1. INTRODUCTION

This report contains a summary of the characterization data from the ZWO ASI2600MM-Pro CMOS camera provided by Ewan Douglas.

The sensor is a SONY IMX571CMOS imager with 6248 x 4176 3.76 micron pixels. It was tested in unbinned mode. The image area is 23.5 x 15.7 mm.

The attached report has been generated from the *azcam* software package. A few highlights are included in the following sections. It is reasonable to say that we verify the specified datasheet performance is very close to what is measured. Overall the sensor and camera are excellent.

2. DARK SIGNAL

The measured dark signal @ -9.6 C is 0.00054 e/pix/sec (<2 e/pix/hr).

A median combined 600 second dark image is shown in Figure 1. No structure is visible.

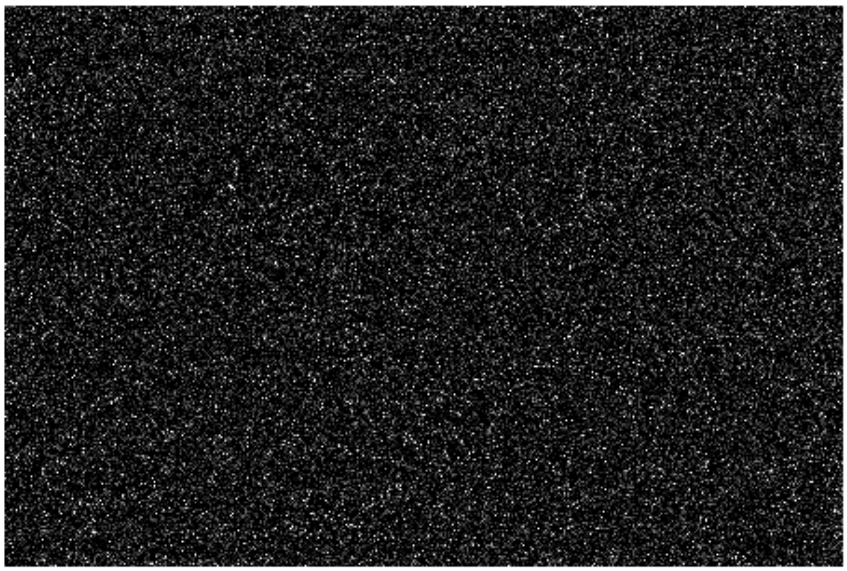

Figure 1. Median combined dark image (600 secs)

3. READ NOISE

The measured read noise of the camera varies with internal operating mode. The lowest value measured is about 1.4 electrons. This is achieved using high gain such as 0.20 e/DN. The noise jumps to about 3.5 electrons with a gain of 0.32 and higher.

- camera.Offset = 10
- camera.Gain = 120 # 0.20 e/DN, **1.4** e noise
- camera.Gain = 100 # 0.25 e/DN, **1.6** e noise
- camera.Gain = 80 # 0.32 e/DN, **3.6** e noise
- camera.Gain = 60 # 0.40 e/DN, **3.5** e noise
- camera.Gain = 20 # 0.60 e/DN, **3.5** e noise

4. QUANTUM EFFICIENCY

The sensor is back illuminated and optimized for blue light imaging. The measured QE is shown in Figure 2.

