IMAGING PERFORMANCE SPECIFICATION

FLIR GRASSHOPPER®3

GigE Vision

GiGE VISION

POE ENABLED

Version 3.1

Revised 1/27/2017

FLIR® The World's Sixth Sense®

FCC Compliance

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation.

Korean EMC Certification

The KCC symbol indicates that this product complies with Korea's Electrical Communication Basic Law regarding EMC testing for electromagnetic interference (EMI) and susceptibility (EMS).

Hardware Warranty

The warranty for the Grasshopper3 PGE camera is 3 years. For detailed information on how to repair or replace your camera, please see the terms and conditions on our website.

WEEE

The symbol indicates that this product may not be treated as household waste. Please ensure this product is properly disposed as inappropriate waste handling of this product may cause potential hazards to the environment and human health. For more detailed information about recycling of this product, please contact us.

Trademarks

Names and marks appearing on the products herein are either registered trademarks or trademarks of FLIR Systems, Inc. and/or its subsidiaries.

Licensing

To view the licenses of open source packages used in this product please see What open source packages does firmware use?

1 Specifications

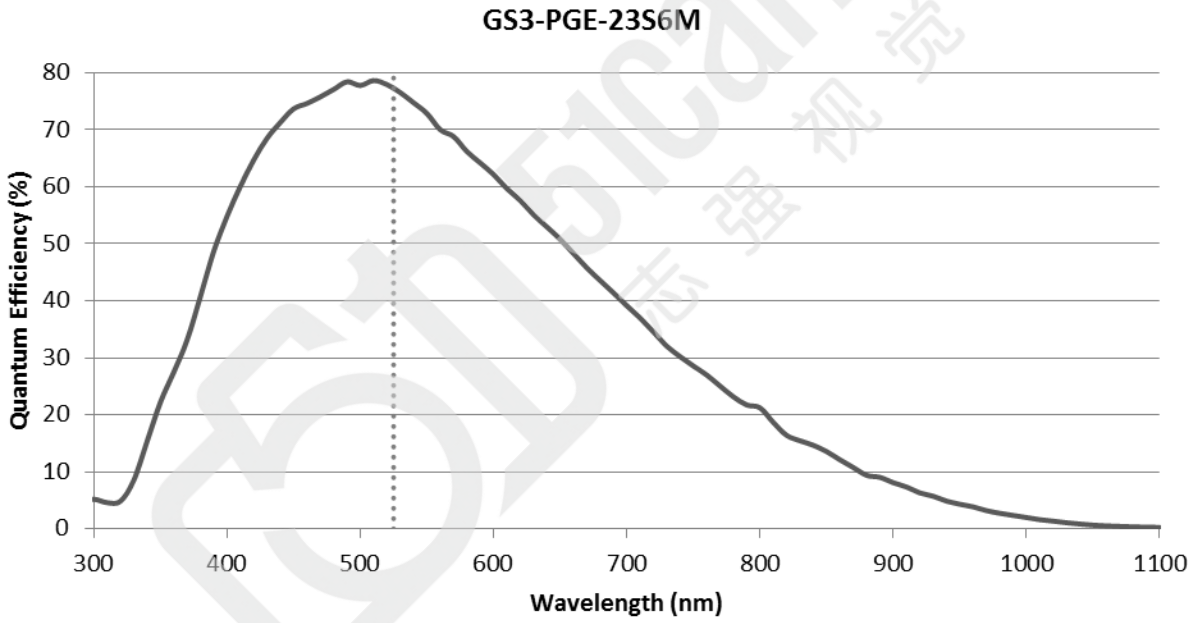
Model	Sensor	Maximum Resolution	Pixel Size	Firmware	Results
GS3-PGE-23S6M-C	Sony IMX174, 1/1.2", Mono	1920 x 1200	5.86 µm	1.3.3.0	page 2
GS3-PGE-23S6C-C	Sony IMX174, 1/1.2", Color	1920 x 1200	5.86 µm	1.3.3.0	page 3
GS3-PGE-50S5M-C	Sony ICX625, 2/3", Mono	2448 x 2048	3.45 µm	1.6.3.0	page 4
GS3-PGE-50S5C-C	Sony ICX625, 2/3", Color	2448 x 2048	3.45 µm	1.6.3.0	page 5
GS3-PGE-60S6M-C	Sony ICX694, 1", Mono	2736 x 2192	4.54 µm	1.5.3.0	page 6
GS3-PGE-60S6C-C	Sony ICX694, 1", Color	2736 x 2192	4.54 µm	1.5.3.0	page 7
GS3-PGE-91S6M-C	Sony ICX814, 1", Mono	3376 x 2704	3.69 µm	1.6.3.0	page 8
GS3-PGE-91S6C-C	Sony ICX814, 1", Color	3376 x 2704	3.69 µm	1.6.3.0	page 9

