 2          | 2,390E -01 | 2,380E -01 | 2,400E -01 | 2,390E -01 | 2,370E -01 | 2,380E -01 | 2,380E -01 |
| 3          | 2,360E -01 | 2,370E -01 | 2,360E -01 | 2,360E -01 | 2,350E -01 | 2,360E -01 | 2,350E -01 |
| 4          | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,400E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,360E -01 | 2,370E -01 | 2,360E -01 | 2,360E -01 | 2,350E -01 | 2,360E -01 | 2,350E -01 |
| Max        | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,400E -01 |
| Mean       | 2,383E -01 | 2,387E -01 | 2,387E -01 | 2,383E -01 | 2,370E -01 | 2,377E -01 | 2,377E -01 |
| Sigma      | 2,082E -03 | 2,082E -03 | 2,309E -03 | 2,082E -03 | 2,000E -03 | 1,528E -03 | 2,517E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,350E -01 |
| 2          | 2,400E -01 |
| 3          | 2,380E -01 |
| 4          | 2,410E -01 |
| Statistics |            |
| Min        | 2,380E -01 |
| Max        | 2,410E -01 |
| Mean       | 2,397E -01 |
| Sigma      | 1,528E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 14: VOL11  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

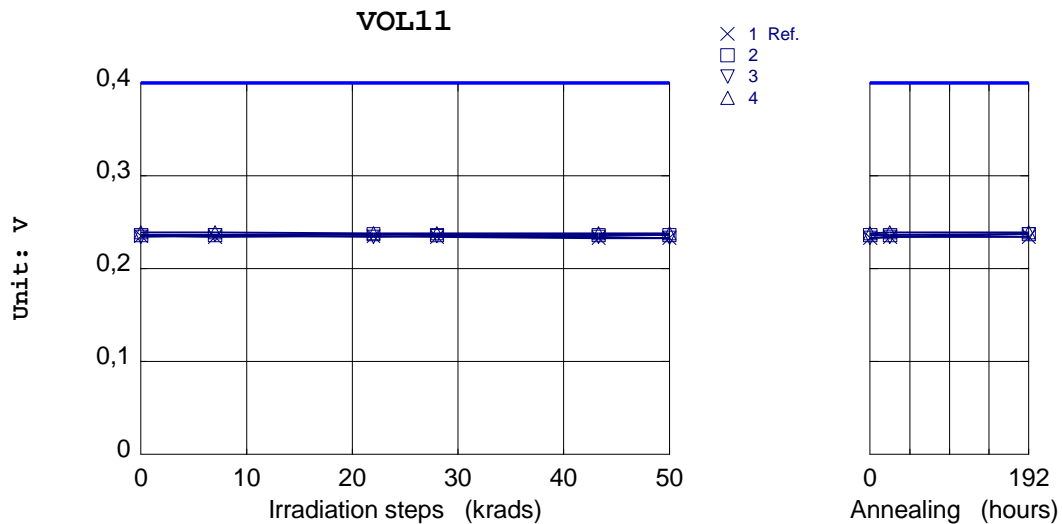
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,350E -01 | 2,340E -01 | 2,350E -01 | 2,340E -01 | 2,330E -01 | 2,330E -01 | 2,340E -01 |
| 2          | 2,360E -01 | 2,360E -01 | 2,370E -01 | 2,360E -01 | 2,360E -01 | 2,360E -01 | 2,360E -01 |
| 3          | 2,340E -01 | 2,360E -01 | 2,340E -01 | 2,350E -01 | 2,340E -01 | 2,330E -01 | 2,340E -01 |
| 4          | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,340E -01 | 2,360E -01 | 2,340E -01 | 2,350E -01 | 2,340E -01 | 2,330E -01 | 2,340E -01 |
| Max        | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| Mean       | 2,363E -01 | 2,370E -01 | 2,363E -01 | 2,363E -01 | 2,360E -01 | 2,357E -01 | 2,363E -01 |
| Sigma      | 2,517E -03 | 1,732E -03 | 2,082E -03 | 1,528E -03 | 2,000E -03 | 2,517E -03 | 2,517E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,340E -01 |
| 2          | 2,370E -01 |
| 3          | 2,370E -01 |
| 4          | 2,390E -01 |
| Statistics |            |
| Min        | 2,370E -01 |
| Max        | 2,390E -01 |
| Mean       | 2,377E -01 |
| Sigma      | 1,155E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 15: VOL12**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

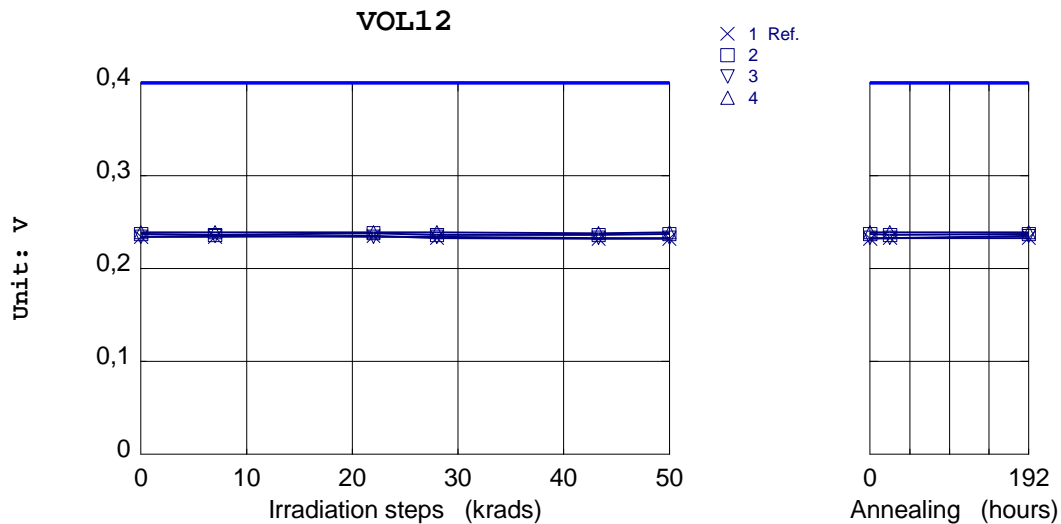
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,340E -01 | 2,340E -01 | 2,350E -01 | 2,330E -01 | 2,320E -01 | 2,320E -01 | 2,330E -01 |
| 2          | 2,370E -01 | 2,360E -01 | 2,380E -01 | 2,360E -01 | 2,360E -01 | 2,370E -01 | 2,360E -01 |
| 3          | 2,340E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,330E -01 | 2,330E -01 | 2,330E -01 |
| 4          | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 | 2,390E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,340E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,330E -01 | 2,330E -01 | 2,330E -01 |
| Max        | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 | 2,390E -01 |
| Mean       | 2,367E -01 | 2,367E -01 | 2,370E -01 | 2,363E -01 | 2,357E -01 | 2,363E -01 | 2,360E -01 |
| Sigma      | 2,517E -03 | 2,082E -03 | 2,646E -03 | 2,517E -03 | 2,517E -03 | 3,055E -03 | 3,000E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,330E -01 |
| 2          | 2,370E -01 |
| 3          | 2,350E -01 |
| 4          | 2,390E -01 |
| Statistics |            |
| Min        | 2,350E -01 |
| Max        | 2,390E -01 |
| Mean       | 2,370E -01 |
| Sigma      | 2,000E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 16: VOL13  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

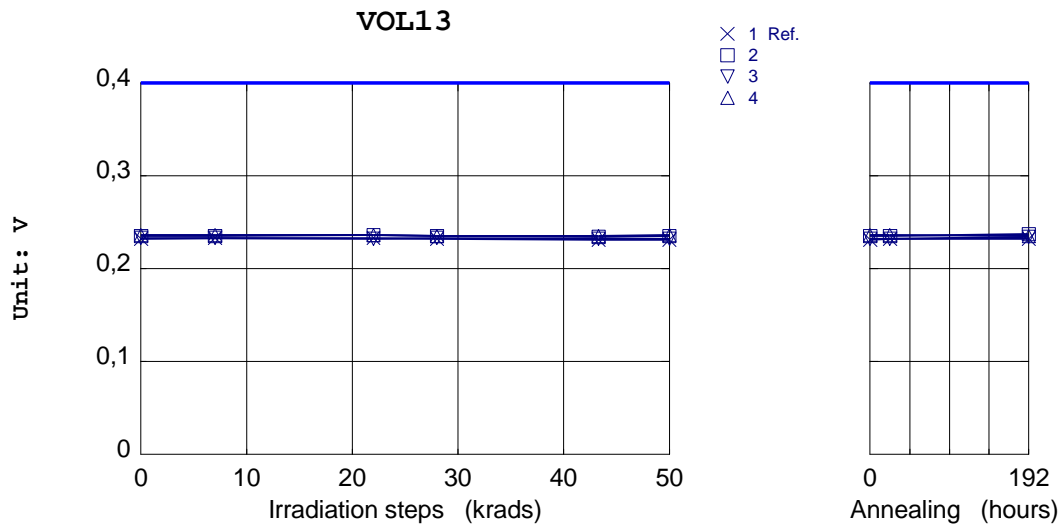
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,320E -01 | 2,330E -01 | 2,330E -01 | 2,320E -01 | 2,310E -01 | 2,310E -01 | 2,320E -01 |
| 2          | 2,350E -01 | 2,350E -01 | 2,360E -01 | 2,350E -01 | 2,340E -01 | 2,350E -01 | 2,350E -01 |
| 3          | 2,330E -01 | 2,330E -01 | 2,320E -01 | 2,330E -01 | 2,320E -01 | 2,320E -01 | 2,320E -01 |
| 4          | 2,360E -01 | 2,360E -01 | 2,360E -01 | 2,350E -01 | 2,350E -01 | 2,360E -01 | 2,360E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,330E -01 | 2,330E -01 | 2,320E -01 | 2,330E -01 | 2,320E -01 | 2,320E -01 | 2,320E -01 |
| Max        | 2,360E -01 | 2,360E -01 | 2,360E -01 | 2,350E -01 | 2,350E -01 | 2,360E -01 | 2,360E -01 |
| Mean       | 2,347E -01 | 2,347E -01 | 2,347E -01 | 2,343E -01 | 2,337E -01 | 2,343E -01 | 2,343E -01 |
| Sigma      | 1,528E -03 | 1,528E -03 | 2,309E -03 | 1,155E -03 | 1,528E -03 | 2,082E -03 | 2,082E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,320E -01 |
| 2          | 2,370E -01 |
| 3          | 2,340E -01 |
| 4          | 2,350E -01 |
| Statistics |            |
| Min        | 2,340E -01 |
| Max        | 2,370E -01 |
| Mean       | 2,353E -01 |
| Sigma      | 1,528E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 17: VOL14  
 AVDD=+5V; DVDD=+5V; IOL=1.6mA

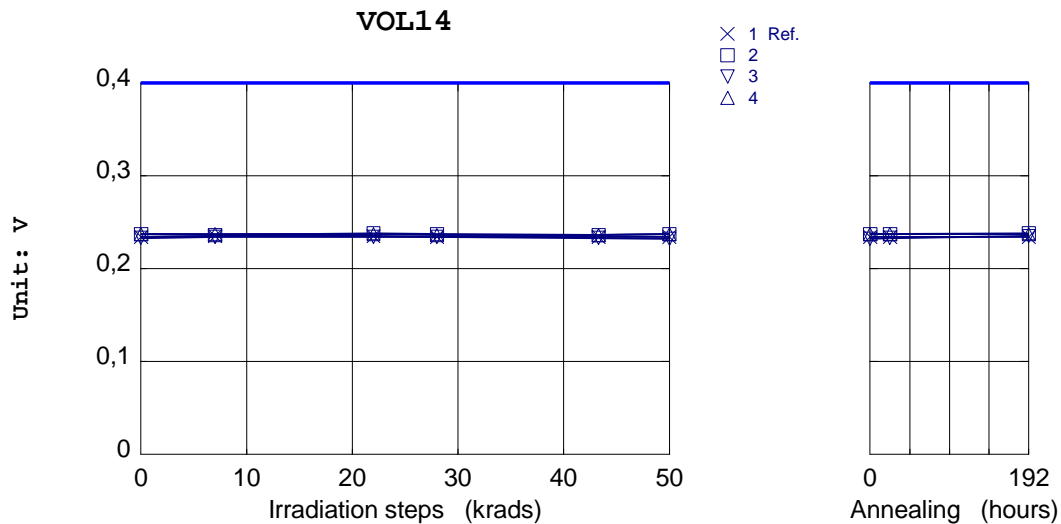
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7 krad     | 22 krad    | 28 krad    | 43,3 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,340E -01 | 2,350E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,340E -01 | 2,340E -01 |
| 2          | 2,370E -01 | 2,360E -01 | 2,380E -01 | 2,370E -01 | 2,360E -01 | 2,370E -01 | 2,370E -01 |
| 3          | 2,330E -01 | 2,340E -01 | 2,340E -01 | 2,340E -01 | 2,330E -01 | 2,320E -01 | 2,330E -01 |
| 4          | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,360E -01 | 2,360E -01 | 2,370E -01 | 2,370E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,330E -01 | 2,340E -01 | 2,340E -01 | 2,340E -01 | 2,330E -01 | 2,320E -01 | 2,330E -01 |
| Max        | 2,370E -01 | 2,370E -01 | 2,380E -01 | 2,370E -01 | 2,360E -01 | 2,370E -01 | 2,370E -01 |
| Mean       | 2,357E -01 | 2,357E -01 | 2,363E -01 | 2,357E -01 | 2,350E -01 | 2,353E -01 | 2,357E -01 |
| Sigma      | 2,309E -03 | 1,528E -03 | 2,082E -03 | 1,528E -03 | 1,732E -03 | 2,887E -03 | 2,309E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,340E -01 |
| 2          | 2,380E -01 |
| 3          | 2,350E -01 |
| 4          | 2,370E -01 |
| Statistics |            |
| Min        | 2,350E -01 |
| Max        | 2,380E -01 |
| Mean       | 2,367E -01 |
| Sigma      | 1,528E -03 |





|                          |                               |                |                                  |
|--------------------------|-------------------------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices                   |

**APPENDIX 2 : TEST RESULTS - LOW DOSE RATE**

|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

Test results including tables and graphics are provided in this section for each measured parameter corresponding to a low dose rate exposure.

**Parameter: Signal-to-Noise Ratio: SNR**

**VDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**

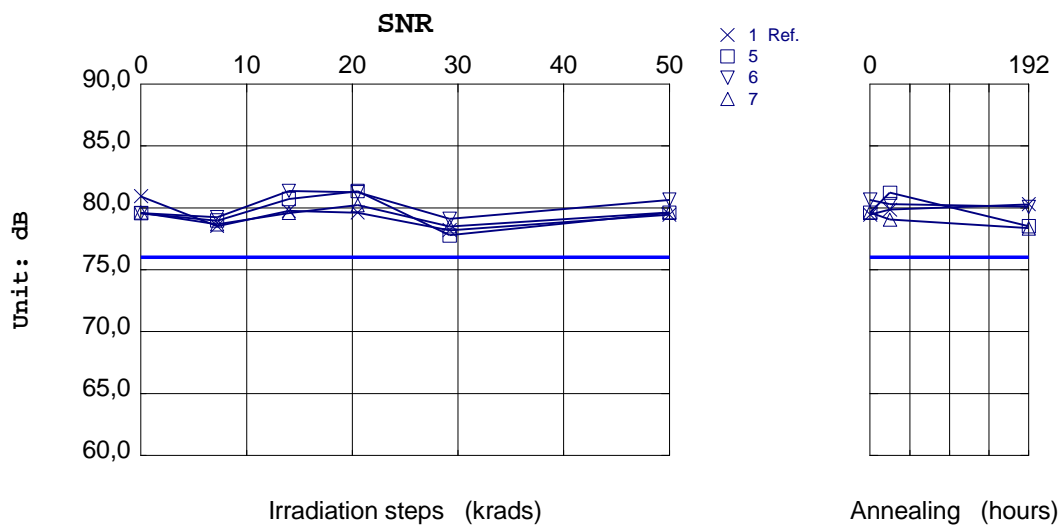
Unit= dB

Spec limit min: 76

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 8,094E +01 | 7,852E +01 | 7,976E +01 | 7,961E +01 | 7,819E +01 | 7,944E +01 | 7,985E +01 |
| 5          | 7,956E +01 | 7,897E +01 | 8,070E +01 | 8,135E +01 | 7,777E +01 | 7,960E +01 | 8,122E +01 |
| 6          | 7,957E +01 | 7,924E +01 | 8,136E +01 | 8,125E +01 | 7,911E +01 | 8,065E +01 | 8,030E +01 |
| 7          | 7,961E +01 | 7,866E +01 | 7,958E +01 | 8,021E +01 | 7,849E +01 | 7,964E +01 | 7,905E +01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 7,956E +01 | 7,866E +01 | 7,958E +01 | 8,021E +01 | 7,777E +01 | 7,960E +01 | 7,905E +01 |
| Max        | 7,961E +01 | 7,924E +01 | 8,136E +01 | 8,135E +01 | 7,911E +01 | 8,064E +01 | 8,122E +01 |
| Mean       | 7,958E +01 | 7,895E +01 | 8,055E +01 | 8,094E +01 | 7,846E +01 | 7,996E +01 | 8,019E +01 |
| Sigma      | 2,822E -02 | 2,927E -01 | 9,017E -01 | 6,299E -01 | 6,693E -01 | 5,939E -01 | 1,089E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 8,028E +01 |
| 5          | 7,851E +01 |
| 6          | 8,008E +01 |
| 7          | 7,835E +01 |
| Statistics |            |
| Min        | 7,835E +01 |
| Max        | 8,007E +01 |
| Mean       | 7,898E +01 |
| Sigma      | 9,548E -01 |



