

## EMVA 1288 Data Sheet mACC200085

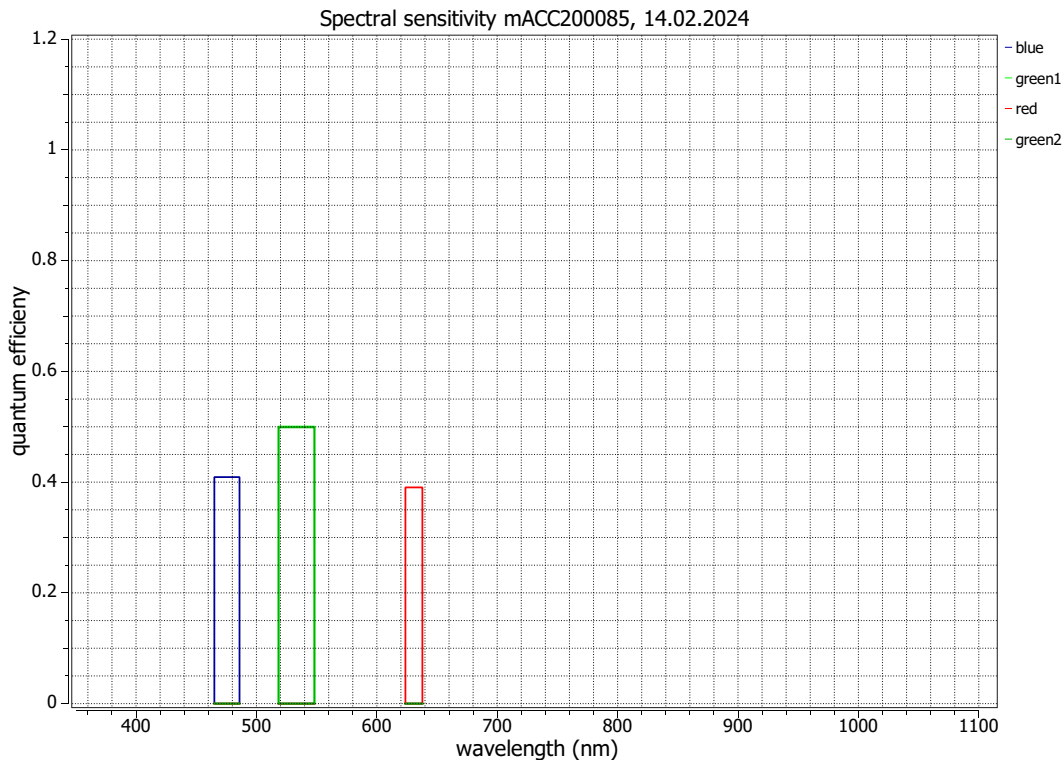
This data sheet describes the specification according to the standard 1288 Release 4.0 Linear issued on 21 June 2021 for "Characterization and Presentation of Specification Data for Image Sensors and Cameras" by the European Machine Vision Association (EMVA), published at <https://www.emva.org/standards-technology/emva-1288/> with proprietary extensions from AEON. The measurements were performed with the AEON ACC2b 14x1 color, Release 9, 13.11.2020, SN 0068(Baumer), software version 2.0.

Measurements performed by Baumer Optronic GmbH. The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

Type of data presented	Single
Vendor	Baumer
Model	VLXT-81C.I
Serial number	700007152605
Sensor diagonal	11.00 mm
Lens category	C-Mount
Resolution	2848 × 2832, 12 bit
Offset/Size used	0 × 0/ 2848 × 2832
Pixel size (h×v)	2.74 μm × 2.74 μm
Sensor	Sony IMX536
Sensor type	CMOS
Shutter type	Global shutter
Overlap cap.	Overlapped
Max. frame rate	0.0 Hz
Interface type	GEV

Nr.	Centroid/FWHM	Gain, blacklevel	$t_{exp}$ (ms)
1	475.5/20.9 nm	1.0 / 39.0	8.00
2	533.3/29.8 nm	1.0 / 39.0	6.25
3	630.8/14.1 nm	1.0 / 39.0	6.25

