

## IMAGING PERFORMANCE SPECIFICATION

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# FLIR *GRASSHOPPER<sup>®</sup> 3*

## *USB3 Vision*



**USB<sup>™</sup>**  
VISION

**Version 17.2**  
**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 Grasshopper3 U3 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-U3-14S5M-C	Sony ICX285, 2/3", Mono	1384 x 1036	6.45 µm	2.6.3.0	<a href="#">page 3</a>
GS3-U3-14S5C-C	Sony ICX285, 2/3", Color	1384 x 1036	6.45 µm	2.6.3.2	<a href="#">page 4</a>
GS3-U3-15S5M-C	Sony ICX825, 2/3", Mono	1384 x 1032	6.45 µm	2.10.3.0	<a href="#">page 5</a>
GS3-U3-15S5C-C	Sony ICX825, 2/3", Color	1384 x 1032	6.45 µm	2.10.3.0	<a href="#">page 6</a>
GS3-U3-23S6M-C	Sony IMX174, 1/1.2", Mono	1920 x 1200	5.86 µm	1.15.3.0	<a href="#">page 7</a>
GS3-U3-23S6C-C	Sony IMX174, 1/1.2", Color	1920 x 1200	5.86 µm	2.4.3.0	<a href="#">page 8</a>
GS3-U3-28S4M-C	Sony ICX687, 1/1.8", Mono	1928 x 1448	3.69 µm	2.1.3.0	<a href="#">page 9</a>
GS3-U3-28S4C-C	Sony ICX687, 1/1.8", Color	1928 x 1448	3.69 µm	2.1.3.0	<a href="#">page 10</a>
GS3-U3-28S5M-C	Sony ICX674, 2/3", Mono	1920 x 1440	4.54 µm	2.1.3.0	<a href="#">page 11</a>
GS3-U3-28S5C-C	Sony ICX674, 2/3", Color	1920 x 1440	4.54 µm	2.1.3.0	<a href="#">page 12</a>
GS3-U3-32S4M-C	Sony IMX252, 1/1.8", Mono	2048 x 1536	3.45 µm	2.17.3.0	<a href="#">page 13</a>
GS3-U3-32S4C-C	Sony IMX252, 1/1.8", Color	2048 x 1536	3.45 µm	2.20.3.1	<a href="#">page 14</a>
GS3-U3-41C6M-C	CMOSIS CMV4000-3E5, 1", Mono	2048 x 2048	5.5 µm	1.11.3.0	<a href="#">page 15</a>
GS3-U3-41C6C-C	CMOSIS CMV4000-3E5, 1", Color	2048 x 2048	5.5 µm	1.11.3.0	<a href="#">page 16</a>
GS3-U3-41C6NIR	CMOSIS CMV4000-3E12, 1", NIR	2048 x 2048	5.5 µm	2.3.3.0	<a href="#">page 17</a>
GS3-U3-41S4M-C	Sony ICX808, 1/1.8", Mono	2016 x 2016	3.1 µm	2.7.3.0	<a href="#">page 18</a>
GS3-U3-41S4C-C	Sony ICX808, 1/1.8", Color	2016 x 2016	3.1 µm	2.7.3.0	<a href="#">page 19</a>
GS3-U3-50S5M-C	Sony ICX625, 2/3", Mono	2448 x 2048	3.45 µm	1.15.3.0	<a href="#">page 20</a>
GS3-U3-50S5C-C	Sony ICX625, 2/3", Color	2448 x 2048	3.45 µm	1.15.3.0	<a href="#">page 21</a>
GS3-U3-51S5M-C	Sony IMX250, 2/3", Mono	2448 x 2048	3.45 µm	2.17.3.0	<a href="#">page 22</a>
GS3-U3-51S5C-C	Sony IMX250, 2/3", Color	2448 x 2048	3.45 µm	2.20.3.1	<a href="#">page 23</a>
GS3-U3-60S6M-C	Sony ICX694, 1", Mono	2736 x 2192	4.54 µm	2.3.3.0	<a href="#">page 24</a>
GS3-U3-60S6C-C	Sony ICX694, 1", Color	2736 x 2192	4.54 µm	2.3.3.0	<a href="#">page 25</a>
GS3-U3-60QS6M-C	Sony ICX694, 1", Mono	2736 x 2192	4.54 µm	2.7.3.0	<a href="#">page 26</a>
GS3-U3-60QS6C-C	Sony ICX694, 1", Color	2736 x 2192	4.54 µm	2.7.3.0	<a href="#">page 27</a>
GS3-U3-89S6M-C	Sony IMX255, 1", Mono	4096 x 2160	3.45 µm	2.25.3.1	<a href="#">page 28</a>
GS3-U3-89S6C-C	Sony IMX255, 1", Color	4096 x 2160	3.45 µm	2.25.3.1	<a href="#">page 29</a>
GS3-U3-91S6M-C	Sony ICX814, 1", Mono	3376 x 2704	3.69 µm	1.8.3.0	<a href="#">page 30</a>
GS3-U3-91S6C-C	Sony ICX814, 1", Color	3376 x 2704	3.69 µm	1.8.3.0	<a href="#">page 31</a>
GS3-U3-120S6M-C	Sony ICX834, 1", Mono	4240 x 2824	3.1 µm	2.12.3.0	<a href="#">page 32</a>
GS3-U3-120S6C-C	Sony ICX834, 1", Color	4240 x 2824	3.1 µm	2.12.3.0	<a href="#">page 33</a>
GS3-U3-123S6M-C	Sony IMX253, 1.1", Mono	4096 x 3000	3.45 µm	2.25.3.1	<a href="#">page 34</a>
GS3-U3-123S6C-C	Sony IMX253, 1.1", Color	4096 x 3000	3.45 µm	2.25.3.1	<a href="#">page 35</a>

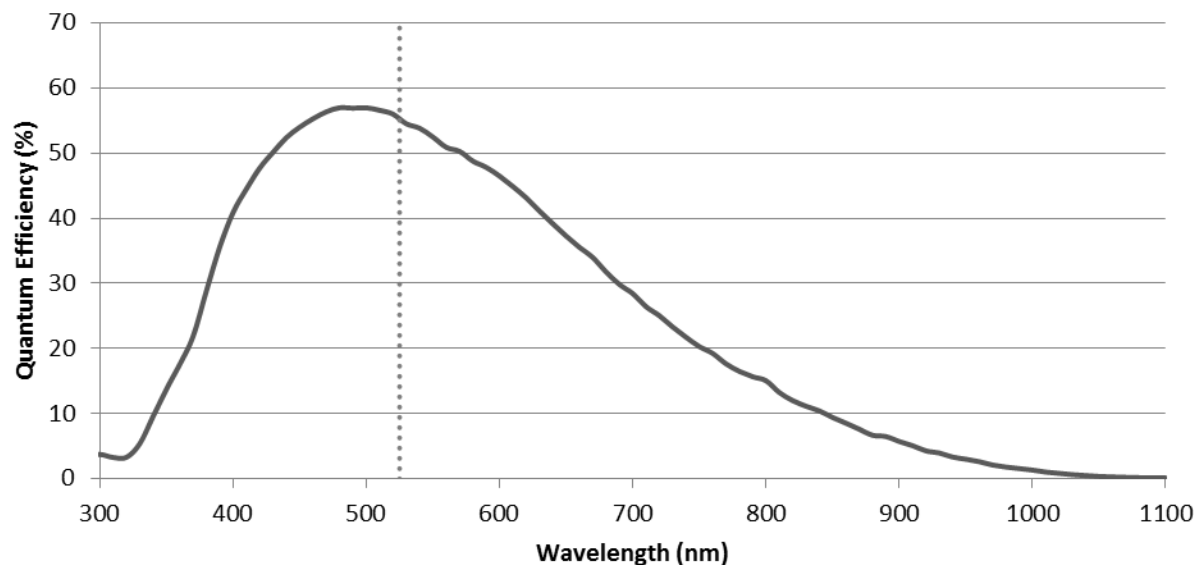


Measurements are taken based on guidelines in the EMVA 1288 standard; the full definition can be found at [EMVA.org](http://EMVA.org). Camera settings are at maximum bit depth unless otherwise noted. Temporal Dark Noise is measured at minimum exposure time. The center wavelength is 525 nm unless otherwise 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 GS3-U3-14S5M-C Imaging Performance

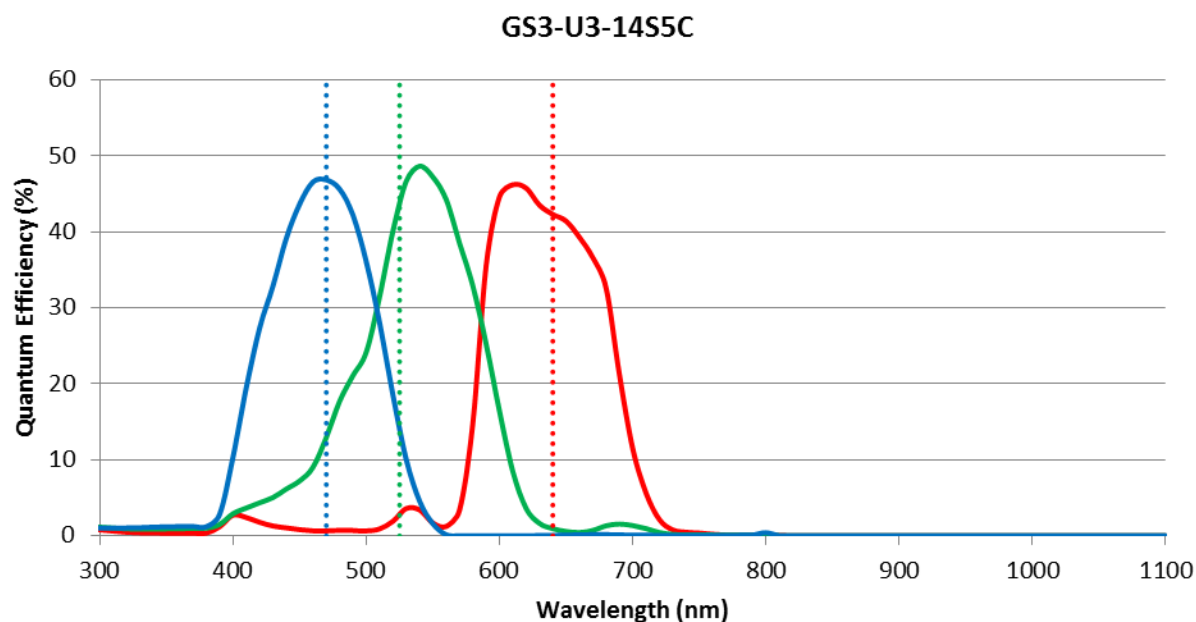
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	56	10
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	55	57
Temporal Dark Noise (Read Noise) (e-)	11.90	7.30
Signal to Noise Ratio Maximum (dB)	42.15	42.37
Signal to Noise Ratio Maximum (Bits)	7.00	7.04
Absolute Sensitivity Threshold ( $\gamma$ )	23.19	14.02
Saturation Capacity (Well Depth) (e-)	16408	17273
Dynamic Range (dB)	62.43	66.91
Dynamic Range (Bits)	10.37	11.11
Gain (e-/ADU)	0.28	0.28

GS3-U3-14S5M



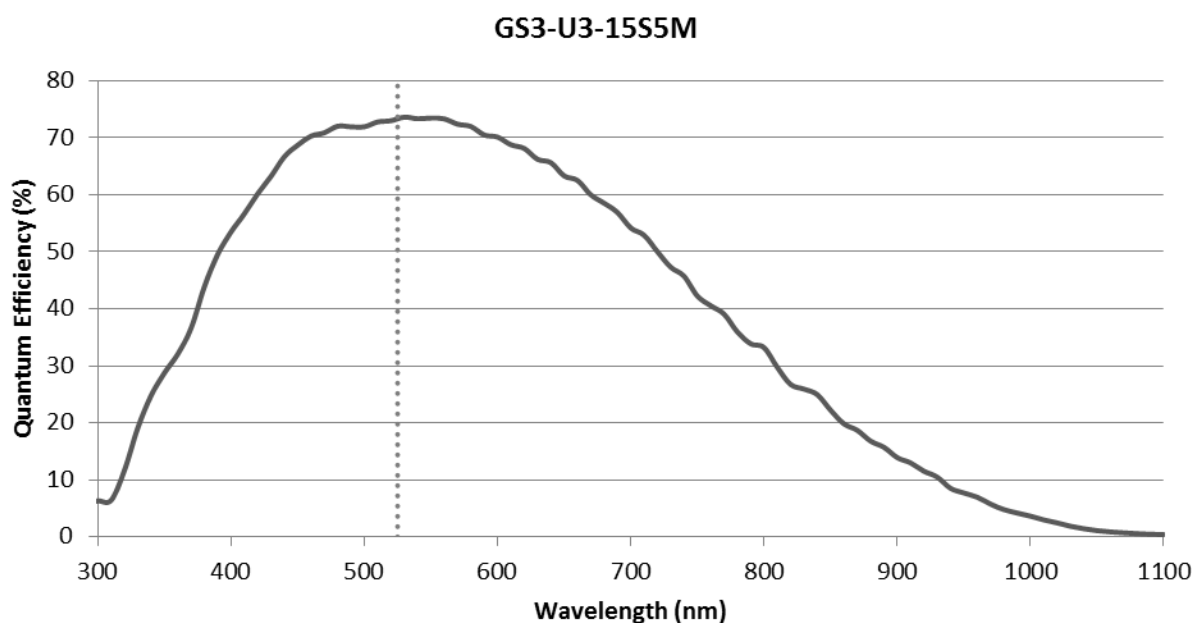
## 3 GS3-U3-14S5C-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	56	56
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	46	46
Quantum Efficiency Green (% at 525 nm)	43	42
Quantum Efficiency Red (% at 640 nm)	42	41
Temporal Dark Noise (Read Noise) (e-)	12.08	7.84
Signal to Noise Ratio Maximum (dB)	42.42	42.08
Signal to Noise Ratio Maximum (Bits)	7.05	6.99
Absolute Sensitivity Threshold ( $\gamma$ )	29.87	19.87
Saturation Capacity (Well Depth) (e-)	17473	16144
Dynamic Range (dB)	62.86	65.74
Dynamic Range (Bits)	10.44	10.92
Gain (e-/ADU)	0.29	0.27



