

# IMAGING PERFORMANCE SPECIFICATION

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## FLIR **FLEA<sup>®</sup>3** *GigE Vision*



***GiGE***  
VISION

**Version 1.1**  
**Revised 1/27/2017**



## 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 Flea3 GigE 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

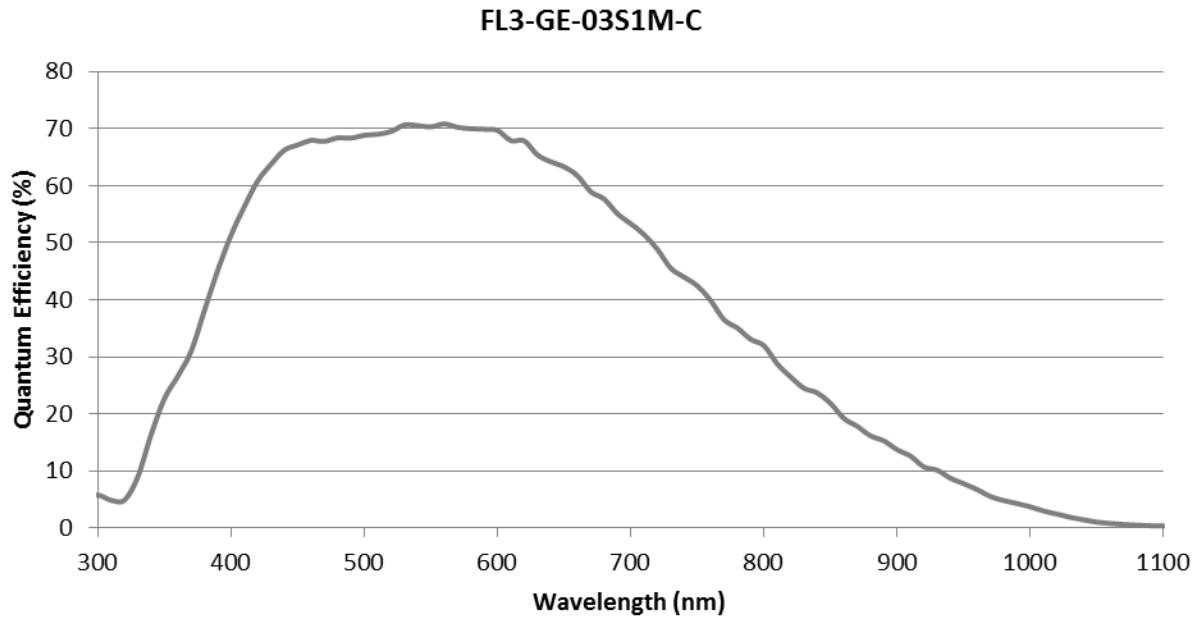
Model	Sensor	Maximum Resolution	Pixel Size	Firmware	Results
FL3-GE-03S1M-C	Sony ICX618, 1/4", Mono	648 x 488	5.6 $\mu\text{m}$	1.24.3.0	<a href="#">page 2</a>
FL3-GE-03S1C-C	Sony ICX618, 1/4", Color	648 x 488	5.6 $\mu\text{m}$	1.24.3.0	<a href="#">page 3</a>
FL3-GE-03S2M-C	Sony ICX424, 1/3", Mono	648 x 488	7.4 $\mu\text{m}$	1.27.3.0	<a href="#">page 4</a>
FL3-GE-03S2C-C	Sony ICX424, 1/3", Color	648 x 488	7.4 $\mu\text{m}$	1.27.3.0	<a href="#">page 5</a>
FL3-GE-08S2M-C	Sony ICX204, 1/3", Mono	1032 x 776	4.65 $\mu\text{m}$	1.14.3.0	<a href="#">page 6</a>
FL3-GE-08S2C-C	Sony ICX204, 1/3", Color	1032 x 776	4.65 $\mu\text{m}$	1.14.3.0	<a href="#">page 7</a>
FL3-GE-13S2M-C	Sony ICX445, 1/3", Mono	1288 x 964	3.75 $\mu\text{m}$	1.8.3.0	<a href="#">page 8</a>
FL3-GE-13S2C-C	Sony ICX445, 1/3", Color	1288 x 964	3.75 $\mu\text{m}$	1.8.3.0	<a href="#">page 9</a>
FL3-GE-14S3M-C	Sony ICX267, 1/2", Mono	1384 x 1032	4.65 $\mu\text{m}$	1.20.3.0	<a href="#">page 10</a>
FL3-GE-14S3C-C	Sony ICX267, 1/2", Color	1384 x 1032	4.65 $\mu\text{m}$	1.20.3.0	<a href="#">page 11</a>
FL3-GE-20S4M-C	Sony ICX274, 1/1.8", Mono	1624 x 1224	4.4 $\mu\text{m}$	1.23.3.0	<a href="#">page 12</a>
FL3-GE-20S4C-C	Sony ICX274, 1/1.8", Color	1624 x 1224	4.4 $\mu\text{m}$	1.23.3.0	<a href="#">page 13</a>
FL3-GE-28S4M-C	Sony ICX687, 1/1.8", Mono	1928 x 1448	3.69 $\mu\text{m}$	1.27.3.0	<a href="#">page 14</a>
FL3-GE-28S4C-C	Sony ICX687, 1/1.8", Color	1928 x 1448	3.69 $\mu\text{m}$	1.26.3.0	<a href="#">page 15</a>
FL3-GE-50S5M-C	Sony ICX655, 2/3", Mono	2448 x 2048	3.45 $\mu\text{m}$	1.19.3.0	<a href="#">page 16</a>
FL3-GE-50S5C-C	Sony ICX655, 2/3", Color	2448 x 2048	3.45 $\mu\text{m}$	1.19.3.0	<a href="#">page 17</a>



Measurements are taken based on guidelines in the EMVA 1288 standard; the full definition can be found at [EMVA.org](http://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).

