1. INTRODUCTION

This document reports on the CCD detector performance of the STA0510A CCD installed in the BCSpec dewar for the Bok B&C Spectrograph. Installation occurred during downtime Aug, 2011. This CCD replaces the older CCD named "ccd21".

Identification		
Customer		Steward Observatory
Project		Mountains
Device	ITL SN	SN5812
	Type	STA0510A
	Lot	109468
	Wafer	11
	Die	2
Date		11Aug11
Author		M. Lesser
Operating Conditions		
Test System		BCSpec dewar tested on QuantumBench at ITL
Temperature		-120 C
Parameters		
Format		1200 columns and 800 rows. 20 overscan columns are read at the end of each line.
System gain		1.5 electrons/DN
Read noise		2.7 e^- in overscan, about 3 e^- in image area

2. PHOTON TRANSFER

Full well is limited by the 16-bit ADC. We recommend keeping counts at 60,000 DN or less which is an effective full well of 90,000 electrons. Below are unbinned and 1x2 photon transfer curves.

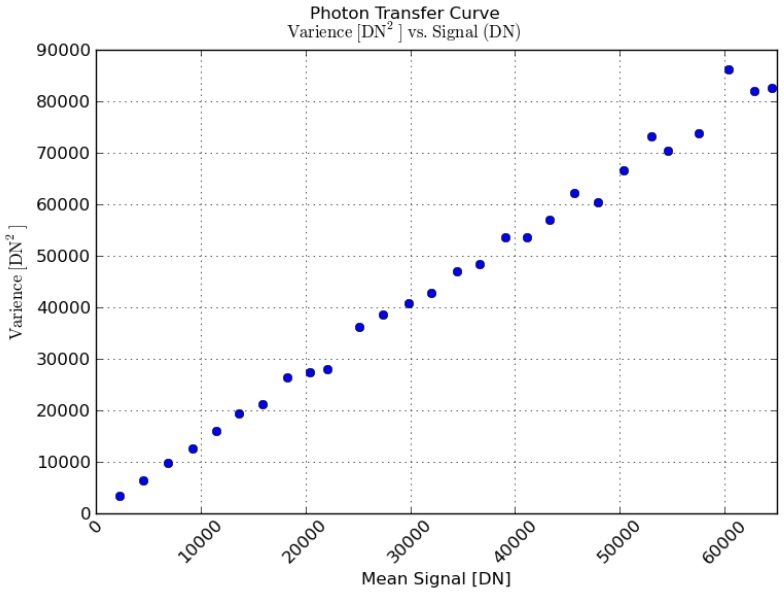

Figure 1. Photon Transfer Curve unbinned.

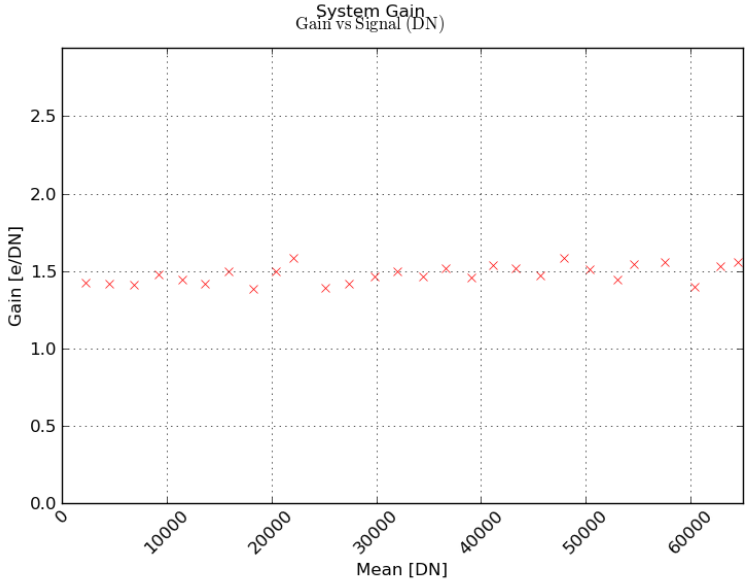

Figure 2. System gain unbinned.