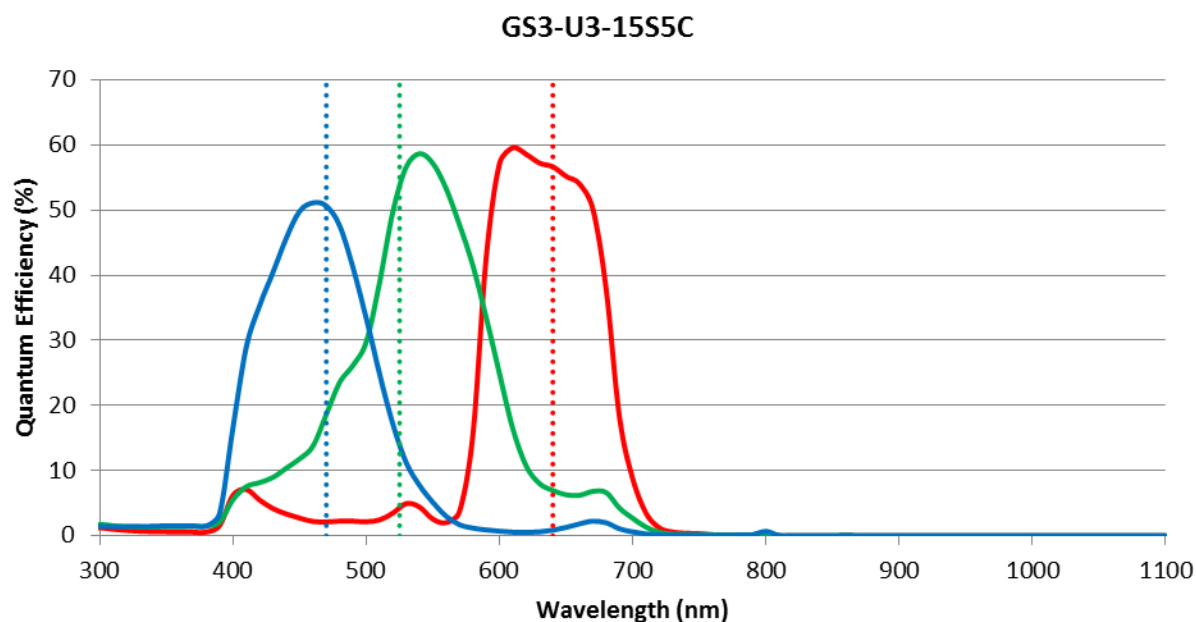
## 4 GS3-U3-15S5M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	49	12
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	73	77
Temporal Dark Noise (Read Noise) (e-)	8.31	7.02
Signal to Noise Ratio Maximum (dB)	43.59	43.55
Signal to Noise Ratio Maximum (Bits)	7.24	7.23
Absolute Sensitivity Threshold ( $\gamma$ )	12.15	9.88
Saturation Capacity (Well Depth) (e-)	22856	22621
Dynamic Range (dB)	68.28	69.56
Dynamic Range (Bits)	11.34	11.55
Gain (e-/ADU)	0.37	0.36



## 5 GS3-U3-15S5C-C Imaging Performance

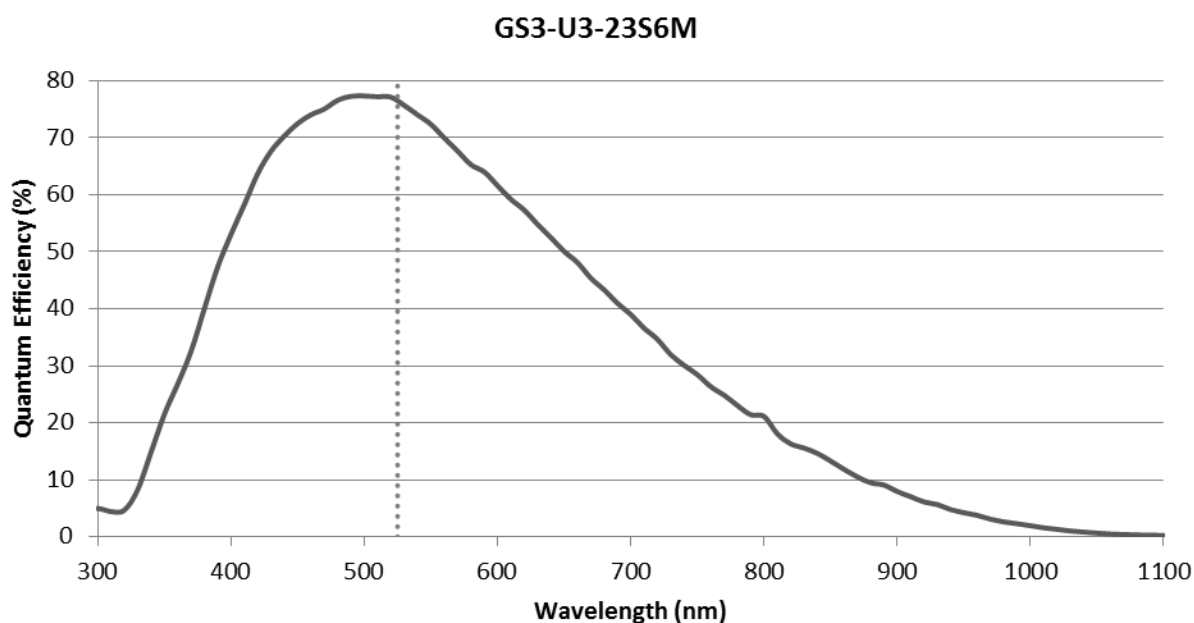
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	49	49
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	50	53
Quantum Efficiency Green (% at 525 nm)	53	55
Quantum Efficiency Red (% at 640 nm)	56	58
Temporal Dark Noise (Read Noise) (e-)	8.78	6.08
Signal to Noise Ratio Maximum (dB)	42.97	43.19
Signal to Noise Ratio Maximum (Bits)	7.14	7.17
Absolute Sensitivity Threshold ( $\gamma$ )	18.24	12.21
Saturation Capacity (Well Depth) (e-)	19807	20841
Dynamic Range (dB)	66.59	70.02
Dynamic Range (Bits)	11.06	11.63
Gain (e-/ADU)	0.35	0.34





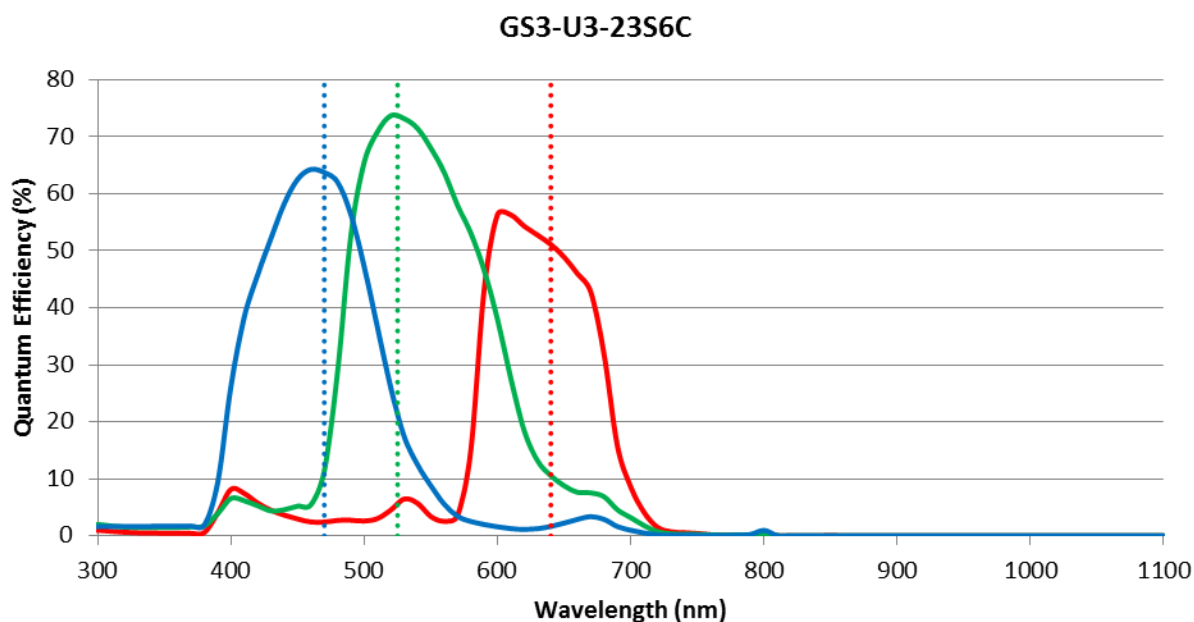
## 6 GS3-U3-23S6M-C Imaging Performance

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)	76	76
Temporal Dark Noise (Read Noise) (e-)	14.19	6.83
Signal to Noise Ratio Maximum (dB)	45.11	45.12
Signal to Noise Ratio Maximum (Bits)	7.49	7.49
Absolute Sensitivity Threshold ( $\gamma$ )	19.69	9.77
Saturation Capacity (Well Depth) (e-)	32406	32513
Dynamic Range (dB)	66.87	72.94
Dynamic Range (Bits)	11.11	12.11
Gain (e-/ADU)	0.51	0.52



## 7 GS3-U3-23S6C-C Imaging Performance

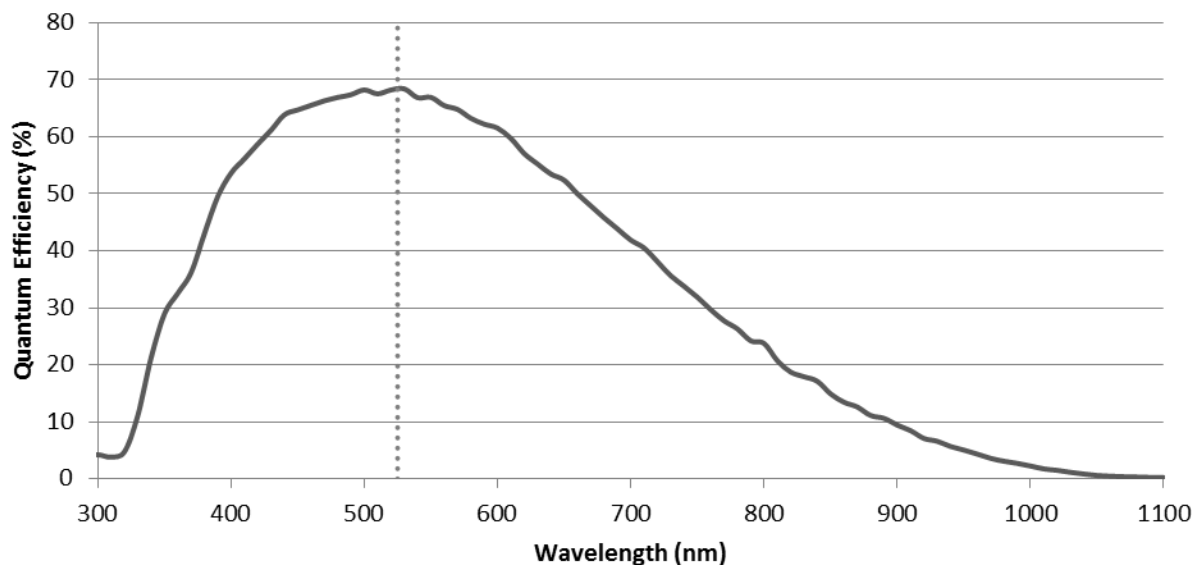
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	37.13	37.13
ADC (Bits)	10-bit	12-bit
Quantum Efficiency Blue (% at 470 nm)	63	63
Quantum Efficiency Green (% at 525 nm)	73	74
Quantum Efficiency Red (% at 640 nm)	51	51
Temporal Dark Noise (Read Noise) (e-)	13.89	6.78
Signal to Noise Ratio Maximum (dB)	45.14	45.15
Signal to Noise Ratio Maximum (Bits)	7.50	7.50
Absolute Sensitivity Threshold ( $\gamma$ )	20.70	10.44
Saturation Capacity (Well Depth) (e-)	32675	32761
Dynamic Range (dB)	67.13	73.07
Dynamic Range (Bits)	11.15	12.14
Gain (e-/ADU)	0.51	0.51