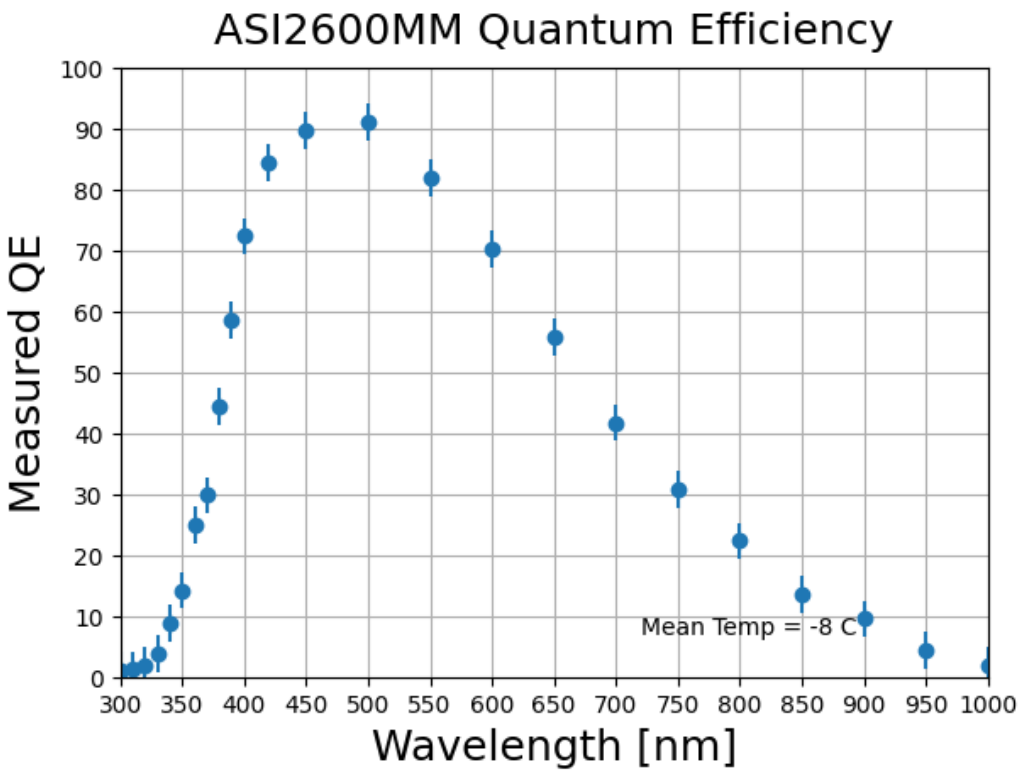

Figure 2. Measures camera quantum efficiency uncorrected for camera window transmission. Absolute calibration may be off due to exact sensor placement.

Table 1. Measured camera quantum efficiency.

5. PRNU

The PRNU of the sensor is excellent. Note the attached report calculates PRNU as standard deviation divided by average signal for a single image. This means the PRNU of a perfect sensor is $1/\sqrt{N}$ or typically a few percent.

