

EMVA 1288 Data Sheet m1263

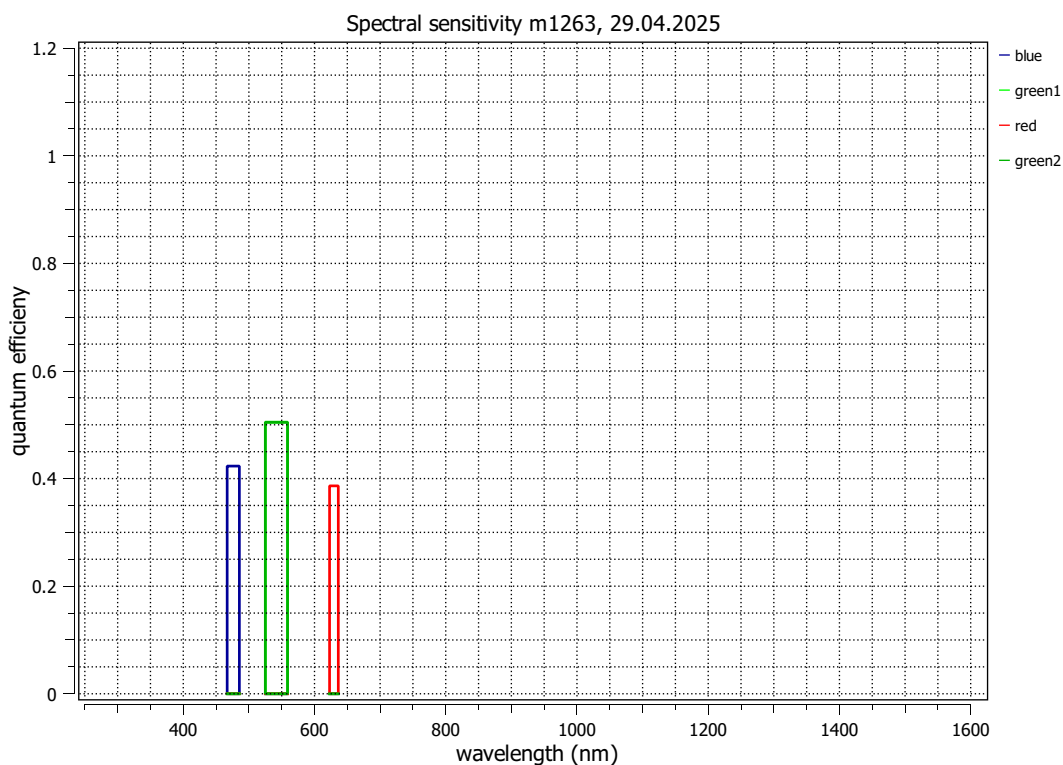
This datasheet describes the specification according to the standard 1288 Release 4.0 Linear issued on 21 June 2021 for "Characterization and Presentation of Specification Data for Image Sensors and Cameras" by the European Machine Vision Association (EMVA), published at <https://www.emva.org/standards-technology/emva-1288/> with proprietary extensions from AEON. The measurements were performed with the AEON ACC2b 14x1 color, Release 9, 13.11.2020, SN 0066(Balluff), software version 2.0.

Measurements performed by Product Development Vision, Balluff GmbH

Type of data presented	Single
Vendor	Balluff GmbH
Model	mvBlueFOX3-2124fC
Serial number	FF022727
Sensor diagonal	17.50 mm
Lens category	C-Mount
Resolution	6048 × 2048, 12 bit
Pixel size (h×v)	2.74 μm × 2.74 μm
Sensor	IMX902
Sensor type	CMOS
Shutter type	Global
Overlap cap.	Overlapping
Max. frame rate	0.0 Hz
Interface type	USB3Vision

Nr.	Centroid/FWHM	Gain, blacklevel	t _{exp} (ms)
1	476.2/18.6 nm	0.0dB, 0.1	3.00
2	542.0/33.9 nm	0.0dB, 0.1	3.00
3	629.6/13.3 nm	0.0dB, 0.1	3.00