## 8 GS3-U3-28S4M-C Imaging Performance

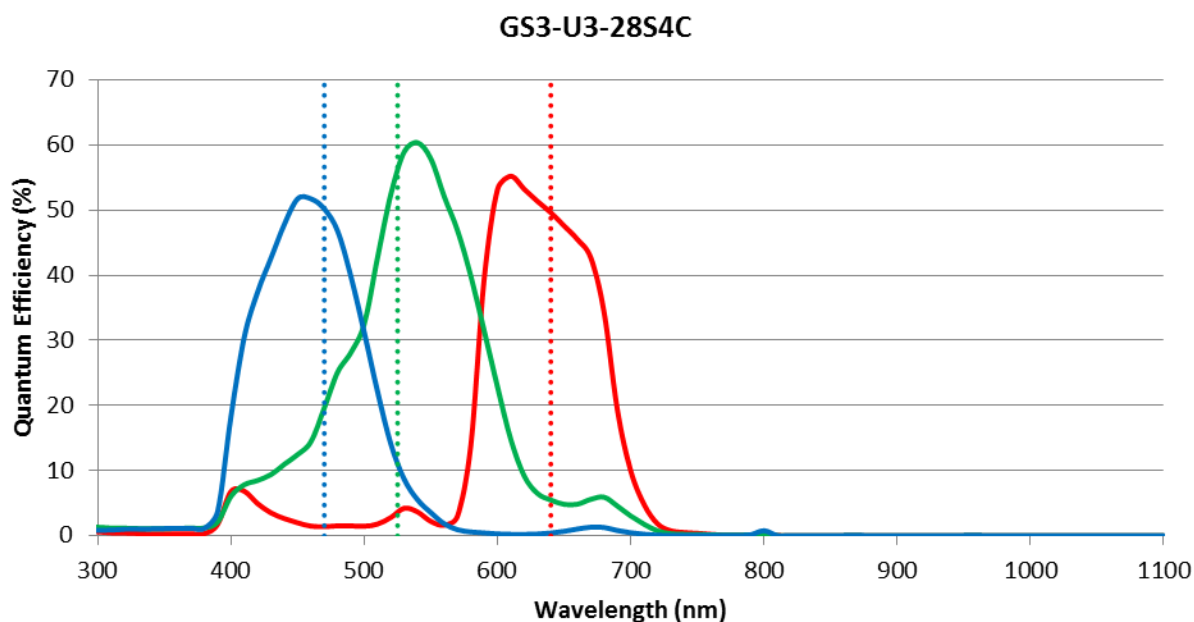
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	31.25
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	68	69
Temporal Dark Noise (Read Noise) (e-)	10.17	7.43
Signal to Noise Ratio Maximum (dB)	39.56	39.30
Signal to Noise Ratio Maximum (Bits)	6.57	6.53
Absolute Sensitivity Threshold ( $\gamma$ )	15.78	11.64
Saturation Capacity (Well Depth) (e-)	9039	8517
Dynamic Range (dB)	58.56	60.62
Dynamic Range (Bits)	9.73	10.07
Gain (e-/ADU)	0.15	0.15

GS3-U3-28S4M



## 9 GS3-U3-28S4C-C Imaging Performance

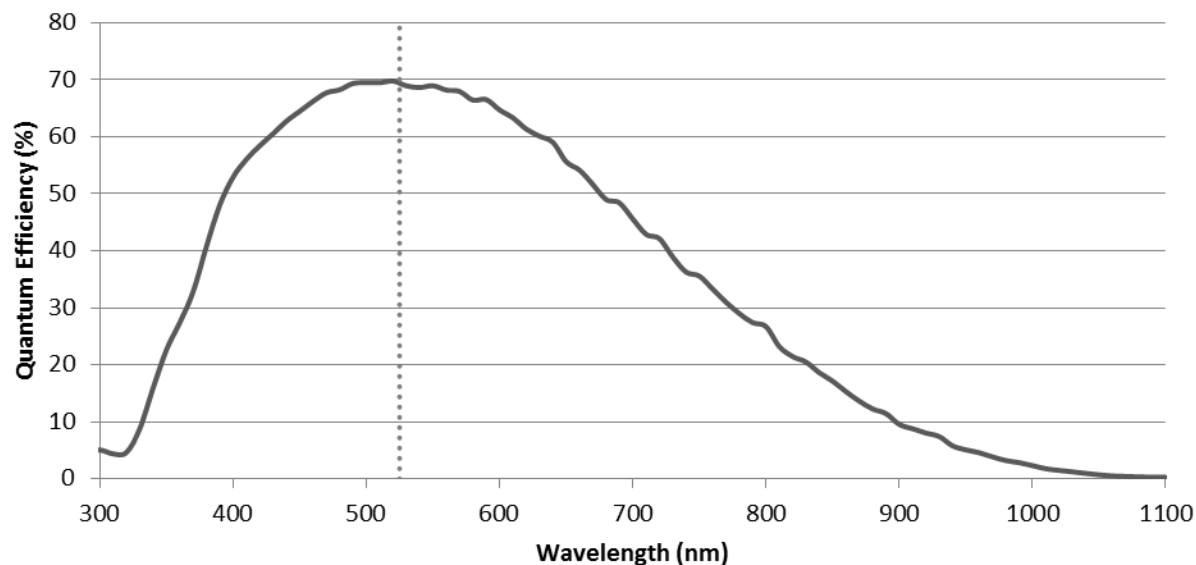
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	50	51
Quantum Efficiency Green (% at 525 nm)	55	56
Quantum Efficiency Red (% at 640 nm)	49	49
Temporal Dark Noise (Read Noise) (e-)	10.17	7.90
Signal to Noise Ratio Maximum (dB)	39.52	39.36
Signal to Noise Ratio Maximum (Bits)	6.56	6.54
Absolute Sensitivity Threshold ( $\gamma$ )	20.37	15.82
Saturation Capacity (Well Depth) (e-)	8948	8637
Dynamic Range (dB)	58.47	60.24
Dynamic Range (Bits)	9.71	10.01
Gain (e-/ADU)	0.16	0.15



# 10 GS3-U3-28S5M-C Imaging Performance

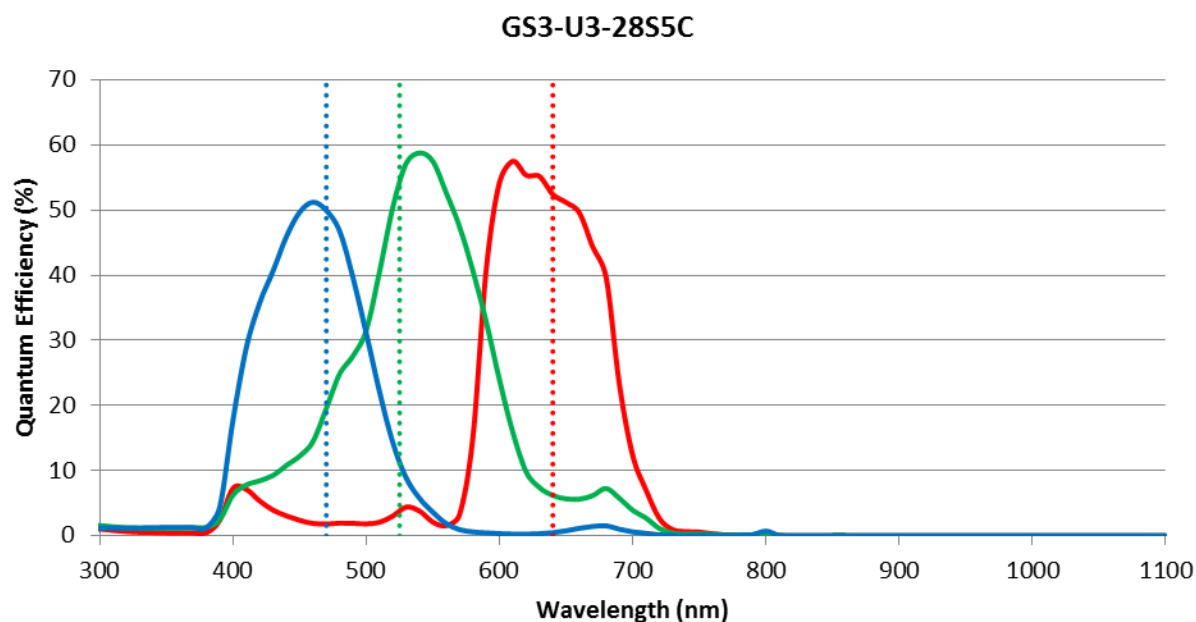
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	69	68
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	9.47	9.56
Signal to Noise Ratio Maximum (dB)	41.42	41.30
Signal to Noise Ratio Maximum (Bits)	6.88	6.86
Absolute Sensitivity Threshold ( $\gamma$ )	14.53	14.74
Saturation Capacity (Well Depth) (e <sup>-</sup> )	13866	13490
Dynamic Range (dB)	62.87	62.55
Dynamic Range (Bits)	10.44	10.39
Gain (e <sup>-</sup> /ADU)	0.24	0.24

GS3-U3-28S5M



# 11 GS3-U3-28S5C-C Imaging Performance

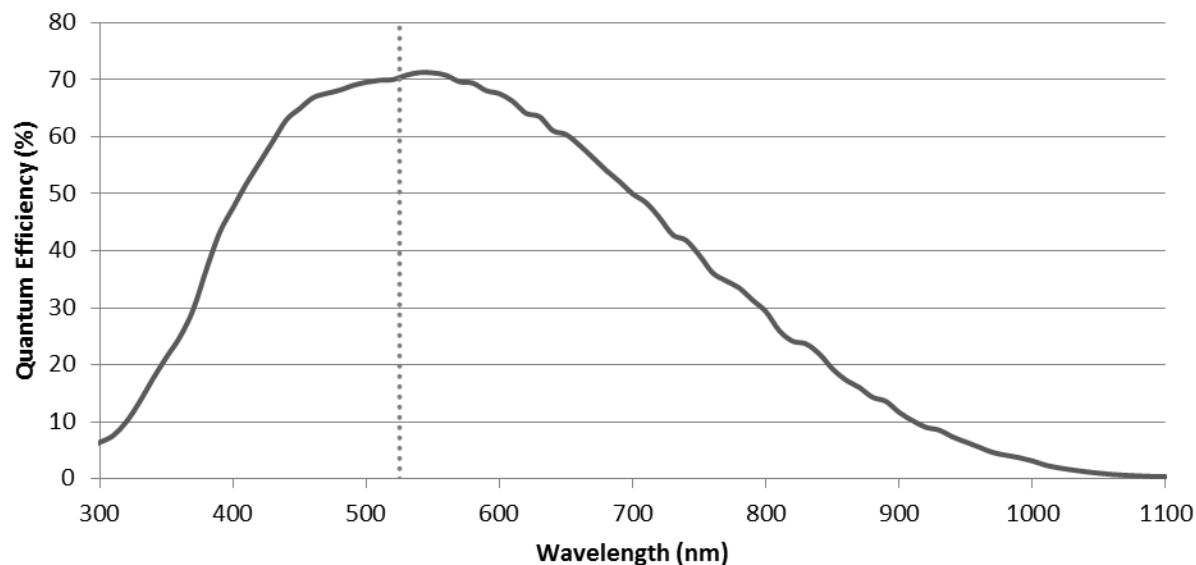
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	49	49
Quantum Efficiency Green (% at 525 nm)	53	53
Quantum Efficiency Red (% at 640 nm)	52	51
Temporal Dark Noise (Read Noise) (e-)	8.85	8.91
Signal to Noise Ratio Maximum (dB)	41.57	41.45
Signal to Noise Ratio Maximum (Bits)	6.90	6.89
Absolute Sensitivity Threshold ( $\gamma$ )	18.27	18.50
Saturation Capacity (Well Depth) (e-)	14341	13971
Dynamic Range (dB)	63.71	63.43
Dynamic Range (Bits)	10.58	10.54
Gain (e-/ADU)	0.23	0.23