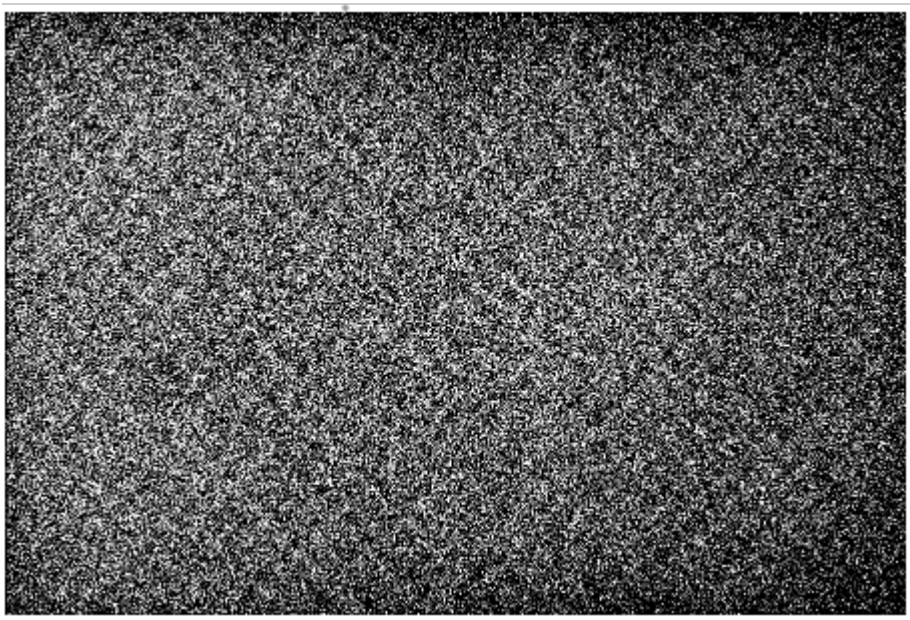

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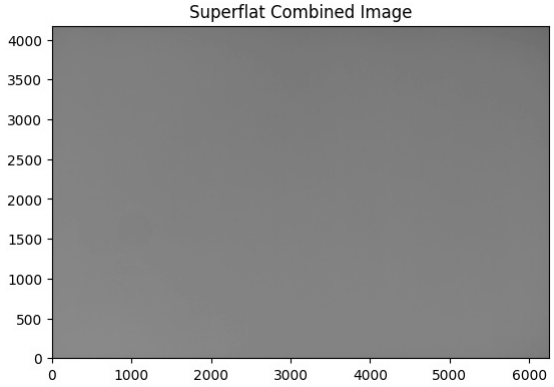
Figure 3. Median combined flat field image at 320 nm.

ITL Detector Characterization Report

Identification	
Customer	UArizona
ITL System	ZWO ASI2600MM
ITL ID	ASI2600MM-Pro
Type	ASI2600MM-Pro
Report Date	Oct-29-2022
Author	Michael Lesser
System	ZWO ASI2600MM
Comment	ASI2600MM-Pro



Superflat Image.

