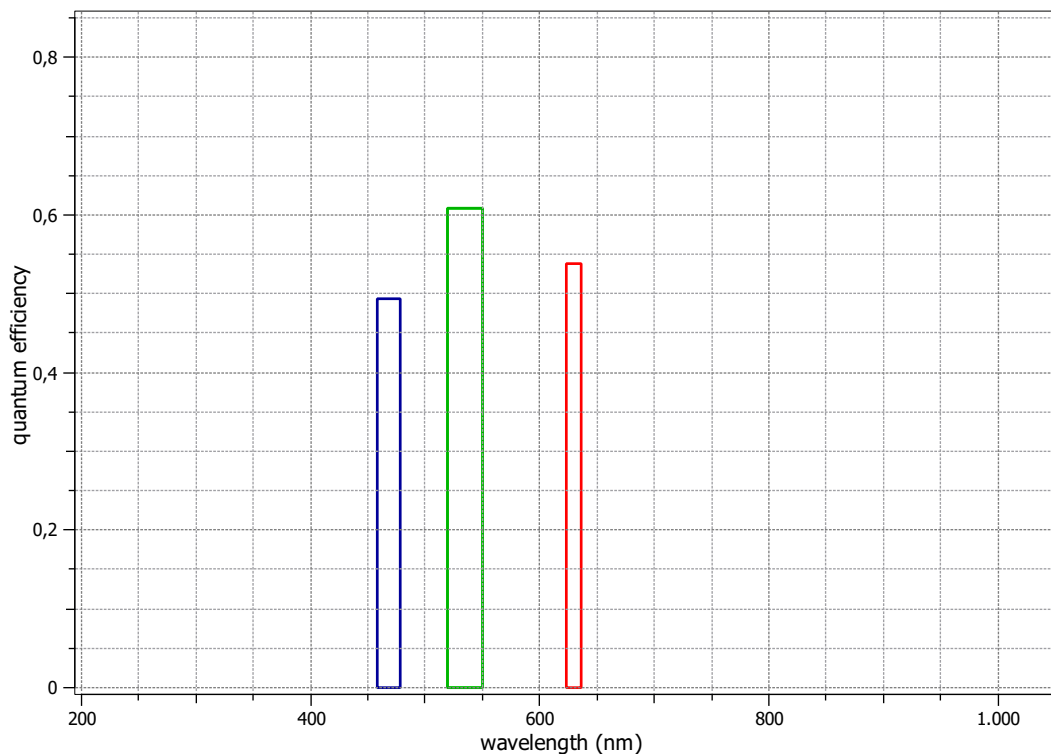


EMVA 1288 Data Sheet m0797

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 VI-SION	Type of data presented	Single
Model	mvBlueCOUGAR-X107bC	Operation point 1 (page 5)	
Serial number	GX028072	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	3216 × 2208, 12 bit	Operation point 2 (page 20)	
Pixel size (h×v)	4.50 μm × 4.50 μm	Wavelength centroid	535.0 nm
Sensor	IMX428	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	8.4 Hz	Wavelength FWHM	13.0 nm
Interface type	GigE Vision	Gain, black-level	0dB, 0.1
		Optional data measured	None