## 12 GS3-U3-32S4M-C Imaging Performance

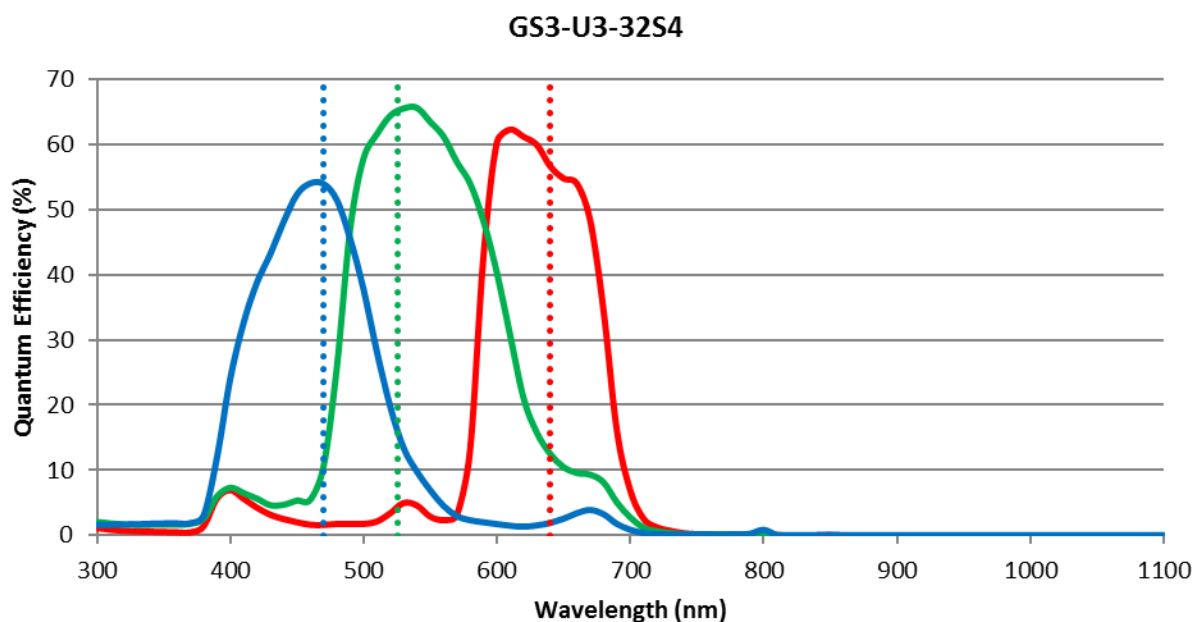
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	37.13	37.13
ADC (Bits)	10-bit	12-bit
Quantum Efficiency (% at 525 nm)	70	76
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	5.11	2.34
Signal to Noise Ratio Maximum (dB)	40.15	40.20
Signal to Noise Ratio Maximum (Bits)	6.67	6.68
Absolute Sensitivity Threshold ( $\gamma$ )	7.97	3.98
Saturation Capacity (Well Depth) (e <sup>-</sup> )	10341	10482
Dynamic Range (dB)	65.31	71.34
Dynamic Range (Bits)	10.85	11.85
Gain (e <sup>-</sup> /ADU)	0.17	0.17

GS3-U3-32S4M



# 13 GS3-U3-32S4C-C Imaging Performance

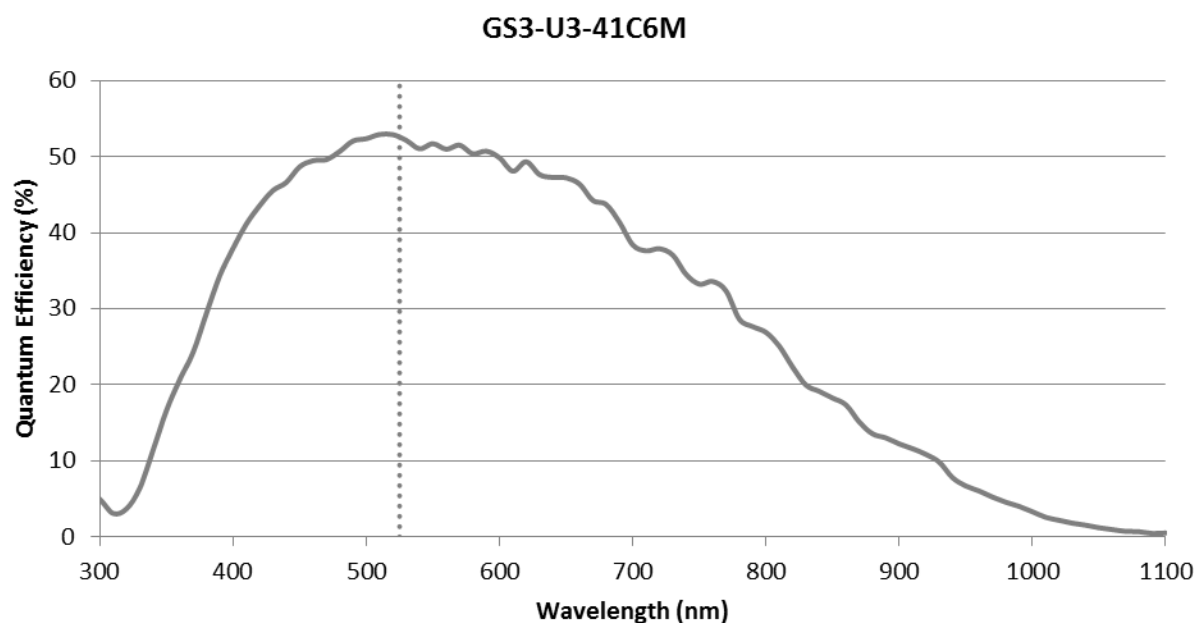
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	37.13	37.13
ADC (Bits)	10-bit	12-bit
Quantum Efficiency Blue (% at 470 nm)	53	54
Quantum Efficiency Green (% at 525 nm)	65	65
Quantum Efficiency Red (% at 640 nm)	56	57
Temporal Dark Noise (Read Noise) (e-)	4.75	2.33
Signal to Noise Ratio Maximum (dB)	39.89	39.93
Signal to Noise Ratio Maximum (Bits)	6.63	6.63
Absolute Sensitivity Threshold ( $\gamma$ )	8.33	4.45
Saturation Capacity (Well Depth) (e-)	9747	9838
Dynamic Range (dB)	65.38	70.82
Dynamic Range (Bits)	10.86	11.76
Gain (e-/ADU)	0.17	0.17





# 14 GS3-U3-41C6M-C Imaging Performance

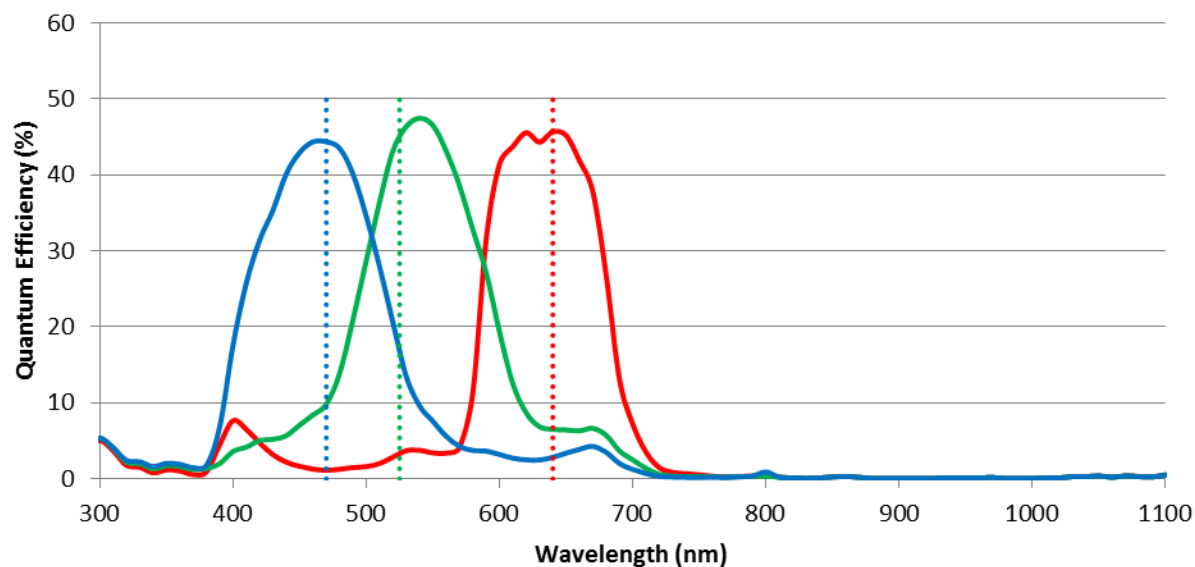
Measurement	Video Mode 0
Pixel Clock (MHz)	384
ADC (Bits)	10-bit
Quantum Efficiency (% at 525 nm)	53
Temporal Dark Noise (Read Noise) (e-)	16.81
Signal to Noise Ratio Maximum (dB)	38.82
Signal to Noise Ratio Maximum (Bits)	6.45
Absolute Sensitivity Threshold ( $\gamma$ )	33.38
Saturation Capacity (Well Depth) (e-)	7620
Dynamic Range (dB)	52.78
Dynamic Range (Bits)	8.78
Gain (e-/ADU)	0.15



# 15 GS3-U3-41C6C-C Imaging Performance

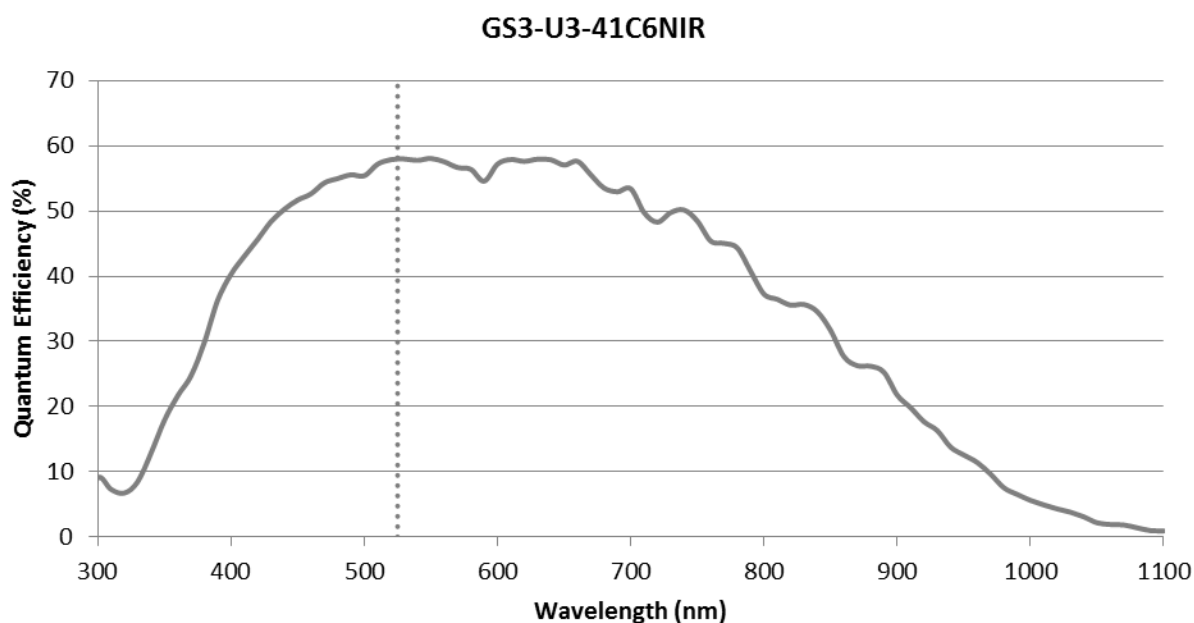
Measurement	Video Mode 0
Pixel Clock (MHz)	384
ADC (Bits)	10-bit
Quantum Efficiency Blue (% at 470 nm)	44
Quantum Efficiency Green (% at 525 nm)	45
Quantum Efficiency Red (% at 640 nm)	46
Temporal Dark Noise (Read Noise) (e-)	17.25
Signal to Noise Ratio Maximum (dB)	39.09
Signal to Noise Ratio Maximum (Bits)	6.49
Absolute Sensitivity Threshold ( $\gamma$ )	41.69
Saturation Capacity (Well Depth) (e-)	8104
Dynamic Range (dB)	53.19
Dynamic Range (Bits)	8.83
Gain (e-/ADU)	0.14