1288 EMVA Standard Compliant

Measurements are taken based on guidelines in the EMVA 1288 standard; the full definition can be found at EMVA.org. Camera settings are at maximum bit depth unless otherwise noted. Temporal Dark Noise is measured at minimum exposure time. The center wavelength is 525 nm unless otherwise noted. The pixel format is Raw 16 or Mono 16 for mono cameras and Raw 16 for color cameras. Results are captured at room temperature (20°C).

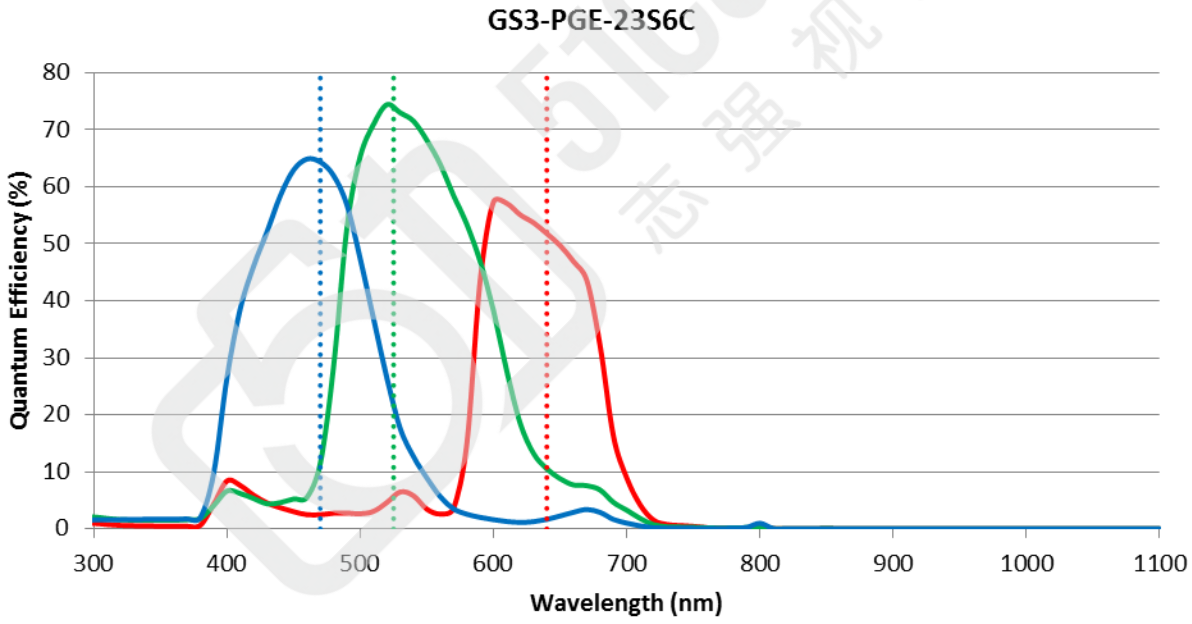
2 GS3-PGE-23S6M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	37.13	37.13
ADC (Bits)	10-bit	12-bit
Quantum Efficiency (% at 525 nm)	77	77
Temporal Dark Noise (Read Noise) (e-)	14.74	6.83
Signal to Noise Ratio Maximum (dB)	45.12	45.14
Signal to Noise Ratio Maximum (Bits)	7.49	7.50
Absolute Sensitivity Threshold (γ)	20.42	9.75
Saturation Capacity (Well Depth) (e-)	32488	32691
Dynamic Range (dB)	66.57	72.99
Dynamic Range (Bits)	11.06	12.12
Gain (e-/ADU)	0.51	0.51