Optional data measured: None



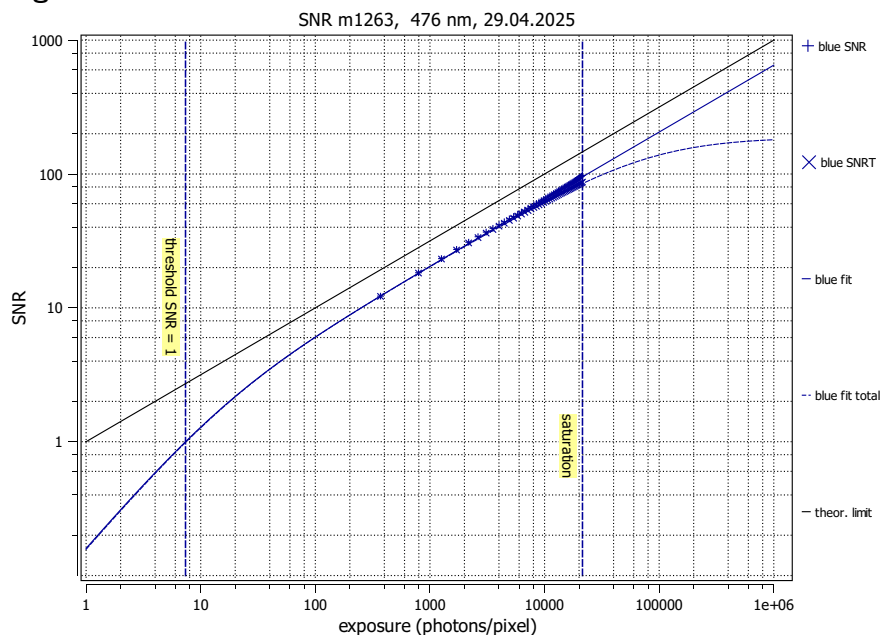
Summary Sheet for Operation Point 1 at a Wavelength of 476 nm

Type of data	Single	Gain, black-level	0.0dB, 0.1
Exposure control	By irradiance	Environmental temperature	24.2°C
Exposure time	3.000 ms	Camera body temperature	32.5°C
Frame rate	15.3 Hz	Internal temperature(s)	42.1°C, 38.9°C
Data transfer mode	BayerGR12	Wavelength, centr., FWHM	476 nm, 18.6 nm

Photon Transfer



Signal-to-Noise Ratio



Quantum efficiency

η 42.3%

Overall system gain

K 0.4243 DN/e⁻

1/ K 2.357 e⁻/DN

Temporal dark noise

σ_d 2.48 e⁻

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

Signal-to-noise ratio

SNR_{max} 95.2

39.6 dB

1/SNR_{max} 1.050 %

Absolute sensitivity threshold

$\mu_{e,\text{min}}$ 3.12 e⁻

$\mu_{e,\text{min,area}}$ 0.415 e⁻/μm²

Saturation capacity

$\mu_{e,\text{sat}}$ 9067 e⁻

$\mu_{e,\text{sat,area}}$ 1208 e⁻/μm²

Dynamic range

DR 2908

69.27 dB

Spatial nonuniformities

DSNU₁₂₈₈ 0.484 e⁻

DSNU_{1288,col} 0.022 e⁻

DSNU_{1288,row} 0.021 e⁻

DSNU_{1288,pix} 0.483 e⁻

PRNU₁₂₈₈ 0.533 %

PRNU_{1288,col} 0.020 %

PRNU_{1288,row} 0.023 %

PRNU_{1288,pix} 0.531 %

Linearity error

LE 0.21%

Dark current

$\mu_{c,\text{mean}}$ 1.13 e⁻/s

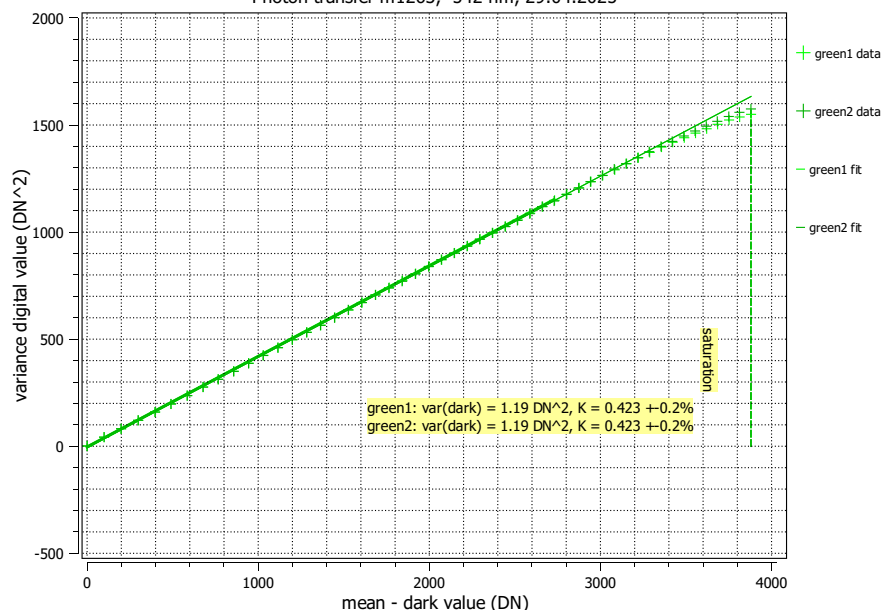
$\mu_{c,\text{var}}$ 1.25 e⁻/s

Summary Sheet for Operation Point 2 at a Wavelength of 542 nm

Type of data	Single	Gain, black-level	0.0dB, 0.1
Exposure control	By irradiance	Environmental temperature	24.2°C
Exposure time	3.000 ms	Camera body temperature	32.7°C
Frame rate	15.3 Hz	Internal temperature(s)	42.5°C, 39.1°C
Data transfer mode	BayerGR12	Wavelength, centr., FWHM	542 nm, 33.9 nm