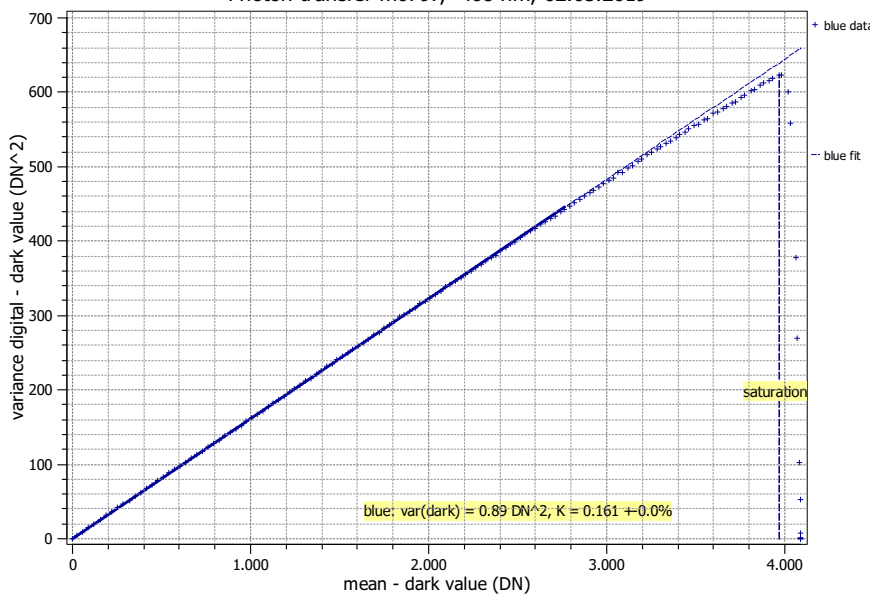


Summary Sheet for Operation Point 1 at a Wavelength of 468 nm

Type of data	Single	Gain, black-level	0dB, 0.1
Exposure control	By irradiance	Environmental temperature	23.9°C
Exposure time	18.00 ms	Camera body temperature	34.0°C
Frame rate	8.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	468 nm, 20.0 nm