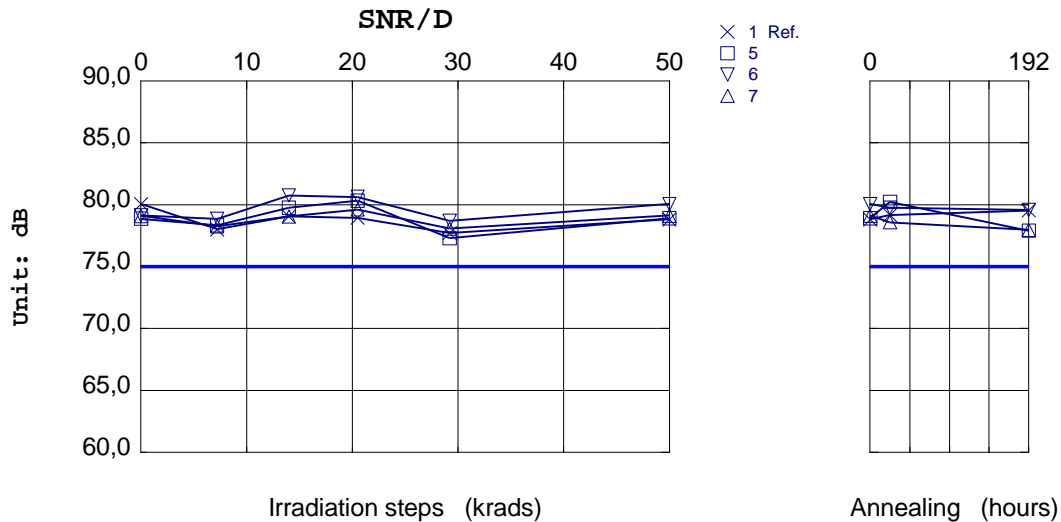
|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Signal-to-Noise Plus Distortion Ratio: SNR/D**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**

Unit= dB  
Spec limit min: 75  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 8,006E +01 | 7,801E +01 | 7,905E +01 | 7,893E +01 | 7,770E +01 | 7,880E +01 | 7,916E +01 |
| 5          | 7,887E +01 | 7,834E +01 | 7,976E +01 | 8,032E +01 | 7,730E +01 | 7,890E +01 | 8,023E +01 |
| 6          | 7,914E +01 | 7,886E +01 | 8,074E +01 | 8,063E +01 | 7,870E +01 | 8,005E +01 | 7,976E +01 |
| 7          | 7,909E +01 | 7,825E +01 | 7,905E +01 | 7,961E +01 | 7,806E +01 | 7,911E +01 | 7,858E +01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 7,887E +01 | 7,825E +01 | 7,905E +01 | 7,961E +01 | 7,729E +01 | 7,890E +01 | 7,858E +01 |
| Max        | 7,914E +01 | 7,886E +01 | 8,074E +01 | 8,063E +01 | 7,870E +01 | 8,005E +01 | 8,023E +01 |
| Mean       | 7,903E +01 | 7,848E +01 | 7,985E +01 | 8,018E +01 | 7,802E +01 | 7,935E +01 | 7,952E +01 |
| Sigma      | 1,433E -01 | 3,332E -01 | 8,480E -01 | 5,229E -01 | 7,026E -01 | 6,126E -01 | 8,497E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 7,954E +01 |
| 5          | 7,790E +01 |
| 6          | 7,957E +01 |
| 7          | 7,796E +01 |
| Statistics |            |
| Min        | 7,790E +01 |
| Max        | 7,957E +01 |
| Mean       | 7,848E +01 |
| Sigma      | 9,479E -01 |

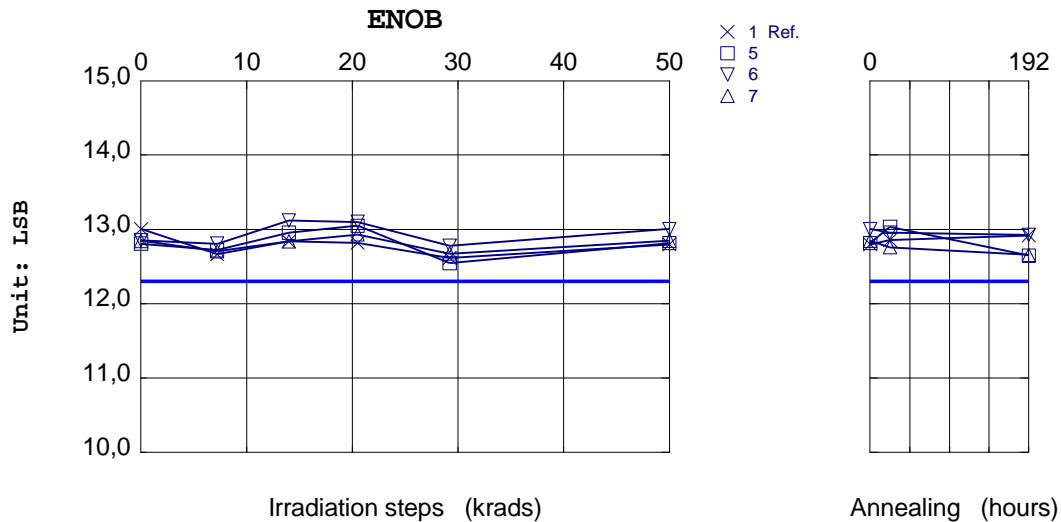


|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Effective Number Of Bits: ENOB**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**  
Unit= LSB  
Spec limit min: 12.3  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,301E +01 | 1,267E +01 | 1,284E +01 | 1,282E +01 | 1,262E +01 | 1,280E +01 | 1,286E +01 |
| 5          | 1,281E +01 | 1,272E +01 | 1,296E +01 | 1,305E +01 | 1,255E +01 | 1,281E +01 | 1,303E +01 |
| 6          | 1,285E +01 | 1,281E +01 | 1,312E +01 | 1,310E +01 | 1,278E +01 | 1,301E +01 | 1,296E +01 |
| 7          | 1,285E +01 | 1,271E +01 | 1,284E +01 | 1,293E +01 | 1,268E +01 | 1,285E +01 | 1,276E +01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,281E +01 | 1,270E +01 | 1,284E +01 | 1,293E +01 | 1,255E +01 | 1,281E +01 | 1,276E +01 |
| Max        | 1,285E +01 | 1,281E +01 | 1,312E +01 | 1,310E +01 | 1,278E +01 | 1,301E +01 | 1,303E +01 |
| Mean       | 1,284E +01 | 1,274E +01 | 1,297E +01 | 1,303E +01 | 1,267E +01 | 1,289E +01 | 1,292E +01 |
| Sigma      | 2,401E -02 | 5,543E -02 | 1,407E -01 | 8,711E -02 | 1,167E -01 | 1,017E -01 | 1,412E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,292E +01 |
| 5          | 1,265E +01 |
| 6          | 1,293E +01 |
| 7          | 1,266E +01 |
| Statistics |            |
| Min        | 1,265E +01 |
| Max        | 1,293E +01 |
| Mean       | 1,274E +01 |
| Sigma      | 1,571E -01 |



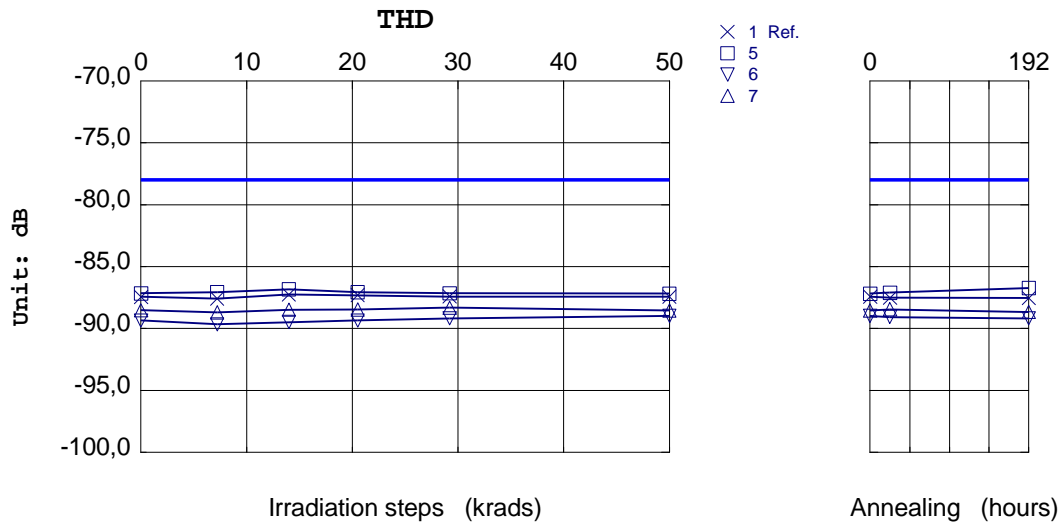
|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Total Harmonic Distortion: THD**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz; Six Harmonics**

Unit= dB  
 Spec limit max: -78  
 Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial     | 7,2 krad    | 14 krad     | 20,5 krad   | 29,2 krad   | 50 krad     | 24 hours    |
|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Serial #   |             |             |             |             |             |             |             |
| 1 Ref.     | -8,745E +01 | -8,758E +01 | -8,726E +01 | -8,731E +01 | -8,741E +01 | -8,743E +01 | -8,751E +01 |
| 5          | -8,717E +01 | -8,706E +01 | -8,683E +01 | -8,707E +01 | -8,716E +01 | -8,719E +01 | -8,712E +01 |
| 6          | -8,936E +01 | -8,966E +01 | -8,948E +01 | -8,935E +01 | -8,918E +01 | -8,897E +01 | -8,907E +01 |
| 7          | -8,852E +01 | -8,870E +01 | -8,848E +01 | -8,846E +01 | -8,832E +01 | -8,854E +01 | -8,845E +01 |
| Statistics |             |             |             |             |             |             |             |
| Min        | -8,936E +01 | -8,966E +01 | -8,948E +01 | -8,935E +01 | -8,918E +01 | -8,897E +01 | -8,907E +01 |
| Max        | -8,717E +01 | -8,706E +01 | -8,683E +01 | -8,707E +01 | -8,716E +01 | -8,719E +01 | -8,712E +01 |
| Mean       | -8,835E +01 | -8,847E +01 | -8,827E +01 | -8,829E +01 | -8,822E +01 | -8,824E +01 | -8,821E +01 |
| Sigma      | 1,105E +00  | 1,315E +00  | 1,337E +00  | 1,151E +00  | 1,015E +00  | 9,303E -01  | 9,970E -01  |

| Test Step  | 192 hours   |
|------------|-------------|
| Serial #   |             |
| 1 Ref.     | -8,754E +01 |
| 5          | -8,674E +01 |
| 6          | -8,918E +01 |
| 7          | -8,866E +01 |
| Statistics |             |
| Min        | -8,918E +01 |
| Max        | -8,674E +01 |
| Mean       | -8,819E +01 |
| Sigma      | 1,286E +00  |

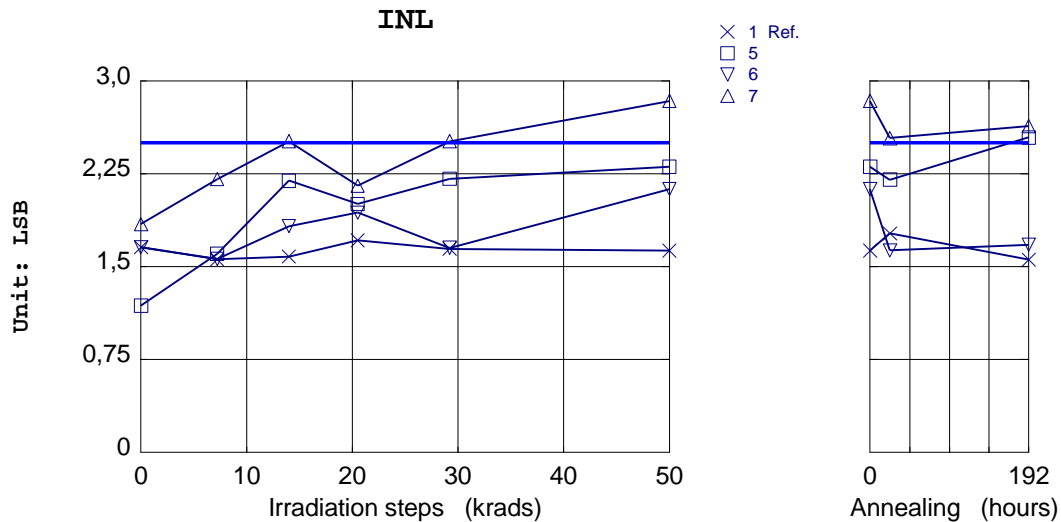


|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Integral Nonlinearity: INL**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**  
Unit= LSB  
Spec limit max: 2.5  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,657E +00 | 1,559E +00 | 1,580E +00 | 1,712E +00 | 1,644E +00 | 1,629E +00 | 1,768E +00 |
| 5          | 1,184E +00 | 1,603E +00 | 2,193E +00 | 2,005E +00 | 2,208E +00 | 2,306E +00 | 2,202E +00 |
| 6          | 1,655E +00 | 1,562E +00 | 1,826E +00 | 1,936E +00 | 1,651E +00 | 2,127E +00 | 1,631E +00 |
| 7          | 1,842E +00 | 2,206E +00 | 2,512E +00 | 2,153E +00 | 2,512E +00 | 2,837E +00 | 2,537E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,184E +00 | 1,562E +00 | 1,826E +00 | 1,936E +00 | 1,651E +00 | 2,127E +00 | 1,631E +00 |
| Max        | 1,842E +00 | 2,206E +00 | 2,512E +00 | 2,153E +00 | 2,512E +00 | 2,837E +00 | 2,537E +00 |
| Mean       | 1,560E +00 | 1,790E +00 | 2,177E +00 | 2,031E +00 | 2,124E +00 | 2,423E +00 | 2,123E +00 |
| Sigma      | 3,391E -01 | 3,606E -01 | 3,433E -01 | 1,109E -01 | 4,367E -01 | 3,693E -01 | 4,581E -01 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,556E +00 |
| 5          | 2,542E +00 |
| 6          | 1,676E +00 |
| 7          | 2,635E +00 |
| Statistics |            |
| Min        | 1,676E +00 |
| Max        | 2,635E +00 |
| Mean       | 2,284E +00 |
| Sigma      | 5,289E -01 |

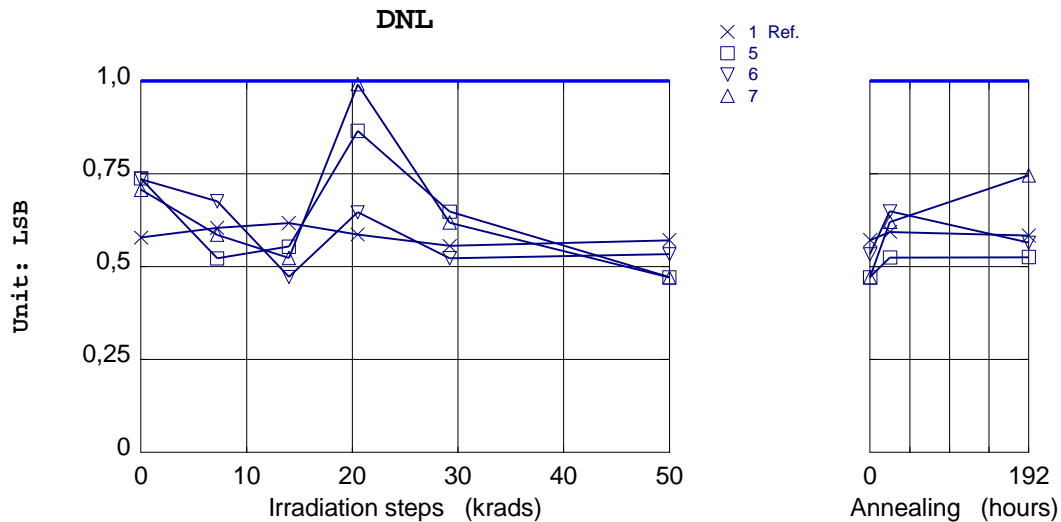


|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Differential Nonlinearity: DNL**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**  
Unit= LSB  
Spec limit max: 1  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 5,782E -01 | 6,044E -01 | 6,171E -01 | 5,863E -01 | 5,555E -01 | 5,711E -01 | 5,934E -01 |
| 5          | 7,368E -01 | 5,219E -01 | 5,537E -01 | 8,649E -01 | 6,480E -01 | 4,711E -01 | 5,245E -01 |
| 6          | 7,355E -01 | 6,756E -01 | 4,722E -01 | 6,462E -01 | 5,222E -01 | 5,334E -01 | 6,488E -01 |
| 7          | 7,070E -01 | 5,854E -01 | 5,233E -01 | 9,906E -01 | 6,184E -01 | 4,704E -01 | 6,198E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 7,070E -01 | 5,219E -01 | 4,722E -01 | 6,462E -01 | 5,222E -01 | 4,704E -01 | 5,245E -01 |
| Max        | 7,368E -01 | 6,756E -01 | 5,537E -01 | 9,906E -01 | 6,480E -01 | 5,334E -01 | 6,488E -01 |
| Mean       | 7,264E -01 | 5,943E -01 | 5,164E -01 | 8,339E -01 | 5,962E -01 | 4,916E -01 | 5,977E -01 |
| Sigma      | 1,687E -02 | 7,723E -02 | 4,116E -02 | 1,743E -01 | 6,578E -02 | 3,614E -02 | 6,504E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 5,833E -01 |
| 5          | 5,255E -01 |
| 6          | 5,642E -01 |
| 7          | 7,454E -01 |
| Statistics |            |
| Min        | 5,255E -01 |
| Max        | 7,454E -01 |
| Mean       | 6,117E -01 |
| Sigma      | 1,174E -01 |

