EMVA 1288 Data Sheet m1302

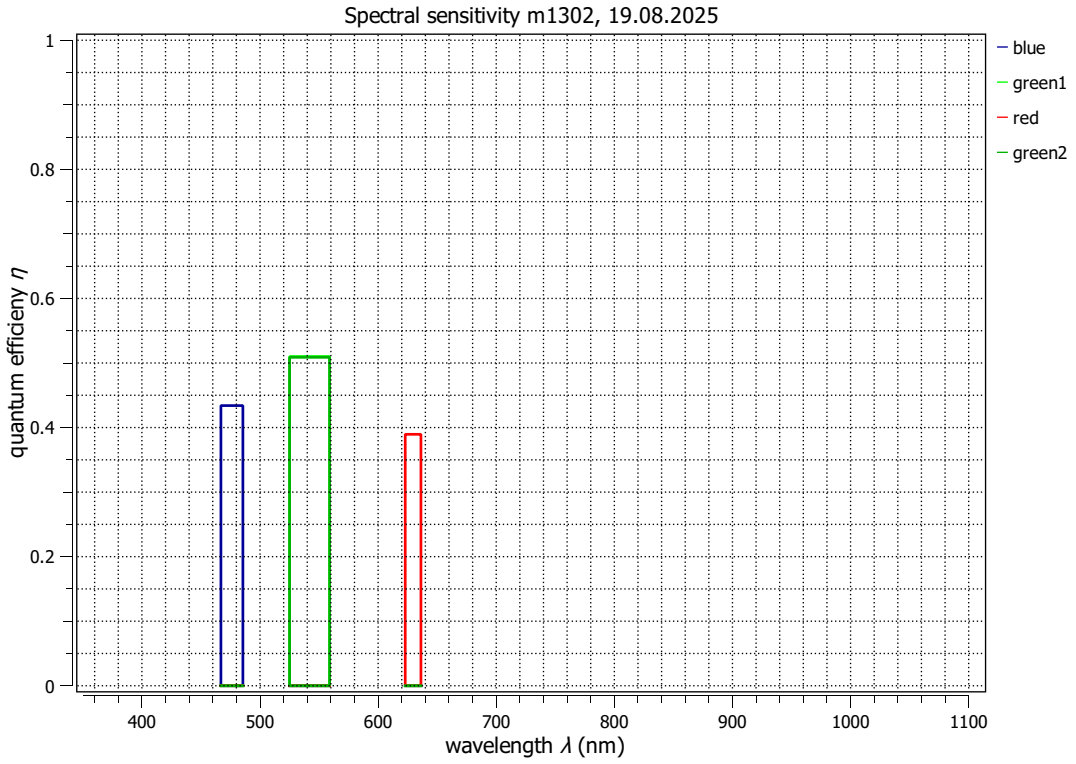
This data sheet describes the specification according to the standard 1288 Release 4.0 Linear issued on 21 June 2021 for "Characterization and Presentation of Specification Data for Image Sensors and Cameras" by the European Machine Vision Association (EMVA), published at `https://www.emva.org/standards-technology/emva-1288/` with proprietary extensions from AEON. The measurements were performed with the AEON ACC2b 14x1 color, Release 9, 13.11.2020, SN 0066(Balluff), software version 3.2.

Measurements performed by Product Development Vision, Balluff GmbH

Type of data presented	Single
Vendor	Balluff GmbH
Model	BVS CA-GV1-0081AC
Serial number	GV000092
Sensor diagonal	11.05 mm
Lens category	C-Mount
Resolution	2856 × 2848, 12 bit
Offset/size channels	0 × 0/ 1428 × 1424
Pixel size (h×v)	2.74 μm × 2.74 μm
Sensor	IMX546
Sensor type	CMOS
Shutter type	Global
Overlap cap.	Overlapping
Max. frame rate	0.0 Hz
Interface type	GigEVision

Nr.	Centroid/FWHM	Gain, blacklevel	t_{exp} (ms)
1	476.2/18.6 nm	0.0dB, 0.1	2.00
2	542.0/33.9 nm	0.0dB, 0.1	3.00
3	629.6/13.3 nm	0.0dB, 0.1	2.00

