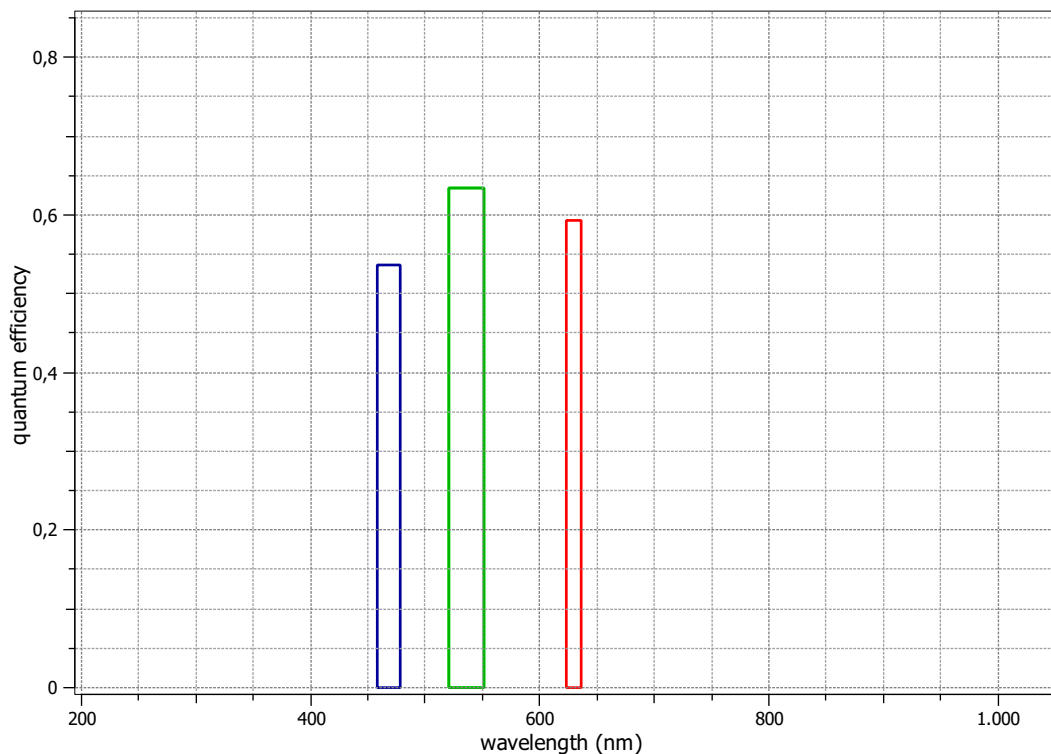


EMVA 1288 Data Sheet m0722

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 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	mvBlueCOUGAR-X102kC	Operation point 1 (page 5)	
Serial number	GX024083	Wavelength centroid	468.0 nm
Sensor diagonal	17.55 mm	Wavelength FWHM	20.0 nm
Lens category	C-Mount	Gain, black-level	0dB, 0.1
Resolution	1608 × 1104, 12 bit	Operation point 2 (page 20)	
Pixel size (h×v)	9.00 μm × 9.00 μm	Wavelength centroid	536.0 nm
Sensor	IMX432	Wavelength FWHM	31.0 nm
Sensor type	CMOS	Gain, black-level	0dB, 0.1
Shutter type	Global	Operation point 3 (page 35)	
Overlap cap.	Overlapping	Wavelength centroid	630.0 nm
Max. frame rate	33.6 Hz	Wavelength FWHM	13.0 nm
Interface type	GigE Vision	Gain, black-level	0dB, 0.1
		Optional data measured	
		None	