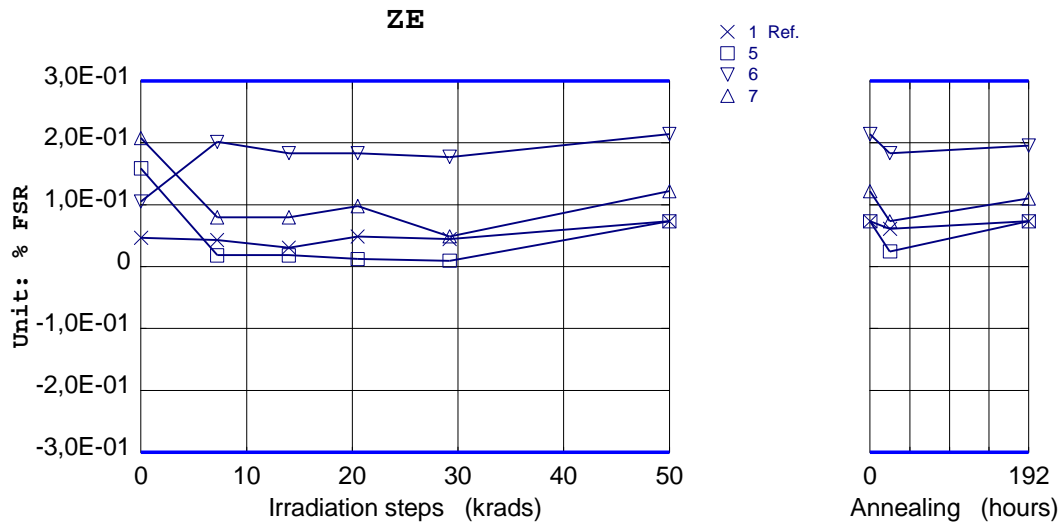


|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Zero Error: ZE**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**  
Unit= % FSR  
Spec limit max: 0.3  
Spec limit min: -0.3  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,656E -02 | 4,279E -02 | 3,052E -02 | 4,853E -02 | 4,425E -02 | 7,320E -02 | 6,104E -02 |
| 5          | 1,587E -01 | 1,831E -02 | 1,831E -02 | 1,221E -02 | 9,235E -03 | 7,320E -02 | 2,441E -02 |
| 6          | 1,052E -01 | 2,014E -01 | 1,831E -01 | 1,831E -01 | 1,770E -01 | 2,140E -01 | 1,831E -01 |
| 7          | 2,075E -01 | 7,935E -02 | 7,935E -02 | 9,766E -02 | 4,883E -02 | 1,220E -01 | 7,324E -02 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,052E -01 | 1,831E -02 | 1,831E -02 | 1,221E -02 | 9,235E -03 | 7,320E -02 | 2,441E -02 |
| Max        | 2,075E -01 | 2,014E -01 | 1,831E -01 | 1,831E -01 | 1,770E -01 | 2,140E -01 | 1,831E -01 |
| Mean       | 1,571E -01 | 9,969E -02 | 9,359E -02 | 9,766E -02 | 7,835E -02 | 1,364E -01 | 9,359E -02 |
| Sigma      | 5,119E -02 | 9,323E -02 | 8,331E -02 | 8,545E -02 | 8,769E -02 | 7,150E -02 | 8,128E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 7,324E -02 |
| 5          | 7,324E -02 |
| 6          | 1,953E -01 |
| 7          | 1,099E -01 |
| Statistics |            |
| Min        | 7,324E -02 |
| Max        | 1,953E -01 |
| Mean       | 1,261E -01 |
| Sigma      | 6,264E -02 |





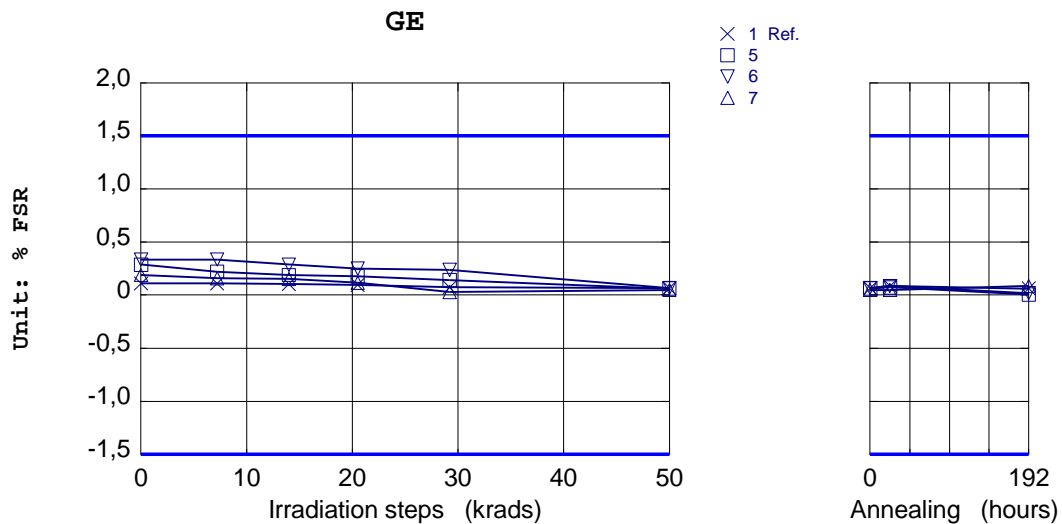
|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Gain Error: GE**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**

Unit= % FSR  
Spec limit max: 1.5  
Spec limit min: -1.5  
Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,099E -01 | 1,099E -01 | 1,038E -01 | 9,528E -02 | 7,324E -02 | 6,490E -02 | 8,545E -02 |
| 5          | 2,869E -01 | 2,197E -01 | 1,892E -01 | 1,770E -01 | 1,404E -01 | 6,100E -02 | 7,324E -02 |
| 6          | 3,357E -01 | 3,357E -01 | 2,869E -01 | 2,502E -01 | 2,380E -01 | 6,710E -02 | 8,545E -02 |
| 7          | 1,892E -01 | 1,587E -01 | 1,526E -01 | 1,160E -01 | 3,052E -02 | 4,880E -02 | 4,883E -02 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,892E -01 | 1,587E -01 | 1,526E -01 | 1,160E -01 | 3,052E -02 | 4,880E -02 | 4,883E -02 |
| Max        | 3,357E -01 | 3,357E -01 | 2,869E -01 | 2,502E -01 | 2,380E -01 | 6,710E -02 | 8,545E -02 |
| Mean       | 2,706E -01 | 2,380E -01 | 2,096E -01 | 1,811E -01 | 1,363E -01 | 5,897E -02 | 6,917E -02 |
| Sigma      | 7,459E -02 | 8,991E -02 | 6,941E -02 | 6,723E -02 | 1,038E -01 | 9,318E -03 | 1,865E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 6,104E -02 |
| 5          | 6,104E -03 |
| 6          | 1,831E -02 |
| 7          | 8,545E -02 |
| Statistics |            |
| Min        | 6,104E -03 |
| Max        | 8,545E -02 |
| Mean       | 3,662E -02 |
| Sigma      | 4,272E -02 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Analog Power Supply Current: IAVDD**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**

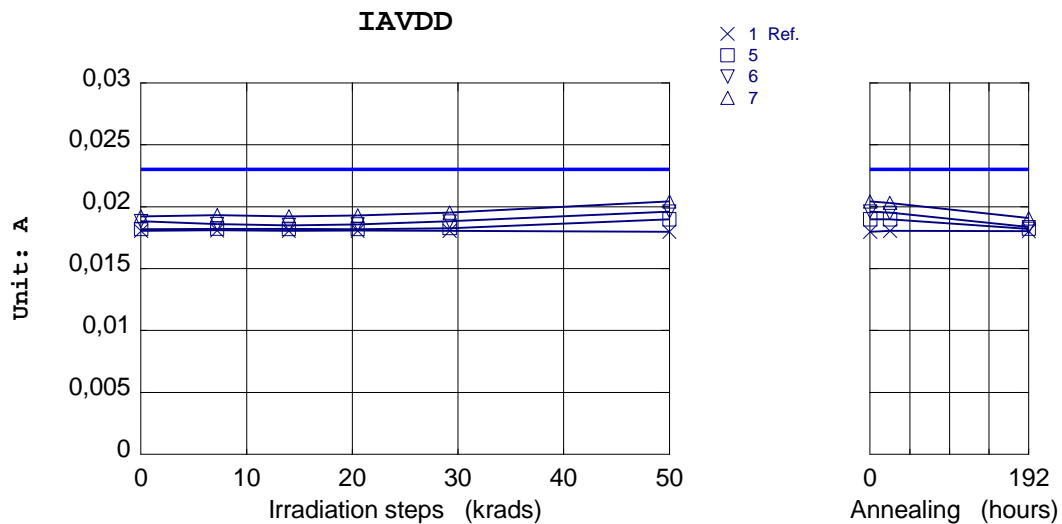
Unit= A

Spec limit max: 0.023

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,804E -02 | 1,808E -02 | 1,805E -02 | 1,806E -02 | 1,805E -02 | 1,798E -02 | 1,804E -02 |
| 5          | 1,819E -02 | 1,822E -02 | 1,820E -02 | 1,819E -02 | 1,825E -02 | 1,897E -02 | 1,897E -02 |
| 6          | 1,884E -02 | 1,859E -02 | 1,850E -02 | 1,857E -02 | 1,880E -02 | 1,960E -02 | 1,950E -02 |
| 7          | 1,922E -02 | 1,931E -02 | 1,922E -02 | 1,928E -02 | 1,952E -02 | 2,042E -02 | 2,030E -02 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 1,819E -02 | 1,822E -02 | 1,820E -02 | 1,819E -02 | 1,825E -02 | 1,897E -02 | 1,897E -02 |
| Max        | 1,922E -02 | 1,931E -02 | 1,922E -02 | 1,928E -02 | 1,952E -02 | 2,042E -02 | 2,030E -02 |
| Mean       | 1,875E -02 | 1,870E -02 | 1,864E -02 | 1,868E -02 | 1,886E -02 | 1,966E -02 | 1,959E -02 |
| Sigma      | 5,212E -04 | 5,545E -04 | 5,237E -04 | 5,552E -04 | 6,339E -04 | 7,258E -04 | 6,705E -04 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,802E -02 |
| 5          | 1,821E -02 |
| 6          | 1,836E -02 |
| 7          | 1,907E -02 |
| Statistics |            |
| Min        | 1,821E -02 |
| Max        | 1,907E -02 |
| Mean       | 1,854E -02 |
| Sigma      | 4,598E -04 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Digital Output Driver Supply Current: IDRVD**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**

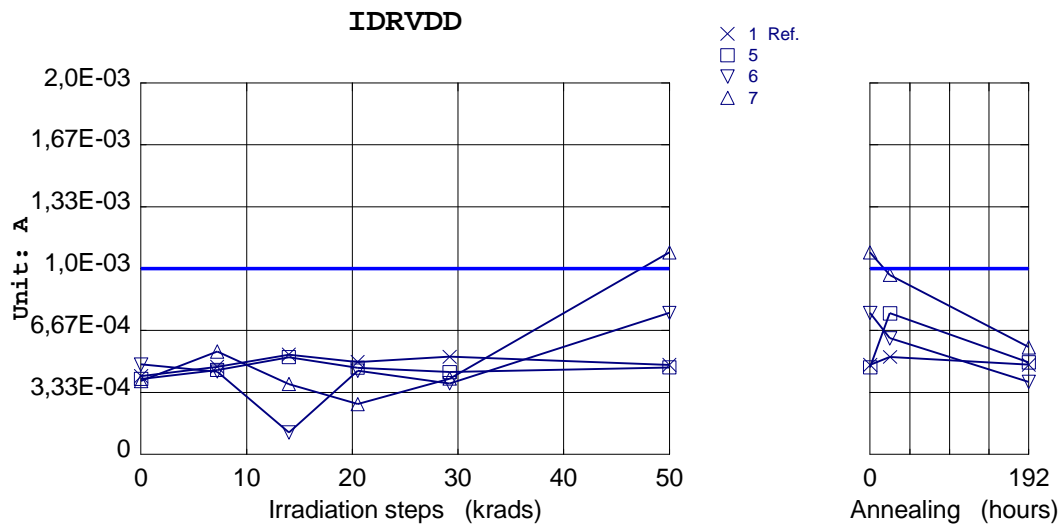
Unit= A

Spec limit max: 0.001

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,209E -04 | 4,714E -04 | 5,370E -04 | 4,968E -04 | 5,250E -04 | 4,814E -04 | 5,245E -04 |
| 5          | 4,052E -04 | 4,535E -04 | 5,227E -04 | 4,664E -04 | 4,421E -04 | 4,678E -04 | 7,594E -04 |
| 6          | 4,834E -04 | 4,456E -04 | 1,176E -04 | 4,500E -04 | 3,820E -04 | 7,620E -04 | 6,245E -04 |
| 7          | 3,941E -04 | 5,536E -04 | 3,780E -04 | 2,707E -04 | 4,079E -04 | 1,087E -03 | 9,655E -04 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 3,941E -04 | 4,456E -04 | 1,176E -04 | 2,707E -04 | 3,820E -04 | 4,678E -04 | 6,245E -04 |
| Max        | 4,834E -04 | 5,536E -04 | 5,227E -04 | 4,664E -04 | 4,421E -04 | 1,087E -03 | 9,655E -04 |
| Mean       | 4,276E -04 | 4,843E -04 | 3,394E -04 | 3,957E -04 | 4,107E -04 | 7,723E -04 | 7,831E -04 |
| Sigma      | 4,866E -05 | 6,020E -05 | 2,053E -04 | 1,086E -04 | 3,015E -05 | 3,097E -04 | 1,717E -04 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,821E -04 |
| 5          | 4,948E -04 |
| 6          | 3,901E -04 |
| 7          | 5,764E -04 |
| Statistics |            |
| Min        | 3,901E -04 |
| Max        | 5,764E -04 |
| Mean       | 4,871E -04 |
| Sigma      | 9,343E -05 |



|                          |                               |                |                |                    |
|--------------------------|-------------------------------|----------------|----------------|--------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071 |
|                          |                               |                |                | Issue : 01         |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                    |

**Parameter: Digital Supply Current: IDVDD**  
**AVDD=+5V; DVDD=+5V; DRVDD=+5V; Input signal: 0-5V, 10KHz; Fsample=1.3MHz**

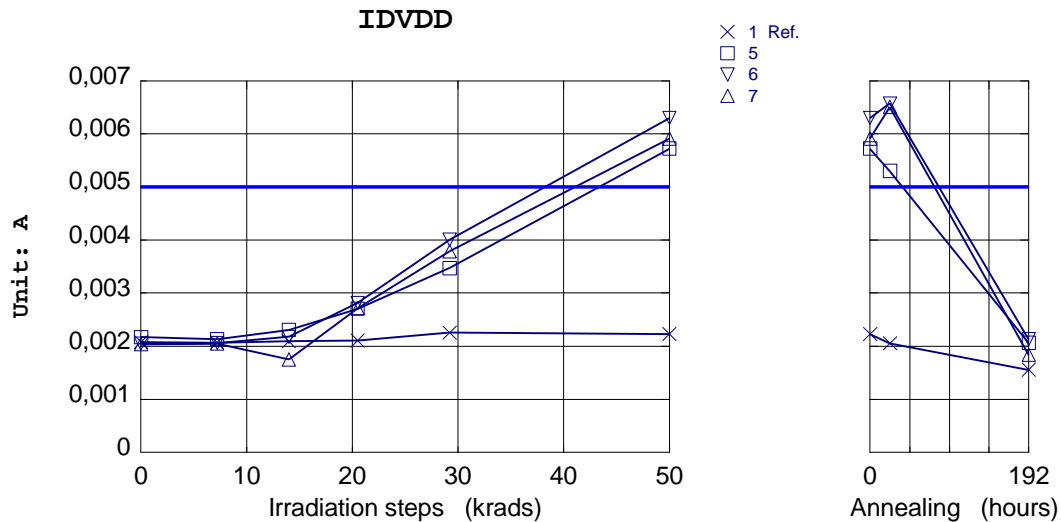
Unit= A

Spec limit max: 0.005

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,079E -03 | 2,065E -03 | 2,095E -03 | 2,106E -03 | 2,256E -03 | 2,229E -03 | 2,055E -03 |
| 5          | 2,171E -03 | 2,132E -03 | 2,307E -03 | 2,706E -03 | 3,471E -03 | 5,721E -03 | 5,301E -03 |
| 6          | 2,047E -03 | 2,060E -03 | 2,176E -03 | 2,817E -03 | 4,009E -03 | 6,298E -03 | 6,574E -03 |
| 7          | 2,036E -03 | 2,051E -03 | 1,749E -03 | 2,717E -03 | 3,787E -03 | 5,913E -03 | 6,507E -03 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,036E -03 | 2,051E -03 | 1,749E -03 | 2,706E -03 | 3,471E -03 | 5,721E -03 | 5,301E -03 |
| Max        | 2,171E -03 | 2,132E -03 | 2,307E -03 | 2,817E -03 | 4,009E -03 | 6,298E -03 | 6,574E -03 |
| Mean       | 2,085E -03 | 2,081E -03 | 2,077E -03 | 2,747E -03 | 3,756E -03 | 5,977E -03 | 6,127E -03 |
| Sigma      | 7,467E -05 | 4,444E -05 | 2,919E -04 | 6,121E -05 | 2,699E -04 | 2,939E -04 | 7,164E -04 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,557E -03 |
| 5          | 2,062E -03 |
| 6          | 2,128E -03 |
| 7          | 1,837E -03 |
| Statistics |            |
| Min        | 1,837E -03 |
| Max        | 2,128E -03 |
| Mean       | 2,009E -03 |
| Sigma      | 1,523E -04 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: High Level Input Voltage: Vih**  
**AVDD=+5V; DVDD=+5V; Fsample=1.3MHz**

