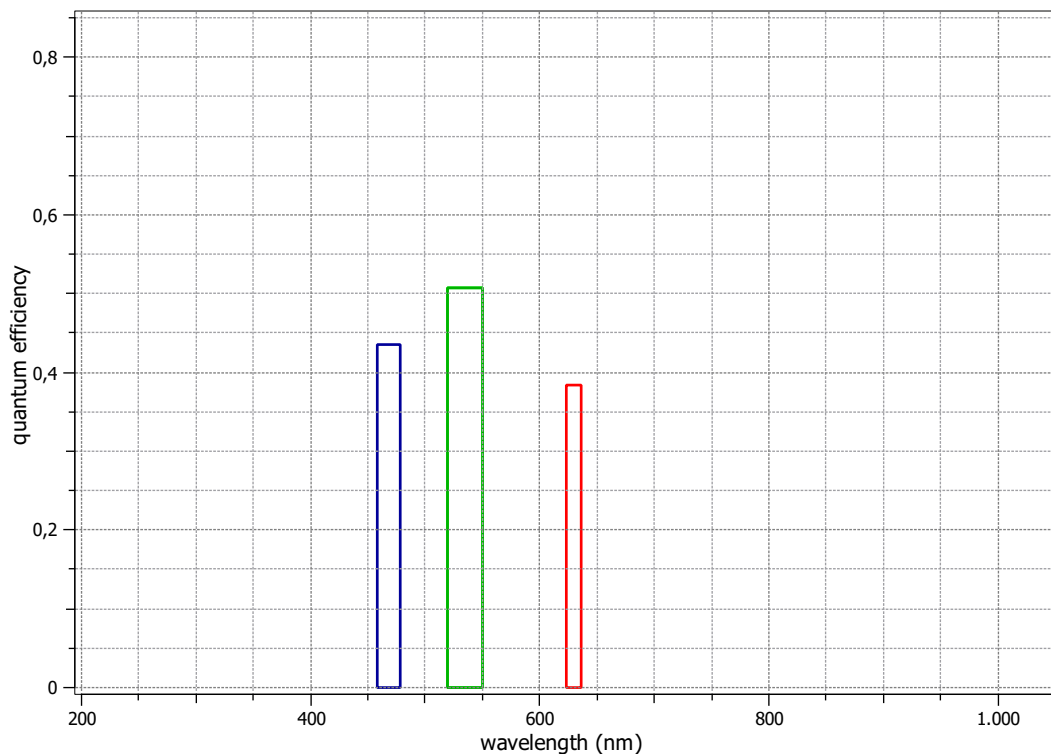


## EMVA 1288 Data Sheet m0831

This datasheet describes the specification according to the standard 1288 release 3.1 for "Characterization and Presentation of Specification Data for Image Sensors and Cameras" issued on December 30, 2016 by the European Machine Vision Association (EMVA), published at [www.standard1288.org](http://www.standard1288.org) and the *zenodo EMVA 1288 community* with proprietary extensions from AEON. The measurements were performed with the AEON ACC3 Release 6, 26.11.2016, SN 0005(MatrixVision).