GS3-U3-41C6C



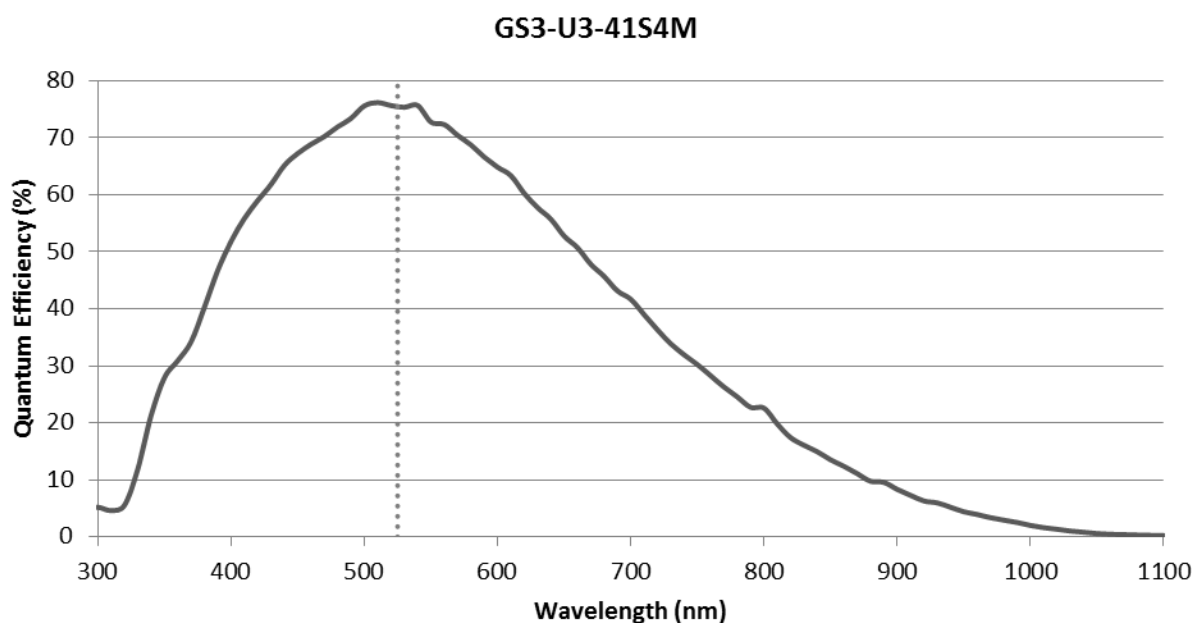
# 16 GS3-U3-41C6NIR Imaging Performance

Measurement	Video Mode 0
Pixel Clock (MHz)	384
ADC (Bits)	10-bit
Quantum Efficiency (% at 525 nm)	57
Temporal Dark Noise (Read Noise) (e-)	17.99
Signal to Noise Ratio Maximum (dB)	39.59
Signal to Noise Ratio Maximum (Bits)	6.58
Absolute Sensitivity Threshold ( $\gamma$ )	32.01
Saturation Capacity (Well Depth) (e-)	9094
Dynamic Range (dB)	53.84
Dynamic Range (Bits)	8.94
Gain (e-/ADU)	0.15



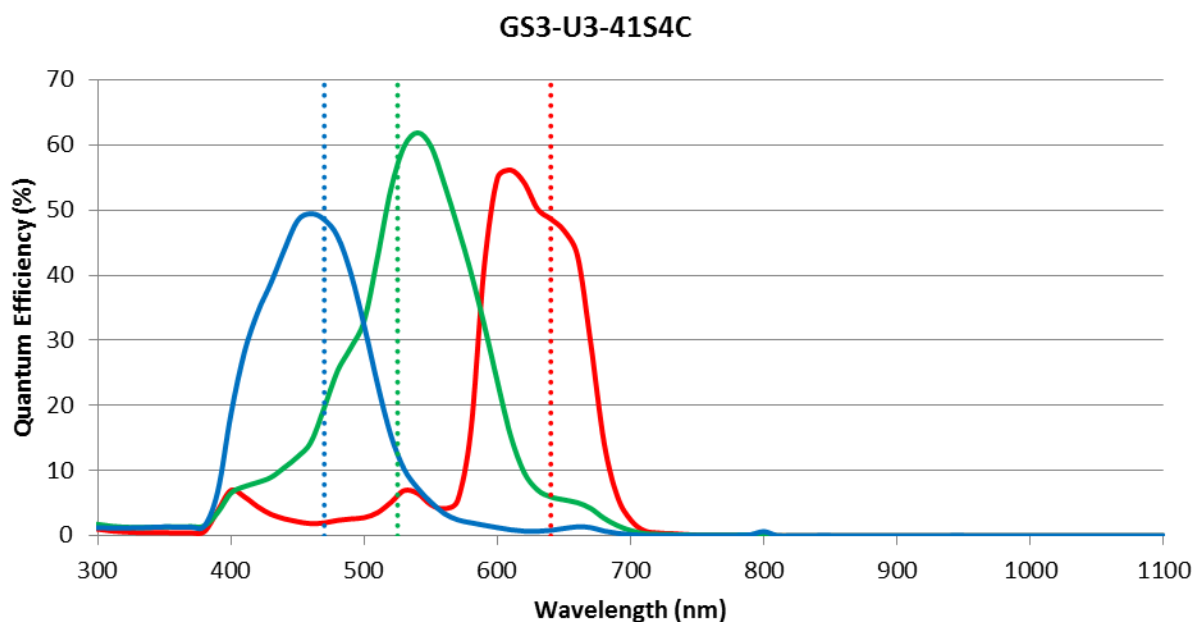
# 17 GS3-U3-41S4M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	75	72
Temporal Dark Noise (Read Noise) (e-)	9.29	8.64
Signal to Noise Ratio Maximum (dB)	38.10	38.11
Signal to Noise Ratio Maximum (Bits)	6.33	6.33
Absolute Sensitivity Threshold ( $\gamma$ )	13.32	12.66
Saturation Capacity (Well Depth) (e-)	6459	6478
Dynamic Range (dB)	56.39	57.01
Dynamic Range (Bits)	9.37	9.47
Gain (e-/ADU)	0.10	0.10



# 18 GS3-U3-41S4C-C Imaging Performance

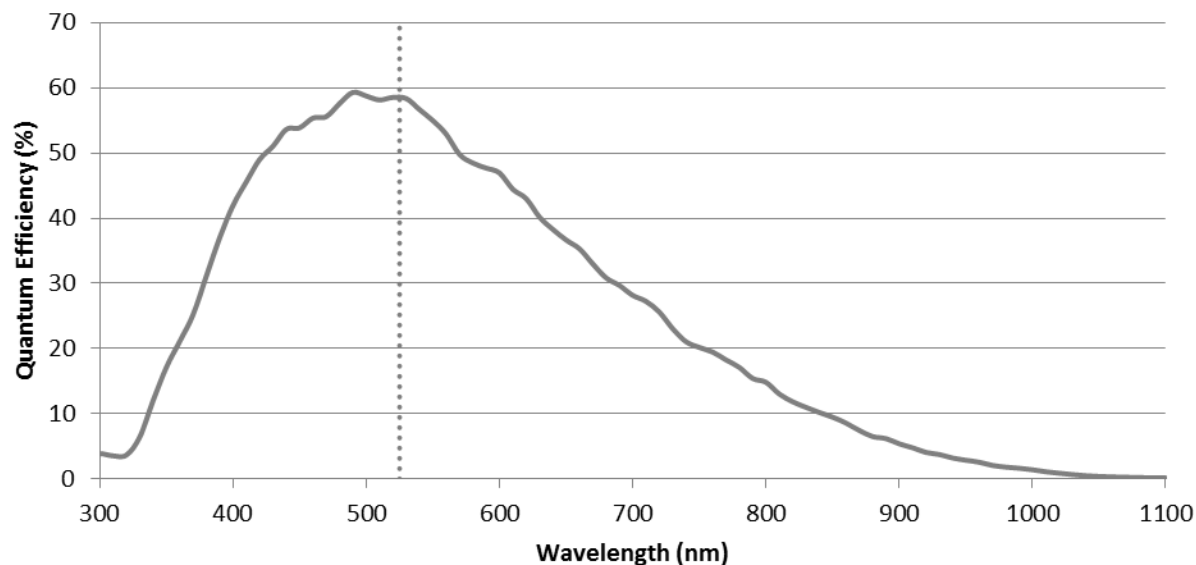
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	48	42
Quantum Efficiency Green (% at 525 nm)	56	54
Quantum Efficiency Red (% at 640 nm)	48	49
Temporal Dark Noise (Read Noise) (e-)	8.56	8.24
Signal to Noise Ratio Maximum (dB)	37.84	38.04
Signal to Noise Ratio Maximum (Bits)	6.29	6.32
Absolute Sensitivity Threshold ( $\gamma$ )	16.72	16.06
Saturation Capacity (Well Depth) (e-)	6088	6367
Dynamic Range (dB)	56.55	57.25
Dynamic Range (Bits)	9.39	9.51
Gain (e-/ADU)	0.10	0.10



# 19 GS3-U3-50S5M-C Imaging Performance

Measurement	Video Mode 0
Pixel Clock (MHz)	60
ADC (Bits)	14-bit
Quantum Efficiency (% at 525 nm)	58
Temporal Dark Noise (Read Noise) (e-)	8.73
Signal to Noise Ratio Maximum (dB)	37.90
Signal to Noise Ratio Maximum (Bits)	6.30
Absolute Sensitivity Threshold ( $\gamma$ )	16.30
Saturation Capacity (Well Depth) (e-)	6168
Dynamic Range (dB)	56.50
Dynamic Range (Bits)	9.38
Gain (e-/ADU)	0.10

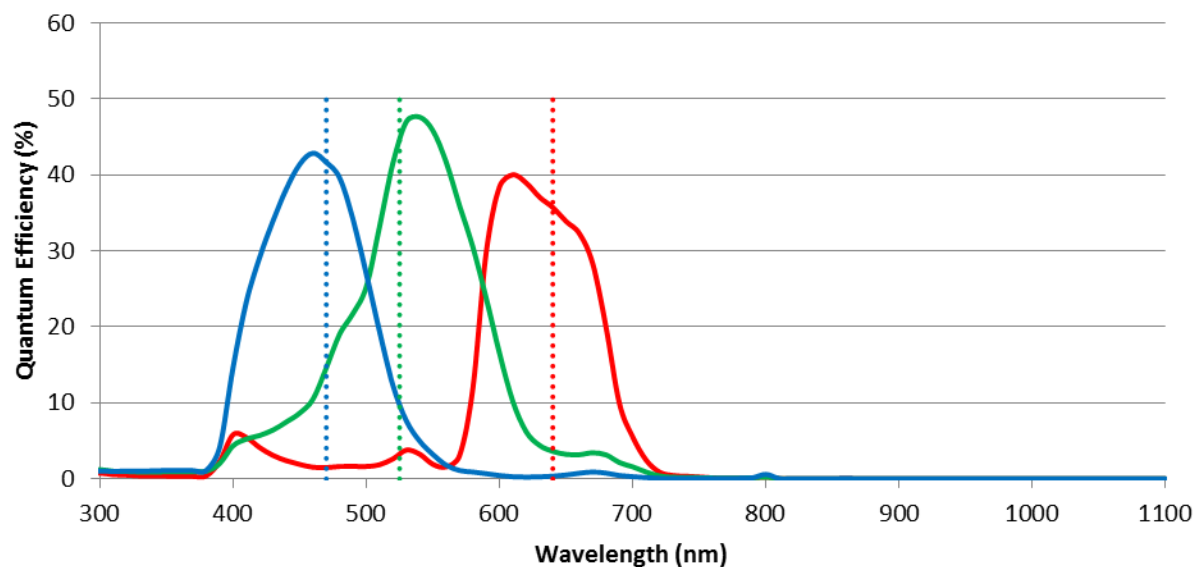
GS3-U3-50S5M



## 20 GS3-U3-50S5C-C Imaging Performance

Measurement	Video Mode 0
Pixel Clock (MHz)	60
ADC (Bits)	14-bit
Quantum Efficiency Blue (% at 470 nm)	41
Quantum Efficiency Green (% at 525 nm)	44
Quantum Efficiency Red (% at 640 nm)	35
Temporal Dark Noise (Read Noise) (e-)	9.15
Signal to Noise Ratio Maximum (dB)	38.06
Signal to Noise Ratio Maximum (Bits)	6.32
Absolute Sensitivity Threshold ( $\gamma$ )	23.19
Saturation Capacity (Well Depth) (e-)	6402
Dynamic Range (dB)	56.43
Dynamic Range (Bits)	9.37
Gain (e-/ADU)	0.10