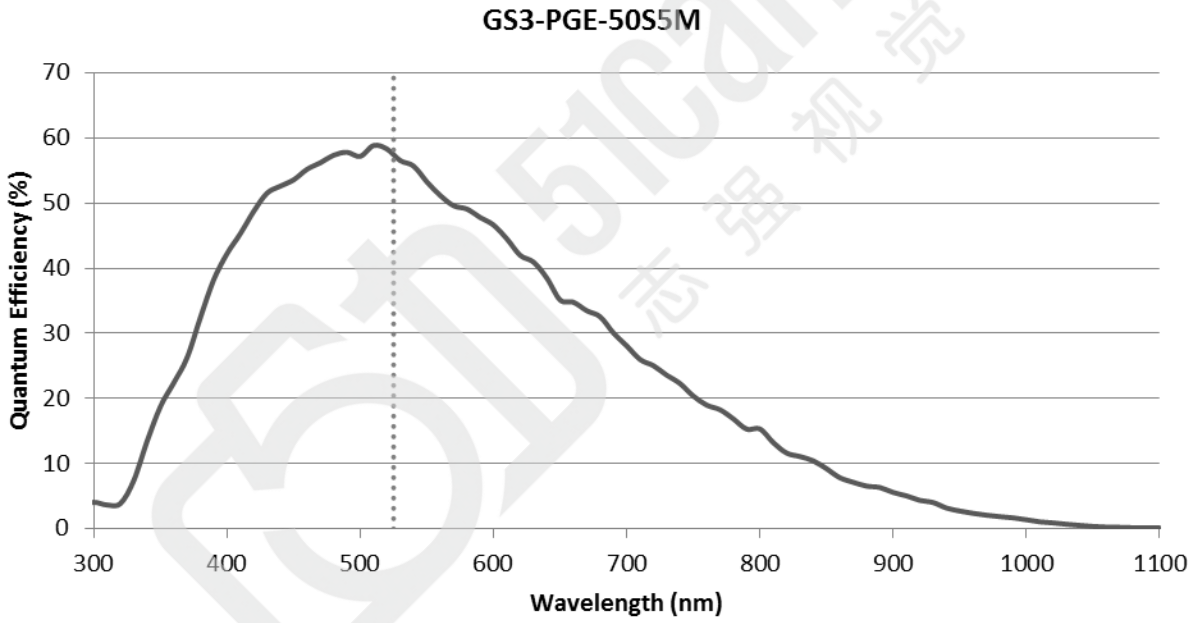
3 GS3-PGE-23S6C-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	37.13	37.13
ADC (Bits)	10-bit	12-bit
Quantum Efficiency Blue (% at 470 nm)	64	64
Quantum Efficiency Green (% at 525 nm)	73	73
Quantum Efficiency Red (% at 640 nm)	51	51
Temporal Dark Noise (Read Noise) (e-)	13.03	6.77
Signal to Noise Ratio Maximum (dB)	45.09	45.12
Signal to Noise Ratio Maximum (Bits)	7.49	7.49
Absolute Sensitivity Threshold (γ)	19.54	10.45
Saturation Capacity (Well Depth) (e-)	32267	32530
Dynamic Range (dB)	67.55	73.01
Dynamic Range (Bits)	11.22	12.13
Gain (e-/ADU)	0.51	0.51