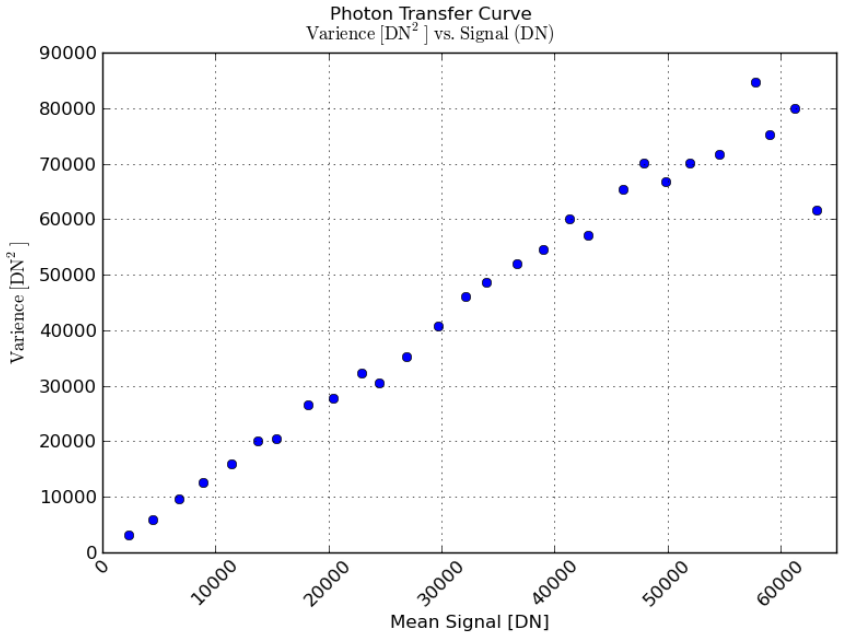

Figure 3. Photon Transfer Curve binned 1x2.

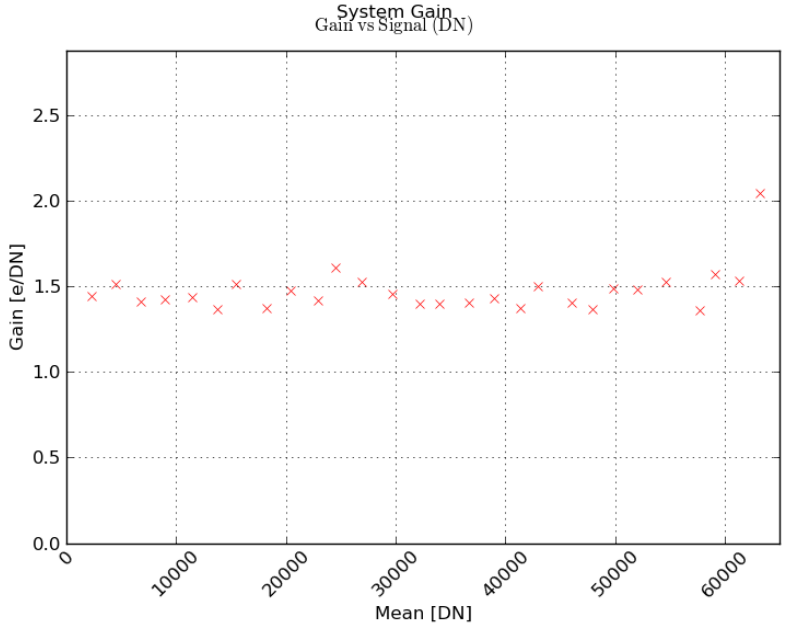

Figure 4. System gain binned 1x2.

3. DARK CURRENT

Dark current is 5.4 e/pixel/hour. These is no noticeable dark current structure.