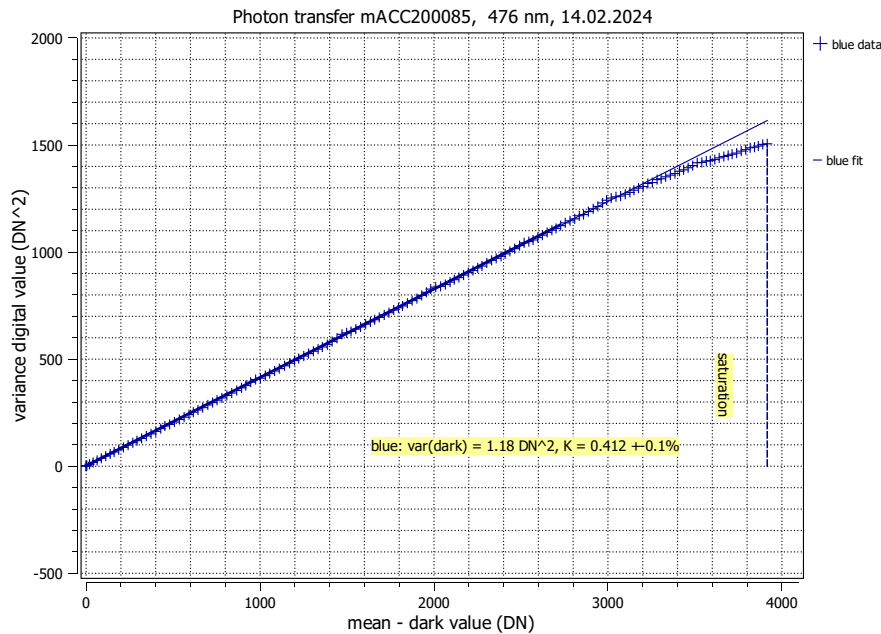
Optional data measured: None



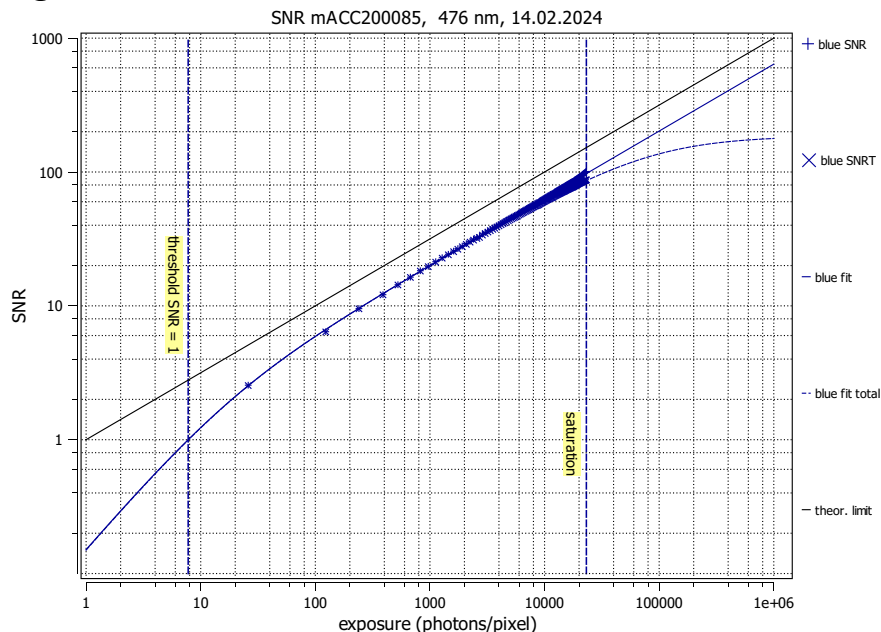
## Summary Sheet for Operation Point 1 at a Wavelength of 476 nm

Type of data	Single	Gain, black-level	1.0 / 39.0
Exposure control	By irradiance	Environmental temperature	21.8°C
Exposure time	8.000 ms	Camera body temperature	34.6°C
Frame rate	10.0 Hz	Internal temperature(s)	49.0°C
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	476 nm, 20.9 nm