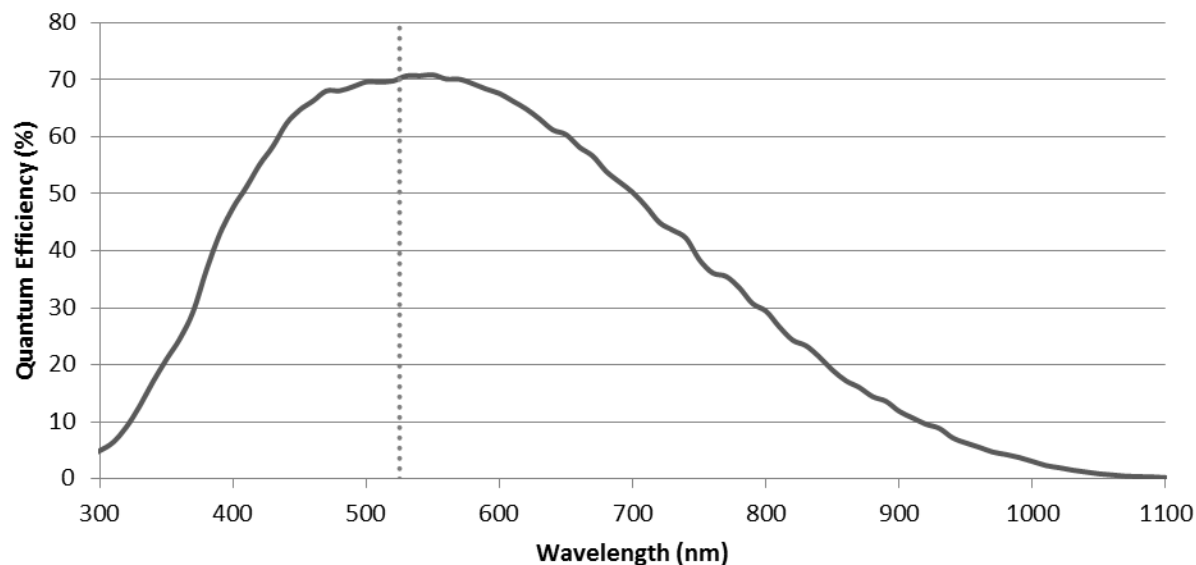
GS3-U3-50S5C



## 21 GS3-U3-51S5M-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)	70	76
Temporal Dark Noise (Read Noise) (e-)	5.11	2.37
Signal to Noise Ratio Maximum (dB)	40.09	40.15
Signal to Noise Ratio Maximum (Bits)	6.66	6.67
Absolute Sensitivity Threshold ( $\gamma$ )	8.00	4.03
Saturation Capacity (Well Depth) (e-)	10208	10361
Dynamic Range (dB)	65.20	71.15
Dynamic Range (Bits)	10.83	11.82
Gain (e-/ADU)	0.17	0.17

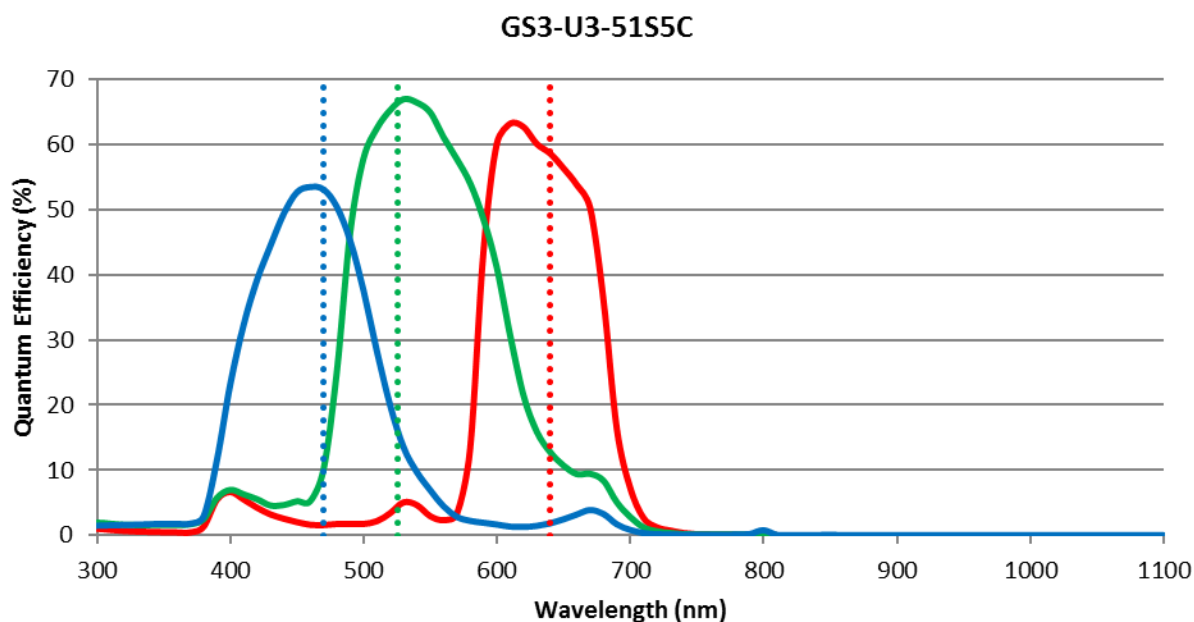
GS3-U3-51S5M





## 22 GS3-U3-51S5C-C Imaging Performance

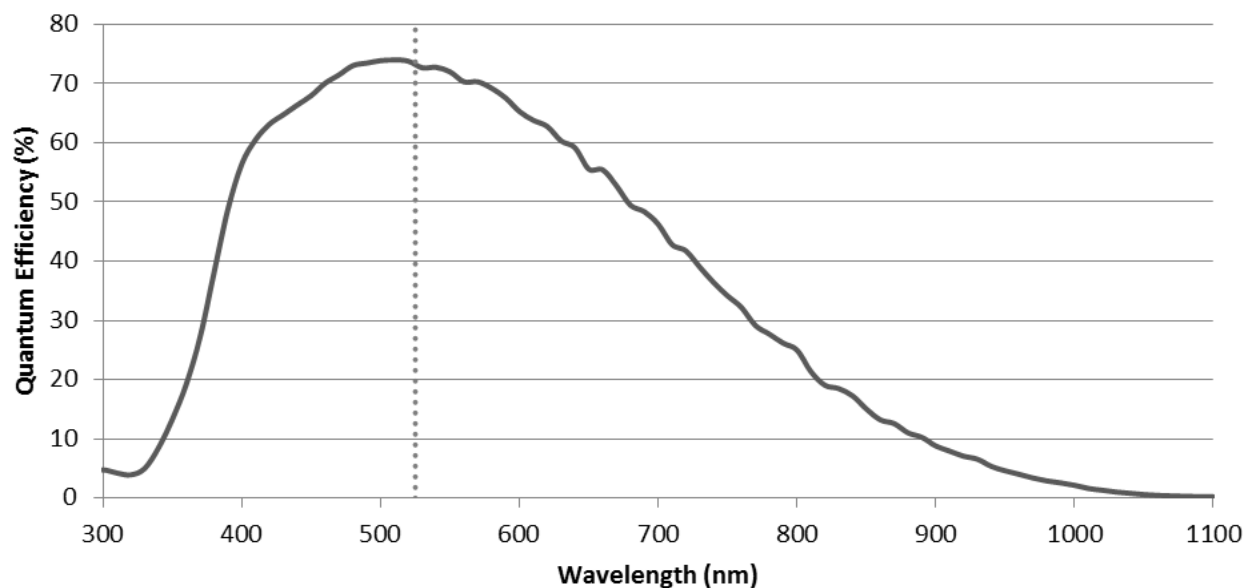
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	37.13	37.13
ADC (Bits)	10-bit	12-bit
Quantum Efficiency Blue (% at 470 nm)	53	53
Quantum Efficiency Green (% at 525 nm)	66	67
Quantum Efficiency Red (% at 640 nm)	58	58
Temporal Dark Noise (Read Noise) (e-)	4.97	2.32
Signal to Noise Ratio Maximum (dB)	40.08	40.14
Signal to Noise Ratio Maximum (Bits)	6.66	6.67
Absolute Sensitivity Threshold ( $\gamma$ )	8.56	4.36
Saturation Capacity (Well Depth) (e-)	10196	10330
Dynamic Range (dB)	65.41	71.27
Dynamic Range (Bits)	10.86	11.84
Gain (e-/ADU)	0.17	0.17



## 23 GS3-U3-60S6M-C Imaging Performance

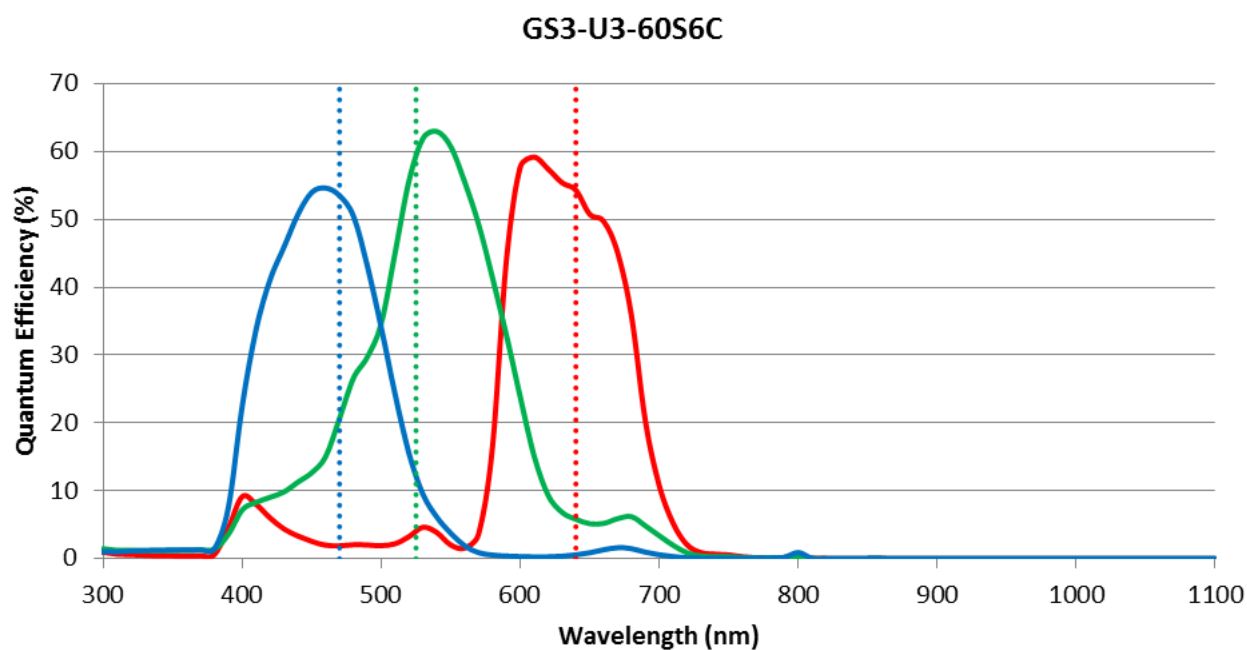
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	73	75
Temporal Dark Noise (Read Noise) (e-)	10.73	10.10
Signal to Noise Ratio Maximum (dB)	41.67	41.82
Signal to Noise Ratio Maximum (Bits)	6.92	6.95
Absolute Sensitivity Threshold ( $\gamma$ )	15.49	14.35
Saturation Capacity (Well Depth) (e-)	14697	15220
Dynamic Range (dB)	62.34	63.14
Dynamic Range (Bits)	10.35	10.49
Gain (e-/ADU)	0.23	0.24

GS3-U3-60S6M



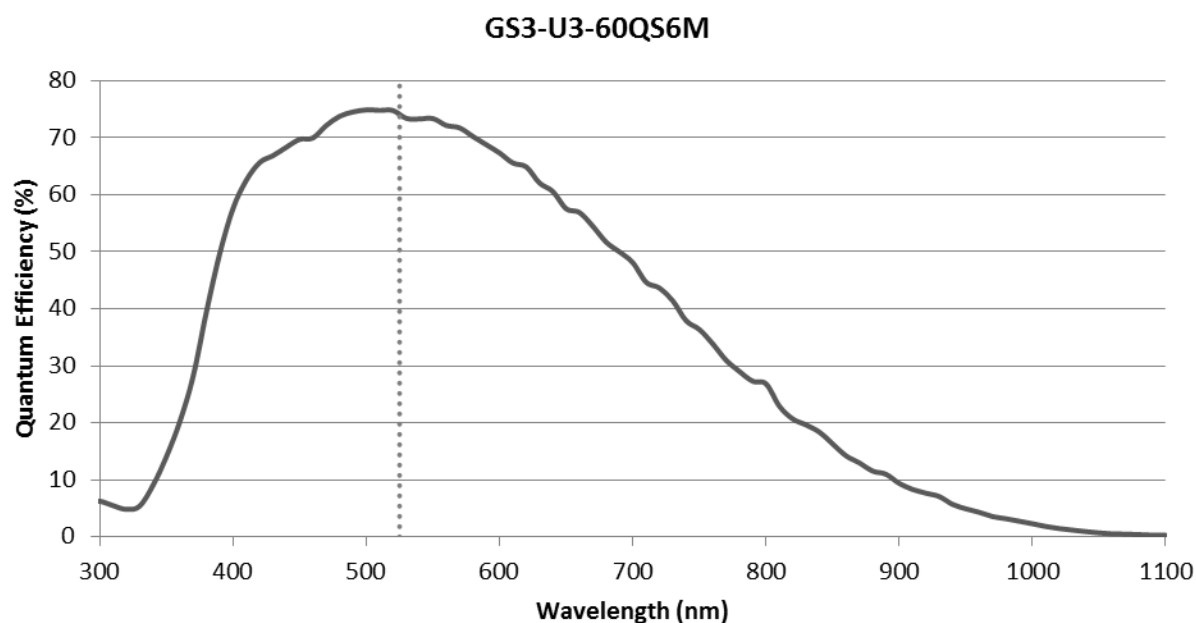
## 24 GS3-U3-60S6C-C Imaging Performance