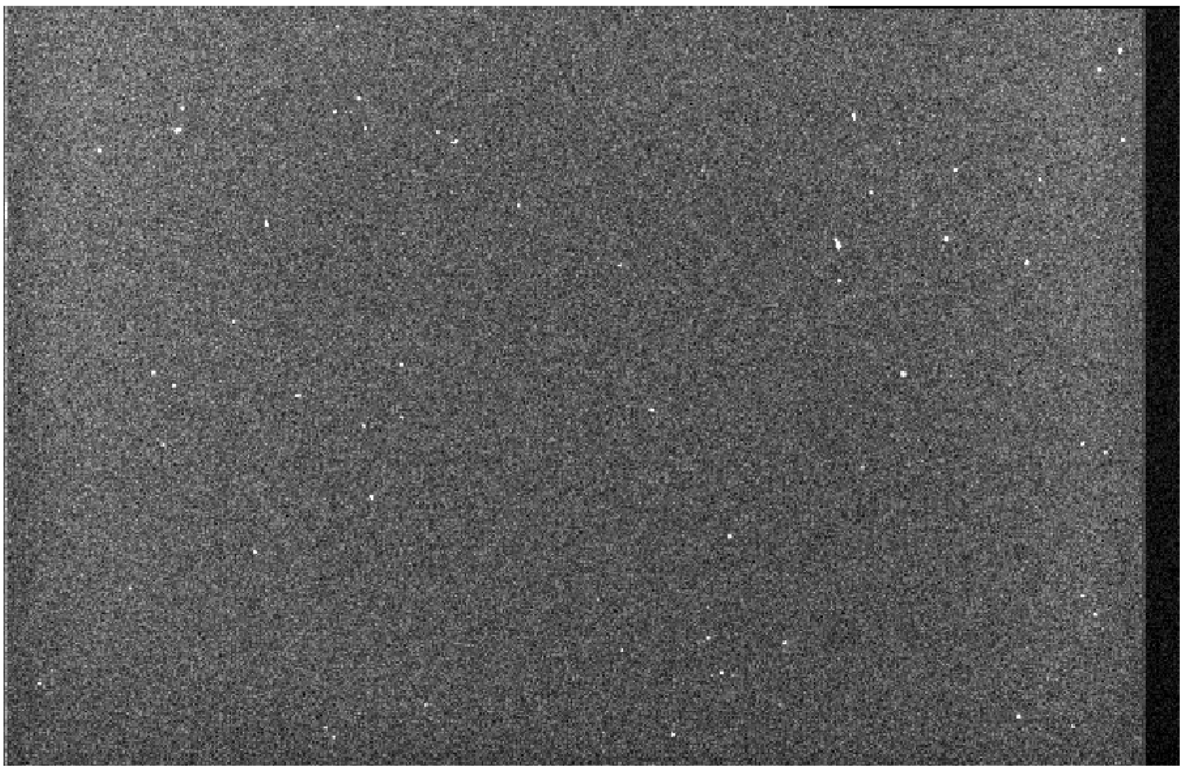

Figure 5. 15 minute dark exposure.

4. LINEARITY

Linearity is normal, no issues have been found.