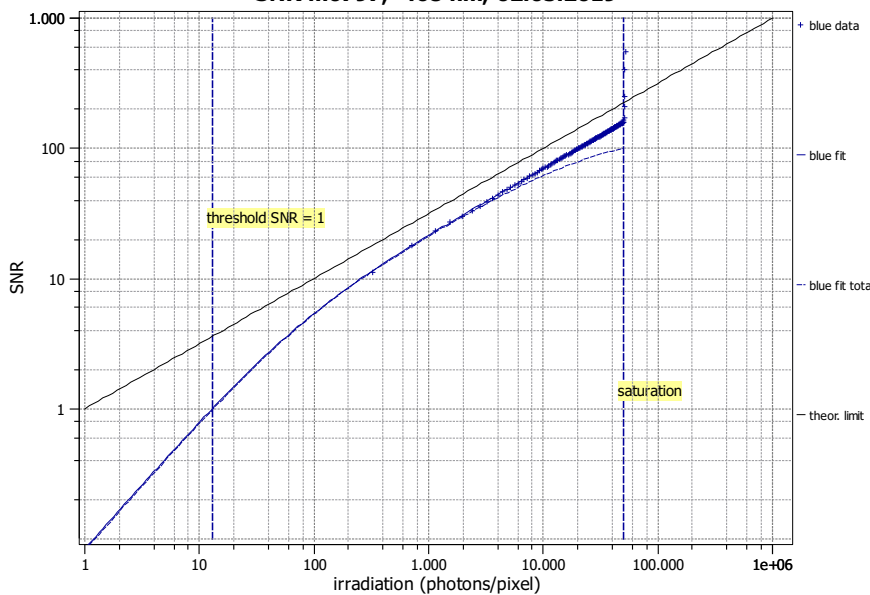
Photon Transfer

Photon transfer m0797, 468 nm, 02.05.2019



Signal-to-Noise Ratio

SNR m0797, 468 nm, 02.05.2019



Quantum efficiency

η 49.3%

Overall system gain

K 0.161 DN/e⁻

$1/K$ 6.209 e⁻/DN

Temporal dark noise

σ_d 5.56 e⁻

$\sigma_{y.dark}$ 0.94 DN

Signal-to-noise ratio

SNR_{max} 157

43.9 dB

7.3 bit

$1/SNR_{max}$ 0.64 %

Absolute sensitivity threshold

$\mu_{p.min}$ 12.90 p

$\mu_{p.min.area}$ 0.637 p/ μm^2

$\mu_{e.min}$ 6.37 e⁻

$\mu_{e.min.area}$ 0.314 e⁻/ μm^2

Saturation capacity

$\mu_{p.sat}$ 49919 p

$\mu_{p.sat.area}$ 2465 p/ μm^2

$\mu_{e.sat}$ 24630 e⁻

$\mu_{e.sat.area}$ 1216 e⁻/ μm^2

Dynamic range

DR 3869

71.8 dB

11.9 bit

Spatial nonuniformities

DSNU₁₂₈₈ 1.42 e⁻

0.23 DN

PRNU₁₂₈₈ 0.77 %

Linearity error

LE_{min} -0.48%

LE_{max} 0.40%

Dark current

$\mu_{c.mean}$ -19 ± 5 e⁻/s

-3.1 DN/s

$\mu_{c.var}$ 31 ± 40 e⁻/s

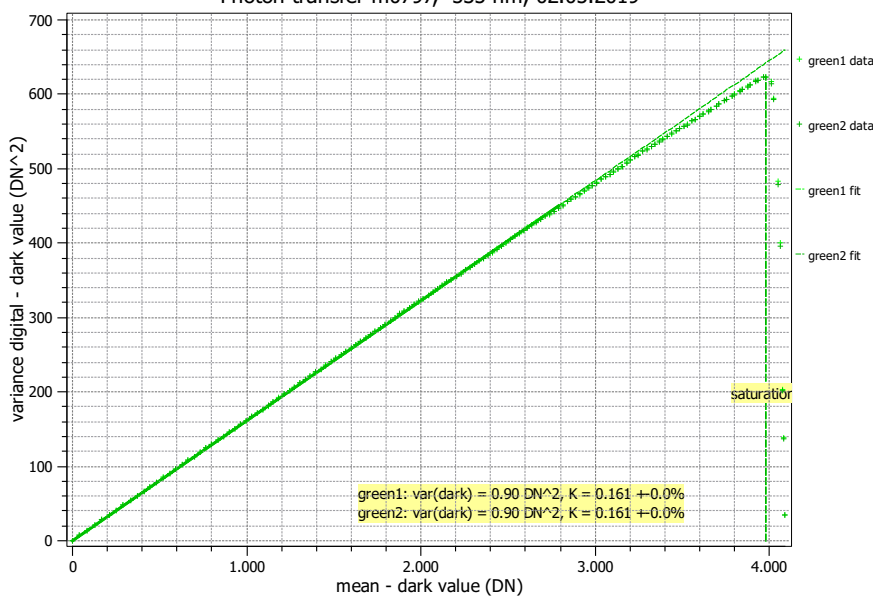
T_d — °C

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	24.0°C
Exposure time	18.00 ms	Camera body temperature	36.5°C
Frame rate	8.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	535 nm, 31.0 nm