Measurements performed by T.Renner, Matrix Vision GmbH

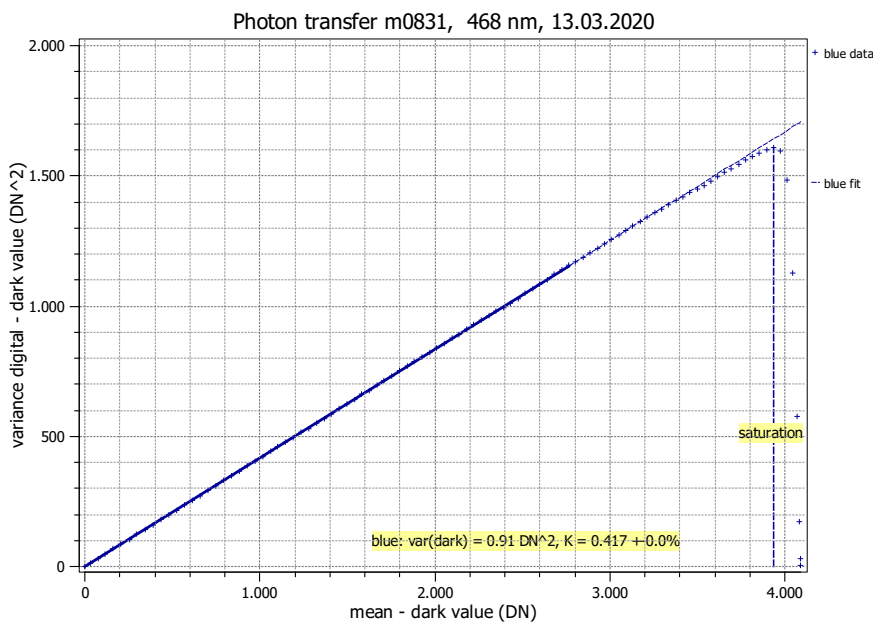
Vendor	Matrix Vision	Type of data presented	Single
Model	mvBlueFOX3-2246C	<b>Operation point 1 (page 5)</b>	
Serial number	FF005182	Wavelength centroid	468.0 nm
Sensor diagonal	19.30 mm	Wavelength FWHM	20.0 nm
Lens category	C-Mount	Gain, black-level	0dB, 0.1
Resolution	5328 × 4608, 12 bit	<b>Operation point 2 (page 20)</b>	
Pixel size (h×v)	2.74 μm × 2.74 μm	Wavelength centroid	535.0 nm
Sensor	IMX540	Wavelength FWHM	31.0 nm
Sensor type	CMOS	Gain, black-level	0dB, 0.1
Shutter type	Global	<b>Operation point 3 (page 35)</b>	
Overlap cap.	Overlapping	Wavelength centroid	630.0 nm
Max. frame rate	7.7 Hz	Wavelength FWHM	13.0 nm
Interface type	USB3 Vision	Gain, black-level	0dB, 0.1
		<b>Optional data measured</b>	
		None	



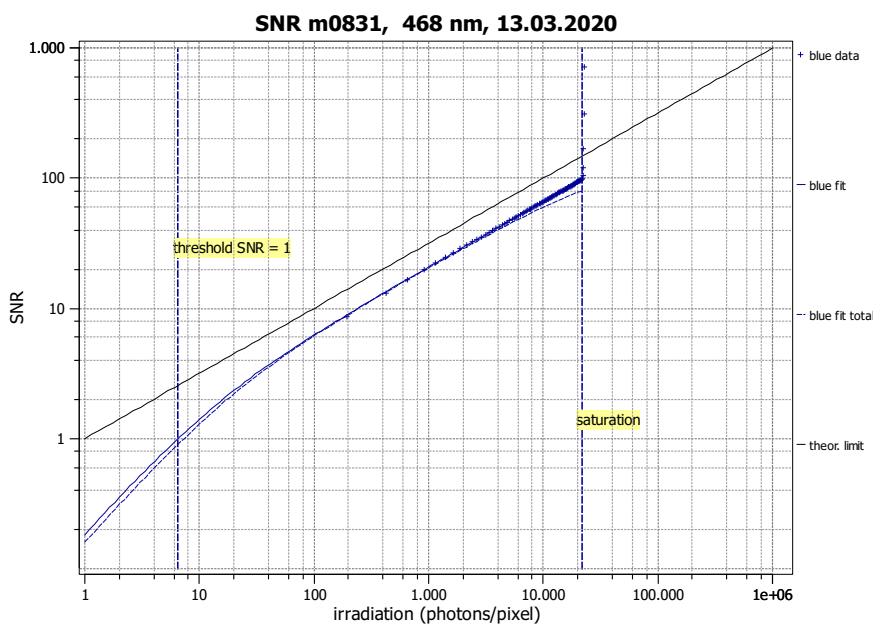
## Summary Sheet for Operation Point 1 at a Wavelength of 468 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	23.1°C
Exposure time	2.00 ms	Camera body temperature	34.7°C
Frame rate	7.7 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	468 nm, 20.0 nm