Optional data measured: None



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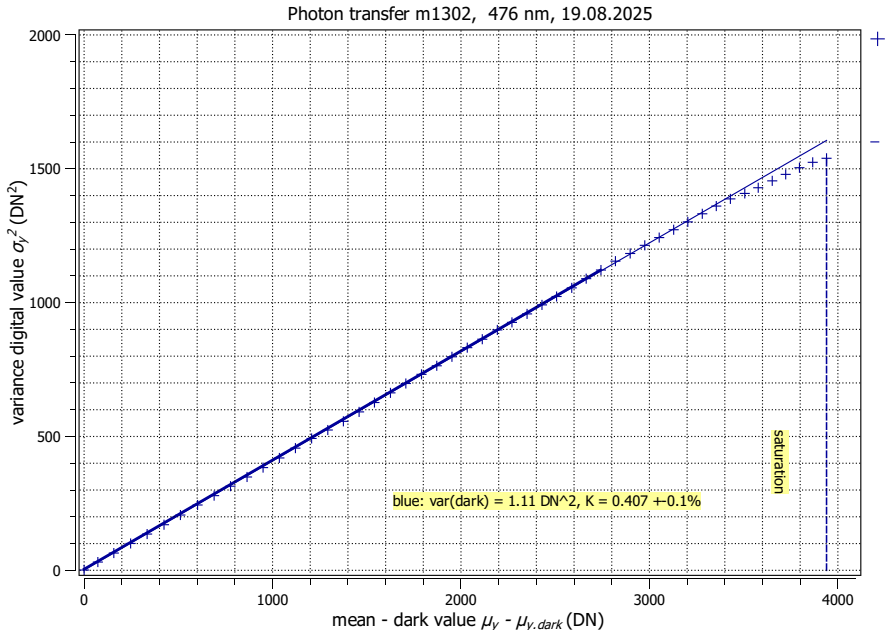
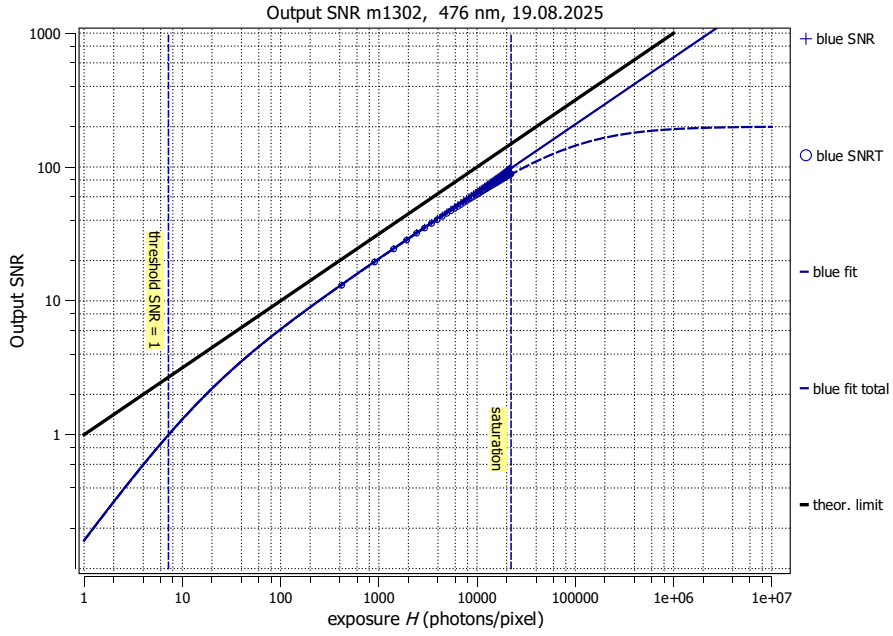
Summary Sheet for Operation Point 1 at a Wavelength of 476 nm

Type of data	Single	Gain, black-level	0.0dB, 0.1
Exposure control	By irradiance	Environmental temperature	25.5°C
Exposure time	2.000 ms	Camera body temperature	33.5°C
Frame rate	44.5 Hz	Internal temperature(s)	46.0°C, 36.8°C
Data transfer mode	BayerRG12p	Wavelength, centr., FWHM	476 nm, 18.6 nm