### Photon Transfer



### Signal-to-Noise Ratio



#### Quantum efficiency

$\eta$  40.9%

#### Overall system gain

$K$  0.4124 DN/e<sup>-</sup>

1/ $K$  2.425 e<sup>-</sup>/DN

#### Temporal dark noise

$\sigma_d$  2.54 e<sup>-</sup>

$\sigma_{y,\text{dark}}$  1.09 DN

#### Signal-to-noise ratio

SNR<sub>max</sub> 97.3

39.8 dB

1/SNR<sub>max</sub> 1.027 %

#### Absolute sensitivity threshold

$\mu_{e,\text{min}}$  3.18 e<sup>-</sup>

$\mu_{e,\text{min,area}}$  0.423 e<sup>-</sup>/μm<sup>2</sup>

#### Saturation capacity

$\mu_{e,\text{sat}}$  9477 e<sup>-</sup>

$\mu_{e,\text{sat,area}}$  1262 e<sup>-</sup>/μm<sup>2</sup>

#### Dynamic range

DR 2981

69.49 dB

#### Spatial nonuniformities

DSNU<sub>1288</sub> 0.365 e<sup>-</sup>

DSNU<sub>1288,col</sub> 0.016 e<sup>-</sup>

DSNU<sub>1288,row</sub> 0.012 e<sup>-</sup>

DSNU<sub>1288,pix</sub> 0.364 e<sup>-</sup>

PRNU<sub>1288</sub> 0.540 %

PRNU<sub>1288,col</sub> 0.018 %

PRNU<sub>1288,row</sub> 0.040 %

PRNU<sub>1288,pix</sub> 0.538 %

#### Linearity error

LE 0.21%

#### Dark current

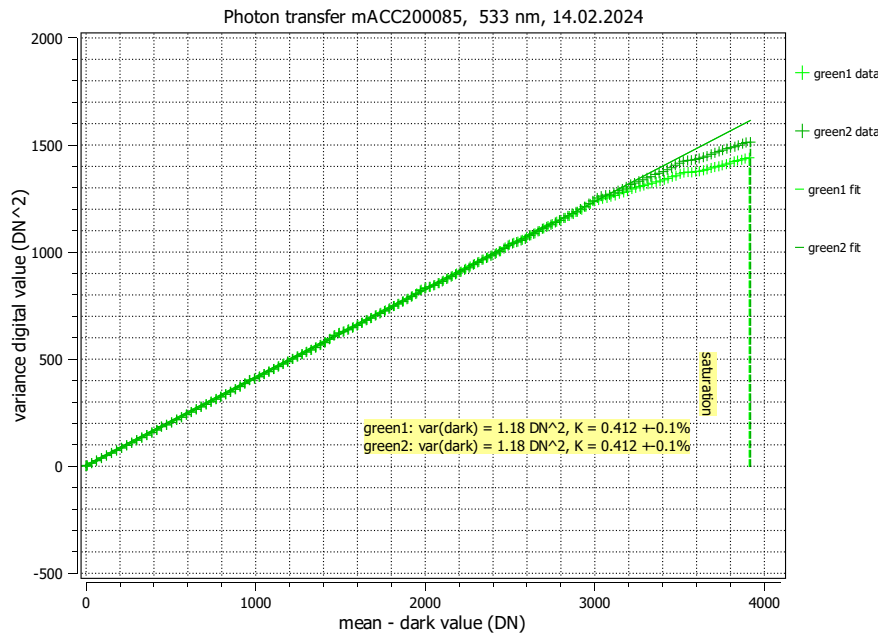
$\mu_{c,\text{mean}}$  0.139 e<sup>-</sup>/s

$\mu_{c,\text{var}}$  29.9 e<sup>-</sup>/s

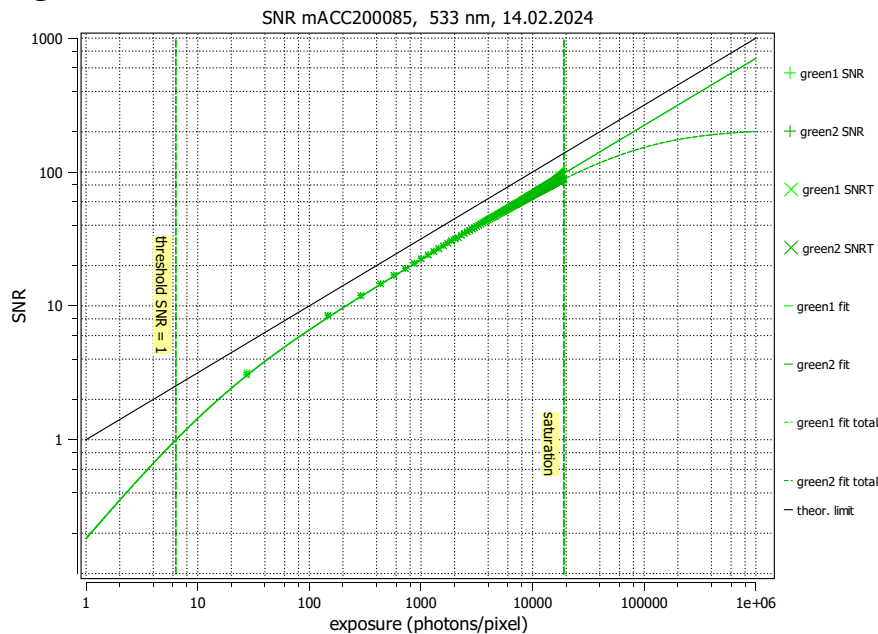
## Summary Sheet for Operation Point 2 at a Wavelength of 533 nm