### Photon Transfer



### Signal-to-Noise Ratio

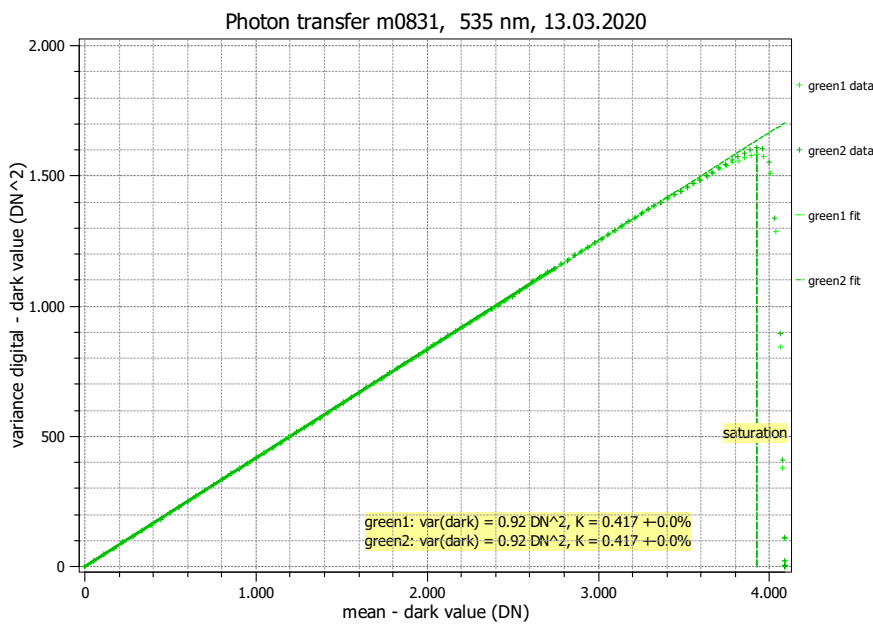


<b>Quantum efficiency</b>	
$\eta$	43.6%
<b>Overall system gain</b>	
$K$	0.417 DN/e <sup>-</sup>
$1/K$	2.397 e <sup>-</sup> /DN
<b>Temporal dark noise</b>	
$\sigma_d$	2.18 e <sup>-</sup>
$\sigma_{y,\text{dark}}$	0.96 DN
<b>Signal-to-noise ratio</b>	
SNR <sub>max</sub>	97
	39.7 dB
	6.6 bit
$1/\text{SNR}_{\text{max}}$	1.03 %
<b>Absolute sensitivity threshold</b>	
$\mu_{p,\text{min}}$	6.53 p
$\mu_{p,\text{min.area}}$	0.870 p/μm <sup>2</sup>
$\mu_{e,\text{min}}$	2.84 e <sup>-</sup>
$\mu_{e,\text{min.area}}$	0.379 e <sup>-</sup> /μm <sup>2</sup>
<b>Saturation capacity</b>	
$\mu_{p,\text{sat}}$	21658 p
$\mu_{p,\text{sat.area}}$	2885 p/μm <sup>2</sup>
$\mu_{e,\text{sat}}$	9434 e <sup>-</sup>
$\mu_{e,\text{sat.area}}$	1257 e <sup>-</sup> /μm <sup>2</sup>
<b>Dynamic range</b>	
DR	3318
	70.4 dB
	11.7 bit
<b>Spatial nonuniformities</b>	
DSNU <sub>1288</sub>	1.34 e <sup>-</sup>
	0.56 DN
PRNU <sub>1288</sub>	0.72 %
<b>Linearity error</b>	
LE <sub>min</sub>	-0.34%
LE <sub>max</sub>	0.32%
<b>Dark current</b>	
$\mu_{c,\text{mean}}$	2.0 ± 0.0 e <sup>-</sup> /s
	0.83 DN/s
$\mu_{c,\text{var}}$	2.1 ± 0.0 e <sup>-</sup> /s
$T_d$	— °C