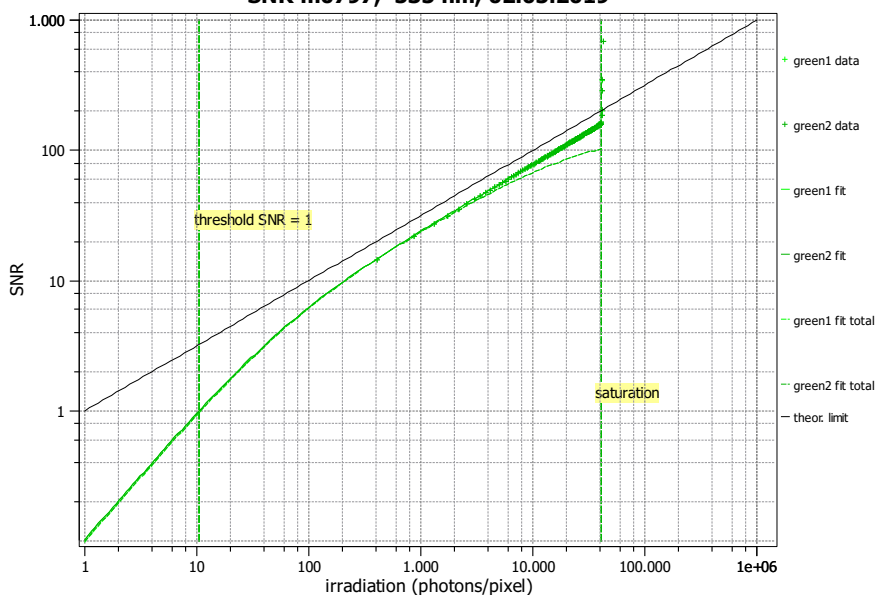
Photon Transfer

Photon transfer m0797, 535 nm, 02.05.2019



Signal-to-Noise Ratio

SNR m0797, 535 nm, 02.05.2019



Quantum efficiency

η 60.9%

Overall system gain

K 0.161 DN/e⁻

$1/K$ 6.197 e⁻/DN

Temporal dark noise

σ_d 5.60 e⁻

$\sigma_{y,\text{dark}}$ 0.95 DN

Signal-to-noise ratio

SNR_{max} 157

43.9 dB

7.3 bit

$1/\text{SNR}_{\text{max}}$ 0.64 %

Absolute sensitivity threshold

$\mu_{p,\text{min}}$ 10.52 p

$\mu_{p,\text{min,area}}$ 0.519 p/ μm^2

$\mu_{e,\text{min}}$ 6.40 e⁻

$\mu_{e,\text{min,area}}$ 0.316 e⁻/ μm^2

Saturation capacity

$\mu_{p,\text{sat}}$ 40522 p

$\mu_{p,\text{sat,area}}$ 2001 p/ μm^2

$\mu_{e,\text{sat}}$ 24659 e⁻

$\mu_{e,\text{sat,area}}$ 1218 e⁻/ μm^2

Dynamic range

DR 3853

71.7 dB

11.9 bit

Spatial nonuniformities

DSNU₁₂₈₈ 1.73 e⁻

0.28 DN

PRNU₁₂₈₈ 0.74 %

Linearity error

LE_{min} -0.39%

LE_{max} 0.36%

Dark current

$\mu_{c,\text{mean}}$ -19 ± 5 e⁻/s

-3.1 DN/s

$\mu_{c,\text{var}}$ 31 ± 40 e⁻/s

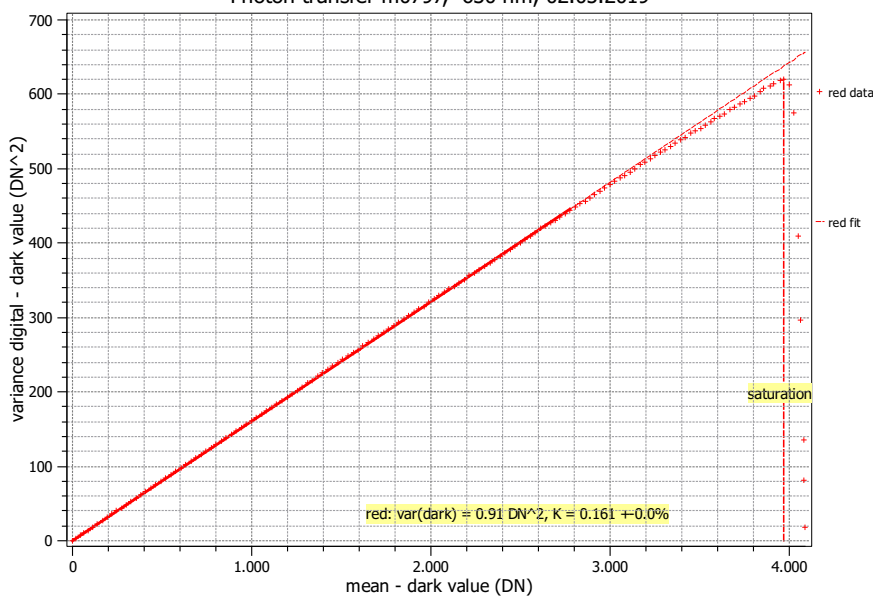
T_d — °C

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	24.1°C
Exposure time	18.00 ms	Camera body temperature	37.8°C
Frame rate	8.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.0 nm