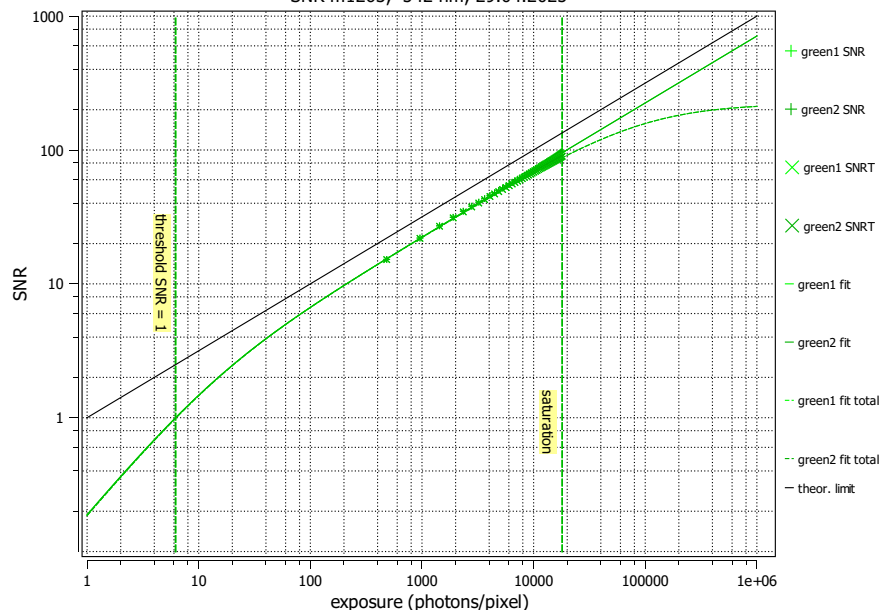
Photon Transfer

Photon transfer m1263, 542 nm, 29.04.2025



Signal-to-Noise Ratio

SNR m1263, 542 nm, 29.04.2025



Quantum efficiency

η 50.5%

Overall system gain

K 0.4230 DN/e⁻

$1/K$ 2.364 e⁻/DN

Temporal dark noise

σ_d 2.49 e⁻

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

Signal-to-noise ratio

SNR_{max} 95.4

39.6 dB

$1/SNR_{\text{max}}$ 1.048 %

Absolute sensitivity threshold

$\mu_{e,\text{min}}$ 3.13 e⁻

$\mu_{e,\text{min},\text{area}}$ 0.417 e⁻/μm²

Saturation capacity

$\mu_{e,\text{sat}}$ 9109 e⁻

$\mu_{e,\text{sat},\text{area}}$ 1213 e⁻/μm²

Dynamic range

DR 2912

69.28 dB

Spatial nonuniformities

DSNU₁₂₈₈ 0.496 e⁻

DSNU_{1288,col} 0.022 e⁻

DSNU_{1288,row} 0.021 e⁻

DSNU_{1288,pix} 0.494 e⁻

PRNU₁₂₈₈ 0.451 %

PRNU_{1288,col} 0.023 %

PRNU_{1288,row} 0.029 %

PRNU_{1288,pix} 0.449 %

Linearity error

LE 0.37%

Dark current

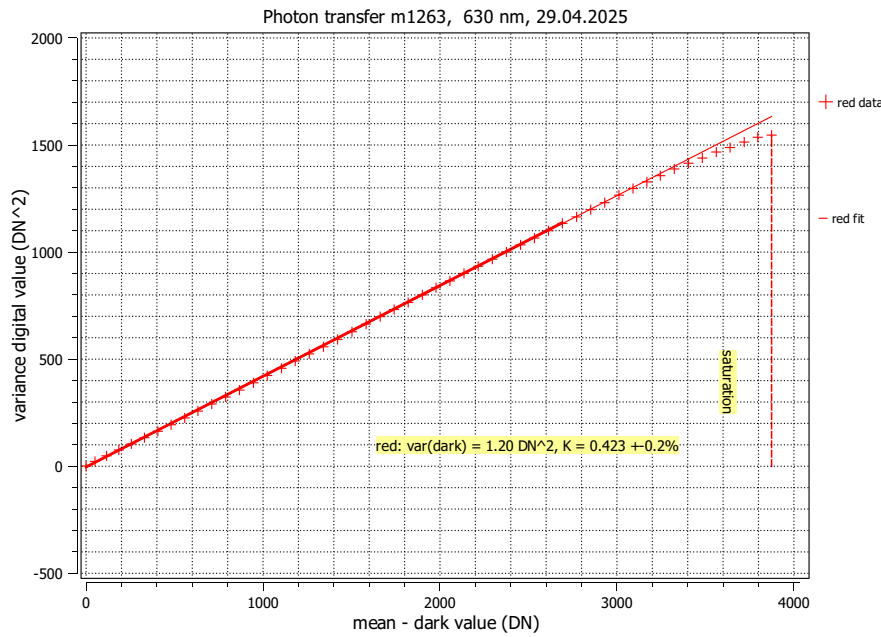
$\mu_{c,\text{mean}}$ 1.11 e⁻/s

$\mu_{c,\text{var}}$ 1.45 e⁻/s

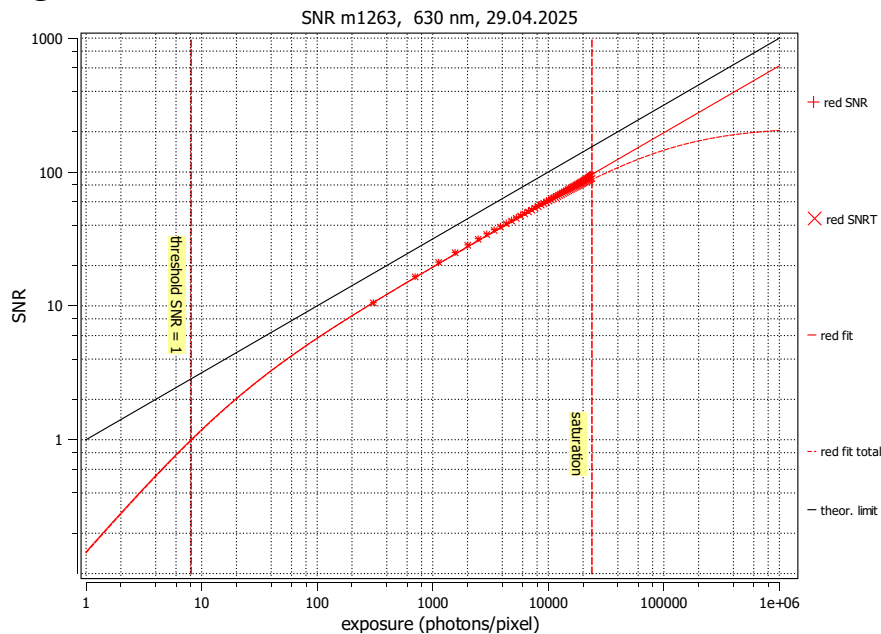
Summary Sheet for Operation Point 3 at a Wavelength of 630 nm