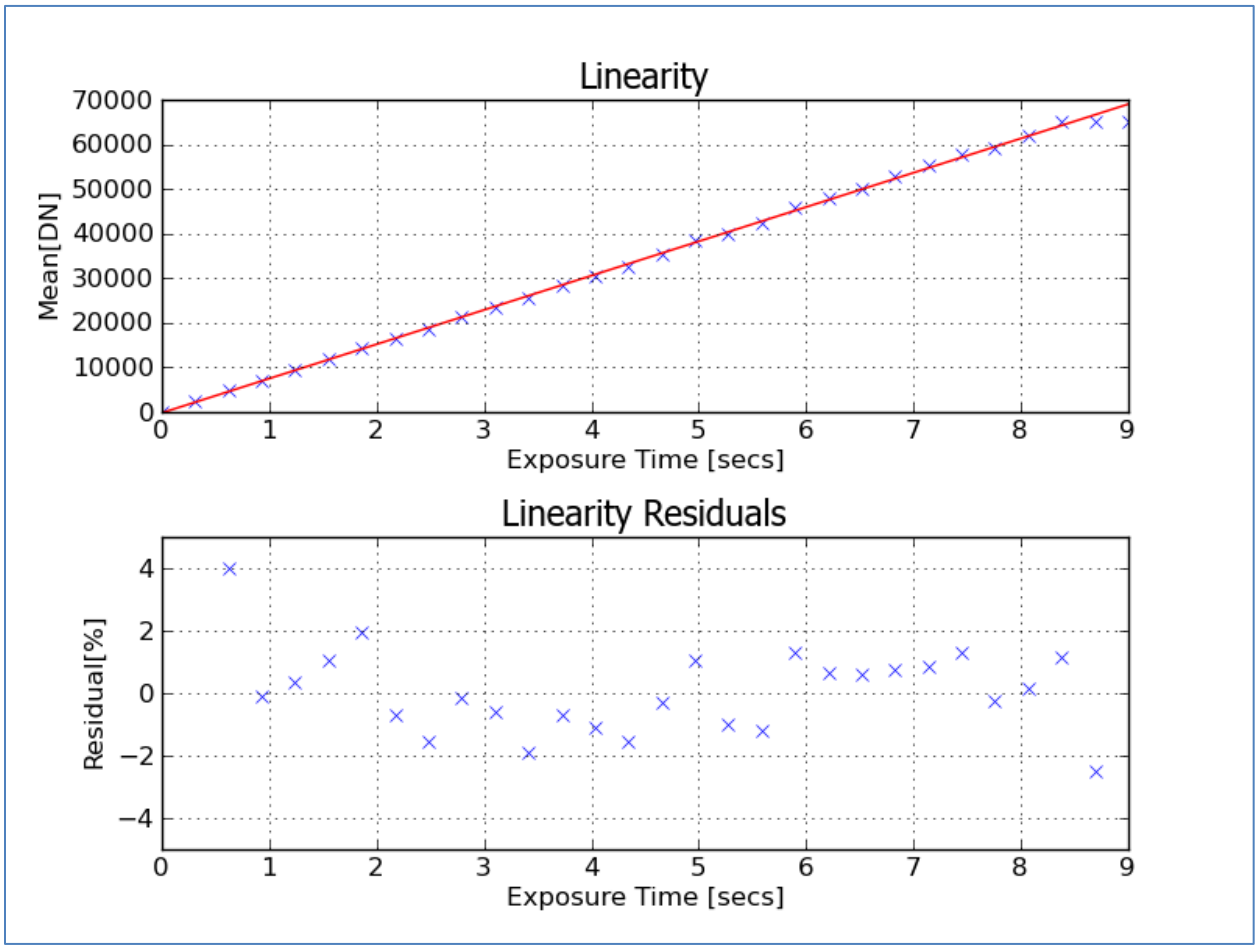

Figure 6. Linearity data.

5. COSMETICS

Flat field images are excellent. There are no bad columns.