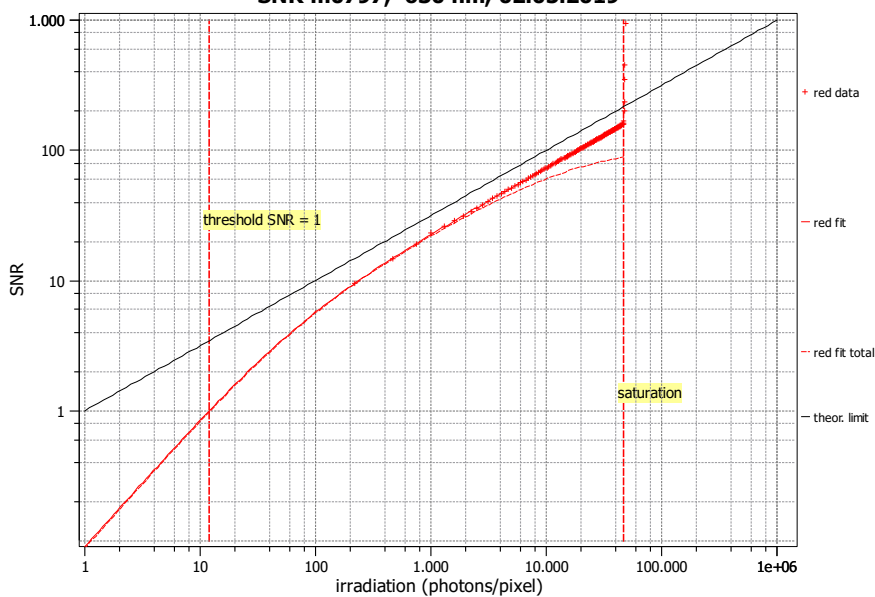
Photon Transfer

Photon transfer m0797, 630 nm, 02.05.2019



Signal-to-Noise Ratio

SNR m0797, 630 nm, 02.05.2019



Quantum efficiency

η 53.8%

Overall system gain

K 0.161 DN/e⁻

$1/K$ 6.225 e⁻/DN

Temporal dark noise

σ_d 5.64 e⁻

$\sigma_{y.dark}$ 0.95 DN

Signal-to-noise ratio

SNR_{max} 158

44.0 dB

7.3 bit

$1/\text{SNR}_{max}$ 0.63 %

Absolute sensitivity threshold

$\mu_{p.min}$ 11.98 p

$\mu_{p.min.area}$ 0.592 p/ μm^2

$\mu_{e.min}$ 6.44 e⁻

$\mu_{e.min.area}$ 0.318 e⁻/ μm^2

Saturation capacity

$\mu_{p.sat}$ 46346 p

$\mu_{p.sat.area}$ 2289 p/ μm^2

$\mu_{e.sat}$ 24925 e⁻

$\mu_{e.sat.area}$ 1231 e⁻/ μm^2

Dynamic range

DR 3868

71.7 dB

11.9 bit

Spatial nonuniformities

DSNU₁₂₈₈ 1.39 e⁻

0.22 DN

PRNU₁₂₈₈ 0.93 %

Linearity error

LE_{min} -0.86%

LE_{max} 0.50%

Dark current

$\mu_{c.mean}$ -19 ± 5 e⁻/s

-3.1 DN/s

$\mu_{c.var}$ 31 ± 40 e⁻/s

T_d — °C