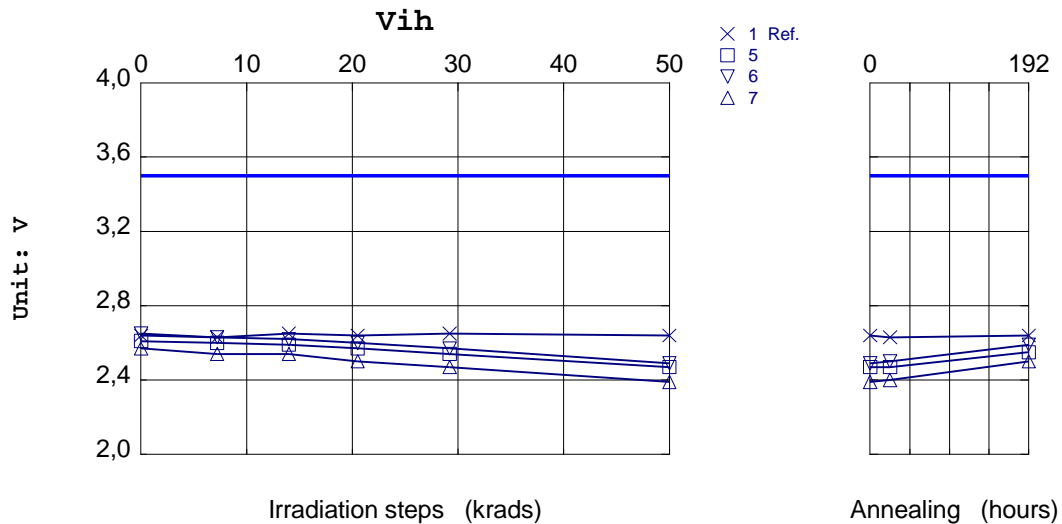
Unit= V

Spec limit max: 3.5

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,640E +00 | 2,630E +00 | 2,650E +00 | 2,640E +00 | 2,650E +00 | 2,640E +00 | 2,630E +00 |
| 5          | 2,610E +00 | 2,600E +00 | 2,590E +00 | 2,570E +00 | 2,540E +00 | 2,470E +00 | 2,470E +00 |
| 6          | 2,650E +00 | 2,630E +00 | 2,620E +00 | 2,600E +00 | 2,570E +00 | 2,490E +00 | 2,500E +00 |
| 7          | 2,570E +00 | 2,540E +00 | 2,540E +00 | 2,500E +00 | 2,470E +00 | 2,390E +00 | 2,400E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,570E +00 | 2,540E +00 | 2,540E +00 | 2,500E +00 | 2,470E +00 | 2,390E +00 | 2,400E +00 |
| Max        | 2,650E +00 | 2,630E +00 | 2,620E +00 | 2,600E +00 | 2,570E +00 | 2,490E +00 | 2,500E +00 |
| Mean       | 2,610E +00 | 2,590E +00 | 2,583E +00 | 2,557E +00 | 2,527E +00 | 2,450E +00 | 2,457E +00 |
| Sigma      | 4,000E -02 | 4,583E -02 | 4,041E -02 | 5,132E -02 | 5,132E -02 | 5,291E -02 | 5,132E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,640E +00 |
| 5          | 2,550E +00 |
| 6          | 2,590E +00 |
| 7          | 2,500E +00 |
| Statistics |            |
| Min        | 2,500E +00 |
| Max        | 2,590E +00 |
| Mean       | 2,547E +00 |
| Sigma      | 4,509E -02 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Input Voltage: Vil**  
**AVDD=+5V; DVDD=+5V; Fsample=1.3MHz**

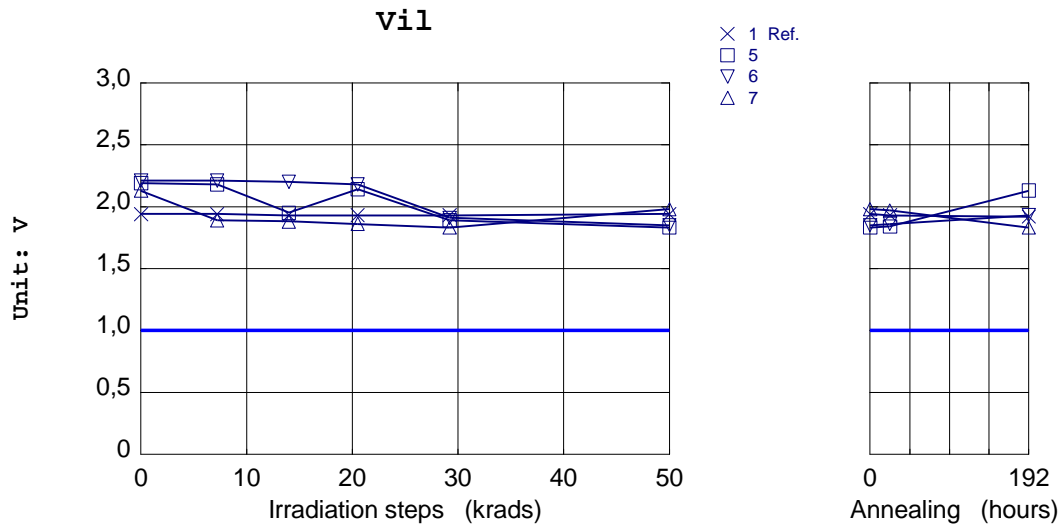
Unit= V

Spec limit min: 1

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 1,940E +00 | 1,940E +00 | 1,930E +00 | 1,930E +00 | 1,930E +00 | 1,940E +00 | 1,930E +00 |
| 5          | 2,190E +00 | 2,180E +00 | 1,950E +00 | 2,140E +00 | 1,890E +00 | 1,830E +00 | 1,840E +00 |
| 6          | 2,210E +00 | 2,210E +00 | 2,200E +00 | 2,180E +00 | 1,910E +00 | 1,850E +00 | 1,860E +00 |
| 7          | 2,130E +00 | 1,890E +00 | 1,880E +00 | 1,860E +00 | 1,830E +00 | 1,980E +00 | 1,970E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,130E +00 | 1,890E +00 | 1,880E +00 | 1,860E +00 | 1,830E +00 | 1,830E +00 | 1,840E +00 |
| Max        | 2,210E +00 | 2,210E +00 | 2,200E +00 | 2,180E +00 | 1,910E +00 | 1,980E +00 | 1,970E +00 |
| Mean       | 2,177E +00 | 2,093E +00 | 2,010E +00 | 2,060E +00 | 1,877E +00 | 1,887E +00 | 1,890E +00 |
| Sigma      | 4,163E -02 | 1,767E -01 | 1,682E -01 | 1,744E -01 | 4,163E -02 | 8,145E -02 | 7,000E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 1,920E +00 |
| 5          | 2,130E +00 |
| 6          | 1,930E +00 |
| 7          | 1,830E +00 |
| Statistics |            |
| Min        | 1,830E +00 |
| Max        | 2,130E +00 |
| Mean       | 1,963E +00 |
| Sigma      | 1,528E -01 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: High Level Output Voltage Pin 24: VOH1**  
**AVDD=+5V; DVDD=+5V; IOH=500uA**

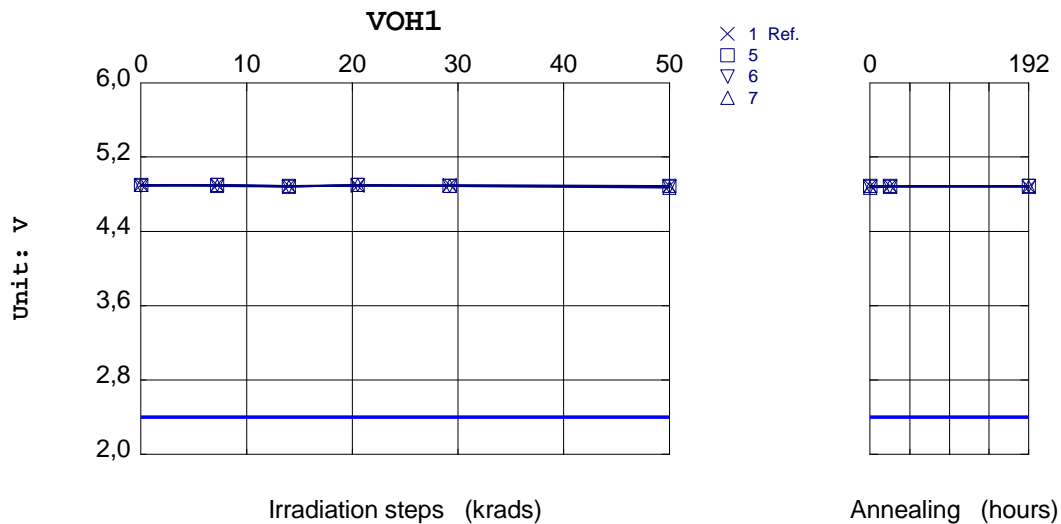
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 6          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,870E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,870E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| Mean       | 4,897E +00 | 4,897E +00 | 4,883E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,883E +00 |
| Sigma      | 5,774E -03 | 5,774E -03 | 5,773E -03 | 0,000E +00 | 0,000E +00 | 1,000E -02 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,880E +00 |
| 5          | 4,890E +00 |
| 6          | 4,890E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 23: VOH2  
AVDD=+5V; DVDD=+5V; IOH=500uA

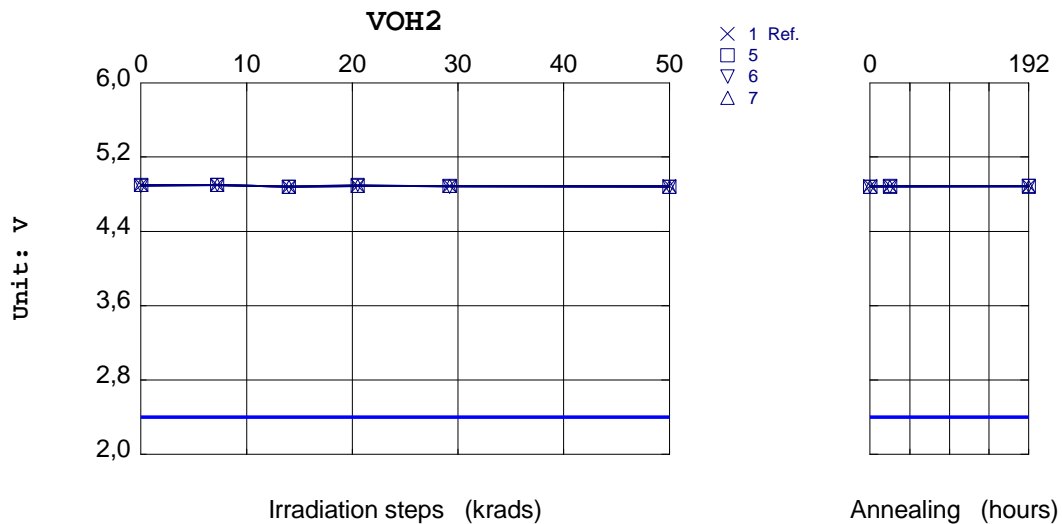
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 6          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Mean       | 4,897E +00 | 4,900E +00 | 4,880E +00 | 4,893E +00 | 4,887E +00 | 4,880E +00 | 4,883E +00 |
| Sigma      | 5,774E -03 | 0,000E +00 | 0,000E +00 | 5,774E -03 | 5,773E -03 | 0,000E +00 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,890E +00 |
| 6          | 4,890E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |





|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 22: VOH3  
 AVDD=+5V; DVDD=+5V; IOH=500uA

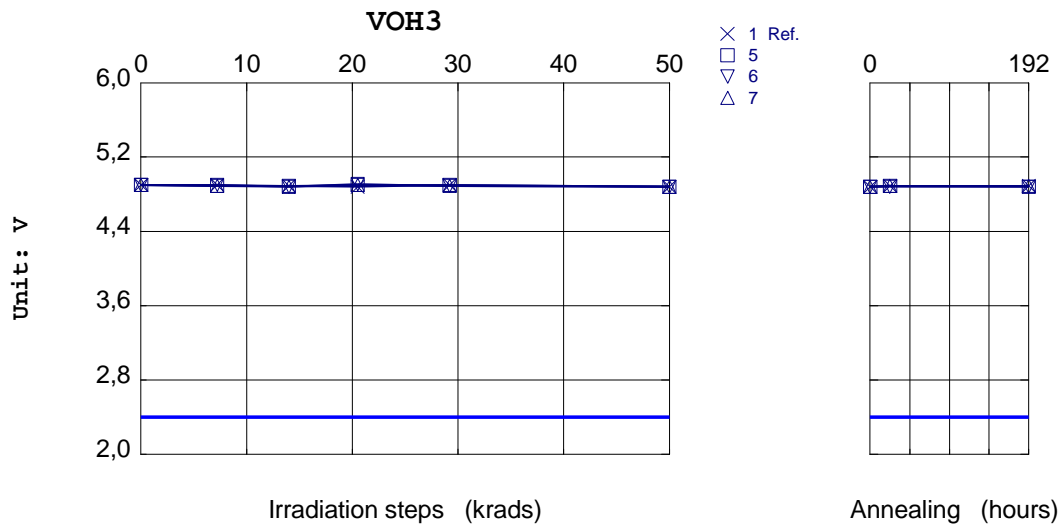
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| 5          | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,910E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,910E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| Mean       | 4,900E +00 | 4,893E +00 | 4,883E +00 | 4,903E +00 | 4,893E +00 | 4,880E +00 | 4,887E +00 |
| Sigma      | 0,000E +00 | 5,774E -03 | 5,773E -03 | 5,773E -03 | 5,774E -03 | 0,000E +00 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,880E +00 |
| 6          | 4,880E +00 |
| 7          | 4,890E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,883E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 21: VOH4  
AVDD=+5V; DVDD=+5V; IOH=500uA

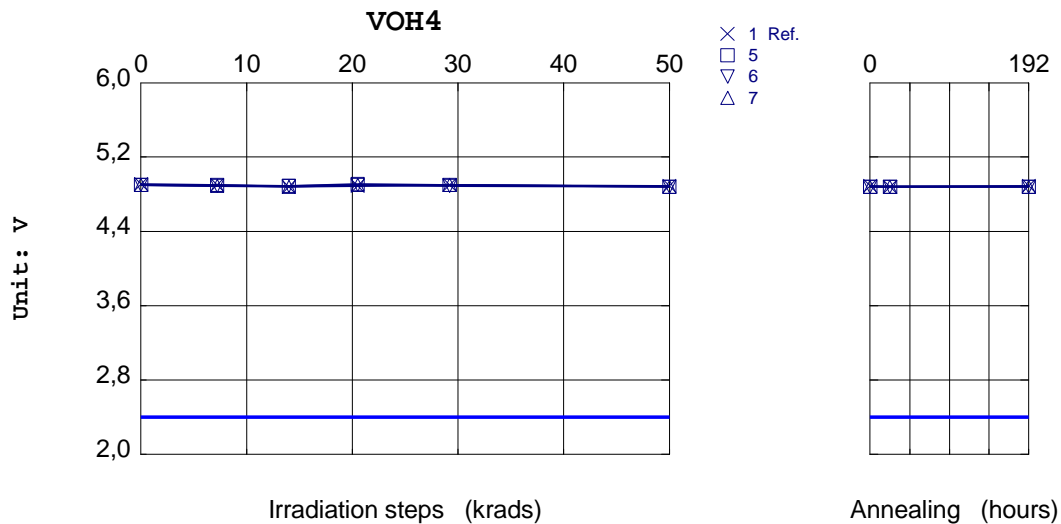
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,910E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,910E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 |
| 6          | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,910E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 |
| Mean       | 4,900E +00 | 4,893E +00 | 4,887E +00 | 4,903E +00 | 4,897E +00 | 4,880E +00 | 4,880E +00 |
| Sigma      | 0,000E +00 | 5,774E -03 | 5,773E -03 | 5,773E -03 | 5,774E -03 | 0,000E +00 | 0,000E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,880E +00 |
| 6          | 4,880E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,880E +00 |
| Mean       | 4,880E +00 |
| Sigma      | 0,000E +00 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 20: VOH5  
 AVDD=+5V; DVDD=+5V; IOH=500uA