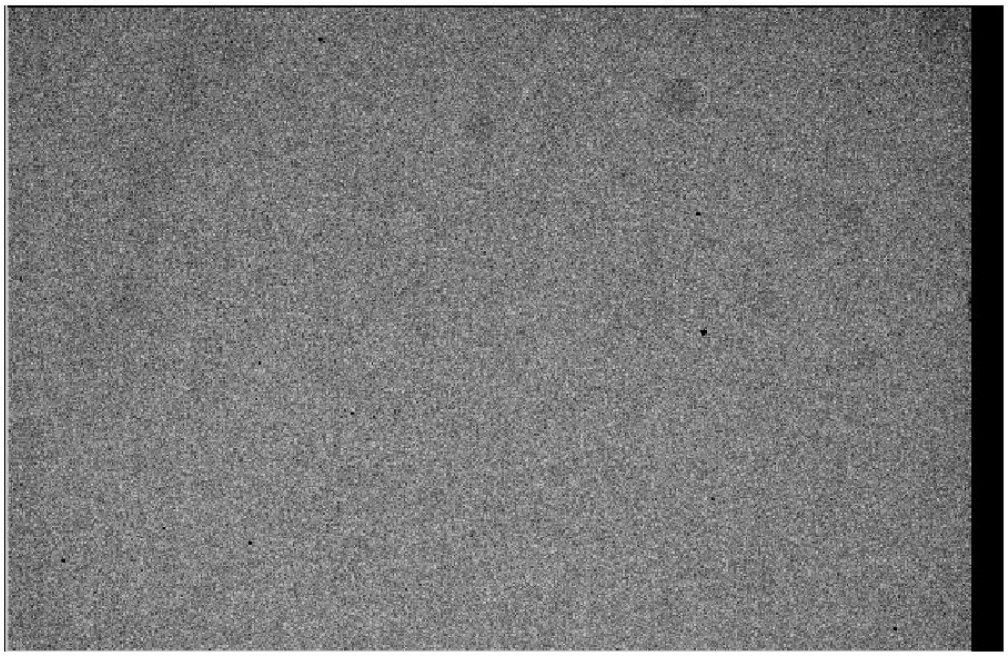

Figure 7. 400 nm flat.

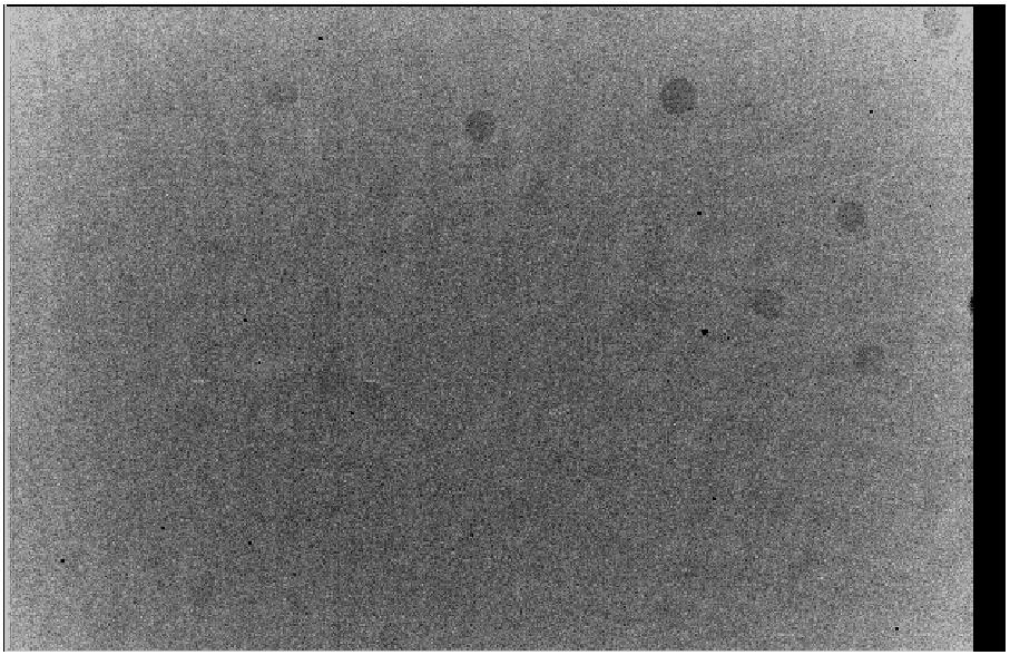

Figure 8. 600 nm flat. Window defects/dirt specks are visible as round spots.