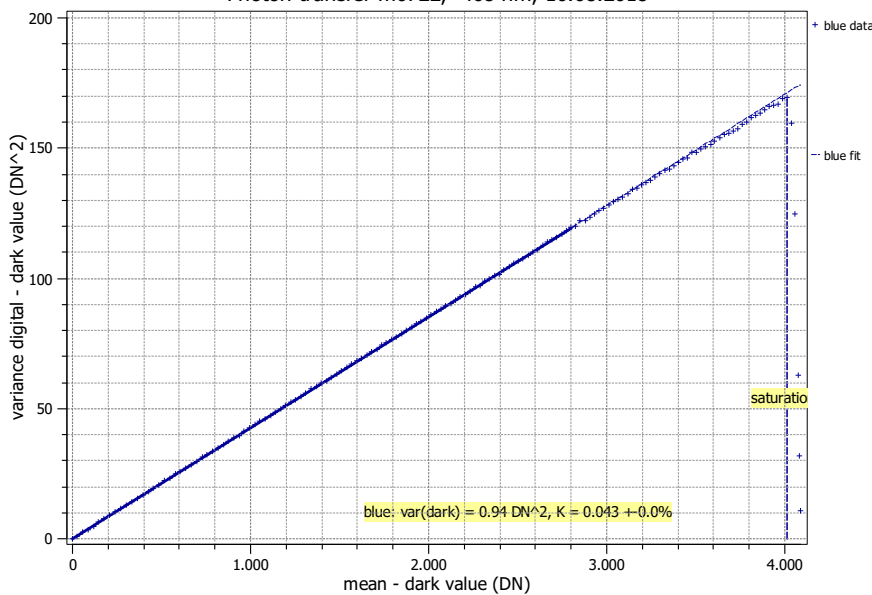


Summary Sheet for Operation Point 1 at a Wavelength of 468 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	24.7°C
Exposure time	18.00 ms	Camera body temperature	46.9°C
Frame rate	30.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	468 nm, 20.0 nm