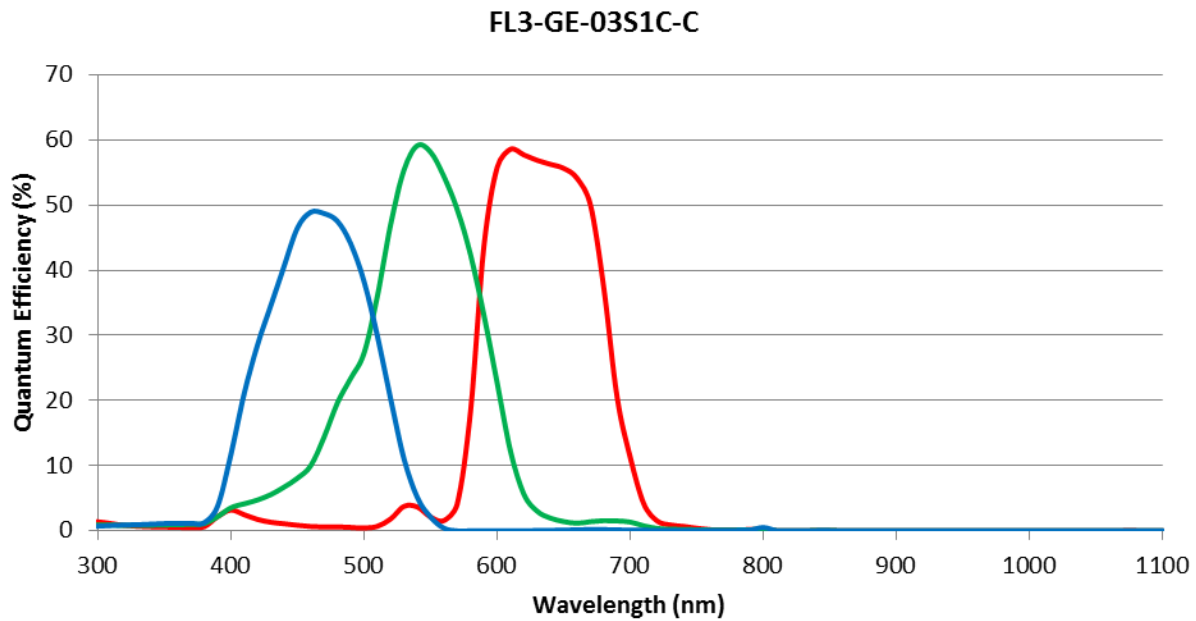
## 2 FL3-GE-03S1M-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	70
Temporal Dark Noise (Read Noise) (e-)	11.73
Signal to Noise Ratio Maximum (dB)	41.62
Signal to Noise Ratio Maximum (Bits)	6.91
Absolute Sensitivity Threshold ( $\gamma$ )	17.57
Saturation Capacity (Well Depth) (e-)	14508
Dynamic Range (dB)	61.49
Dynamic Range (Bits)	10.21
Gain (e-/ADU)	0.22



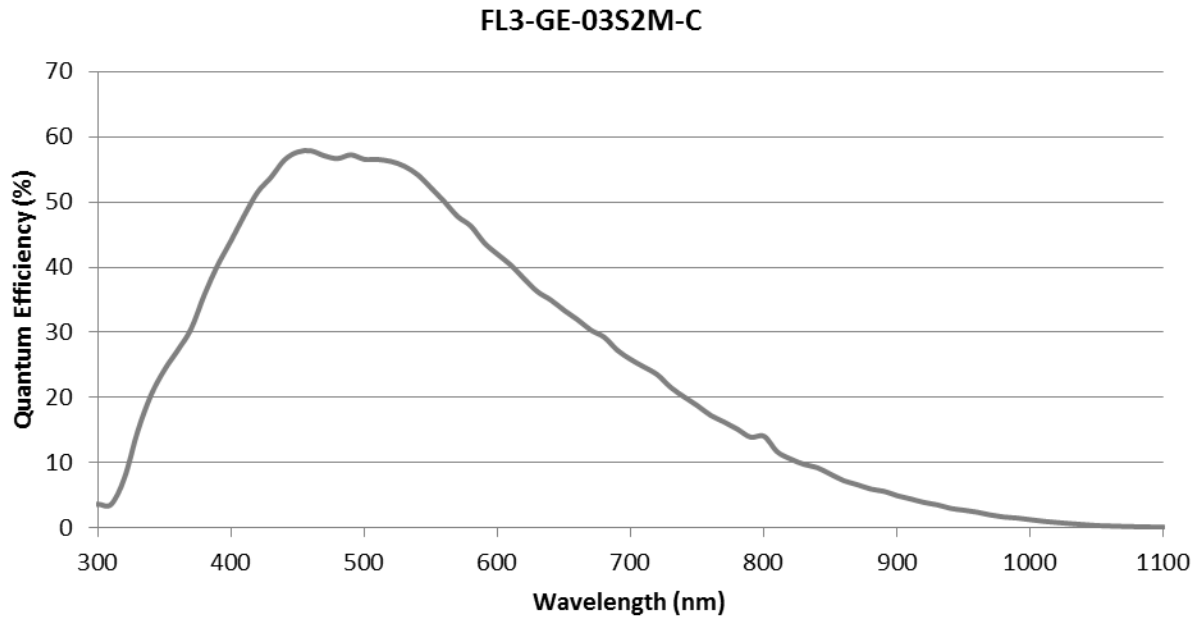
### 3 FL3-GE-03S1C-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	49
Quantum Efficiency Green (% at 525 nm)	51
Quantum Efficiency Red (% at 640 nm)	56
Temporal Dark Noise (Read Noise) (e-)	12.59
Signal to Noise Ratio Maximum (dB)	41.62
Signal to Noise Ratio Maximum (Bits)	6.91
Absolute Sensitivity Threshold ( $\gamma$ )	26.20
Saturation Capacity (Well Depth) (e-)	14528
Dynamic Range (dB)	60.91
Dynamic Range (Bits)	10.12
Gain (e-/ADU)	0.22