Gain Analysis

Read Noise in electrons IS NOT system noise corrected

Channel	Gain [e/DN]	Noise [e]	Sens. [uV/e]	Bias[DN]
00	0.25	1.6	0.00	101.4

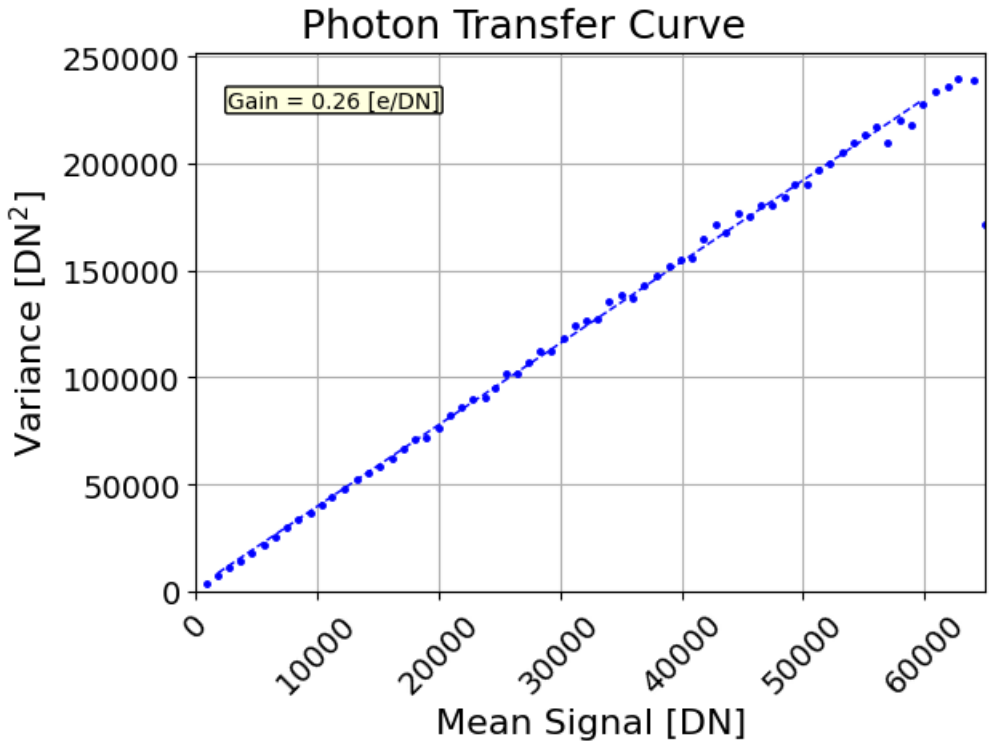
PRNU Analysis

PRNU grade = FAIL

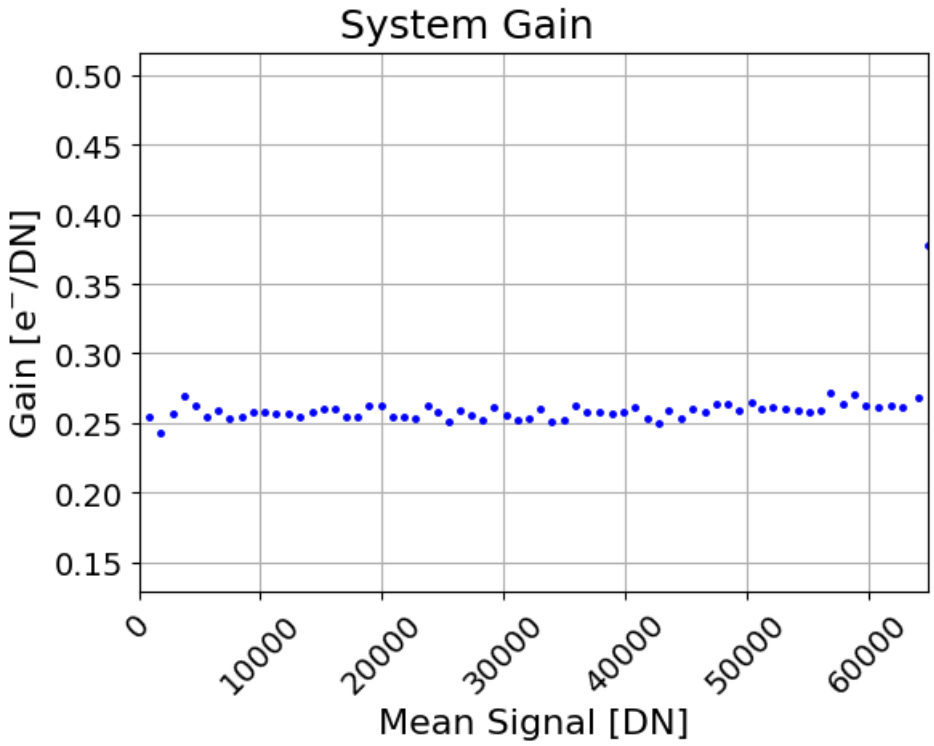
PRNU spec= 10.0%

Wavelength	PRNU [%]
0300	13.0
0310	11.9
0320	9.2
0330	6.2
0340	4.0
0350	4.4
0360	3.5
0370	4.3
0380	3.3
0390	4.2
0400	3.9
0420	3.6
0450	3.2
0500	3.4
0550	3.7
0600	2.6
0650	3.5
0700	2.9
0750	2.9
0800	3.4
0850	4.4
0900	3.0
0950	7.1
1000	6.7

PTC Analysis



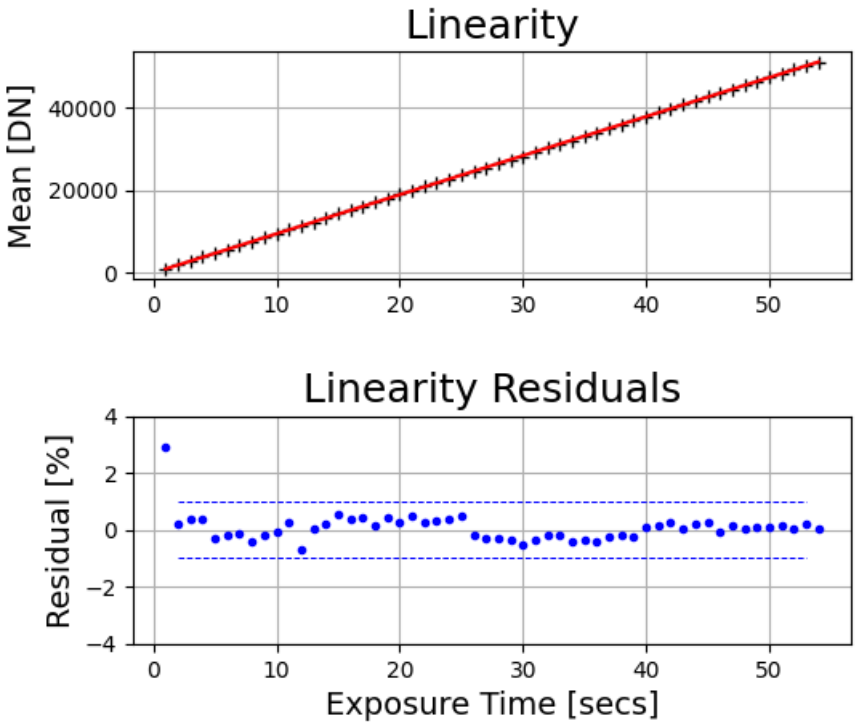
Photon Transfer Curve.