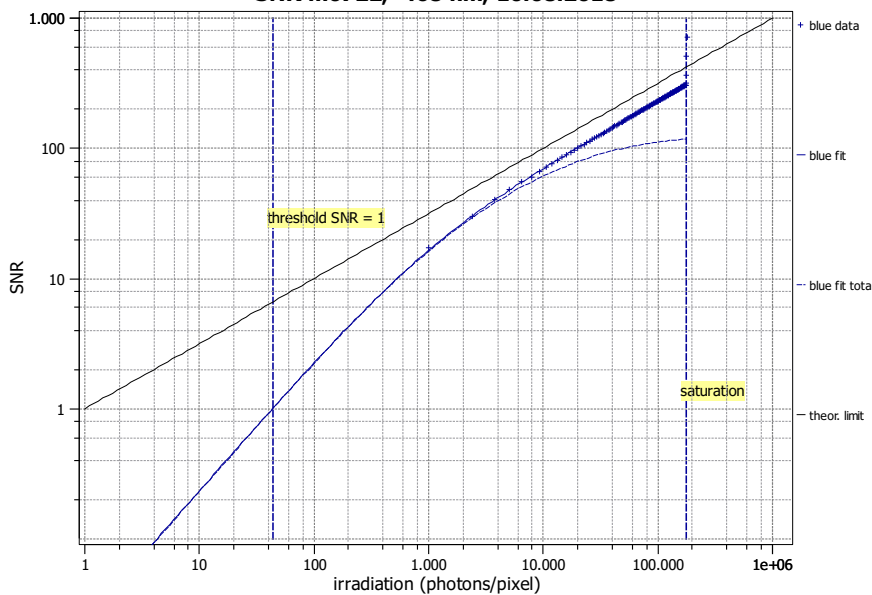
Photon Transfer

Photon transfer m0722, 468 nm, 10.08.2018



Signal-to-Noise Ratio

SNR m0722, 468 nm, 10.08.2018



Quantum efficiency

η 53.6%

Overall system gain

K 0.043 DN/e⁻

$1/K$ 23.451 e⁻/DN

Temporal dark noise

σ_d 21.75 e⁻

$\sigma_{y.dark}$ 0.97 DN

Signal-to-noise ratio

SNR_{max} 307

49.7 dB

8.3 bit

$1/\text{SNR}_{max}$ 0.33 %

Absolute sensitivity threshold

$\mu_{p.min}$ 43.4 p

$\mu_{p.min.area}$ 0.54 p/ μm^2

$\mu_{e.min}$ 23.3 e⁻

$\mu_{e.min.area}$ 0.29 e⁻/ μm^2

Saturation capacity

$\mu_{p.sat}$ 175344 p

$\mu_{p.sat.area}$ 2165 p/ μm^2

$\mu_{e.sat}$ 93993 e⁻

$\mu_{e.sat.area}$ 1160 e⁻/ μm^2

Dynamic range

DR 4037

72.1 dB

12.0 bit

Spatial nonuniformities

DSNU₁₂₈₈ 2.89 e⁻

0.12 DN

PRNU₁₂₈₈ 0.79 %

Linearity error

LE_{min} -0.27%

LE_{max} 0.58%

Dark current

$\mu_{c.mean}$ -64 ± 23 e⁻/s

-2.7 DN/s

$\mu_{c.var}$ 89 ± 36 e⁻/s

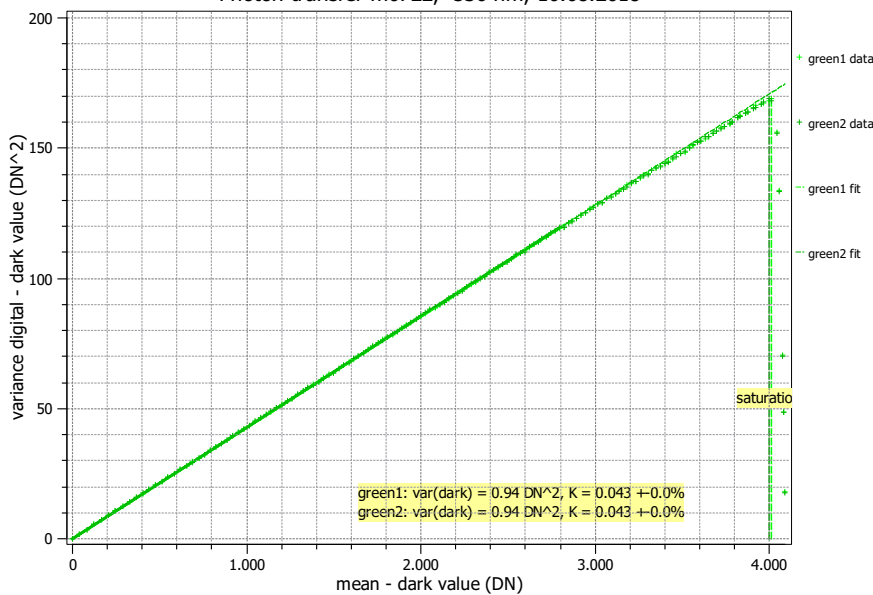
T_d — °C

Summary Sheet for Operation Point 2 at a Wavelength of 536 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	24.8°C
Exposure time	18.00 ms	Camera body temperature	46.8°C
Frame rate	30.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	536 nm, 31.0 nm