# 4 FL3-GE-03S2M-C Imaging Performance

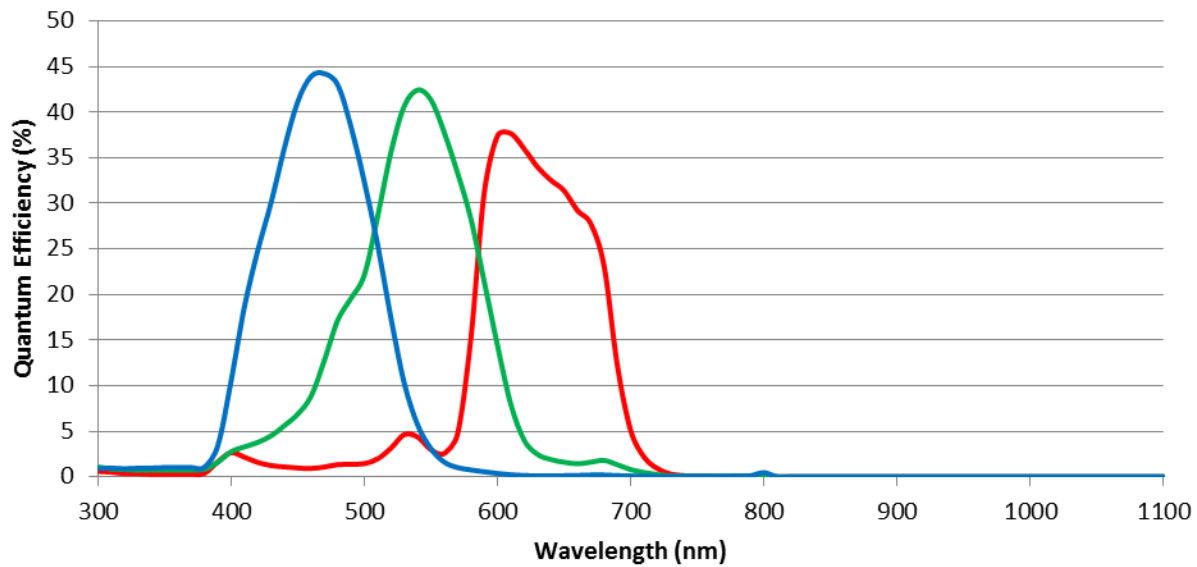
Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	56
Temporal Dark Noise (Read Noise) (e-)	13.50
Signal to Noise Ratio Maximum (dB)	40.77
Signal to Noise Ratio Maximum (Bits)	6.77
Absolute Sensitivity Threshold ( $\gamma$ )	25.07
Saturation Capacity (Well Depth) (e-)	11977
Dynamic Range (dB)	58.63
Dynamic Range (Bits)	9.74
Gain (e-/ADU)	0.21



# 5 FL3-GE-03S2C-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	44
Quantum Efficiency Green (% at 525 nm)	38
Quantum Efficiency Red (% at 640 nm)	33
Temporal Dark Noise (Read Noise) (e-)	12.22
Signal to Noise Ratio Maximum (dB)	40.40
Signal to Noise Ratio Maximum (Bits)	6.71
Absolute Sensitivity Threshold ( $\gamma$ )	34.93
Saturation Capacity (Well Depth) (e-)	10971
Dynamic Range (dB)	58.72
Dynamic Range (Bits)	9.75
Gain (e-/ADU)	0.20

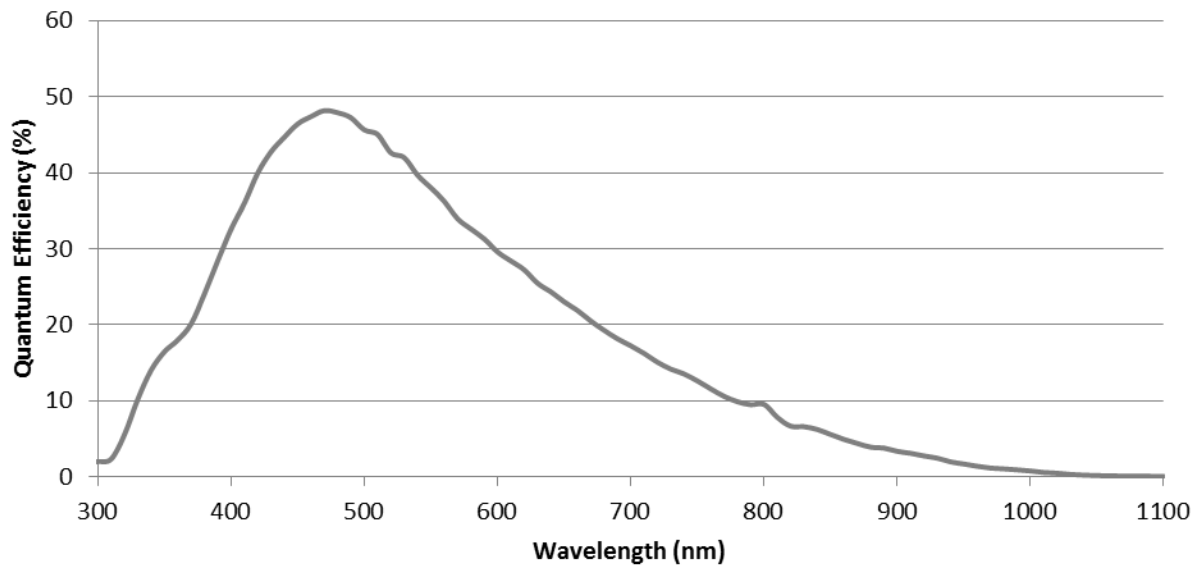
FL3-GE-03S2C-C



# 6 FL3-GE-08S2M-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	42
Temporal Dark Noise (Read Noise) (e-)	12.13
Signal to Noise Ratio Maximum (dB)	40.77
Signal to Noise Ratio Maximum (Bits)	6.77
Absolute Sensitivity Threshold ( $\gamma$ )	30.70
Saturation Capacity (Well Depth) (e-)	11944
Dynamic Range (dB)	59.51
Dynamic Range (Bits)	9.89
Gain (e-/ADU)	0.19