Type of data	Single	Gain, black-level	1.0 / 39.0
Exposure control	By irradiance	Environmental temperature	21.9°C
Exposure time	6.254 ms	Camera body temperature	34.7°C
Frame rate	10.0 Hz	Internal temperature(s)	49.0°C
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	533 nm, 29.8 nm

### Photon Transfer



### Signal-to-Noise Ratio

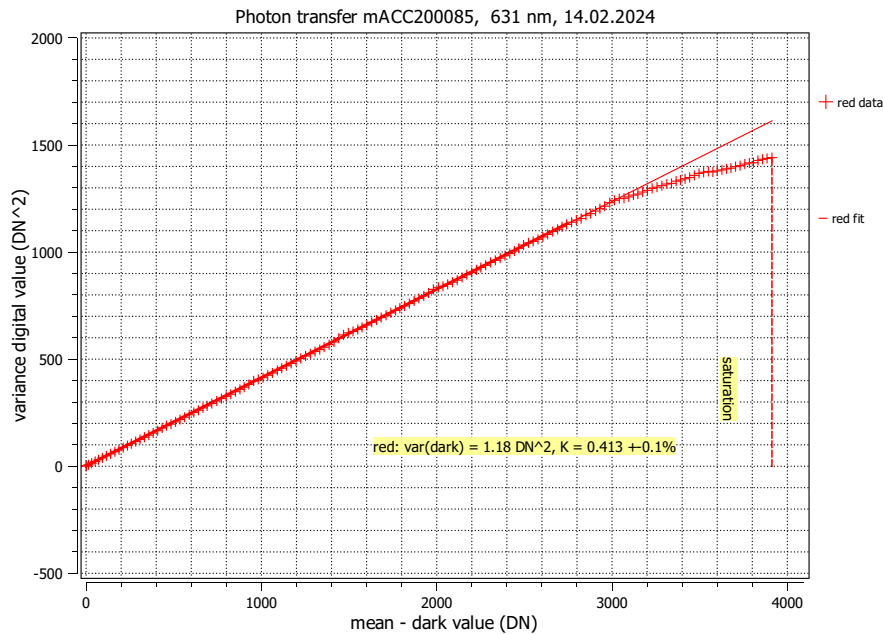


<b>Quantum efficiency</b>	
$\eta$	50.0%
<b>Overall system gain</b>	
$K$	0.4124 DN/e <sup>-</sup>
$1/K$	2.425 e <sup>-</sup> /DN
<b>Temporal dark noise</b>	
$\sigma_d$	2.54 e <sup>-</sup>
$\sigma_{y,\text{dark}}$	1.09 DN
<b>Signal-to-noise ratio</b>	
SNR <sub>max</sub>	97.7
	39.8 dB
$1/\text{SNR}_{\text{max}}$	1.024 %
<b>Absolute sensitivity threshold</b>	
$\mu_{e,\text{min}}$	3.18 e <sup>-</sup>
$\mu_{e,\text{min,area}}$	0.423 e <sup>-</sup> /μm <sup>2</sup>
<b>Saturation capacity</b>	
$\mu_{e,\text{sat}}$	9541 e <sup>-</sup>
$\mu_{e,\text{sat,area}}$	1271 e <sup>-</sup> /μm <sup>2</sup>
<b>Dynamic range</b>	
DR	3001
	69.55 dB
<b>Spatial nonuniformities</b>	
DSNU <sub>1288</sub>	0.353 e <sup>-</sup>
DSNU <sub>1288.col</sub>	0.016 e <sup>-</sup>
DSNU <sub>1288.row</sub>	0.012 e <sup>-</sup>
DSNU <sub>1288.pix</sub>	0.352 e <sup>-</sup>
PRNU <sub>1288</sub>	0.478 %
PRNU <sub>1288.col</sub>	0.016 %
PRNU <sub>1288.row</sub>	0.022 %
PRNU <sub>1288.pix</sub>	0.477 %
<b>Linearity error</b>	
LE	0.12%
<b>Dark current</b>	
$\mu_{c,\text{mean}}$	0.145 e <sup>-</sup> /s
$\mu_{c,\text{var}}$	27.1 e <sup>-</sup> /s