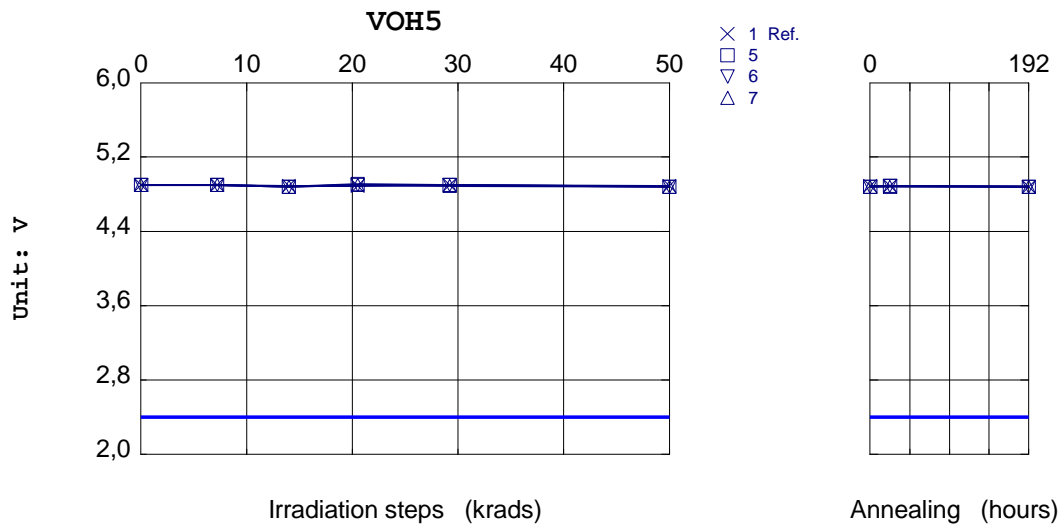
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,910E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| 7          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,910E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| Mean       | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,903E +00 | 4,897E +00 | 4,880E +00 | 4,887E +00 |
| Sigma      | 0,000E +00 | 0,000E +00 | 0,000E +00 | 5,773E -03 | 5,774E -03 | 0,000E +00 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,880E +00 |
| 5          | 4,880E +00 |
| 6          | 4,880E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,880E +00 |
| Mean       | 4,880E +00 |
| Sigma      | 0,000E +00 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: High Level Output Voltage Pin 19: VOH6**  
**AVDD=+5V; DVDD=+5V; IOH=500uA**

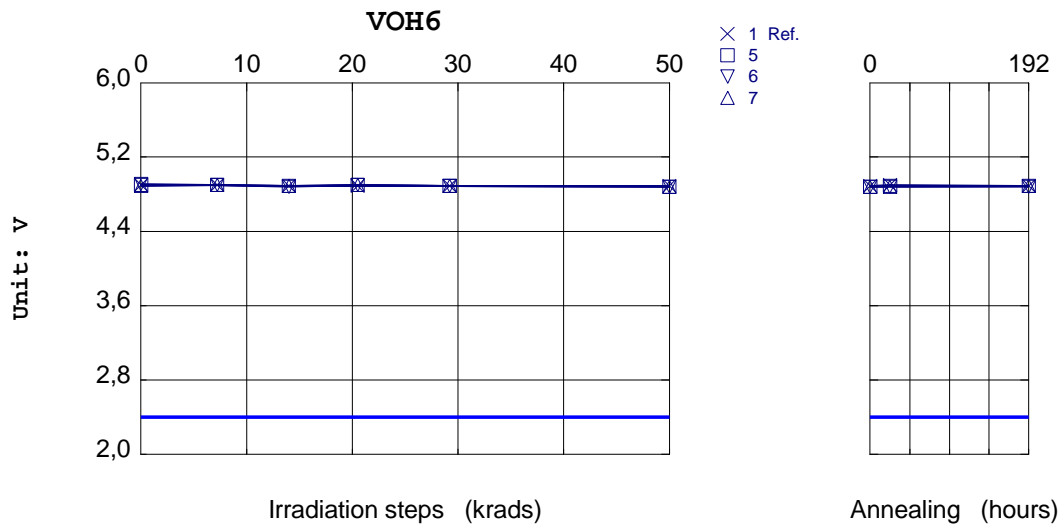
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 6          | 4,910E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,910E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Mean       | 4,900E +00 | 4,900E +00 | 4,887E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,883E +00 |
| Sigma      | 1,000E -02 | 0,000E +00 | 5,773E -03 | 0,000E +00 | 0,000E +00 | 0,000E +00 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,890E +00 |
| 6          | 4,880E +00 |
| 7          | 4,890E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                          |                               |                |                |                    |
|--------------------------|-------------------------------|----------------|----------------|--------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071 |
|                          |                               |                |                | Issue : 01         |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                    |

**Parameter: High Level Output Voltage Pin 18: VOH7**  
**AVDD=+5V; DVDD=+5V; IOH=500uA**

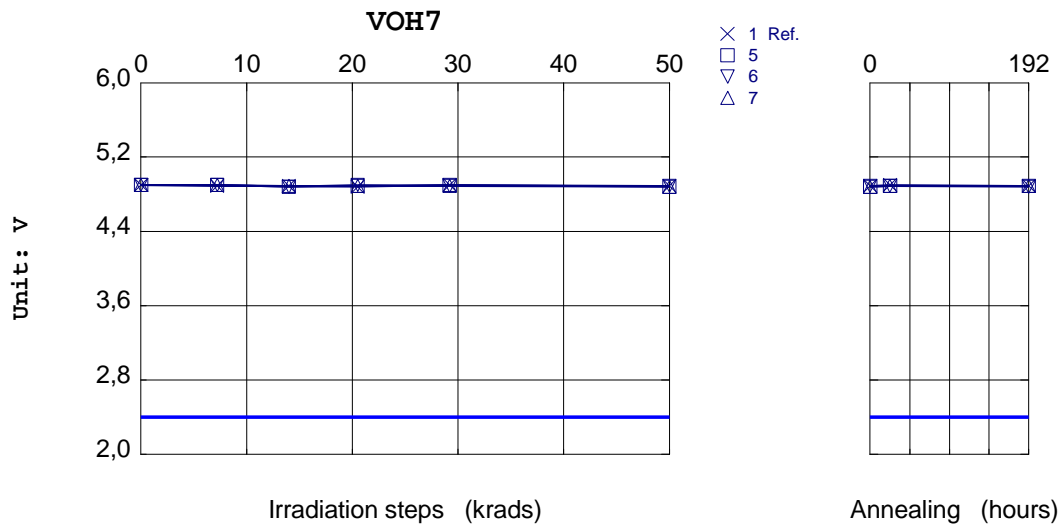
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 7          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Mean       | 4,900E +00 | 4,900E +00 | 4,883E +00 | 4,893E +00 | 4,893E +00 | 4,883E +00 | 4,890E +00 |
| Sigma      | 0,000E +00 | 0,000E +00 | 5,773E -03 | 5,774E -03 | 5,774E -03 | 5,773E -03 | 0,000E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,890E +00 |
| 6          | 4,880E +00 |
| 7          | 4,890E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 17: VOH8  
AVDD=+5V; DVDD=+5V; IOH=500uA

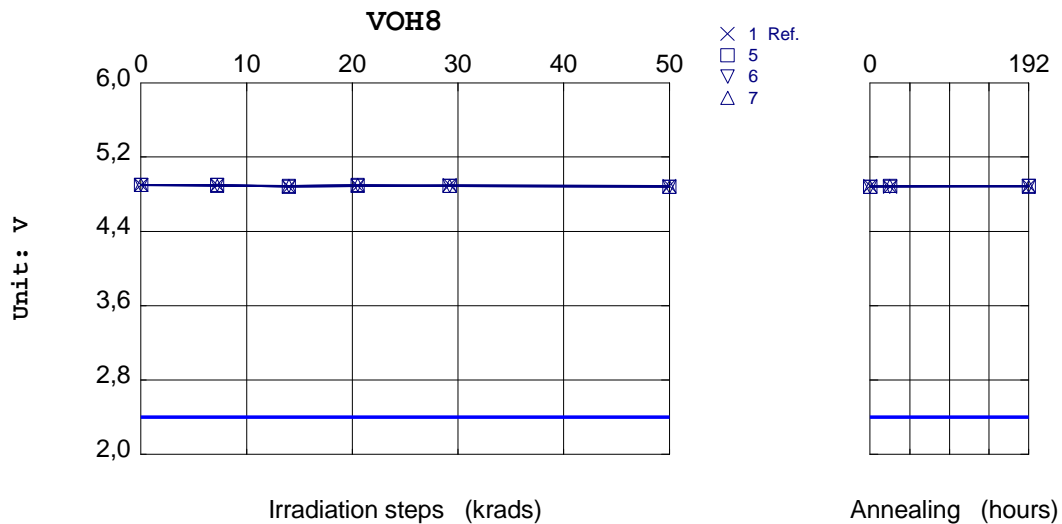
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Mean       | 4,900E +00 | 4,897E +00 | 4,887E +00 | 4,897E +00 | 4,890E +00 | 4,880E +00 | 4,887E +00 |
| Sigma      | 0,000E +00 | 5,774E -03 | 5,773E -03 | 5,774E -03 | 0,000E +00 | 0,000E +00 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,890E +00 |
| 6          | 4,890E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 16: VOH9  
AVDD=+5V; DVDD=+5V; IOH=500uA

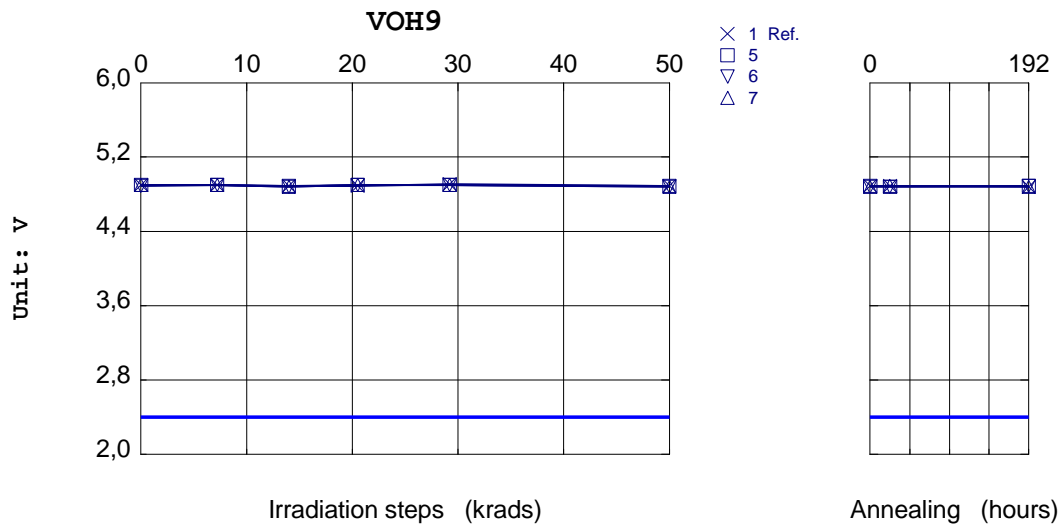
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,890E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 |
| 6          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Mean       | 4,897E +00 | 4,900E +00 | 4,883E +00 | 4,900E +00 | 4,900E +00 | 4,883E +00 | 4,883E +00 |
| Sigma      | 5,774E -03 | 0,000E +00 | 5,773E -03 | 0,000E +00 | 0,000E +00 | 5,773E -03 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,880E +00 |
| 5          | 4,890E +00 |
| 6          | 4,890E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 15: VOH10  
 AVDD=+5V; DVDD=+5V; IOH=500uA

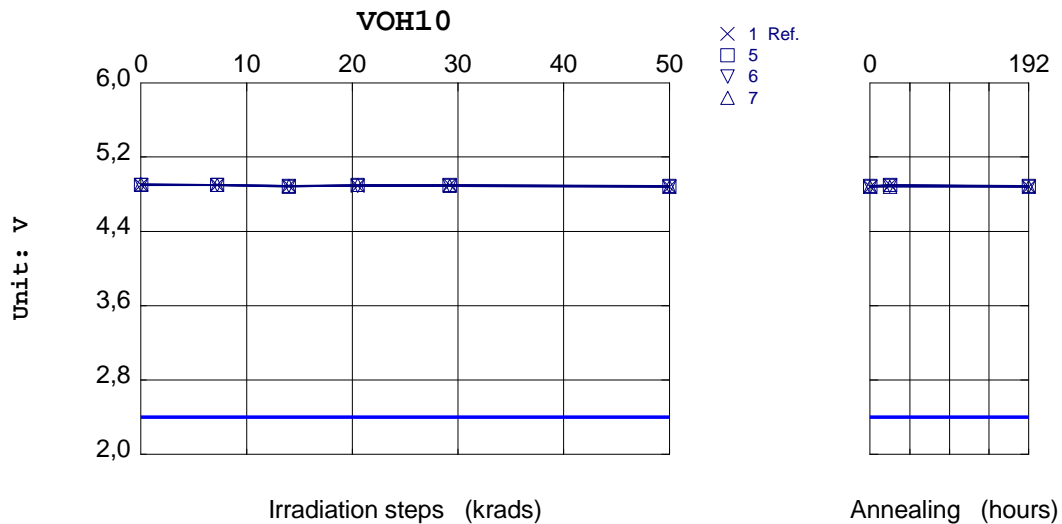
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 7          | 4,910E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,910E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 |
| Mean       | 4,903E +00 | 4,900E +00 | 4,887E +00 | 4,897E +00 | 4,893E +00 | 4,883E +00 | 4,890E +00 |
| Sigma      | 5,773E -03 | 0,000E +00 | 5,773E -03 | 5,774E -03 | 5,774E -03 | 5,773E -03 | 1,000E -02 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,880E +00 |
| 5          | 4,890E +00 |
| 6          | 4,880E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,883E +00 |
| Sigma      | 5,773E -03 |





|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 14: VOH11  
AVDD=+5V; DVDD=+5V; IOH=500uA

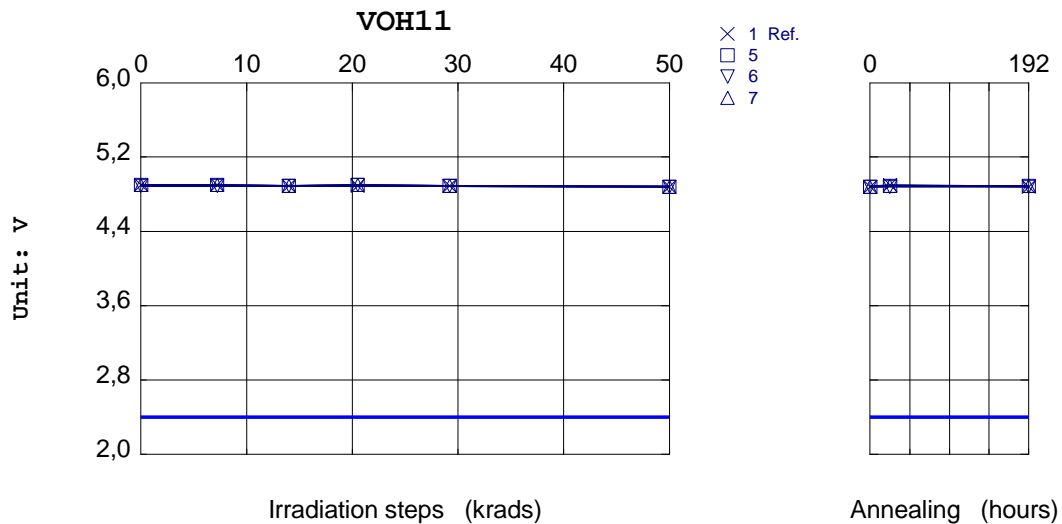
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,900E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 6          | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| 7          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Mean       | 4,897E +00 | 4,897E +00 | 4,890E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,887E +00 |
| Sigma      | 5,774E -03 | 5,774E -03 | 0,000E +00 | 0,000E +00 | 0,000E +00 | 0,000E +00 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,880E +00 |
| 5          | 4,890E +00 |
| 6          | 4,880E +00 |
| 7          | 4,890E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 13: VOH12  
AVDD=+5V; DVDD=+5V; IOH=500uA