FL3-GE-08S2M-C

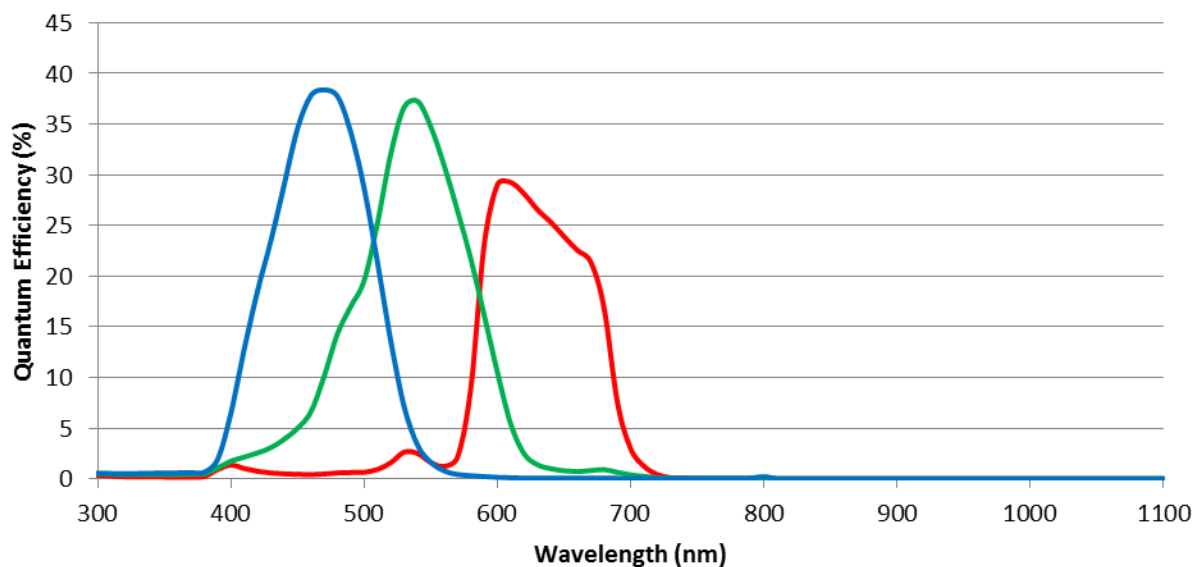




# 7 FL3-GE-08S2C-C Imaging Performance

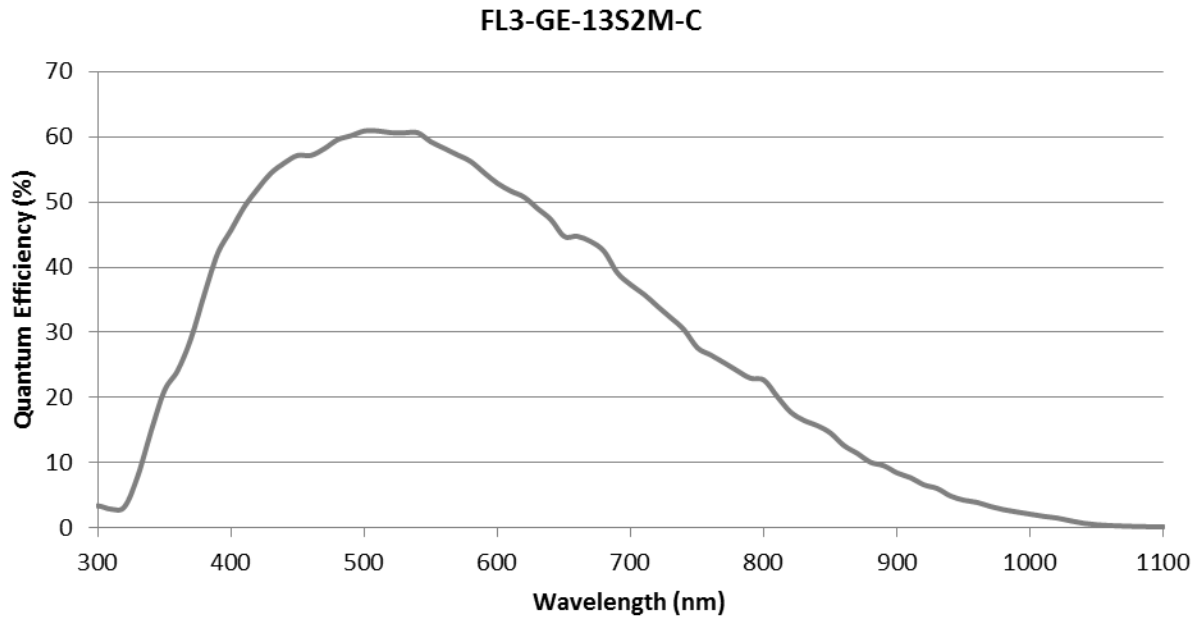
Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	38
Quantum Efficiency Green (% at 525 nm)	34
Quantum Efficiency Red (% at 640 nm)	25
Temporal Dark Noise (Read Noise) (e-)	12.62
Signal to Noise Ratio Maximum (dB)	40.62
Signal to Noise Ratio Maximum (Bits)	6.75
Absolute Sensitivity Threshold ( $\gamma$ )	40.27
Saturation Capacity (Well Depth) (e-)	11543
Dynamic Range (dB)	58.89
Dynamic Range (Bits)	9.78
Gain (e-/ADU)	0.20