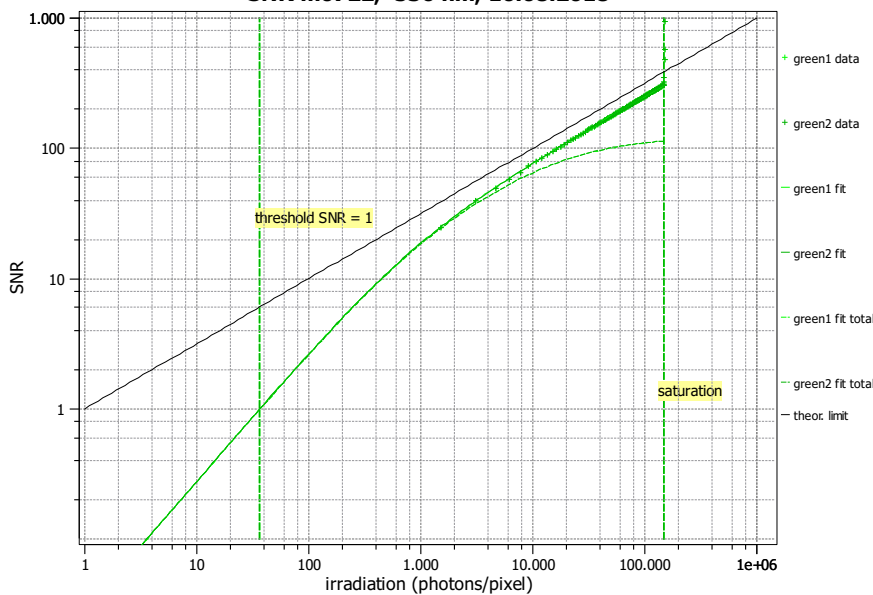
Photon Transfer

Photon transfer m0722, 536 nm, 10.08.2018



Signal-to-Noise Ratio

SNR m0722, 536 nm, 10.08.2018



Quantum efficiency

η 63.4%

Overall system gain

K 0.043 DN/e⁻

1/ K 23.421 e⁻/DN

Temporal dark noise

σ_d 21.72 e⁻

$\sigma_{y,\text{dark}}$ 0.97 DN

Signal-to-noise ratio

SNR_{max} 306

49.7 dB

8.3 bit

1/SNR_{max} 0.33 %

Absolute sensitivity threshold

$\mu_{p,\text{min}}$ 36.7 p

$\mu_{p,\text{min,area}}$ 0.45 p/ μm^2

$\mu_{e,\text{min}}$ 23.3 e⁻

$\mu_{e,\text{min,area}}$ 0.29 e⁻/ μm^2

Saturation capacity

$\mu_{p,\text{sat}}$ 147968 p

$\mu_{p,\text{sat,area}}$ 1827 p/ μm^2

$\mu_{e,\text{sat}}$ 93796 e⁻

$\mu_{e,\text{sat,area}}$ 1158 e⁻/ μm^2

Dynamic range

DR 4034

72.1 dB

12.0 bit

Spatial nonuniformities

DSNU₁₂₈₈ 2.70 e⁻

0.12 DN

PRNU₁₂₈₈ 0.82 %

Linearity error

LE_{min} -0.52%

LE_{max} 0.63%

Dark current

$\mu_{c,\text{mean}}$ -64 ± 23 e⁻/s

-2.8 DN/s

$\mu_{c,\text{var}}$ 60 ± 14 e⁻/s

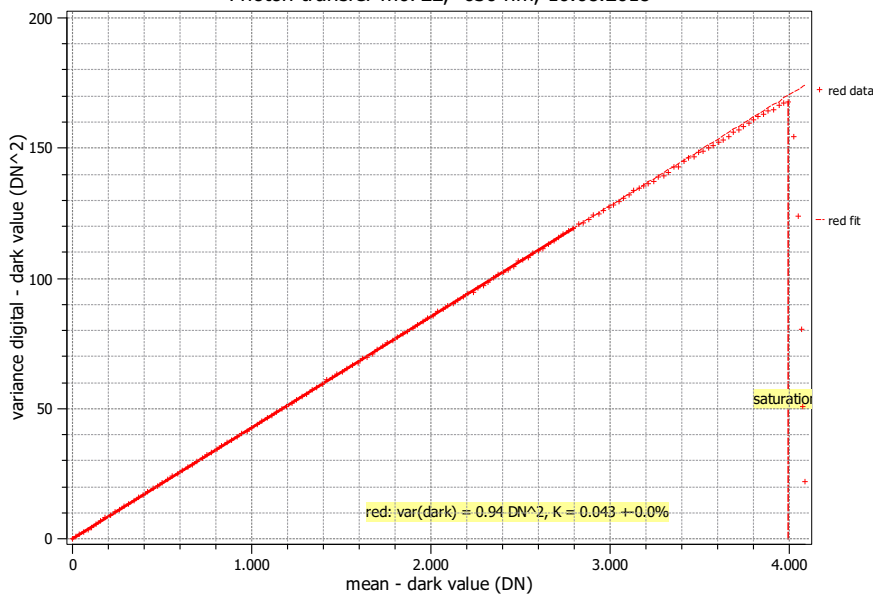
T_d — °C

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	24.8°C
Exposure time	18.00 ms	Camera body temperature	46.7°C
Frame rate	30.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.0 nm