Photon Transfer Gain Plot.

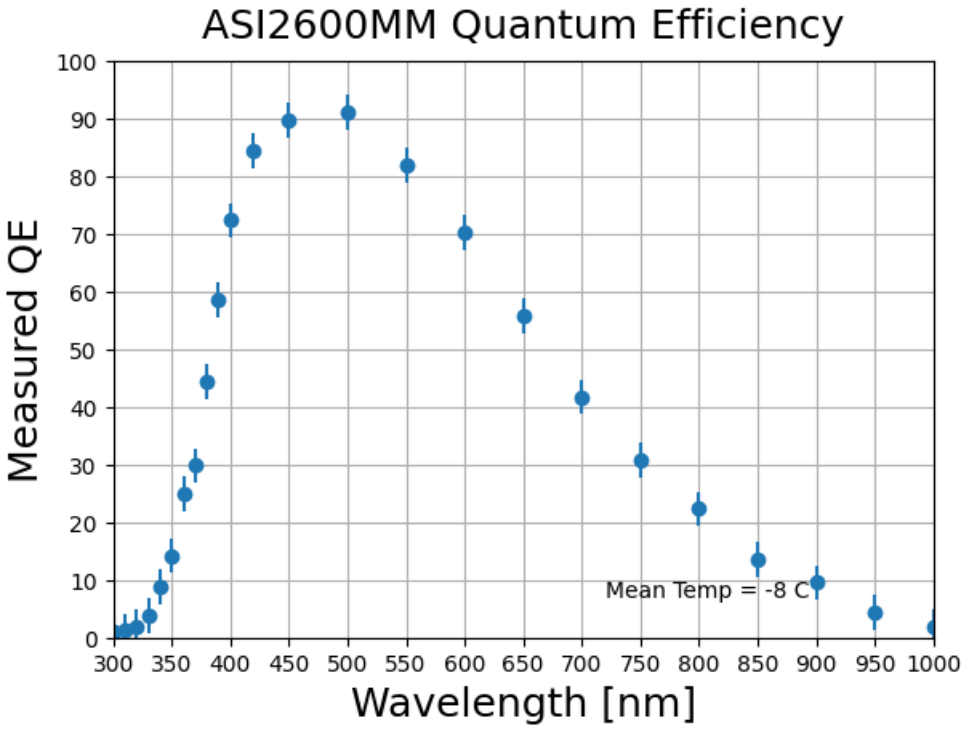
Linearity Analysis

Linearity grade = PASS
Max residual value [%]: 0.7
Max allowed residual [%]: 1.0
Minimum fit limit [DN]: 1000.0
Maximum fit limit [DN]: 50000.0



Linearity and residuals Plot.