Photon Transfer



Signal-to-Noise Ratio



Quantum efficiency

η	43.4%

Overall system gain

K	0.4074 DN/e$^-$
$1/K$	2.455 e$^-$/DN

Temporal dark noise

σ_d	2.49 e$^-$
$\sigma_{y.\mathrm{dark}}$	1.05 DN

Signal-to-noise ratio

$\mathrm{SNR}_{\max}$	98.1
	39.8 dB
$1/\mathrm{SNR}_{\max}$	1.019 %

Absolute sensitivity threshold

$\mu_{e.\mathrm{min}}$	3.13 e$^-$
$\mu_{e.\mathrm{min.area}}$	0.417 e$^-/\mu$m^2

Saturation capacity

$\mu_{e.\mathrm{sat}}$	9632 e$^-$
$\mu_{e.\mathrm{sat.area}}$	1283 e$^-/\mu$m^2

Dynamic range

DR	3073
	69.75 dB

Spatial nonuniformities

DSNU_{1288}	0.298 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{col}}$	0.053 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{row}}$	0.011 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{pix}}$	0.293 e$^-$
PRNU_{1288}	0.499 %
$\mathrm{PRNU}_{1288.\mathrm{col}}$	0.035 %
$\mathrm{PRNU}_{1288.\mathrm{row}}$	0.018 %
$\mathrm{PRNU}_{1288.\mathrm{pix}}$	0.497 %

Linearity error

LE	0.29%

Dark current

$\mu_{c.\mathrm{mean}}$	9.81E-01 e$^-$/s
$\mu_{c.\mathrm{var}}$	9.94E-01 e$^-$/s

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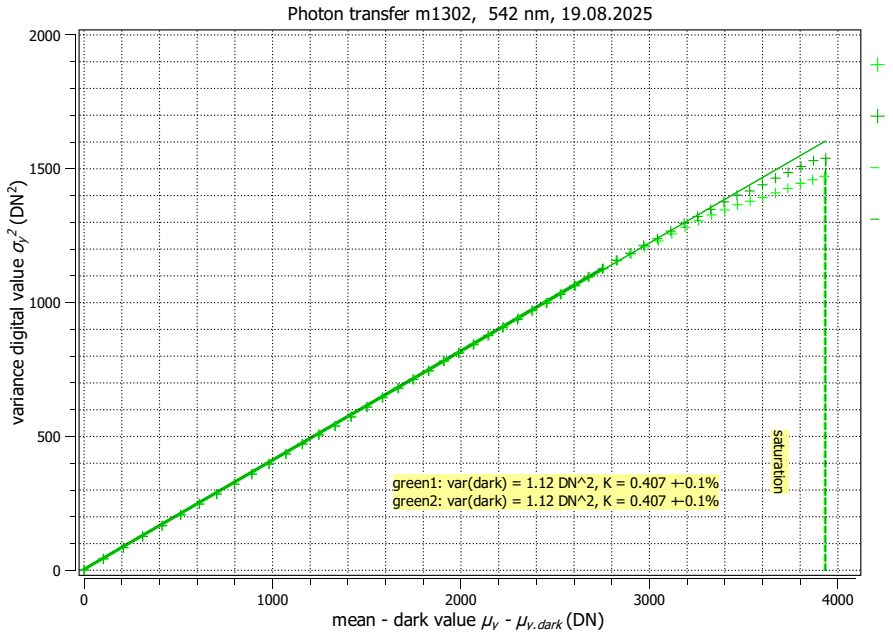
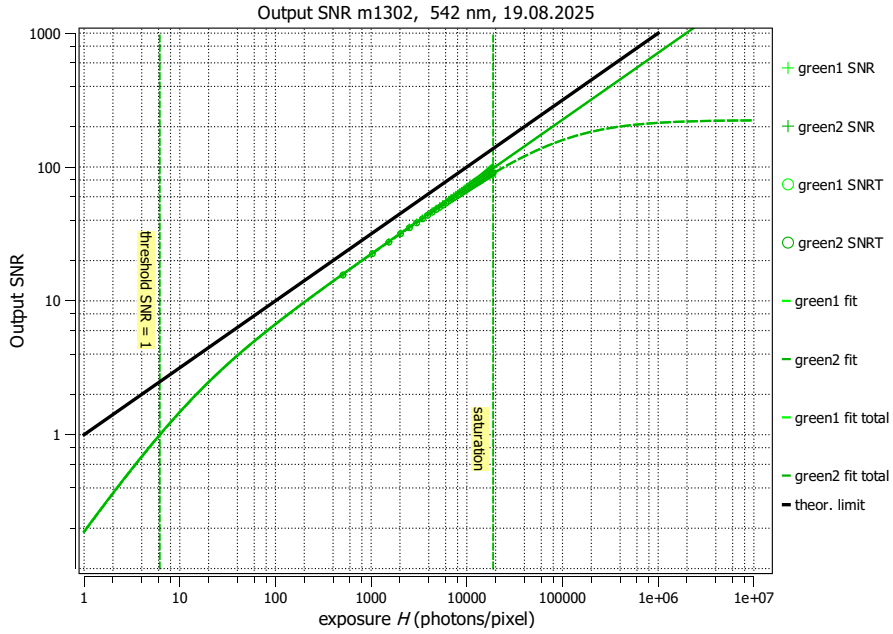
Summary Sheet for Operation Point 2 at a Wavelength of 542 nm