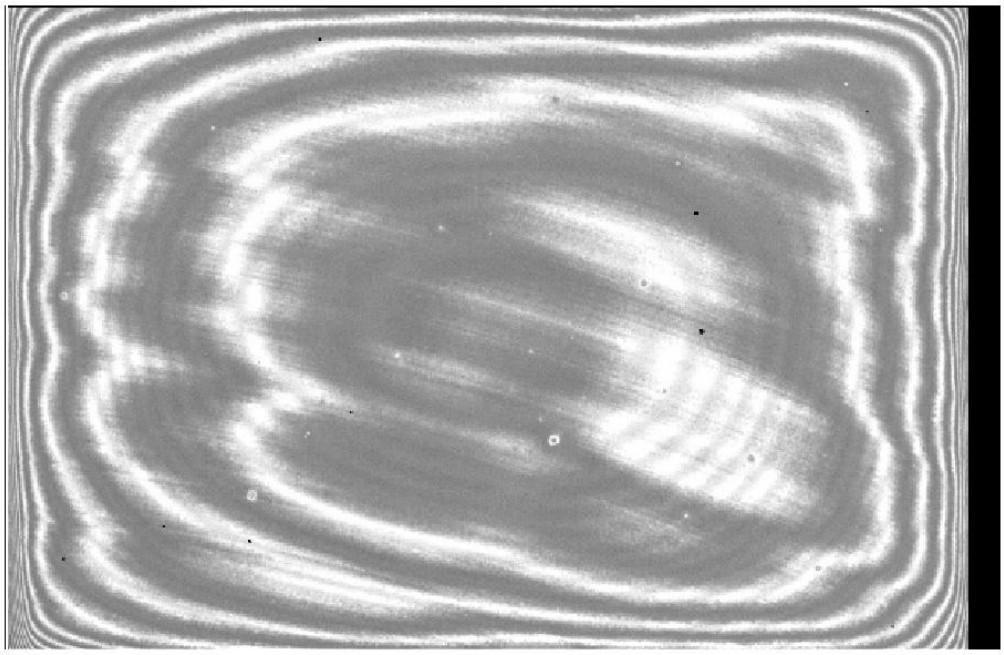

Figure 9. 900 nm flat showing interference fringing.

6. QUANTUM EFFICIENCY

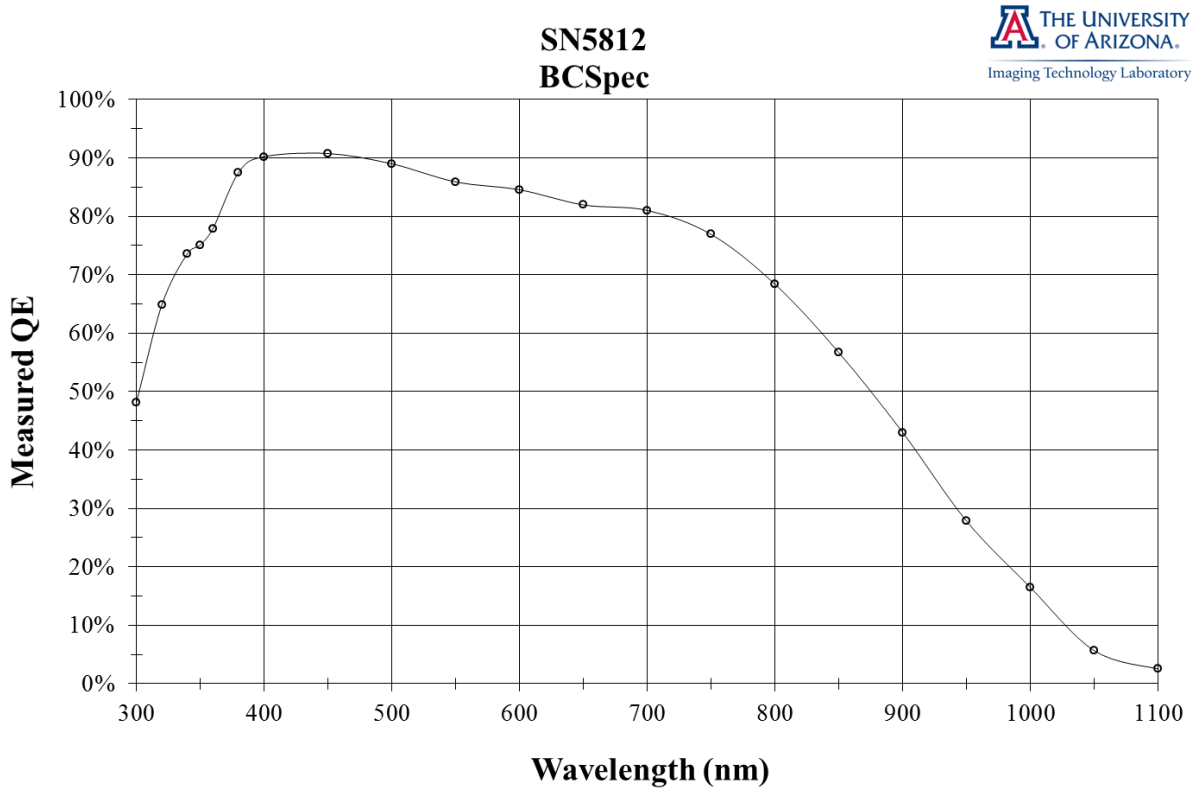

Figure 10. Quantum Efficiency.