FL3-GE-08S2C-C



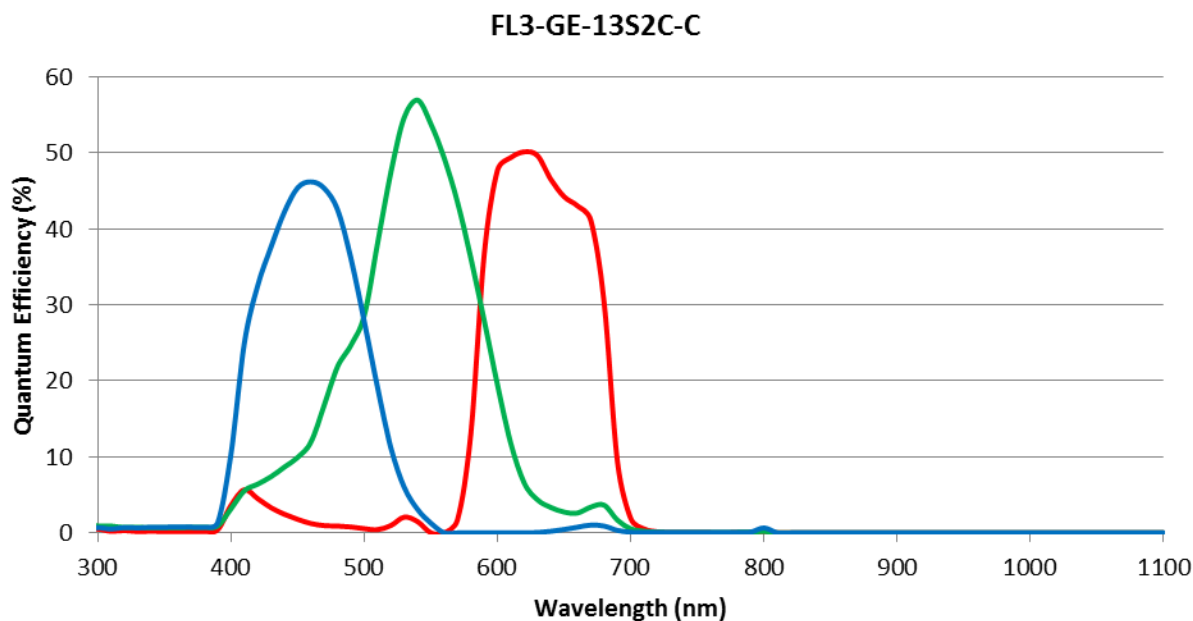
# 8 FL3-GE-13S2M-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	61
Temporal Dark Noise (Read Noise) (e-)	7.61
Signal to Noise Ratio Maximum (dB)	38.66
Signal to Noise Ratio Maximum (Bits)	6.42
Absolute Sensitivity Threshold ( $\gamma$ )	13.63
Saturation Capacity (Well Depth) (e-)	7347
Dynamic Range (dB)	59.14
Dynamic Range (Bits)	9.82
Gain (e-/ADU)	0.12



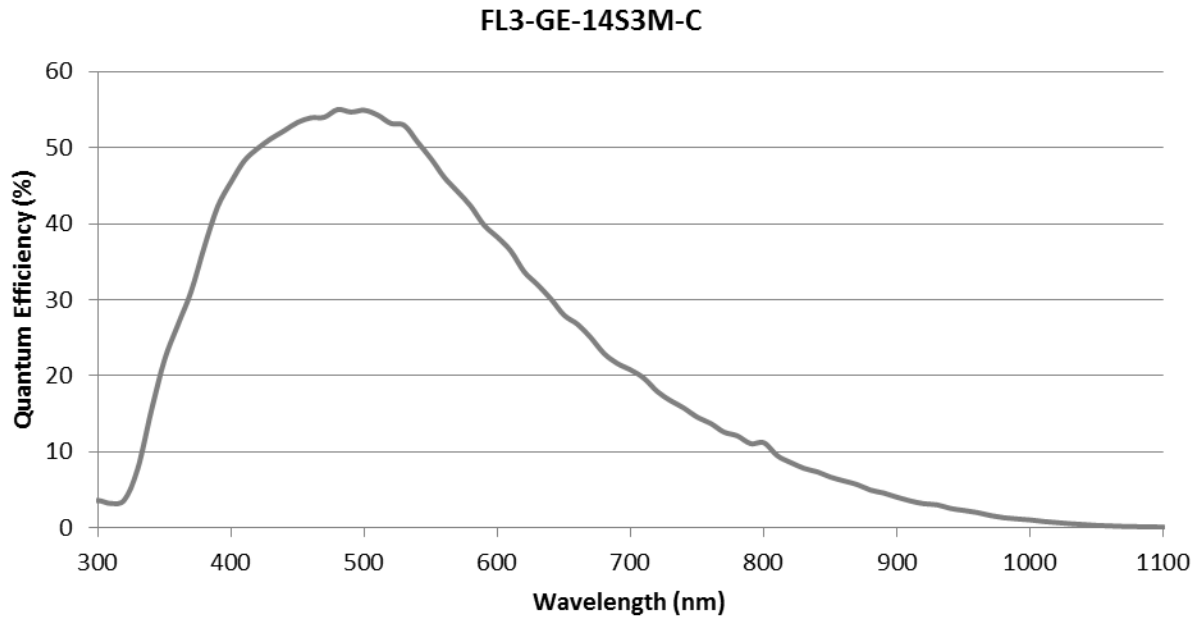
# 9 FL3-GE-13S2C-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	45
Quantum Efficiency Green (% at 525 nm)	51
Quantum Efficiency Red (% at 640 nm)	47
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	8.71
Signal to Noise Ratio Maximum (dB)	38.87
Signal to Noise Ratio Maximum (Bits)	6.46
Absolute Sensitivity Threshold ( $\gamma$ )	19.10
Saturation Capacity (Well Depth) (e <sup>-</sup> )	7701
Dynamic Range (dB)	58.44
Dynamic Range (Bits)	9.71
Gain (e <sup>-</sup> /ADU)	0.12