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)	54	54
Temporal Dark Noise (Read Noise) (e-)	10.15	9.57
Signal to Noise Ratio Maximum (dB)	41.65	41.76
Signal to Noise Ratio Maximum (Bits)	6.92	6.94
Absolute Sensitivity Threshold ( $\gamma$ )	19.31	18.42
Saturation Capacity (Well Depth) (e-)	14629	15011
Dynamic Range (dB)	62.76	63.47
Dynamic Range (Bits)	10.42	10.54
Gain (e-/ADU)	0.23	0.24



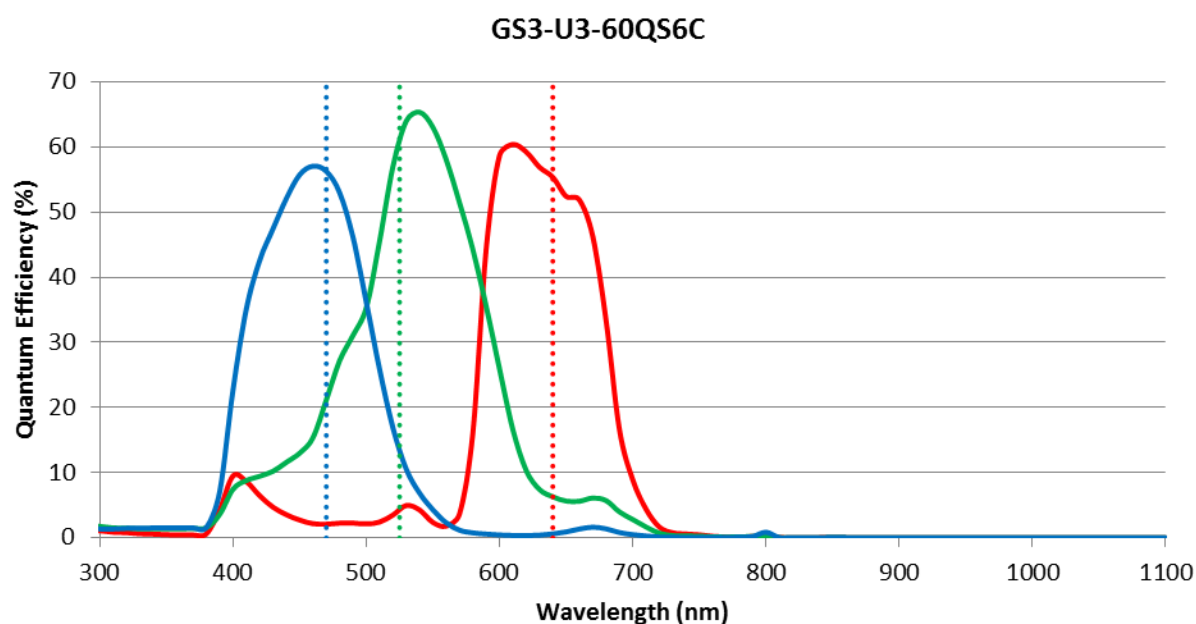
## 25 GS3-U3-60QS6M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	49	31.25
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	74	73
Temporal Dark Noise (Read Noise) (e-)	10.88	8.97
Signal to Noise Ratio Maximum (dB)	41.53	41.36
Signal to Noise Ratio Maximum (Bits)	6.90	6.87
Absolute Sensitivity Threshold ( $\gamma$ )	15.43	13.05
Saturation Capacity (Well Depth) (e-)	14227	13673
Dynamic Range (dB)	61.94	63.20
Dynamic Range (Bits)	10.29	10.50
Gain (e-/ADU)	0.23	0.22



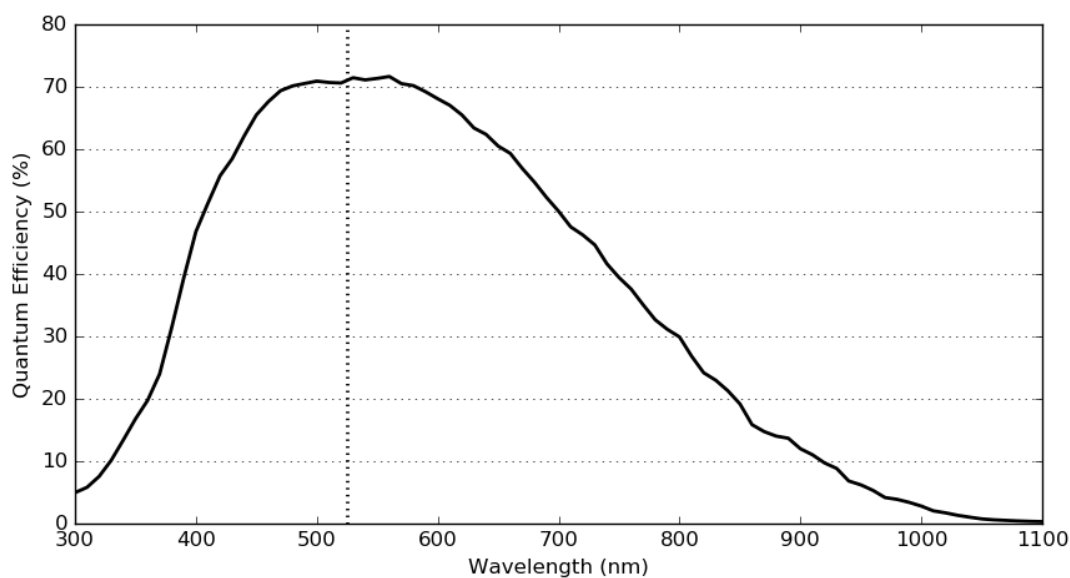
## 26 GS3-U3-60QS6C-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	49	49
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	56	55
Quantum Efficiency Green (% at 525 nm)	60	59
Quantum Efficiency Red (% at 640 nm)	55	55
Temporal Dark Noise (Read Noise) (e-)	10.56	9.12
Signal to Noise Ratio Maximum (dB)	41.49	41.31
Signal to Noise Ratio Maximum (Bits)	6.89	6.86
Absolute Sensitivity Threshold ( $\gamma$ )	19.09	16.82
Saturation Capacity (Well Depth) (e-)	14092	13505
Dynamic Range (dB)	62.11	62.94
Dynamic Range (Bits)	10.32	10.45
Gain (e-/ADU)	0.23	0.22



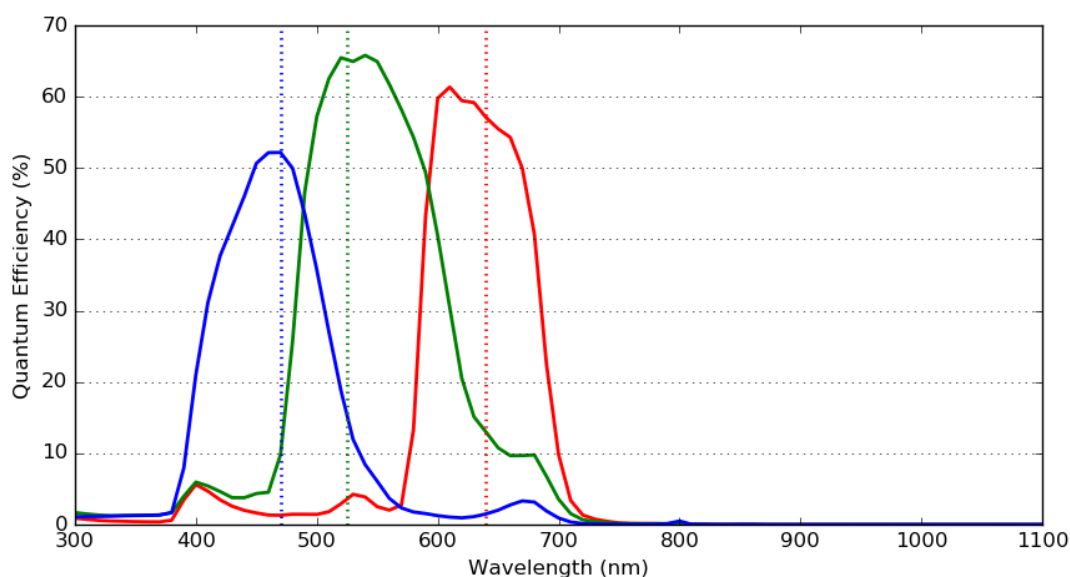
## 27 GS3-U3-89S6M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
ADC (Bits)	10-bit	12-bit
Quantum Efficiency (% at 525 nm)	72	71
Temporal Dark Noise (Read Noise) (e-)	4.70	2.43
Signal to Noise Ratio Maximum (dB)	40.23	40.19
Signal to Noise Ratio Maximum (Bits)	6.68	6.67
Absolute Sensitivity Threshold ( $\gamma$ )	7.24	4.13
Saturation Capacity (Well Depth) (e-)	10555	10435
Dynamic Range (dB)	66.15	71.03
Dynamic Range (Bits)	10.99	11.80
Gain (e-/ADU)	0.17	0.17



## 28 GS3-U3-89S6C-C Imaging Performance

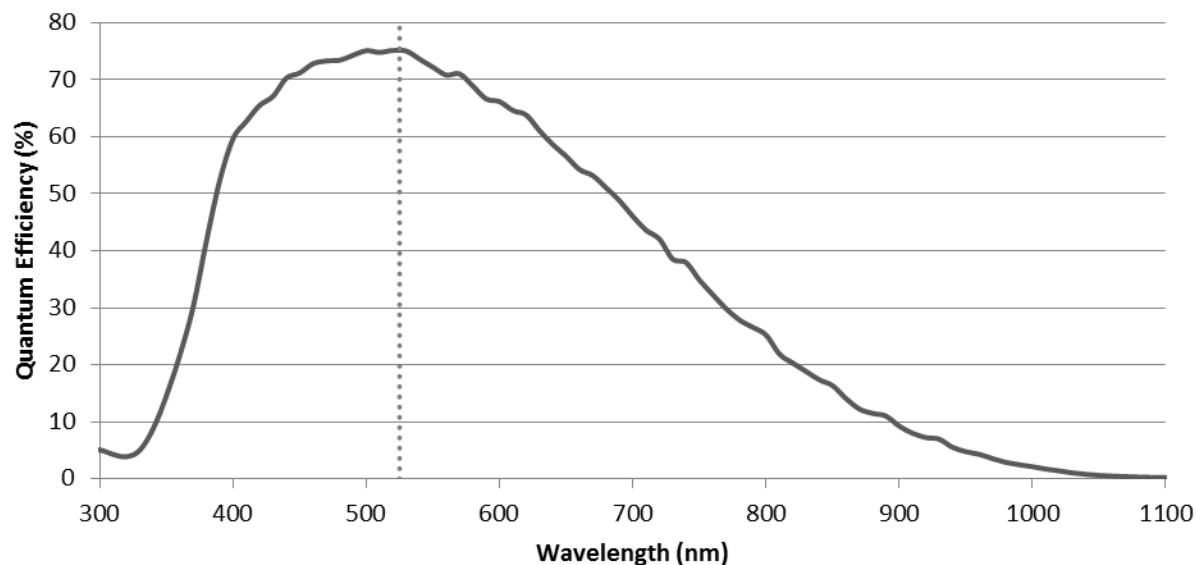
Measurement	Video Mode 0	Video Mode 7
ADC (Bits)	10-bit	12-bit
Quantum Efficiency Blue (% at 470 nm)	48	47
Quantum Efficiency Green (% at 525 nm)	64	63
Quantum Efficiency Red (% at 640 nm)	59	59
Temporal Dark Noise (Read Noise) (e-)	4.77	2.43
Signal to Noise Ratio Maximum (dB)	40.29	40.24
Signal to Noise Ratio Maximum (Bits)	6.69	6.68
Absolute Sensitivity Threshold ( $\gamma$ )	8.22	4.64
Saturation Capacity (Well Depth) (e-)	10692	10559
Dynamic Range (dB)	66.15	71.13
Dynamic Range (Bits)	10.99	11.81
Gain (e-/ADU)	0.17	0.17



## 29 GS3-U3-91S6M-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)	75	75
Temporal Dark Noise (Read Noise) (e <sup>-</sup> )	9.43	9.62
Signal to Noise Ratio Maximum (dB)	40.00	40.00
Signal to Noise Ratio Maximum (Bits)	6.64	6.64
Absolute Sensitivity Threshold ( $\gamma$ )	13.53	13.78
Saturation Capacity (Well Depth) (e <sup>-</sup> )	9996	10007
Dynamic Range (dB)	60.06	59.90
Dynamic Range (Bits)	9.98	9.95
Gain (e <sup>-</sup> /ADU)	0.16	0.16