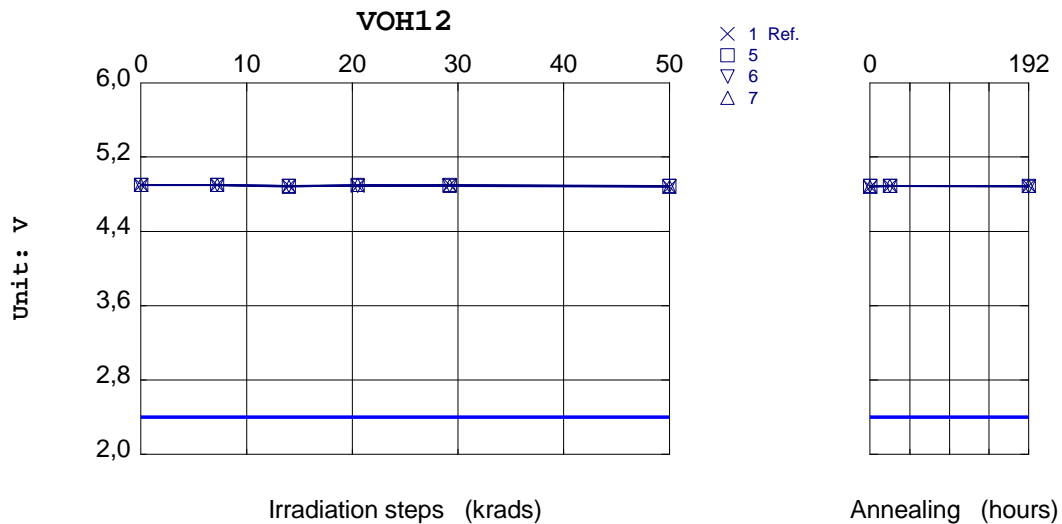
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 7          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Mean       | 4,900E +00 | 4,900E +00 | 4,887E +00 | 4,897E +00 | 4,893E +00 | 4,887E +00 | 4,890E +00 |
| Sigma      | 0,000E +00 | 0,000E +00 | 5,773E -03 | 5,774E -03 | 5,774E -03 | 5,773E -03 | 0,000E +00 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,890E +00 |
| 6          | 4,880E +00 |
| 7          | 4,890E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

**Parameter: High Level Output Voltage Pin 12: VOH13**  
**AVDD=+5V; DVDD=+5V; IOH=500uA**

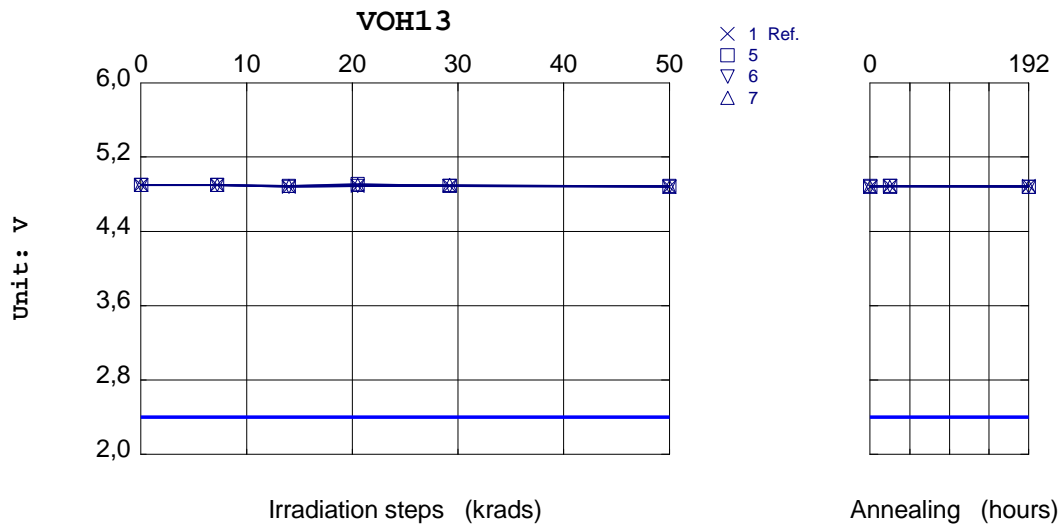
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,890E +00 | 4,890E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 7          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,890E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,910E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Mean       | 4,900E +00 | 4,900E +00 | 4,887E +00 | 4,900E +00 | 4,893E +00 | 4,883E +00 | 4,887E +00 |
| Sigma      | 0,000E +00 | 0,000E +00 | 5,773E -03 | 1,000E -02 | 5,774E -03 | 5,773E -03 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,880E +00 |
| 6          | 4,880E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,880E +00 |
| Mean       | 4,880E +00 |
| Sigma      | 0,000E +00 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: High Level Output Voltage Pin 11: VOH14  
AVDD=+5V; DVDD=+5V; IOH=500uA

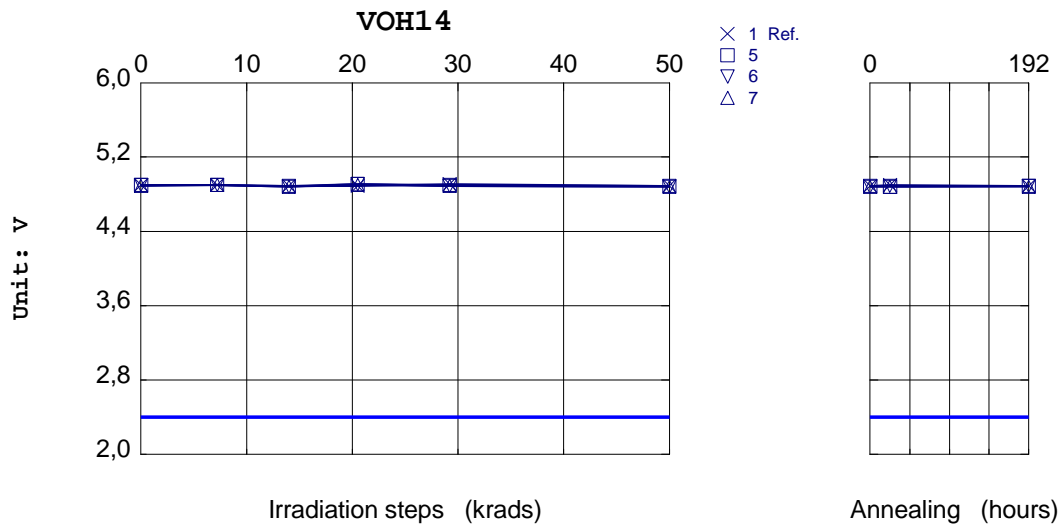
Unit= V

Spec limit min: 2.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 | 4,910E +00 | 4,890E +00 | 4,900E +00 |
| 5          | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,910E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 |
| 6          | 4,900E +00 | 4,900E +00 | 4,880E +00 | 4,910E +00 | 4,890E +00 | 4,880E +00 | 4,890E +00 |
| 7          | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 4,890E +00 | 4,900E +00 | 4,880E +00 | 4,900E +00 | 4,890E +00 | 4,880E +00 | 4,880E +00 |
| Max        | 4,900E +00 | 4,900E +00 | 4,890E +00 | 4,910E +00 | 4,900E +00 | 4,890E +00 | 4,890E +00 |
| Mean       | 4,897E +00 | 4,900E +00 | 4,883E +00 | 4,907E +00 | 4,893E +00 | 4,883E +00 | 4,883E +00 |
| Sigma      | 5,774E -03 | 0,000E +00 | 5,773E -03 | 5,773E -03 | 5,774E -03 | 5,773E -03 | 5,773E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 4,890E +00 |
| 5          | 4,890E +00 |
| 6          | 4,890E +00 |
| 7          | 4,880E +00 |
| Statistics |            |
| Min        | 4,880E +00 |
| Max        | 4,890E +00 |
| Mean       | 4,887E +00 |
| Sigma      | 5,773E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 24: VOL1**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

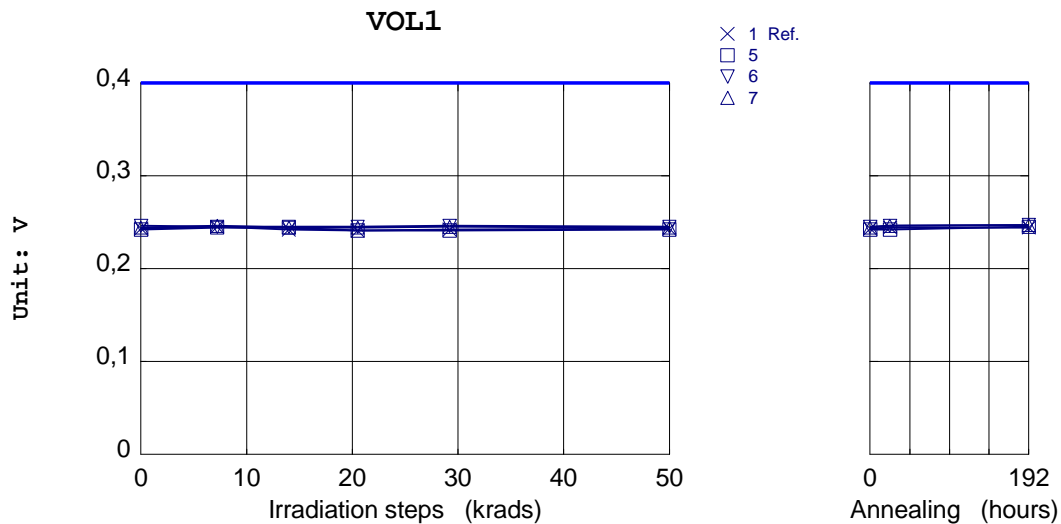
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,430E -01 | 2,450E -01 | 2,420E -01 | 2,410E -01 | 2,420E -01 | 2,430E -01 | 2,440E -01 |
| 5          | 2,420E -01 | 2,440E -01 | 2,440E -01 | 2,410E -01 | 2,410E -01 | 2,420E -01 | 2,420E -01 |
| 6          | 2,460E -01 | 2,450E -01 | 2,450E -01 | 2,450E -01 | 2,460E -01 | 2,450E -01 | 2,460E -01 |
| 7          | 2,440E -01 | 2,460E -01 | 2,440E -01 | 2,440E -01 | 2,450E -01 | 2,440E -01 | 2,460E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,420E -01 | 2,440E -01 | 2,440E -01 | 2,410E -01 | 2,410E -01 | 2,420E -01 | 2,420E -01 |
| Max        | 2,460E -01 | 2,460E -01 | 2,450E -01 | 2,450E -01 | 2,460E -01 | 2,450E -01 | 2,460E -01 |
| Mean       | 2,440E -01 | 2,450E -01 | 2,443E -01 | 2,433E -01 | 2,440E -01 | 2,437E -01 | 2,447E -01 |
| Sigma      | 2,000E -03 | 1,000E -03 | 5,774E -04 | 2,082E -03 | 2,646E -03 | 1,528E -03 | 2,309E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,440E -01 |
| 5          | 2,450E -01 |
| 6          | 2,470E -01 |
| 7          | 2,470E -01 |
| Statistics |            |
| Min        | 2,450E -01 |
| Max        | 2,470E -01 |
| Mean       | 2,463E -01 |
| Sigma      | 1,155E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

**Parameter: Low Level Output Voltage Pin 23: VOL2**

AVDD=+5V; DVDD=+5V; IOL=1.6mA

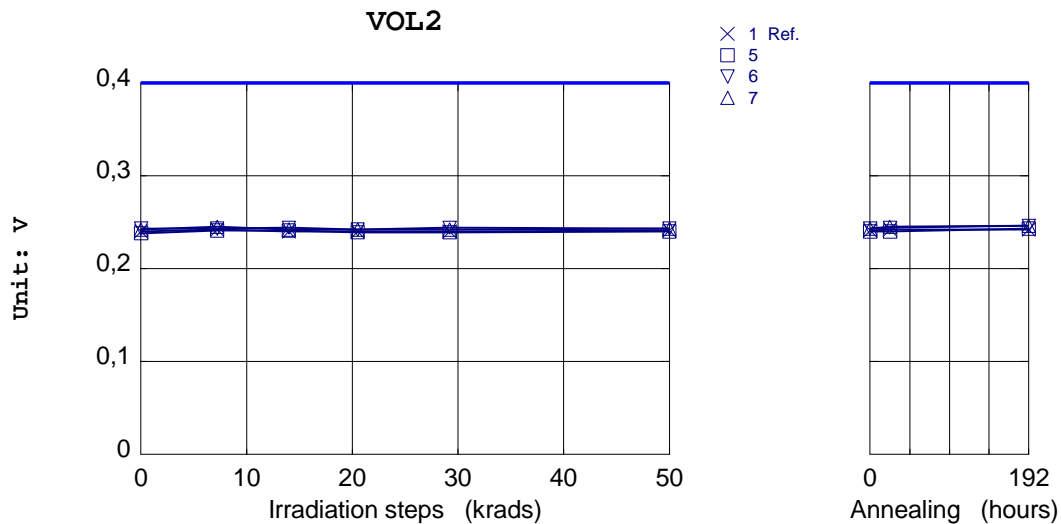
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,400E -01 | 2,420E -01 | 2,400E -01 | 2,400E -01 | 2,400E -01 | 2,410E -01 | 2,420E -01 |
| 5          | 2,380E -01 | 2,410E -01 | 2,410E -01 | 2,390E -01 | 2,390E -01 | 2,400E -01 | 2,400E -01 |
| 6          | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,440E -01 | 2,430E -01 | 2,440E -01 |
| 7          | 2,420E -01 | 2,450E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,430E -01 | 2,450E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,380E -01 | 2,410E -01 | 2,410E -01 | 2,390E -01 | 2,390E -01 | 2,400E -01 | 2,400E -01 |
| Max        | 2,430E -01 | 2,450E -01 | 2,440E -01 | 2,420E -01 | 2,440E -01 | 2,430E -01 | 2,450E -01 |
| Mean       | 2,410E -01 | 2,430E -01 | 2,423E -01 | 2,410E -01 | 2,417E -01 | 2,420E -01 | 2,430E -01 |
| Sigma      | 2,646E -03 | 2,000E -03 | 1,528E -03 | 1,732E -03 | 2,517E -03 | 1,732E -03 | 2,646E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,420E -01 |
| 5          | 2,430E -01 |
| 6          | 2,460E -01 |
| 7          | 2,460E -01 |
| Statistics |            |
| Min        | 2,430E -01 |
| Max        | 2,460E -01 |
| Mean       | 2,450E -01 |
| Sigma      | 1,732E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 22: VOL3**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

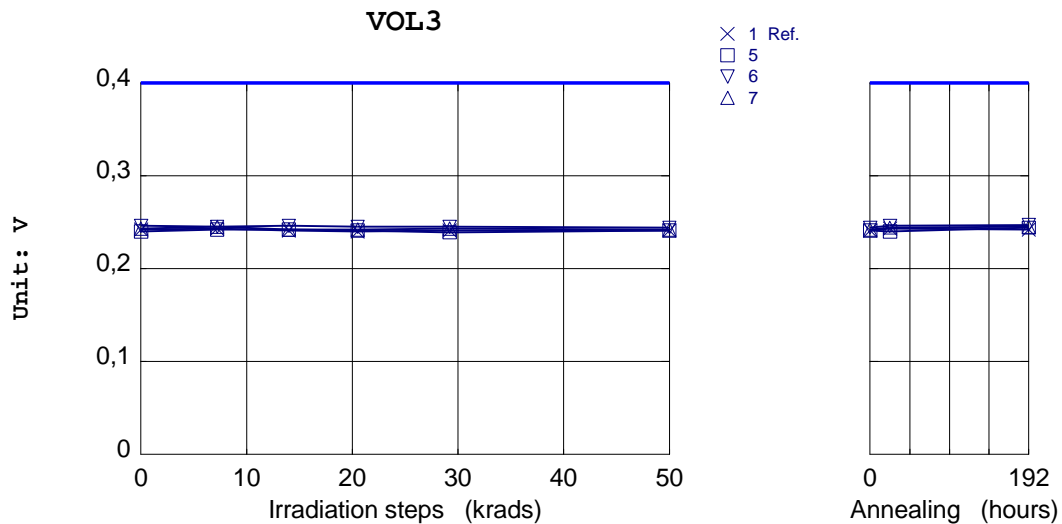
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,420E -01 | 2,430E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,410E -01 | 2,430E -01 |
| 5          | 2,400E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 | 2,390E -01 | 2,410E -01 | 2,400E -01 |
| 6          | 2,460E -01 | 2,450E -01 | 2,460E -01 | 2,450E -01 | 2,450E -01 | 2,440E -01 | 2,460E -01 |
| 7          | 2,430E -01 | 2,450E -01 | 2,420E -01 | 2,420E -01 | 2,430E -01 | 2,420E -01 | 2,440E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,400E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 | 2,390E -01 | 2,410E -01 | 2,400E -01 |
| Max        | 2,460E -01 | 2,450E -01 | 2,460E -01 | 2,450E -01 | 2,450E -01 | 2,440E -01 | 2,460E -01 |
| Mean       | 2,430E -01 | 2,440E -01 | 2,433E -01 | 2,427E -01 | 2,423E -01 | 2,423E -01 | 2,433E -01 |
| Sigma      | 3,000E -03 | 1,732E -03 | 2,309E -03 | 2,082E -03 | 3,055E -03 | 1,528E -03 | 3,055E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,420E -01 |
| 5          | 2,440E -01 |
| 6          | 2,470E -01 |
| 7          | 2,450E -01 |
| Statistics |            |
| Min        | 2,440E -01 |
| Max        | 2,470E -01 |
| Mean       | 2,453E -01 |
| Sigma      | 1,528E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 21: VOL4  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