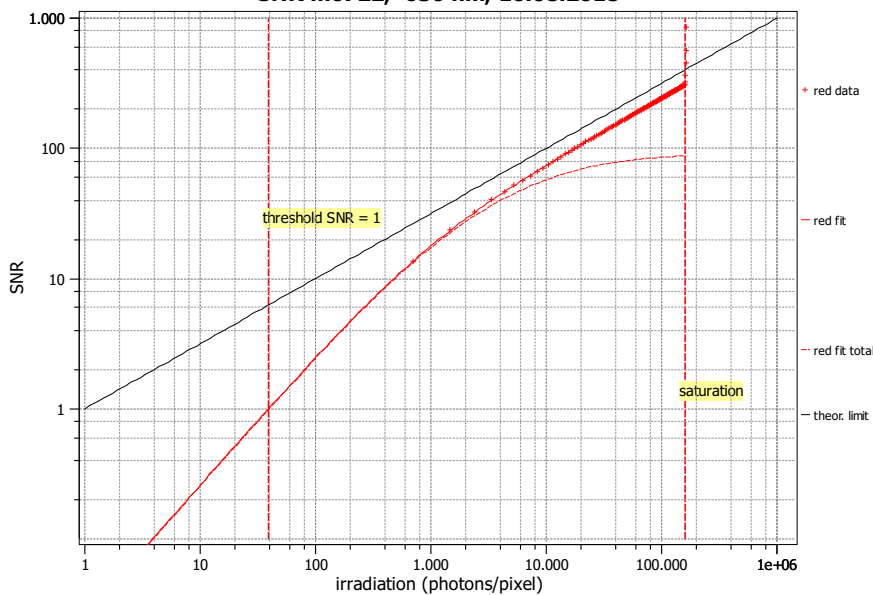
Photon Transfer

Photon transfer m0722, 630 nm, 10.08.2018



Signal-to-Noise Ratio

SNR m0722, 630 nm, 10.08.2018



Quantum efficiency

η 59.3%

Overall system gain

K 0.043 DN/e⁻

$1/K$ 23.471 e⁻/DN

Temporal dark noise

σ_d 21.73 e⁻

$\sigma_{y,\text{dark}}$ 0.97 DN

Signal-to-noise ratio

SNR_{max} 307

49.7 dB

8.3 bit

$1/\text{SNR}_{\text{max}}$ 0.33 %

Absolute sensitivity threshold

$\mu_{p,\text{min}}$ 39.2 p

$\mu_{p,\text{min,area}}$ 0.48 p/ μm^2

$\mu_{e,\text{min}}$ 23.3 e⁻

$\mu_{e,\text{min,area}}$ 0.29 e⁻/ μm^2

Saturation capacity

$\mu_{p,\text{sat}}$ 158468 p

$\mu_{p,\text{sat,area}}$ 1956 p/ μm^2

$\mu_{e,\text{sat}}$ 93988 e⁻

$\mu_{e,\text{sat,area}}$ 1160 e⁻/ μm^2

Dynamic range

DR 4040

72.1 dB

12.0 bit

Spatial nonuniformities

DSNU₁₂₈₈ 4.19 e⁻

0.18 DN

PRNU₁₂₈₈ 1.10 %

Linearity error

LE_{min} -1.07%

LE_{max} 0.32%

Dark current

$\mu_{c,\text{mean}}$ -64 ± 23 e⁻/s

-2.7 DN/s

$\mu_{c,\text{var}}$ 92 ± 14 e⁻/s

T_d — °C