Quantum Efficiency Analysis

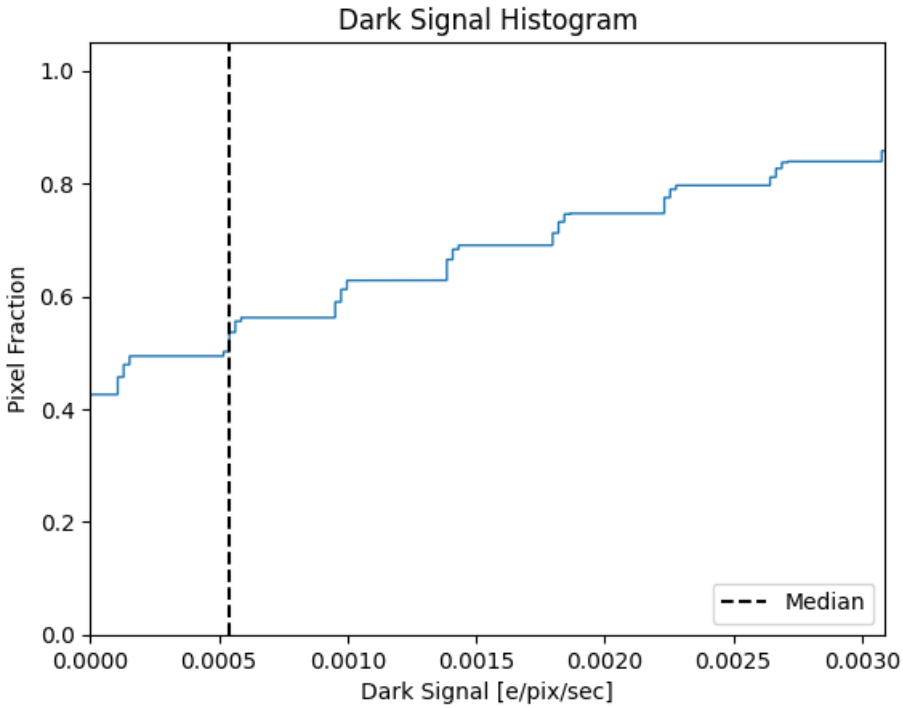


Wavelength	QE	QE Spec.	Grade
300	0.011		
310	0.012		
320	0.018		
330	0.039		
340	0.088		
350	0.142		
360	0.248		
370	0.298		
380	0.444		
390	0.585		
400	0.723		
420	0.844		
450	0.897		
500	0.910		
550	0.818		
600	0.702		

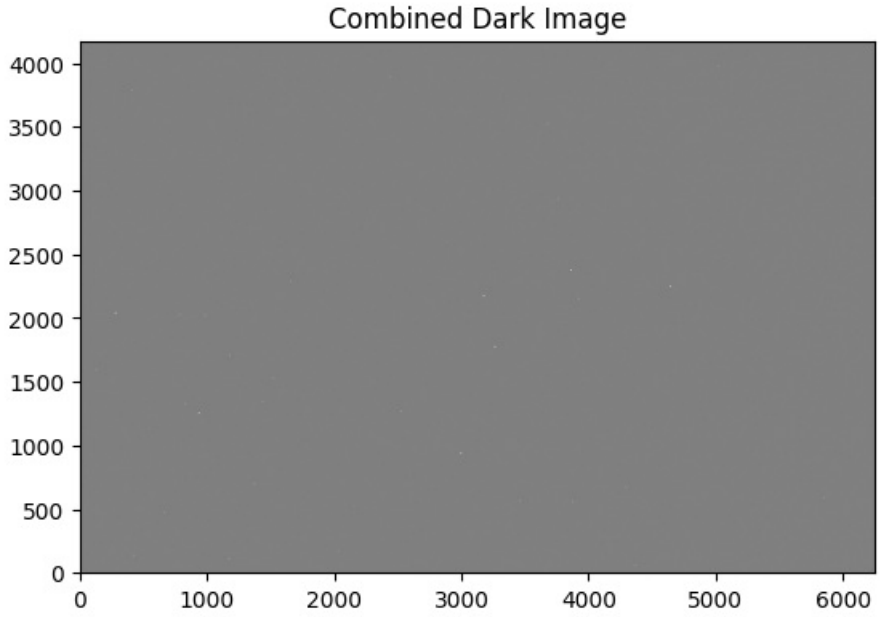
Wavelength	QE	QE Spec.	Grade
650	0.557		
700	0.417		
750	0.307		
800	0.223		
850	0.136		
900	0.095		
950	0.044		
1000	0.019		

Dark Signal Analysis

Median dark signal is 0.00054 e/pix/sec



Cumulative Dark Signal Histogram.



Dark Image.