Type of data	Single	Gain, black-level	0.0dB, 0.1
Exposure control	By irradiance	Environmental temperature	24.2°C
Exposure time	3.000 ms	Camera body temperature	32.8°C
Frame rate	15.3 Hz	Internal temperature(s)	42.5°C, 39.2°C
Data transfer mode	BayerGR12	Wavelength, centr., FWHM	630 nm, 13.3 nm

Photon Transfer



Signal-to-Noise Ratio



Quantum efficiency

η 38.6%

Overall system gain

K 0.4232 DN/e⁻

$1/K$ 2.363 e⁻/DN

Temporal dark noise

σ_d 2.49 e⁻

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

Signal-to-noise ratio

SNR_{max} 96.0

39.6 dB

$1/\text{SNR}_{\text{max}}$ 1.041 %

Absolute sensitivity threshold

$\mu_{e,\text{min}}$ 3.13 e⁻

$\mu_{e,\text{min,area}}$ 0.417 e⁻/μm²

Saturation capacity

$\mu_{e,\text{sat}}$ 9221 e⁻

$\mu_{e,\text{sat,area}}$ 1228 e⁻/μm²

Dynamic range

DR 2943

69.38 dB

Spatial nonuniformities

DSNU₁₂₈₈ 0.492 e⁻

DSNU_{1288.col} 0.022 e⁻

DSNU_{1288.row} 0.029 e⁻

DSNU_{1288.pix} 0.491 e⁻

PRNU₁₂₈₈ 0.462 %

PRNU_{1288.col} 0.026 %

PRNU_{1288.row} 0.030 %

PRNU_{1288.pix} 0.460 %

Linearity error

LE 0.19%

Dark current

$\mu_{c,\text{mean}}$ 1.10 e⁻/s

$\mu_{c,\text{var}}$ 1.34 e⁻/s