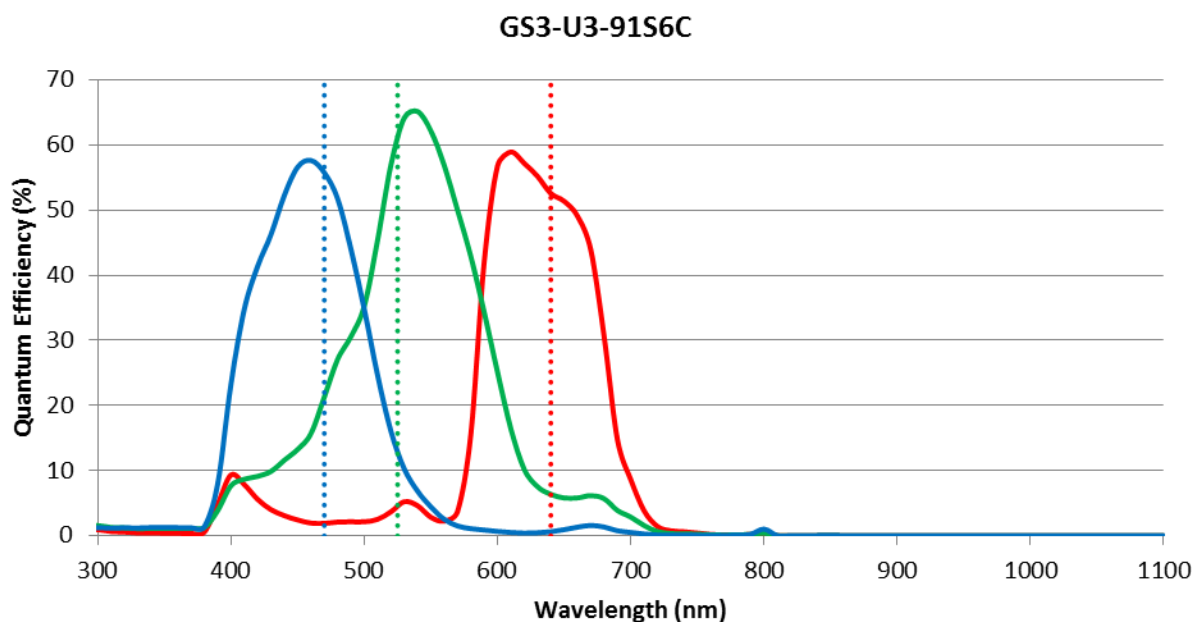
GS3-U3-91S6M





## 30 GS3-U3-91S6C-C Imaging Performance

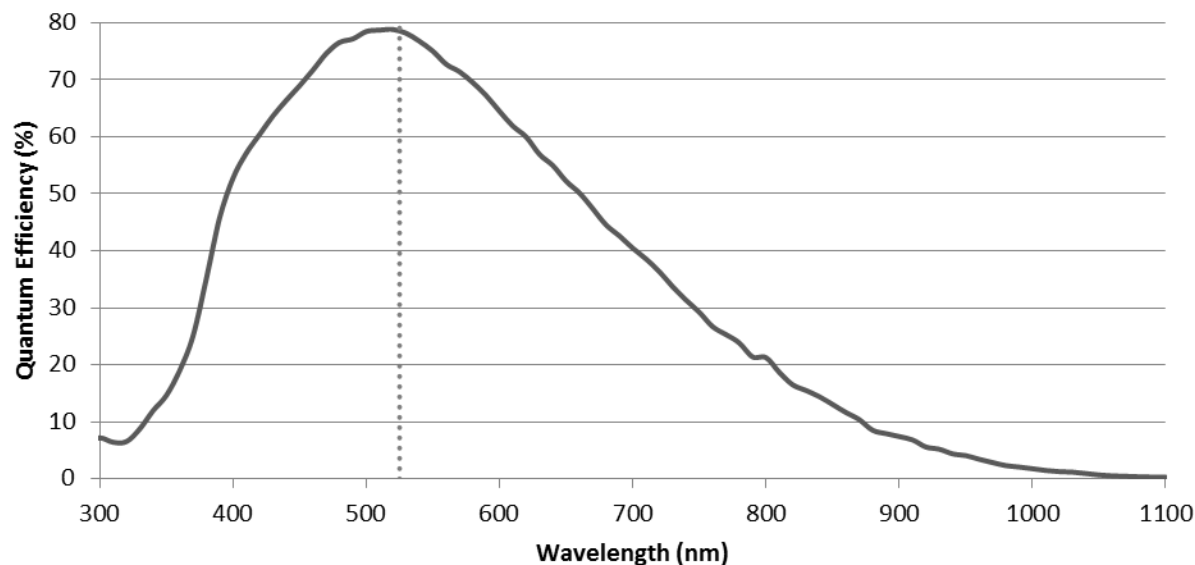
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	55	56
Quantum Efficiency Green (% at 525 nm)	60	60
Quantum Efficiency Red (% at 640 nm)	52	53
Temporal Dark Noise (Read Noise) (e-)	9.27	9.30
Signal to Noise Ratio Maximum (dB)	40.11	40.10
Signal to Noise Ratio Maximum (Bits)	6.66	6.66
Absolute Sensitivity Threshold ( $\gamma$ )	17.27	17.15
Saturation Capacity (Well Depth) (e-)	10262	10227
Dynamic Range (dB)	60.43	60.37
Dynamic Range (Bits)	10.04	10.03
Gain (e-/ADU)	0.16	0.16



## 31 GS3-U3-120S6M-C Imaging Performance

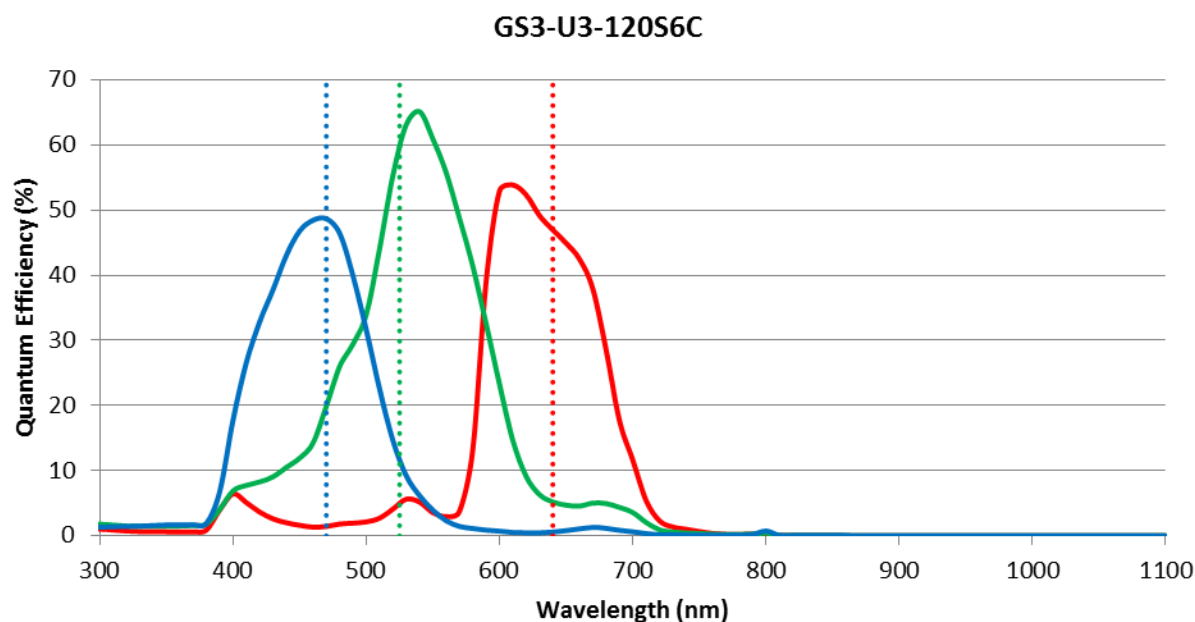
Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency (% at 525 nm)	78	78
Temporal Dark Noise (Read Noise) (e-)	10.87	11.18
Signal to Noise Ratio Maximum (dB)	37.87	37.84
Signal to Noise Ratio Maximum (Bits)	6.29	6.29
Absolute Sensitivity Threshold ( $\gamma$ )	14.82	15.18
Saturation Capacity (Well Depth) (e-)	6125	6085
Dynamic Range (dB)	54.63	54.34
Dynamic Range (Bits)	9.07	9.03
Gain (e-/ADU)	0.10	0.10

GS3-U3-120S6M



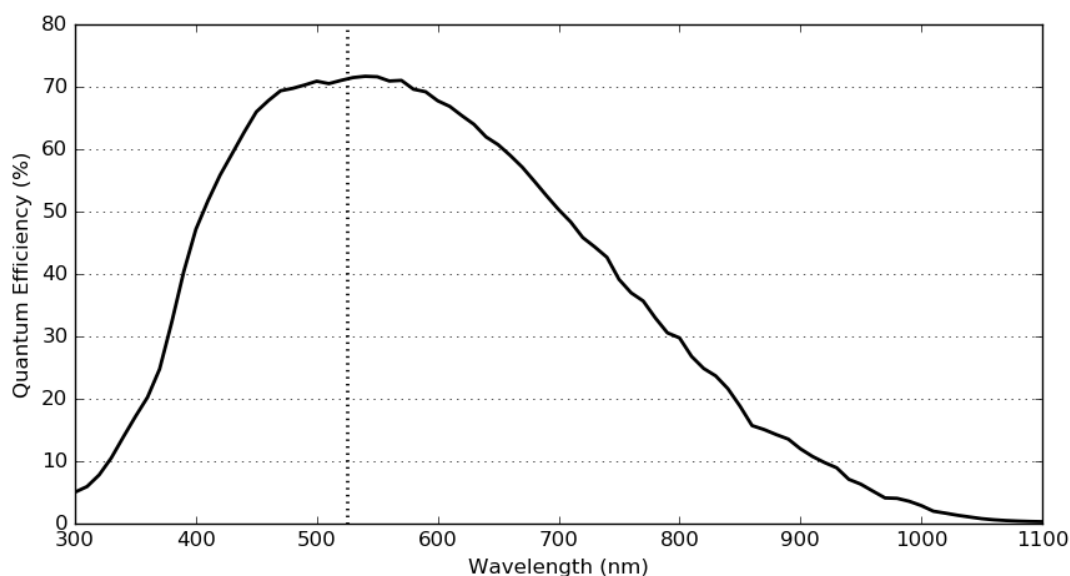
## 32 GS3-U3-120S6C-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
Pixel Clock (MHz)	54	54
ADC (Bits)	14-bit	14-bit
Quantum Efficiency Blue (% at 470 nm)	48	48
Quantum Efficiency Green (% at 525 nm)	59	58
Quantum Efficiency Red (% at 640 nm)	46	48
Temporal Dark Noise (Read Noise) (e-)	10.82	11.55
Signal to Noise Ratio Maximum (dB)	37.79	37.97
Signal to Noise Ratio Maximum (Bits)	6.28	6.31
Absolute Sensitivity Threshold ( $\gamma$ )	20.02	21.39
Saturation Capacity (Well Depth) (e-)	6010	6263
Dynamic Range (dB)	54.50	54.32
Dynamic Range (Bits)	9.05	9.02
Gain (e-/ADU)	0.10	0.10



## 33 GS3-U3-123S6M-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
ADC (Bits)	10-bit	12-bit
Quantum Efficiency (% at 525 nm)	72	71
Temporal Dark Noise (Read Noise) (e-)	4.74	2.43
Signal to Noise Ratio Maximum (dB)	40.24	40.19
Signal to Noise Ratio Maximum (Bits)	6.68	6.68
Absolute Sensitivity Threshold ( $\gamma$ )	7.28	4.12
Saturation Capacity (Well Depth) (e-)	10563	10451
Dynamic Range (dB)	66.09	71.04
Dynamic Range (Bits)	10.98	11.80
Gain (e-/ADU)	0.17	0.17



## 34 GS3-U3-123S6C-C Imaging Performance

Measurement	Video Mode 0	Video Mode 7
ADC (Bits)	10-bit	12-bit
Quantum Efficiency Blue (% at 470 nm)	48	47
Quantum Efficiency Green (% at 525 nm)	65	64
Quantum Efficiency Red (% at 640 nm)	59	59
Temporal Dark Noise (Read Noise) (e-)	4.74	2.43
Signal to Noise Ratio Maximum (dB)	40.27	40.21
Signal to Noise Ratio Maximum (Bits)	6.69	6.68
Absolute Sensitivity Threshold ( $\gamma$ )	8.13	4.61
Saturation Capacity (Well Depth) (e-)	10645	10504
Dynamic Range (dB)	66.15	71.08
Dynamic Range (Bits)	10.99	11.81
Gain (e-/ADU)	0.17	0.17