# 10 FL3-GE-14S3M-C Imaging Performance

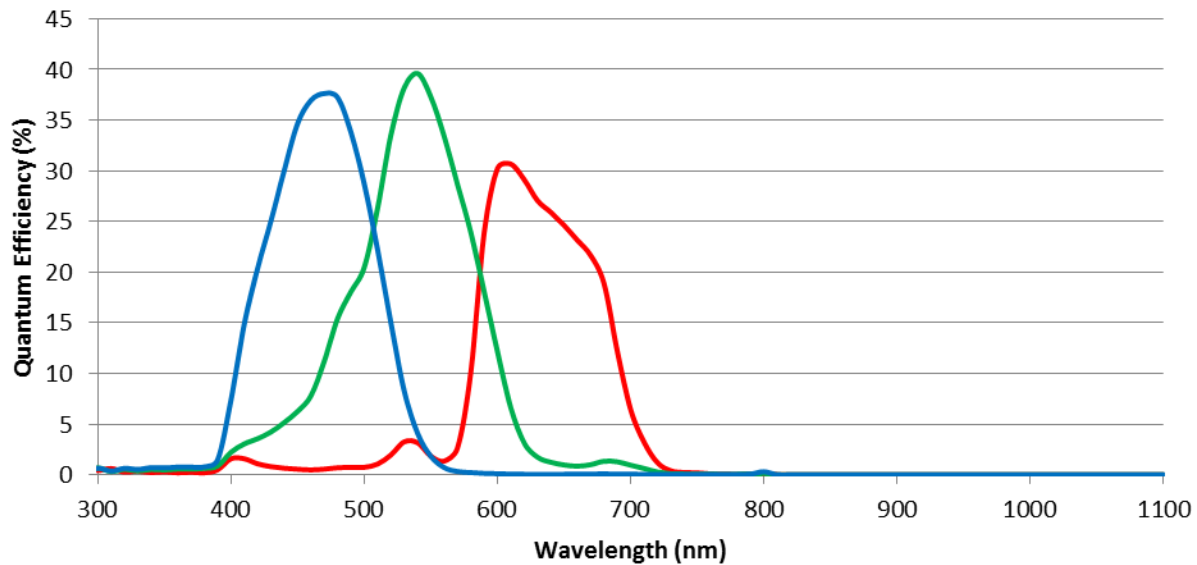
Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	53
Temporal Dark Noise (Read Noise) (e-)	11.48
Signal to Noise Ratio Maximum (dB)	40.16
Signal to Noise Ratio Maximum (Bits)	6.67
Absolute Sensitivity Threshold ( $\gamma$ )	23.63
Saturation Capacity (Well Depth) (e-)	10366
Dynamic Range (dB)	58.75
Dynamic Range (Bits)	9.76
Gain (e-/ADU)	0.18



# 11 FL3-GE-14S3C-C Imaging Performance

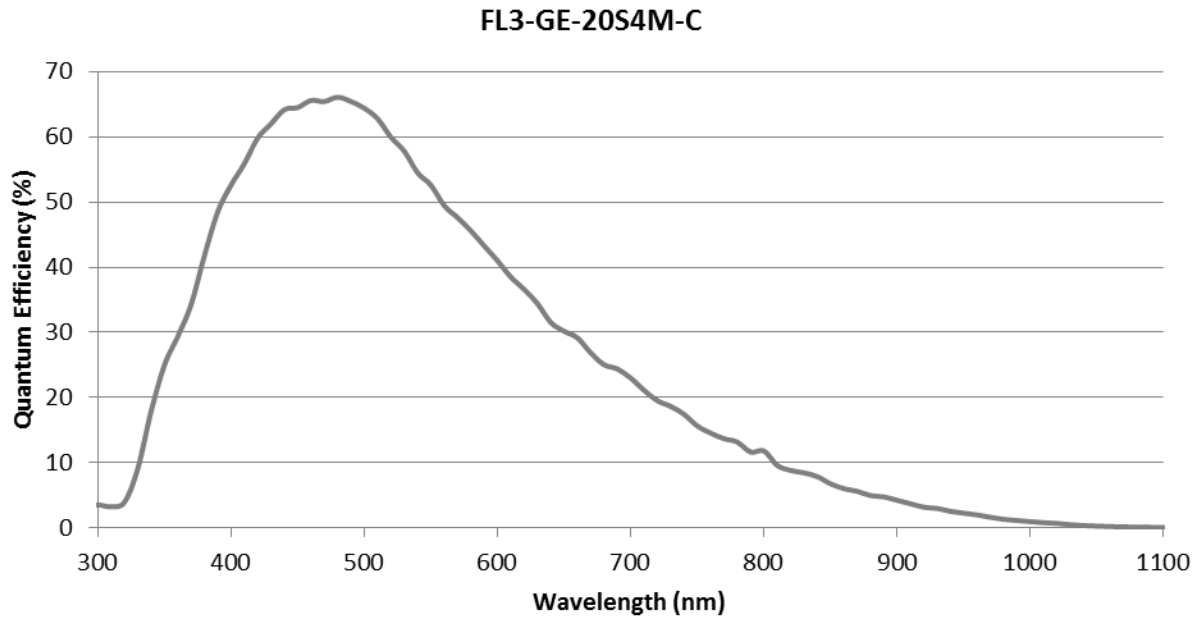
Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	38
Quantum Efficiency Green (% at 525 nm)	36
Quantum Efficiency Red (% at 640 nm)	26
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	10.52
Signal to Noise Ratio Maximum (dB)	39.81
Signal to Noise Ratio Maximum (Bits)	6.61
Absolute Sensitivity Threshold ( $\gamma$ )	32.94
Saturation Capacity (Well Depth) (e <sup>-</sup> )	9573
Dynamic Range (dB)	58.78
Dynamic Range (Bits)	9.76
Gain (e <sup>-</sup> /ADU)	0.17