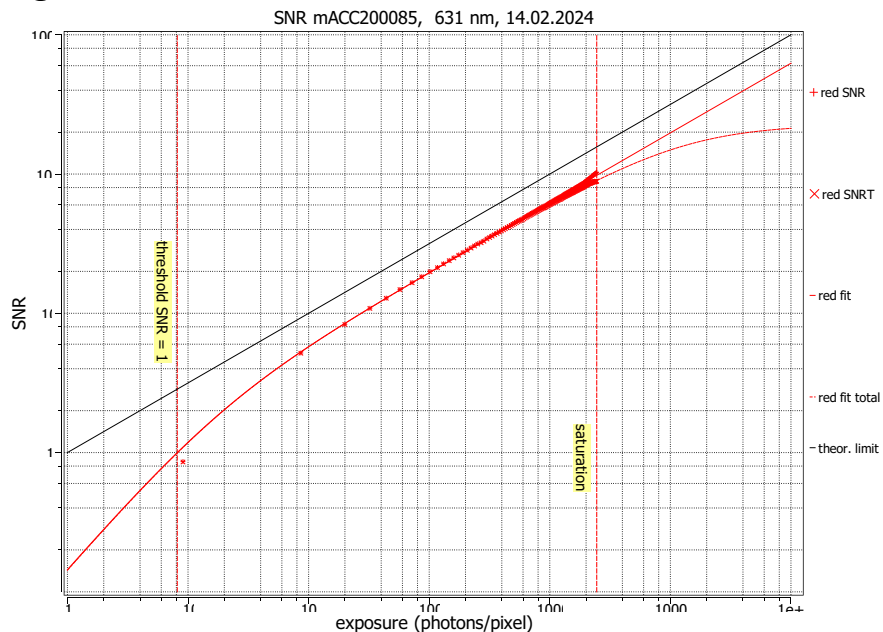
## Summary Sheet for Operation Point 3 at a Wavelength of 631 nm

Type of data	Single	Gain, black-level	1.0 / 39.0
Exposure control	By irradiance	Environmental temperature	21.9°C
Exposure time	6.254 ms	Camera body temperature	34.8°C
Frame rate	10.0 Hz	Internal temperature(s)	49.0°C
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	631 nm, 14.1 nm

### Photon Transfer



### Signal-to-Noise Ratio



<b>Quantum efficiency</b>	
$\eta$	39.0%
<b>Overall system gain</b>	
$K$	0.4125 DN/e <sup>-</sup>
$1/K$	2.424 e <sup>-</sup> /DN
<b>Temporal dark noise</b>	
$\sigma_d$	2.54 e <sup>-</sup>
$\sigma_{y,\text{dark}}$	1.09 DN
<b>Signal-to-noise ratio</b>	
SNR <sub>max</sub>	97.8
	39.8 dB
$1/\text{SNR}_{\text{max}}$	1.022 %
<b>Absolute sensitivity threshold</b>	
$\mu_{e,\text{min}}$	3.18 e <sup>-</sup>
$\mu_{e,\text{min,area}}$	0.424 e <sup>-</sup> /μm <sup>2</sup>
<b>Saturation capacity</b>	
$\mu_{e,\text{sat}}$	9572 e <sup>-</sup>
$\mu_{e,\text{sat,area}}$	1275 e <sup>-</sup> /μm <sup>2</sup>
<b>Dynamic range</b>	
DR	3010
	69.57 dB
<b>Spatial nonuniformities</b>	
DSNU <sub>1288</sub>	0.386 e <sup>-</sup>
DSNU <sub>1288.col</sub>	0.016 e <sup>-</sup>
DSNU <sub>1288.row</sub>	0.024 e <sup>-</sup>
DSNU <sub>1288.pix</sub>	0.385 e <sup>-</sup>
PRNU <sub>1288</sub>	0.441 %
PRNU <sub>1288.col</sub>	0.017 %
PRNU <sub>1288.row</sub>	0.046 %
PRNU <sub>1288.pix</sub>	0.439 %
<b>Linearity error</b>	
LE	0.12%
<b>Dark current</b>	
$\mu_{c,\text{mean}}$	0.0206 e <sup>-</sup> /s
$\mu_{c,\text{var}}$	28.4 e <sup>-</sup> /s