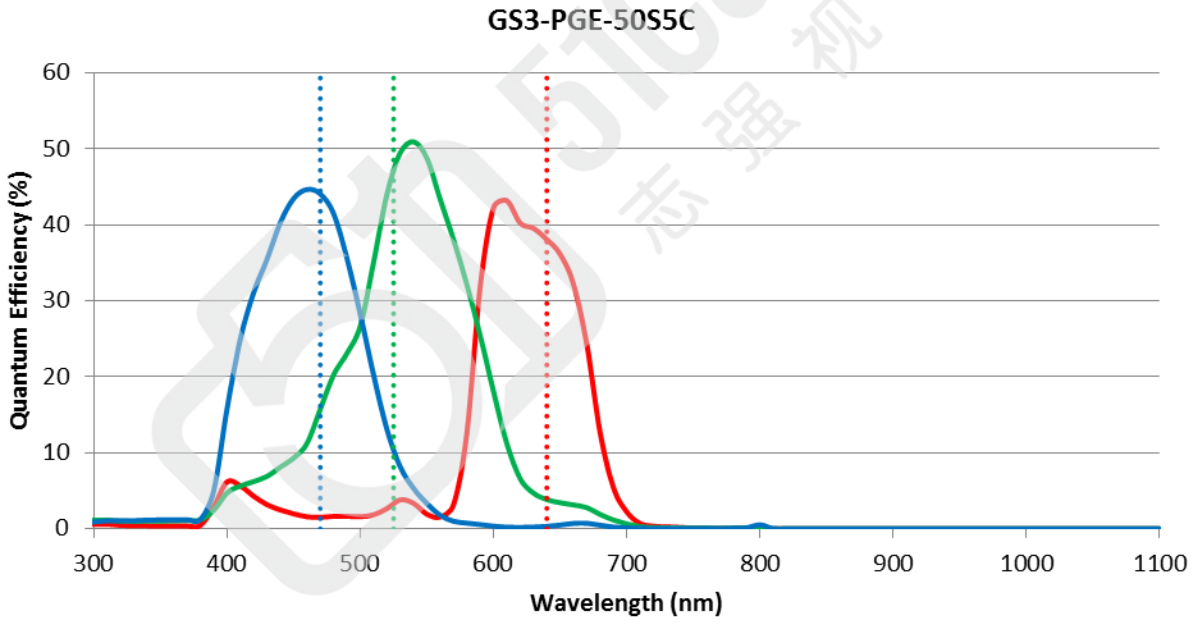
4 GS3-PGE-50S5M-C Imaging Performance

Measurement	Video Mode 0
Pixel Clock (MHz)	60
ADC (Bits)	14-bit
Quantum Efficiency (% at 525 nm)	57
Temporal Dark Noise (Read Noise) (e-)	8.18
Signal to Noise Ratio Maximum (dB)	37.71
Signal to Noise Ratio Maximum (Bits)	6.26
Absolute Sensitivity Threshold (γ)	15.69
Saturation Capacity (Well Depth) (e-)	5903
Dynamic Range (dB)	56.66
Dynamic Range (Bits)	9.41
Gain (e-/ADU)	0.10