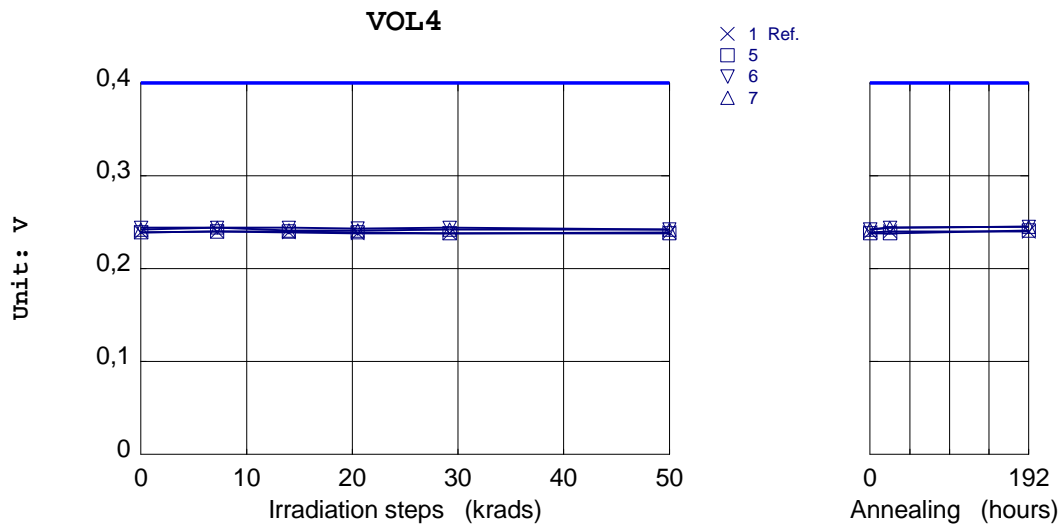
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 | 2,400E -01 |
| 5          | 2,390E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 |
| 6          | 2,440E -01 | 2,440E -01 | 2,440E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,440E -01 |
| 7          | 2,420E -01 | 2,440E -01 | 2,410E -01 | 2,410E -01 | 2,420E -01 | 2,420E -01 | 2,440E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,390E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 |
| Max        | 2,440E -01 | 2,440E -01 | 2,440E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,440E -01 |
| Mean       | 2,417E -01 | 2,427E -01 | 2,417E -01 | 2,410E -01 | 2,413E -01 | 2,407E -01 | 2,420E -01 |
| Sigma      | 2,517E -03 | 2,309E -03 | 2,082E -03 | 2,000E -03 | 3,055E -03 | 2,309E -03 | 3,464E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,400E -01 |
| 5          | 2,410E -01 |
| 6          | 2,450E -01 |
| 7          | 2,450E -01 |
| Statistics |            |
| Min        | 2,410E -01 |
| Max        | 2,450E -01 |
| Mean       | 2,437E -01 |
| Sigma      | 2,309E -03 |





|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 20: VOL5**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

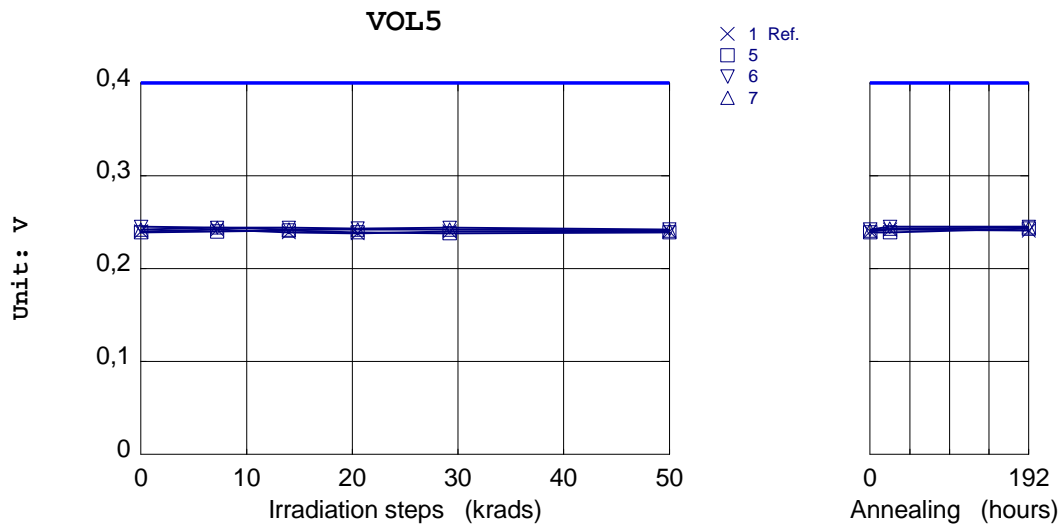
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,400E -01 | 2,420E -01 | 2,390E -01 | 2,380E -01 | 2,400E -01 | 2,400E -01 | 2,420E -01 |
| 5          | 2,390E -01 | 2,400E -01 | 2,410E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 | 2,390E -01 |
| 6          | 2,450E -01 | 2,440E -01 | 2,440E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,450E -01 |
| 7          | 2,420E -01 | 2,440E -01 | 2,420E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 | 2,430E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,390E -01 | 2,400E -01 | 2,410E -01 | 2,390E -01 | 2,380E -01 | 2,390E -01 | 2,390E -01 |
| Max        | 2,450E -01 | 2,440E -01 | 2,440E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,450E -01 |
| Mean       | 2,420E -01 | 2,427E -01 | 2,423E -01 | 2,413E -01 | 2,413E -01 | 2,407E -01 | 2,423E -01 |
| Sigma      | 3,000E -03 | 2,309E -03 | 1,528E -03 | 2,082E -03 | 3,055E -03 | 1,528E -03 | 3,055E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,410E -01 |
| 5          | 2,430E -01 |
| 6          | 2,450E -01 |
| 7          | 2,440E -01 |
| Statistics |            |
| Min        | 2,430E -01 |
| Max        | 2,450E -01 |
| Mean       | 2,440E -01 |
| Sigma      | 1,000E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

**Parameter: Low Level Output Voltage Pin 19: VOL6**

AVDD=+5V; DVDD=+5V; IOL=1.6mA

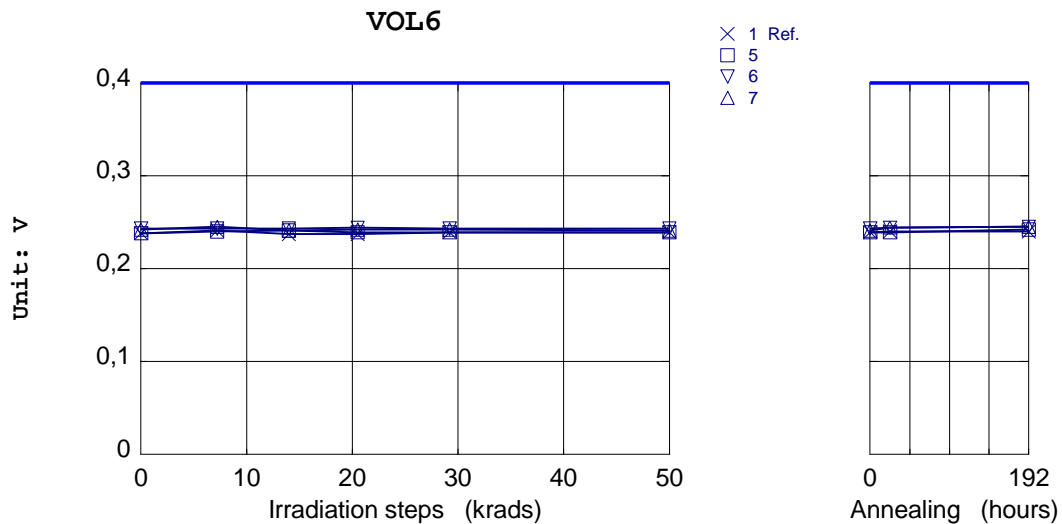
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,380E -01 | 2,410E -01 | 2,370E -01 | 2,370E -01 | 2,390E -01 | 2,390E -01 | 2,400E -01 |
| 5          | 2,380E -01 | 2,400E -01 | 2,410E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 |
| 6          | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,430E -01 | 2,430E -01 | 2,440E -01 |
| 7          | 2,420E -01 | 2,450E -01 | 2,410E -01 | 2,420E -01 | 2,420E -01 | 2,410E -01 | 2,440E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,380E -01 | 2,400E -01 | 2,410E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 | 2,390E -01 |
| Max        | 2,430E -01 | 2,450E -01 | 2,430E -01 | 2,440E -01 | 2,430E -01 | 2,430E -01 | 2,440E -01 |
| Mean       | 2,410E -01 | 2,427E -01 | 2,417E -01 | 2,417E -01 | 2,413E -01 | 2,410E -01 | 2,423E -01 |
| Sigma      | 2,646E -03 | 2,517E -03 | 1,155E -03 | 2,517E -03 | 2,082E -03 | 2,000E -03 | 2,887E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,400E -01 |
| 5          | 2,420E -01 |
| 6          | 2,450E -01 |
| 7          | 2,450E -01 |
| Statistics |            |
| Min        | 2,420E -01 |
| Max        | 2,450E -01 |
| Mean       | 2,440E -01 |
| Sigma      | 1,732E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 18: VOL7  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

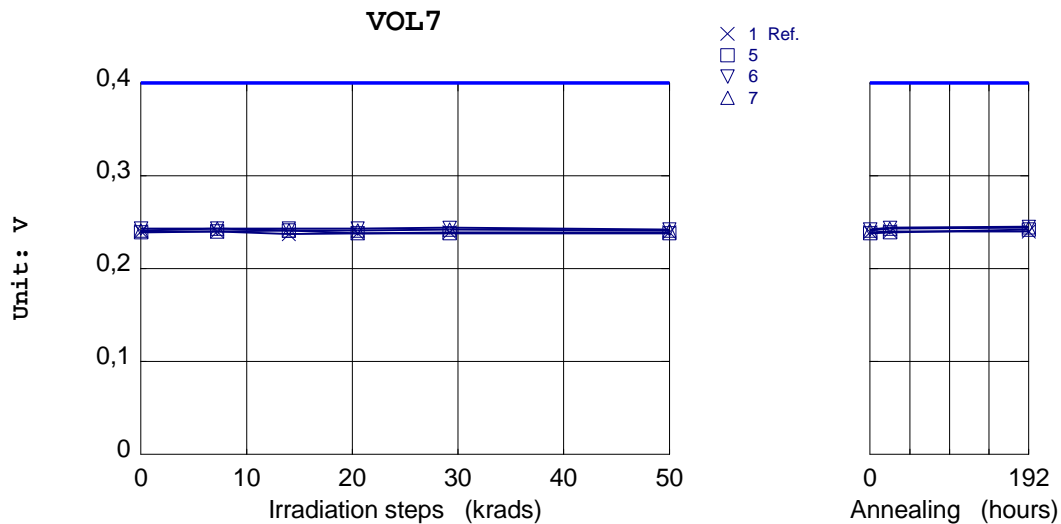
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,400E -01 | 2,400E -01 | 2,370E -01 | 2,380E -01 | 2,390E -01 | 2,390E -01 | 2,400E -01 |
| 5          | 2,390E -01 | 2,400E -01 | 2,410E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| 6          | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,440E -01 |
| 7          | 2,410E -01 | 2,430E -01 | 2,410E -01 | 2,410E -01 | 2,420E -01 | 2,410E -01 | 2,430E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,390E -01 | 2,400E -01 | 2,410E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 |
| Max        | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,430E -01 | 2,440E -01 | 2,420E -01 | 2,440E -01 |
| Mean       | 2,410E -01 | 2,420E -01 | 2,417E -01 | 2,407E -01 | 2,413E -01 | 2,403E -01 | 2,420E -01 |
| Sigma      | 2,000E -03 | 1,732E -03 | 1,155E -03 | 2,517E -03 | 3,055E -03 | 2,082E -03 | 2,646E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,400E -01 |
| 5          | 2,420E -01 |
| 6          | 2,450E -01 |
| 7          | 2,440E -01 |
| Statistics |            |
| Min        | 2,420E -01 |
| Max        | 2,450E -01 |
| Mean       | 2,437E -01 |
| Sigma      | 1,528E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 17: VOL8  
 AVDD=+5V; DVDD=+5V; IOL=1.6mA

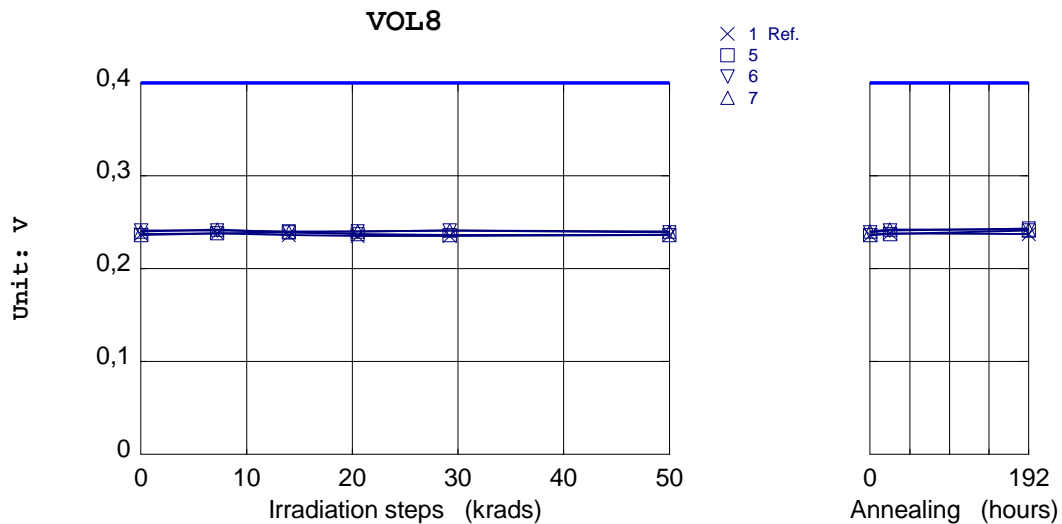
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,370E -01 | 2,380E -01 | 2,360E -01 | 2,350E -01 | 2,350E -01 | 2,360E -01 | 2,380E -01 |
| 5          | 2,360E -01 | 2,380E -01 | 2,390E -01 | 2,370E -01 | 2,360E -01 | 2,360E -01 | 2,370E -01 |
| 6          | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,410E -01 | 2,390E -01 | 2,410E -01 |
| 7          | 2,400E -01 | 2,420E -01 | 2,390E -01 | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,420E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,360E -01 | 2,380E -01 | 2,390E -01 | 2,370E -01 | 2,360E -01 | 2,360E -01 | 2,370E -01 |
| Max        | 2,410E -01 | 2,420E -01 | 2,400E -01 | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,420E -01 |
| Mean       | 2,390E -01 | 2,403E -01 | 2,393E -01 | 2,390E -01 | 2,393E -01 | 2,383E -01 | 2,400E -01 |
| Sigma      | 2,646E -03 | 2,082E -03 | 5,774E -04 | 1,732E -03 | 2,887E -03 | 2,082E -03 | 2,646E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,370E -01 |
| 5          | 2,410E -01 |
| 6          | 2,430E -01 |
| 7          | 2,420E -01 |
| Statistics |            |
| Min        | 2,410E -01 |
| Max        | 2,430E -01 |
| Mean       | 2,420E -01 |
| Sigma      | 1,000E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 16: VOL9  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

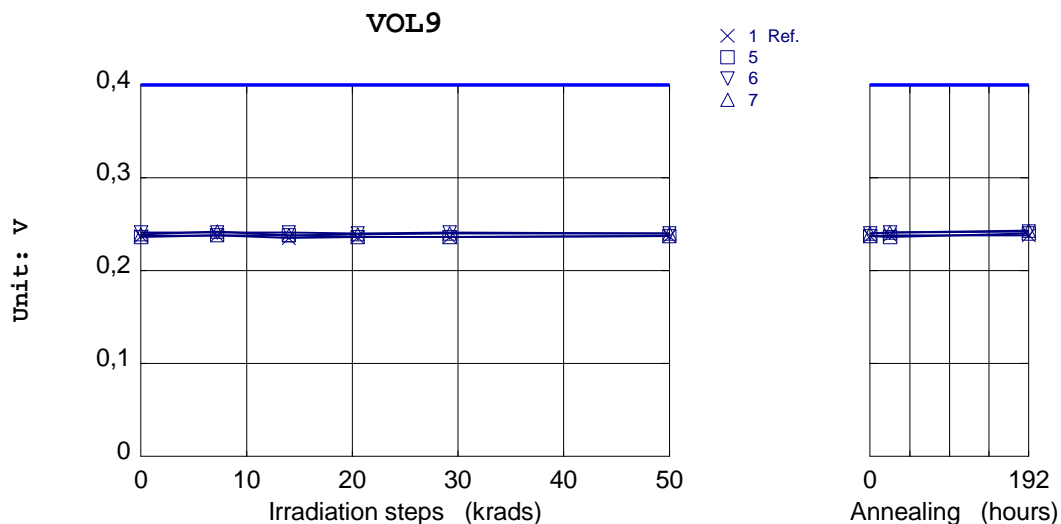
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,370E -01 | 2,380E -01 | 2,350E -01 | 2,360E -01 | 2,360E -01 | 2,370E -01 | 2,380E -01 |
| 5          | 2,360E -01 | 2,380E -01 | 2,380E -01 | 2,360E -01 | 2,360E -01 | 2,370E -01 | 2,360E -01 |
| 6          | 2,410E -01 | 2,410E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 |
| 7          | 2,390E -01 | 2,420E -01 | 2,380E -01 | 2,390E -01 | 2,400E -01 | 2,400E -01 | 2,410E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,360E -01 | 2,380E -01 | 2,380E -01 | 2,360E -01 | 2,360E -01 | 2,370E -01 | 2,360E -01 |
| Max        | 2,410E -01 | 2,420E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 | 2,400E -01 | 2,410E -01 |
| Mean       | 2,387E -01 | 2,403E -01 | 2,390E -01 | 2,383E -01 | 2,390E -01 | 2,390E -01 | 2,393E -01 |
| Sigma      | 2,517E -03 | 2,082E -03 | 1,732E -03 | 2,082E -03 | 2,646E -03 | 1,732E -03 | 2,887E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,380E -01 |
| 5          | 2,400E -01 |
| 6          | 2,420E -01 |
| 7          | 2,430E -01 |
| Statistics |            |
| Min        | 2,400E -01 |
| Max        | 2,430E -01 |
| Mean       | 2,417E -01 |
| Sigma      | 1,528E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 15: VOL10  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