FL3-GE-14S3C-C



# 12 FL3-GE-20S4M-C Imaging Performance

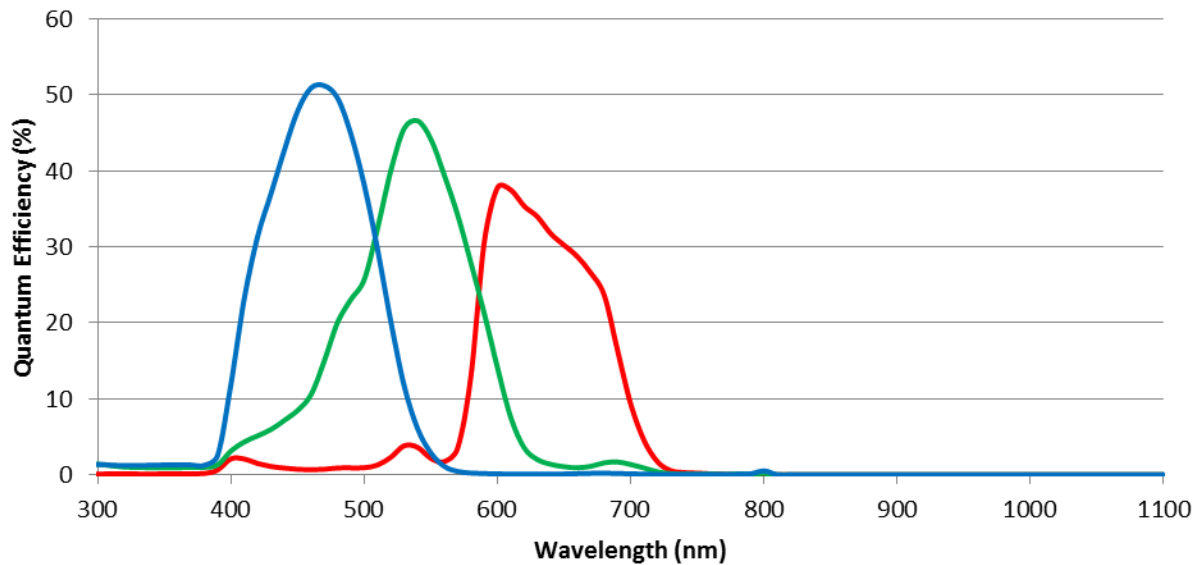
Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	59
Temporal Dark Noise (Read Noise) (e-)	8.35
Signal to Noise Ratio Maximum (dB)	39.01
Signal to Noise Ratio Maximum (Bits)	6.48
Absolute Sensitivity Threshold ( $\gamma$ )	15.77
Saturation Capacity (Well Depth) (e-)	7969
Dynamic Range (dB)	59.09
Dynamic Range (Bits)	9.82
Gain (e-/ADU)	0.13



# 13 FL3-GE-20S4C-C Imaging Performance

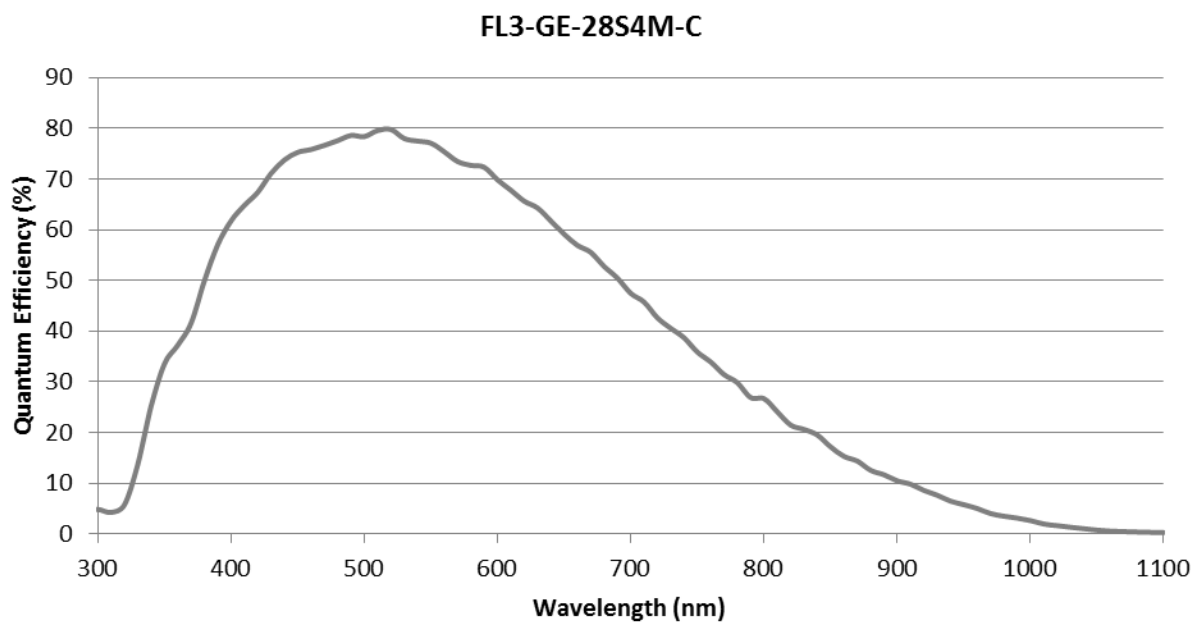
Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	51
Quantum Efficiency Green (% at 525 nm)	43
Quantum Efficiency Red (% at 640 nm)	32
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	8.34
Signal to Noise Ratio Maximum (dB)	39.12
Signal to Noise Ratio Maximum (Bits)	6.50
Absolute Sensitivity Threshold ( $\gamma$ )	22.04
Saturation Capacity (Well Depth) (e <sup>-</sup> )	8162
Dynamic Range (dB)	59.30
Dynamic Range (Bits)	9.85
Gain (e <sup>-</sup> /ADU)	0.13