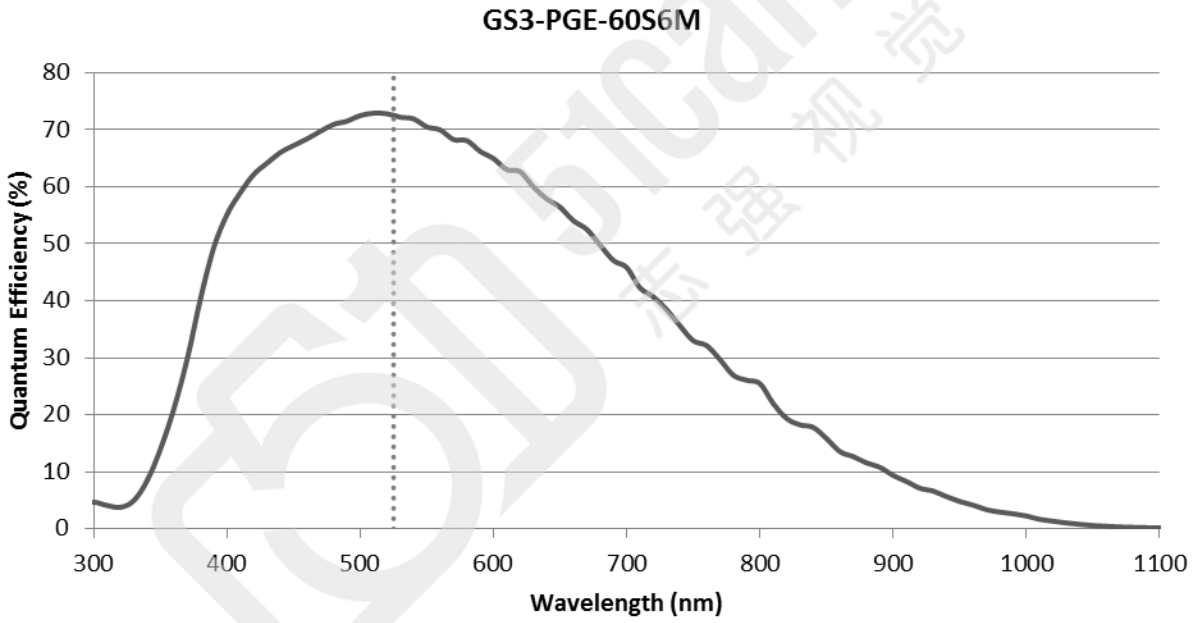
5 GS3-PGE-50S5C-C Imaging Performance

Measurement	Video Mode 0
Pixel Clock (MHz)	60
ADC (Bits)	14-bit
Quantum Efficiency Blue (% at 470 nm)	44
Quantum Efficiency Green (% at 525 nm)	46
Quantum Efficiency Red (% at 640 nm)	38
Temporal Dark Noise (Read Noise) (e-)	9.69
Signal to Noise Ratio Maximum (dB)	38.10
Signal to Noise Ratio Maximum (Bits)	6.33
Absolute Sensitivity Threshold (γ)	22.91
Saturation Capacity (Well Depth) (e-)	6454
Dynamic Range (dB)	56.03
Dynamic Range (Bits)	9.31
Gain (e-/ADU)	0.10



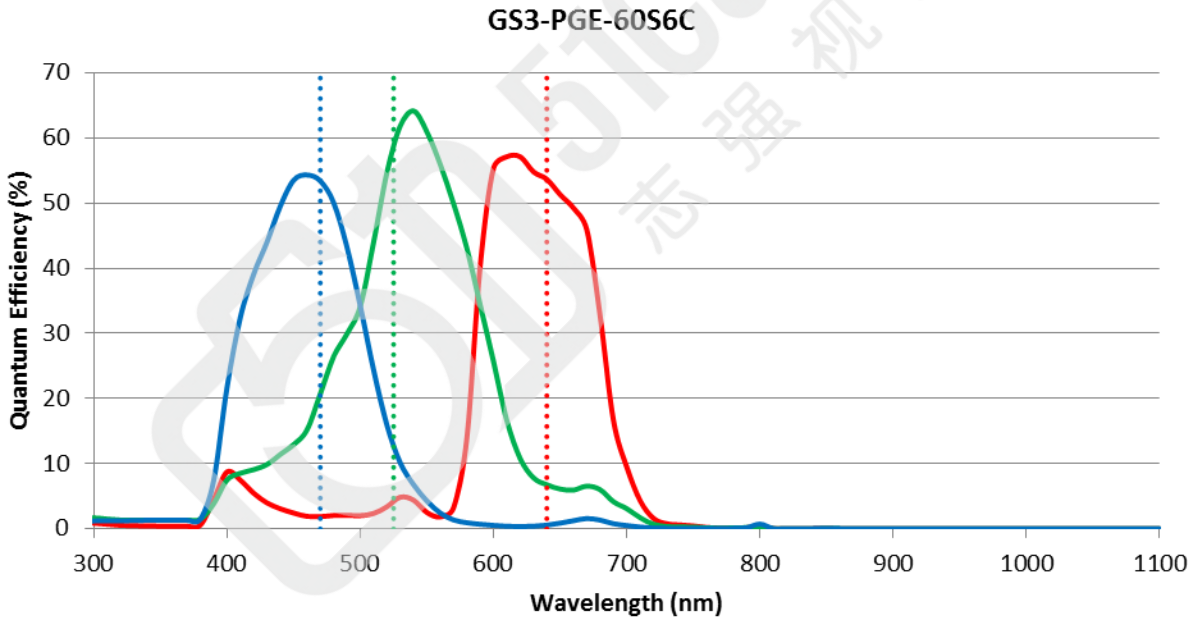
6 GS3-PGE-60S6M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	72	73
Temporal Dark Noise (Read Noise) (e-)	10.87	9.61
Signal to Noise Ratio Maximum (dB)	41.56	41.75
Signal to Noise Ratio Maximum (Bits)	6.90	6.93
Absolute Sensitivity Threshold (γ)	15.96	13.87
Saturation Capacity (Well Depth) (e-)	14321	14959
Dynamic Range (dB)	62.00	63.40
Dynamic Range (Bits)	10.30	10.53
Gain (e-/ADU)	0.23	0.24