7. CHARGE TRANSFER EFFICIENCY

Both horizontal and vertical CTE is 0.999995. The Fe-55 X-ray CTE data was taken in a different dewar than the other data in this report.

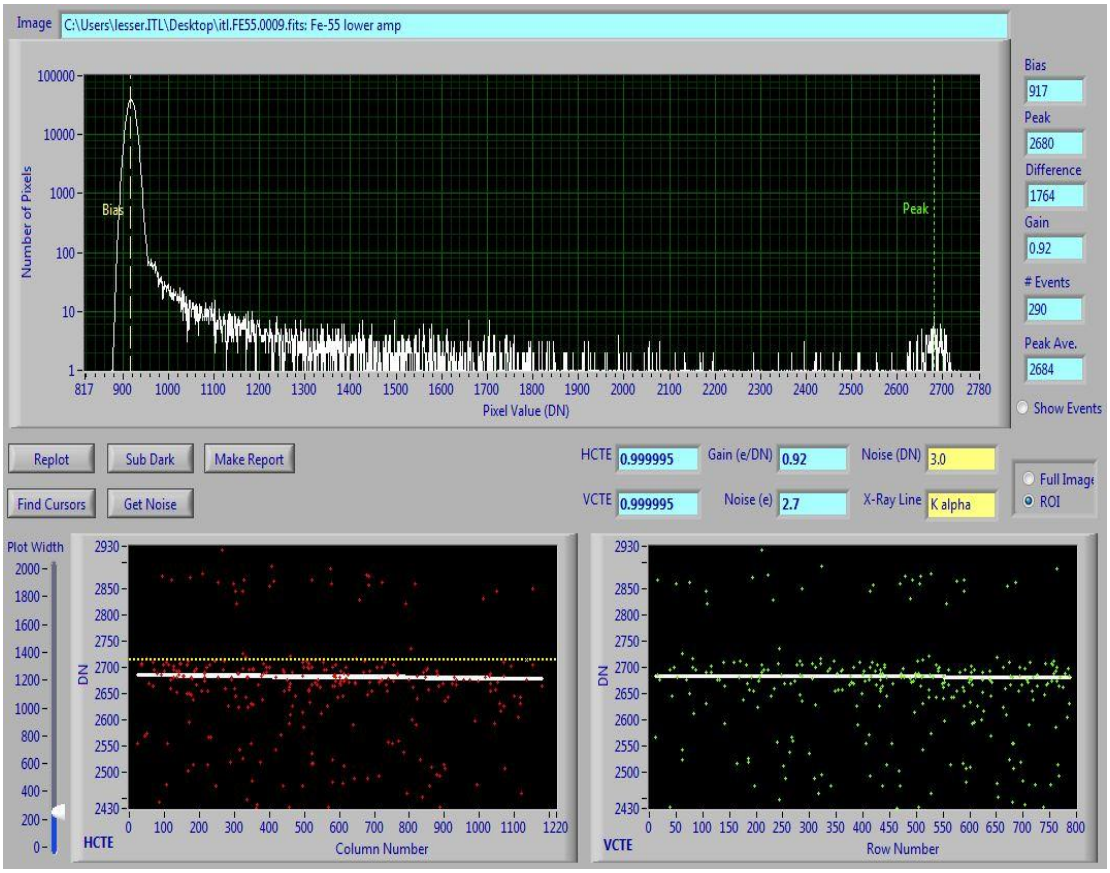

Figure 11. Fe-55 X-ray histogram.