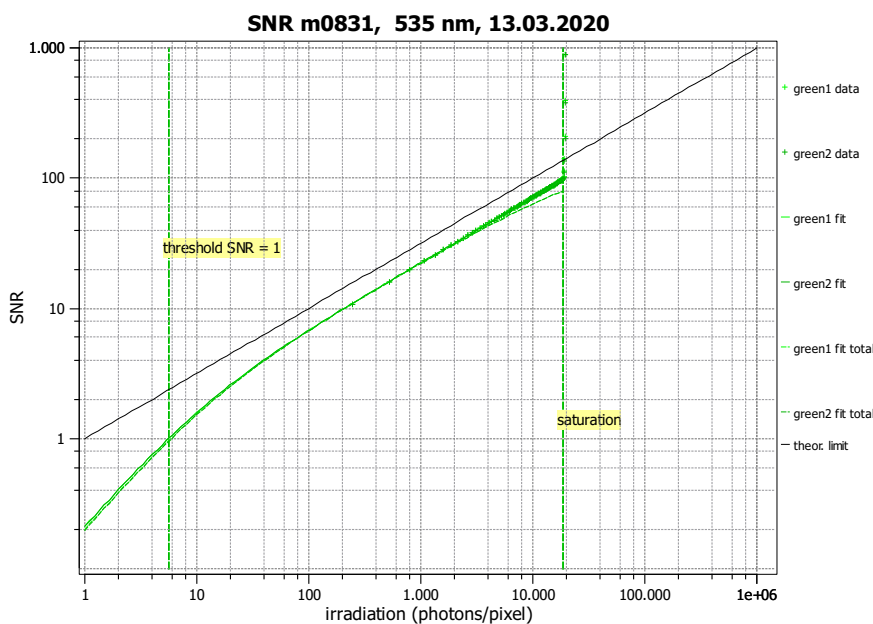
## Summary Sheet for Operation Point 2 at a Wavelength of 535 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	23.2°C
Exposure time	2.00 ms	Camera body temperature	35.5°C
Frame rate	7.7 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	535 nm, 31.0 nm

### Photon Transfer



### Signal-to-Noise Ratio



#### Quantum efficiency

$\eta$  50.8%

#### Overall system gain

$K$  0.417 DN/e<sup>-</sup>

$1/K$  2.399 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  2.19 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  0.96 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 97