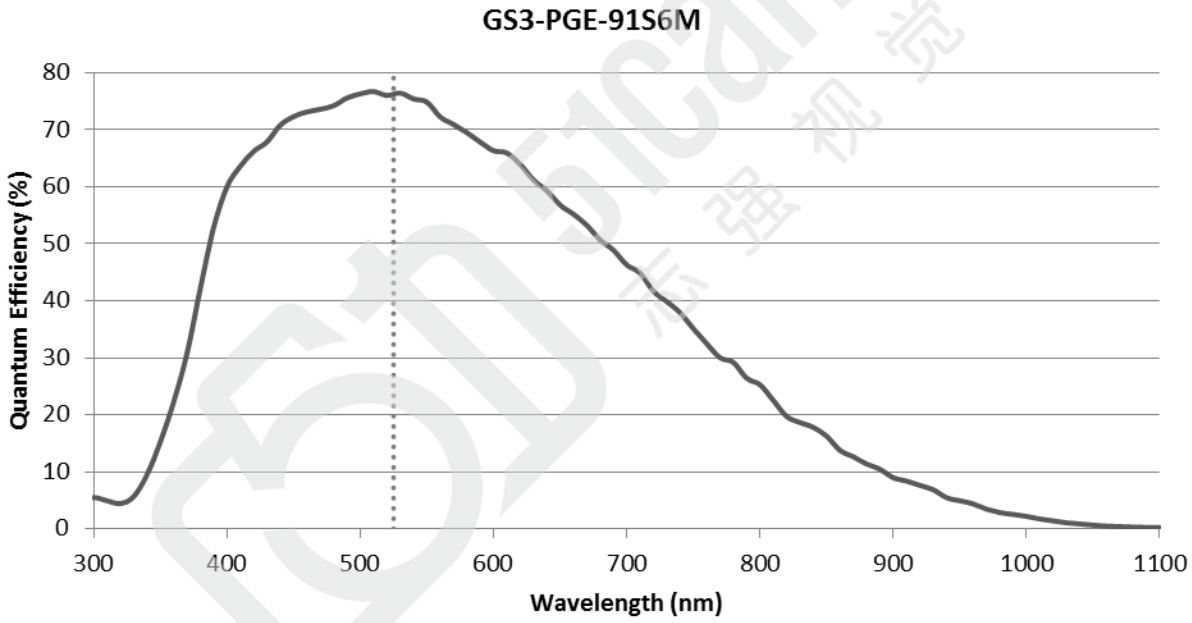
7 GS3-PGE-60S6C-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	53	53
Quantum Efficiency Green (% at 525 nm)	58	58
Quantum Efficiency Red (% at 640 nm)	53	53
Temporal Dark Noise (Read Noise) (e-)	10.69	9.99
Signal to Noise Ratio Maximum (dB)	41.59	41.75
Signal to Noise Ratio Maximum (Bits)	6.91	6.94
Absolute Sensitivity Threshold (γ)	19.91	18.76
Saturation Capacity (Well Depth) (e-)	14412	14973
Dynamic Range (dB)	62.20	63.09
Dynamic Range (Bits)	10.33	10.48
Gain (e-/ADU)	0.23	0.24



8 GS3-PGE-91S6M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	76	76
Temporal Dark Noise (Read Noise) (e-)	8.86	9.17
Signal to Noise Ratio Maximum (dB)	40.22	40.13
Signal to Noise Ratio Maximum (Bits)	6.68	6.67
Absolute Sensitivity Threshold (γ)	12.60	13.02
Saturation Capacity (Well Depth) (e-)	10529	10311
Dynamic Range (dB)	61.02	60.56
Dynamic Range (Bits)	10.14	10.06
Gain (e-/ADU)	0.17	0.17



9 GS3-PGE-91S6C-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	55	55
Quantum Efficiency Green (% at 525 nm)	60	59
Quantum Efficiency Red (% at 640 nm)	51	51
Temporal Dark Noise (Read Noise) (e-)	8.76	8.71
Signal to Noise Ratio Maximum (dB)	40.29	40.10
Signal to Noise Ratio Maximum (Bits)	6.69	6.66
Absolute Sensitivity Threshold (γ)	16.14	16.08
Saturation Capacity (Well Depth) (e-)	10681	10229
Dynamic Range (dB)	61.24	60.91
Dynamic Range (Bits)	10.17	10.12
Gain (e-/ADU)	0.17	0.17