FL3-GE-20S4C-C



# 14 FL3-GE-28S4M-C Imaging Performance

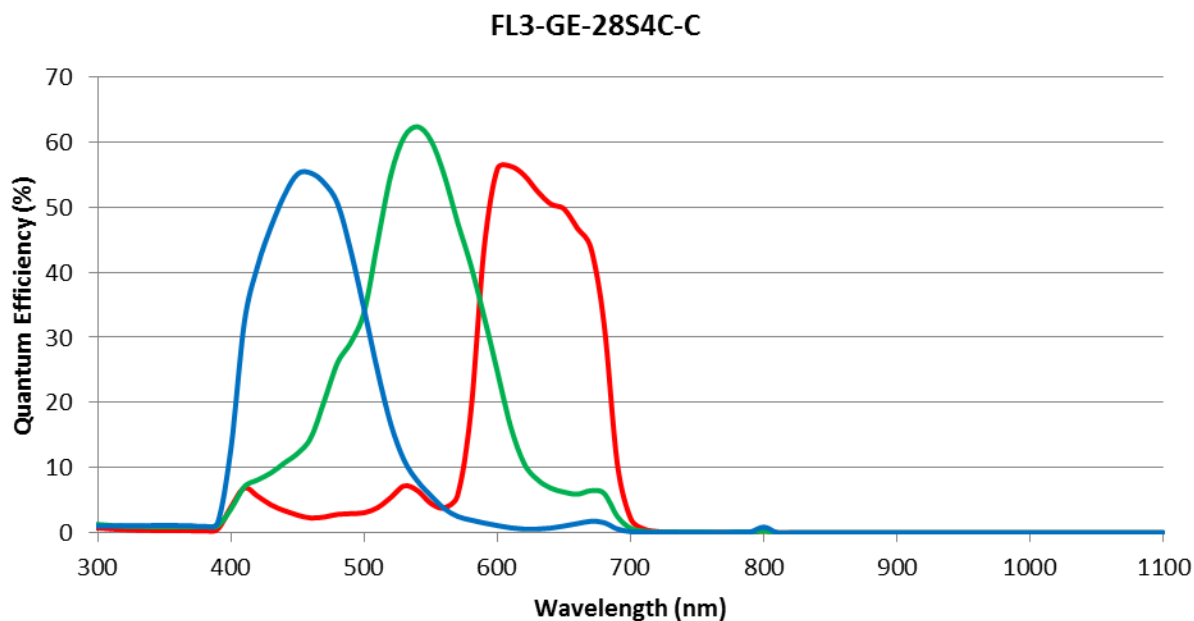
Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	79
Temporal Dark Noise (Read Noise) (e-)	9.68
Signal to Noise Ratio Maximum (dB)	40.64
Signal to Noise Ratio Maximum (Bits)	6.78
Absolute Sensitivity Threshold ( $\gamma$ )	13.13
Saturation Capacity (Well Depth) (e-)	11586
Dynamic Range (dB)	61.12
Dynamic Range (Bits)	10.15
Gain (e-/ADU)	0.19





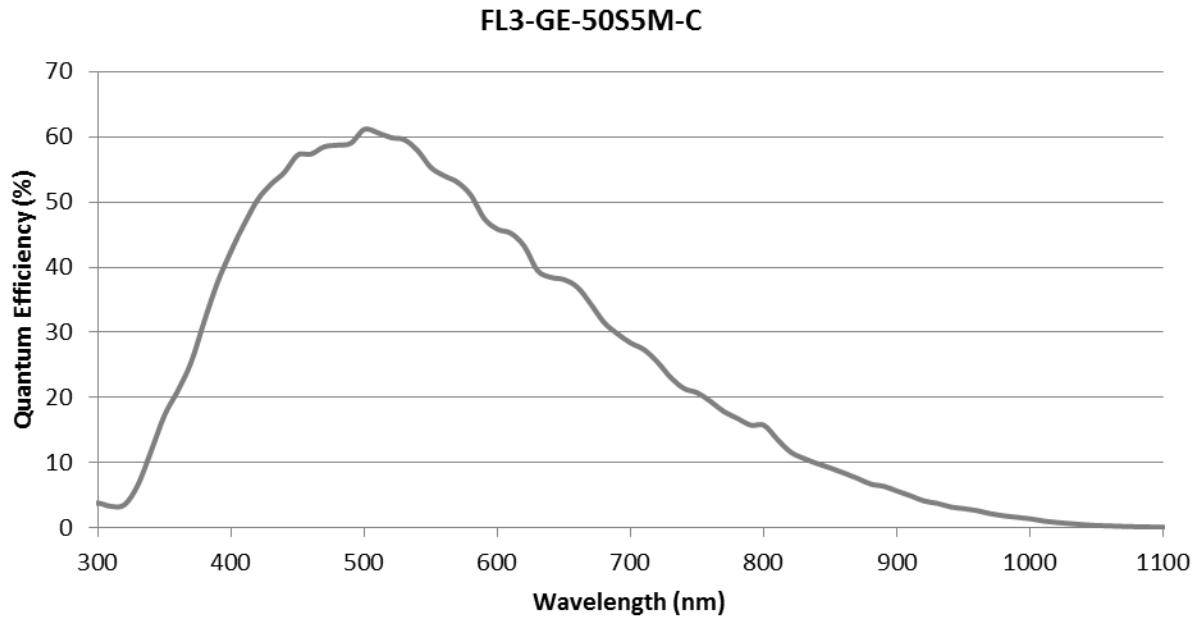
# 15 FL3-GE-28S4C-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	54
Quantum Efficiency Green (% at 525 nm)	58
Quantum Efficiency Red (% at 640 nm)	50
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	9.01
Signal to Noise Ratio Maximum (dB)	40.65
Signal to Noise Ratio Maximum (Bits)	6.75
Absolute Sensitivity Threshold ( $\gamma$ )	17.55
Saturation Capacity (Well Depth) (e <sup>-</sup> )	11618
Dynamic Range (dB)	61.74
Dynamic Range (Bits)	10.25
Gain (e <sup>-</sup> /ADU)	0.19



# 16 FL3-GE-50S5M-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency (% at 525 nm)	60
Temporal Dark Noise (Read Noise) (e-)	9.43
Signal to Noise Ratio Maximum (dB)	37.68
Signal to Noise Ratio Maximum (Bits)	6.26
Absolute Sensitivity Threshold ( $\gamma$ )	17.23
Saturation Capacity (Well Depth) (e-)	5856
Dynamic Range (dB)	55.42
Dynamic Range (Bits)	9.20
Gain (e-/ADU)	0.09



# 17 FL3-GE-50S5C-C Imaging Performance

Measurement	Video Mode 0
ADC (Bits)	12-bit
Quantum Efficiency Blue (% at 470 nm)	44
Quantum Efficiency Green (% at 525 nm)	48
Quantum Efficiency Red (% at 640 nm)	38
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	7.95
Signal to Noise Ratio Maximum (dB)	37.38
Signal to Noise Ratio Maximum (Bits)	6.21
Absolute Sensitivity Threshold ( $\gamma$ )	19.04
Saturation Capacity (Well Depth) (e <sup>-</sup> )	5467
Dynamic Range (dB)	56.22
Dynamic Range (Bits)	9.34
Gain (e <sup>-</sup> /ADU)	0.09

FL3-GE-50S5C-C