39.7 dB

6.6 bit

$1/\text{SNR}_{\text{max}}$  1.03 %

#### Absolute sensitivity threshold

$\mu_{p,\text{min}}$  5.61 p

$\mu_{p,\text{min},\text{area}}$  0.748 p/μm<sup>2</sup>

$\mu_{e,\text{min}}$  2.85 e<sup>-</sup>

$\mu_{e,\text{min},\text{area}}$  0.380 e<sup>-</sup>/μm<sup>2</sup>

#### Saturation capacity

$\mu_{p,\text{sat}}$  18515 p

$\mu_{p,\text{sat},\text{area}}$  2466 p/μm<sup>2</sup>

$\mu_{e,\text{sat}}$  9397 e<sup>-</sup>

$\mu_{e,\text{sat},\text{area}}$  1252 e<sup>-</sup>/μm<sup>2</sup>

#### Dynamic range

DR 3298

70.4 dB

11.7 bit

#### Spatial nonuniformities

DSNU<sub>1288</sub> 0.82 e<sup>-</sup>

0.34 DN

PRNU<sub>1288</sub> 0.73 %

#### Linearity error

LE<sub>min</sub> -0.49%

LE<sub>max</sub> 0.84%

#### Dark current

$\mu_{c,\text{mean}}$  2.0 ± 0.0 e<sup>-</sup>/s

0.82 DN/s

$\mu_{c,\text{var}}$  2.1 ± 0.0 e<sup>-</sup>/s

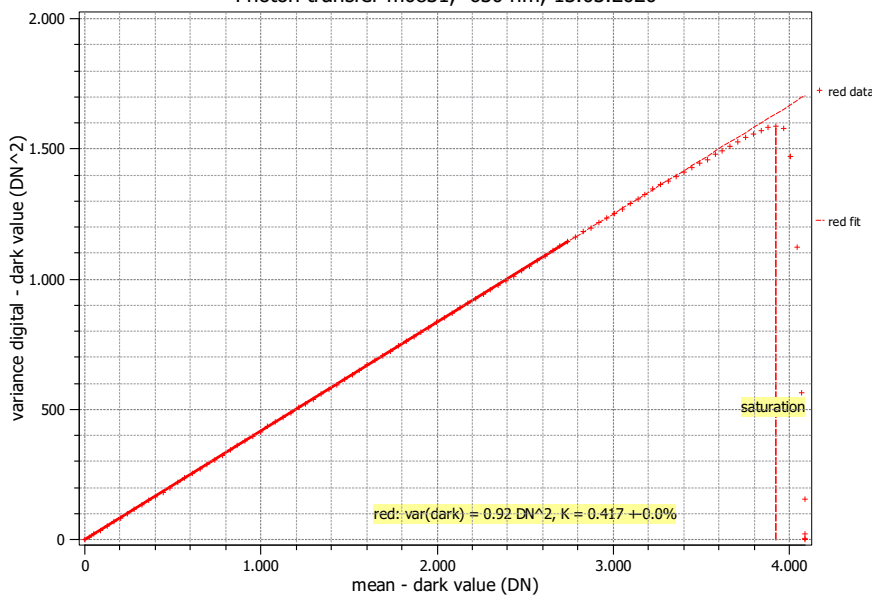
$T_d$  — °C

## Summary Sheet for Operation Point 3 at a Wavelength of 630 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	23.1°C
Exposure time	2.00 ms	Camera body temperature	35.8°C
Frame rate	7.7 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.0 nm

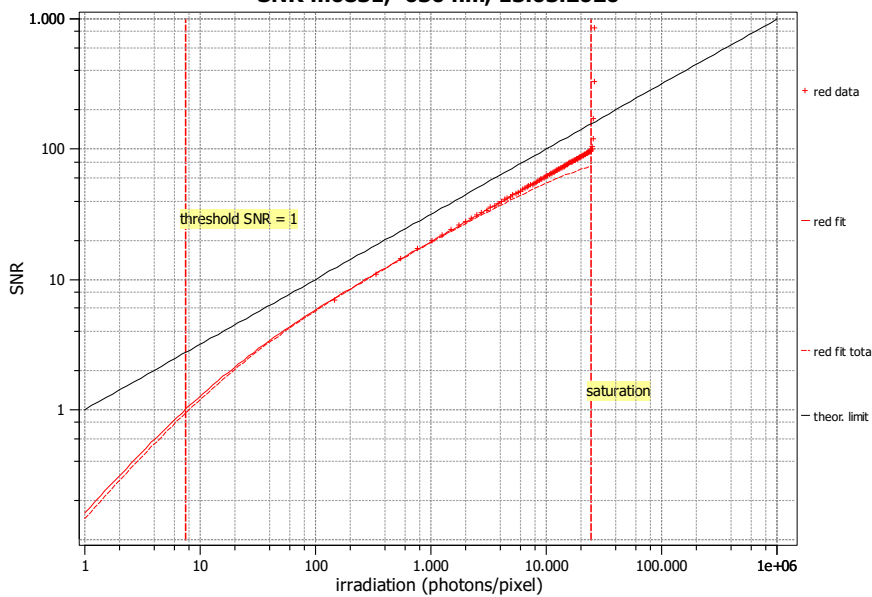
### Photon Transfer

Photon transfer m0831, 630 nm, 13.03.2020



### Signal-to-Noise Ratio

SNR m0831, 630 nm, 13.03.2020



#### Quantum efficiency

$\eta$  38.4%

#### Overall system gain

$K$  0.417 DN/e<sup>-</sup>

$1/K$  2.399 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  2.20 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  0.96 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 97

39.8 dB

6.6 bit

$1/\text{SNR}_{\text{max}}$  1.03 %

#### Absolute sensitivity threshold

$\mu_{p,\text{min}}$  7.46 p

$\mu_{p,\text{min},\text{area}}$  0.993 p/ $\mu\text{m}^2$

$\mu_{e,\text{min}}$  2.86 e<sup>-</sup>

$\mu_{e,\text{min},\text{area}}$  0.381 e<sup>-</sup>/ $\mu\text{m}^2$

#### Saturation capacity

$\mu_{p,\text{sat}}$  24642 p

$\mu_{p,\text{sat},\text{area}}$  3282 p/ $\mu\text{m}^2$

$\mu_{e,\text{sat}}$  9451 e<sup>-</sup>

$\mu_{e,\text{sat},\text{area}}$  1259 e<sup>-</sup>/ $\mu\text{m}^2$

#### Dynamic range

DR 3305

70.4 dB

11.7 bit

#### Spatial nonuniformities

DSNU<sub>1288</sub> 1.06 e<sup>-</sup>

0.44 DN

PRNU<sub>1288</sub> 0.86 %

#### Linearity error

LE<sub>min</sub> -0.42%

LE<sub>max</sub> 0.31%

#### Dark current

$\mu_{c,\text{mean}}$  1.9 ± 0.0 e<sup>-</sup>/s

0.78 DN/s

$\mu_{c,\text{var}}$  1.9 ± 0.0 e<sup>-</sup>/s

$T_d$  — °C