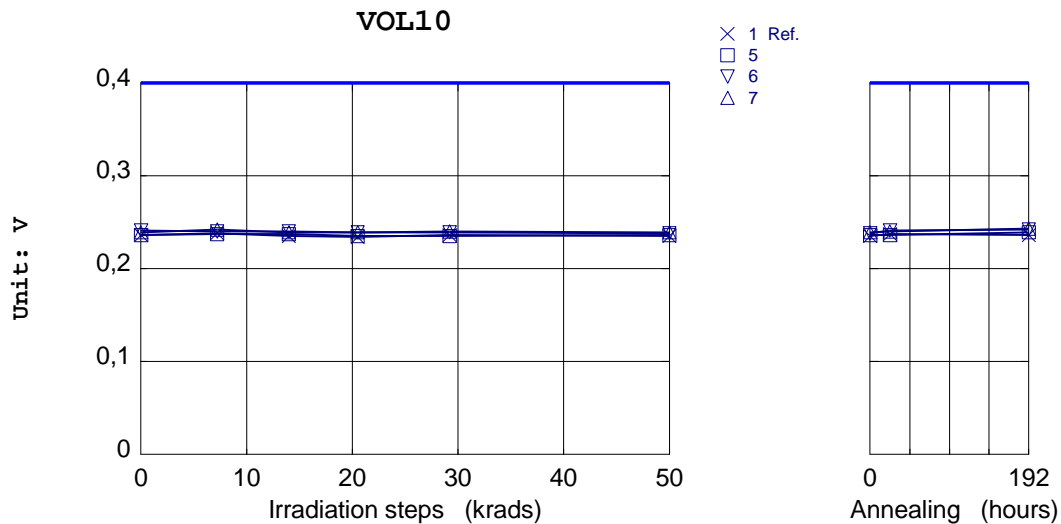
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,360E -01 | 2,380E -01 | 2,350E -01 | 2,340E -01 | 2,360E -01 | 2,350E -01 | 2,370E -01 |
| 5          | 2,360E -01 | 2,370E -01 | 2,370E -01 | 2,350E -01 | 2,350E -01 | 2,360E -01 | 2,360E -01 |
| 6          | 2,410E -01 | 2,400E -01 | 2,400E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,410E -01 |
| 7          | 2,390E -01 | 2,420E -01 | 2,390E -01 | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,400E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,360E -01 | 2,370E -01 | 2,370E -01 | 2,350E -01 | 2,350E -01 | 2,360E -01 | 2,360E -01 |
| Max        | 2,410E -01 | 2,420E -01 | 2,400E -01 | 2,390E -01 | 2,400E -01 | 2,390E -01 | 2,410E -01 |
| Mean       | 2,387E -01 | 2,397E -01 | 2,387E -01 | 2,377E -01 | 2,380E -01 | 2,377E -01 | 2,390E -01 |
| Sigma      | 2,517E -03 | 2,517E -03 | 1,528E -03 | 2,309E -03 | 2,646E -03 | 1,528E -03 | 2,646E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,360E -01 |
| 5          | 2,390E -01 |
| 6          | 2,420E -01 |
| 7          | 2,430E -01 |
| Statistics |            |
| Min        | 2,390E -01 |
| Max        | 2,430E -01 |
| Mean       | 2,413E -01 |
| Sigma      | 2,082E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 14: VOL11**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

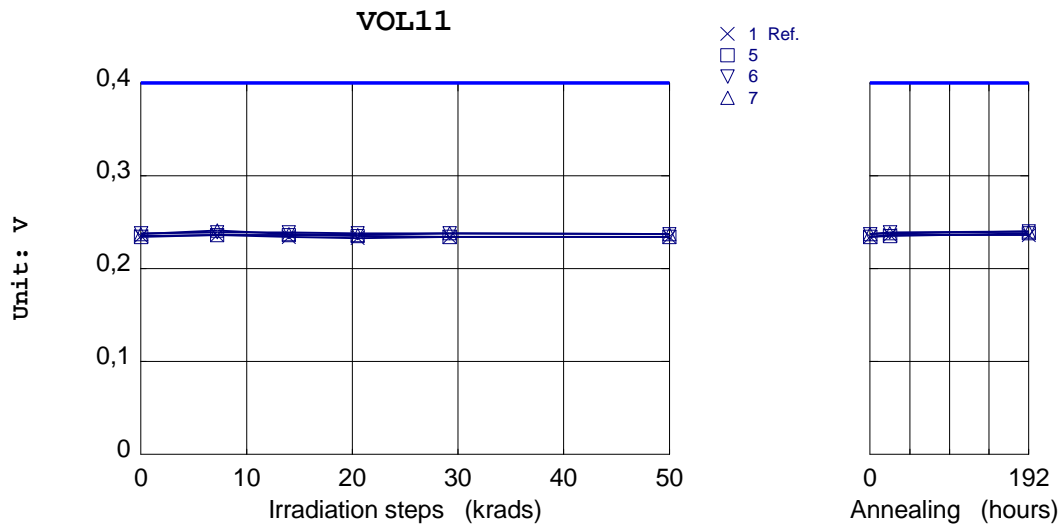
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,350E -01 | 2,360E -01 | 2,340E -01 | 2,330E -01 | 2,340E -01 | 2,340E -01 | 2,360E -01 |
| 5          | 2,340E -01 | 2,360E -01 | 2,360E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,350E -01 |
| 6          | 2,380E -01 | 2,390E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,370E -01 | 2,390E -01 |
| 7          | 2,370E -01 | 2,410E -01 | 2,370E -01 | 2,360E -01 | 2,380E -01 | 2,370E -01 | 2,380E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,340E -01 | 2,360E -01 | 2,360E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,350E -01 |
| Max        | 2,380E -01 | 2,410E -01 | 2,390E -01 | 2,380E -01 | 2,380E -01 | 2,370E -01 | 2,390E -01 |
| Mean       | 2,363E -01 | 2,387E -01 | 2,373E -01 | 2,363E -01 | 2,367E -01 | 2,360E -01 | 2,373E -01 |
| Sigma      | 2,082E -03 | 2,517E -03 | 1,528E -03 | 1,528E -03 | 2,309E -03 | 1,732E -03 | 2,082E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,360E -01 |
| 5          | 2,380E -01 |
| 6          | 2,400E -01 |
| 7          | 2,400E -01 |
| Statistics |            |
| Min        | 2,380E -01 |
| Max        | 2,400E -01 |
| Mean       | 2,393E -01 |
| Sigma      | 1,155E -03 |



|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 15: VOL12  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

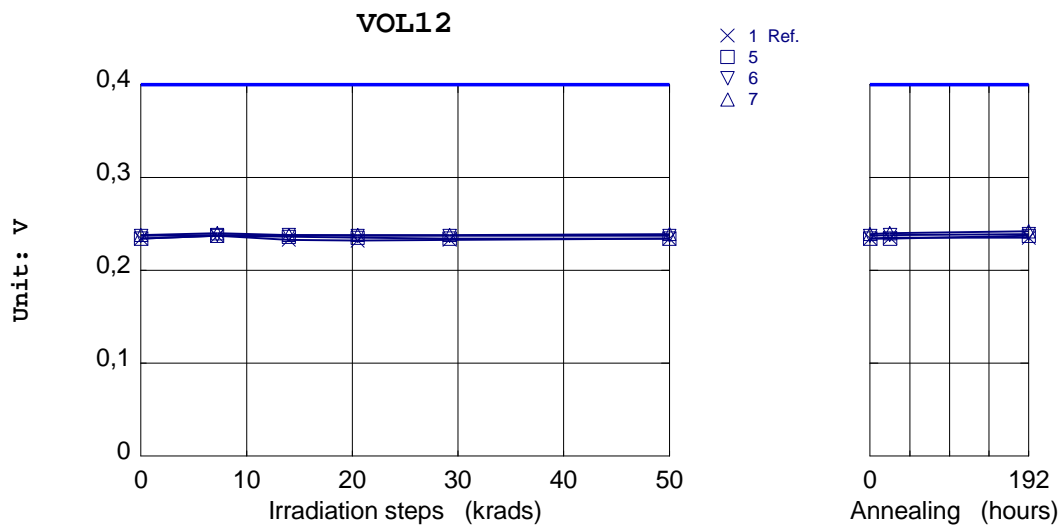
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,340E -01 | 2,370E -01 | 2,330E -01 | 2,320E -01 | 2,330E -01 | 2,340E -01 | 2,350E -01 |
| 5          | 2,340E -01 | 2,370E -01 | 2,360E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,340E -01 |
| 6          | 2,370E -01 | 2,380E -01 | 2,380E -01 | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,380E -01 |
| 7          | 2,380E -01 | 2,400E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 | 2,400E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,340E -01 | 2,370E -01 | 2,360E -01 | 2,350E -01 | 2,340E -01 | 2,340E -01 | 2,340E -01 |
| Max        | 2,380E -01 | 2,400E -01 | 2,380E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 | 2,400E -01 |
| Mean       | 2,363E -01 | 2,383E -01 | 2,373E -01 | 2,367E -01 | 2,363E -01 | 2,367E -01 | 2,373E -01 |
| Sigma      | 2,082E -03 | 1,528E -03 | 1,155E -03 | 1,528E -03 | 2,082E -03 | 2,517E -03 | 3,055E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,350E -01 |
| 5          | 2,370E -01 |
| 6          | 2,390E -01 |
| 7          | 2,420E -01 |
| Statistics |            |
| Min        | 2,370E -01 |
| Max        | 2,420E -01 |
| Mean       | 2,393E -01 |
| Sigma      | 2,517E -03 |





|                   |                        |                |                |                    |
|-------------------|------------------------|----------------|----------------|--------------------|
| HIREX Engineering | Total Dose Test Report |                |                | Réf. : HRX/99.5071 |
|                   |                        |                |                | Issue : 01         |
| Part Type :       | AD9243                 | Manufacturer : | Analog Devices |                    |

Parameter: Low Level Output Voltage Pin 16: VOL13  
AVDD=+5V; DVDD=+5V; IOL=1.6mA

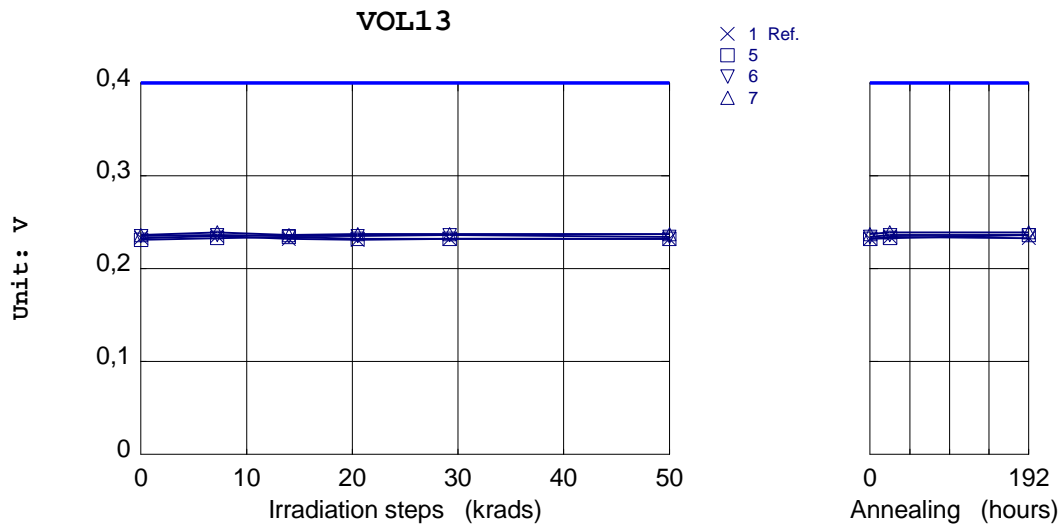
Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,330E -01 | 2,350E -01 | 2,320E -01 | 2,310E -01 | 2,320E -01 | 2,320E -01 | 2,340E -01 |
| 5          | 2,310E -01 | 2,330E -01 | 2,340E -01 | 2,320E -01 | 2,320E -01 | 2,320E -01 | 2,330E -01 |
| 6          | 2,350E -01 | 2,360E -01 | 2,350E -01 | 2,350E -01 | 2,360E -01 | 2,340E -01 | 2,360E -01 |
| 7          | 2,360E -01 | 2,390E -01 | 2,360E -01 | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,390E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,310E -01 | 2,330E -01 | 2,340E -01 | 2,320E -01 | 2,320E -01 | 2,320E -01 | 2,330E -01 |
| Max        | 2,360E -01 | 2,390E -01 | 2,360E -01 | 2,370E -01 | 2,370E -01 | 2,370E -01 | 2,390E -01 |
| Mean       | 2,340E -01 | 2,360E -01 | 2,350E -01 | 2,347E -01 | 2,350E -01 | 2,343E -01 | 2,360E -01 |
| Sigma      | 2,646E -03 | 3,000E -03 | 1,000E -03 | 2,517E -03 | 2,646E -03 | 2,517E -03 | 3,000E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,330E -01 |
| 5          | 2,360E -01 |
| 6          | 2,360E -01 |
| 7          | 2,390E -01 |
| Statistics |            |
| Min        | 2,360E -01 |
| Max        | 2,390E -01 |
| Mean       | 2,370E -01 |
| Sigma      | 1,732E -03 |



|                          |                               |                |                |                                  |
|--------------------------|-------------------------------|----------------|----------------|----------------------------------|
| <b>HIREX Engineering</b> | <b>Total Dose Test Report</b> |                |                | Réf. : HRX/99.5071<br>Issue : 01 |
| Part Type :              | AD9243                        | Manufacturer : | Analog Devices |                                  |

**Parameter: Low Level Output Voltage Pin 17: VOL14**  
**AVDD=+5V; DVDD=+5V; IOL=1.6mA**

Unit= V

Spec limit max: 0.4

Spec limits are represented in bold lines on the graphic.

| Test Step  | Initial    | 7,2 krad   | 14 krad    | 20,5 krad  | 29,2 krad  | 50 krad    | 24 hours   |
|------------|------------|------------|------------|------------|------------|------------|------------|
| Serial #   |            |            |            |            |            |            |            |
| 1 Ref.     | 2,350E -01 | 2,370E -01 | 2,340E -01 | 2,340E -01 | 2,340E -01 | 2,350E -01 | 2,360E -01 |
| 5          | 2,340E -01 | 2,360E -01 | 2,360E -01 | 2,340E -01 | 2,330E -01 | 2,350E -01 | 2,350E -01 |
| 6          | 2,370E -01 | 2,380E -01 | 2,380E -01 | 2,360E -01 | 2,370E -01 | 2,360E -01 | 2,380E -01 |
| 7          | 2,390E -01 | 2,410E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 | 2,380E -01 | 2,400E -01 |
| Statistics |            |            |            |            |            |            |            |
| Min        | 2,340E -01 | 2,360E -01 | 2,360E -01 | 2,340E -01 | 2,330E -01 | 2,350E -01 | 2,350E -01 |
| Max        | 2,390E -01 | 2,410E -01 | 2,380E -01 | 2,380E -01 | 2,390E -01 | 2,380E -01 | 2,400E -01 |
| Mean       | 2,367E -01 | 2,383E -01 | 2,373E -01 | 2,360E -01 | 2,363E -01 | 2,363E -01 | 2,377E -01 |
| Sigma      | 2,517E -03 | 2,517E -03 | 1,155E -03 | 2,000E -03 | 3,055E -03 | 1,528E -03 | 2,517E -03 |

| Test Step  | 192 hours  |
|------------|------------|
| Serial #   |            |
| 1 Ref.     | 2,350E -01 |
| 5          | 2,380E -01 |
| 6          | 2,390E -01 |
| 7          | 2,420E -01 |
| Statistics |            |
| Min        | 2,380E -01 |
| Max        | 2,420E -01 |
| Mean       | 2,397E -01 |
| Sigma      | 2,082E -03 |