Type of data	Single	Gain, black-level	0.0dB, 0.1
Exposure control	By irradiance	Environmental temperature	25.6°C
Exposure time	3.000 ms	Camera body temperature	34.1°C
Frame rate	44.5 Hz	Internal temperature(s)	47.0°C, 37.7°C
Data transfer mode	BayerRG12p	Wavelength, centr., FWHM	542 nm, 33.9 nm

Photon Transfer



Signal-to-Noise Ratio



Quantum efficiency

η	51.0%

Overall system gain

K	0.4072 DN/e$^-$
$1/K$	2.456 e$^-$/DN

Temporal dark noise

σ_d	2.49 e$^-$
$\sigma_{y.\mathrm{dark}}$	1.06 DN

Signal-to-noise ratio

$\mathrm{SNR}_{\max}$	98.0
	39.8 dB
$1/\mathrm{SNR}_{\max}$	1.020 %

Absolute sensitivity threshold

$\mu_{e.\mathrm{min}}$	3.14 e$^-$
$\mu_{e.\mathrm{min.area}}$	0.418 e$^-/\mu$m^2

Saturation capacity

$\mu_{e.\mathrm{sat}}$	9613 e$^-$
$\mu_{e.\mathrm{sat.area}}$	1280 e$^-/\mu$m^2

Dynamic range

DR	3060
	69.72 dB

Spatial nonuniformities

DSNU_{1288}	0.295 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{col}}$	0.057 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{row}}$	0.010 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{pix}}$	0.289 e$^-$
PRNU_{1288}	0.446 %
$\mathrm{PRNU}_{1288.\mathrm{col}}$	0.032 %
$\mathrm{PRNU}_{1288.\mathrm{row}}$	0.017 %
$\mathrm{PRNU}_{1288.\mathrm{pix}}$	0.444 %

Linearity error

LE	0.35%

Dark current

$\mu_{c.\mathrm{mean}}$	1.05E+00 e$^-$/s
$\mu_{c.\mathrm{var}}$	1.11E+00 e$^-$/s

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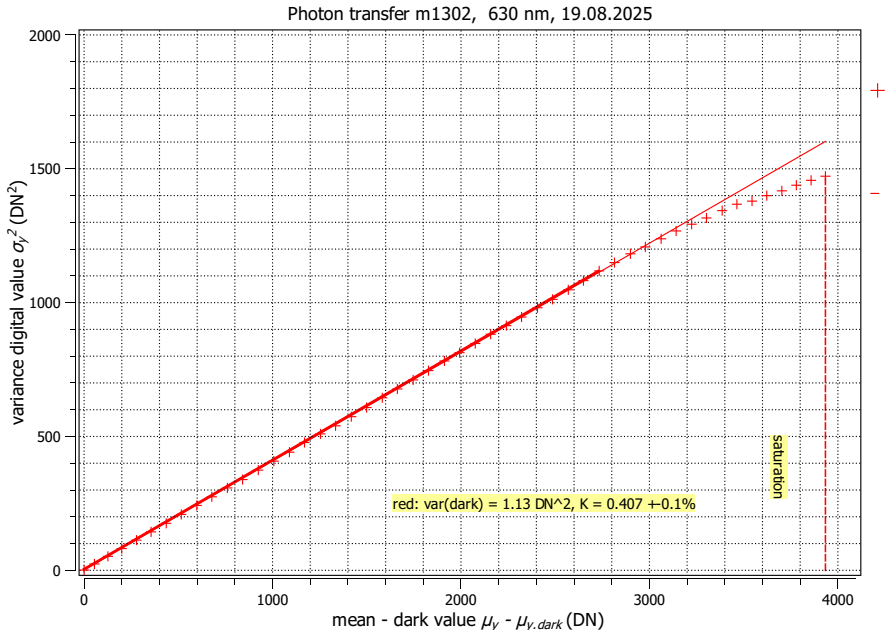
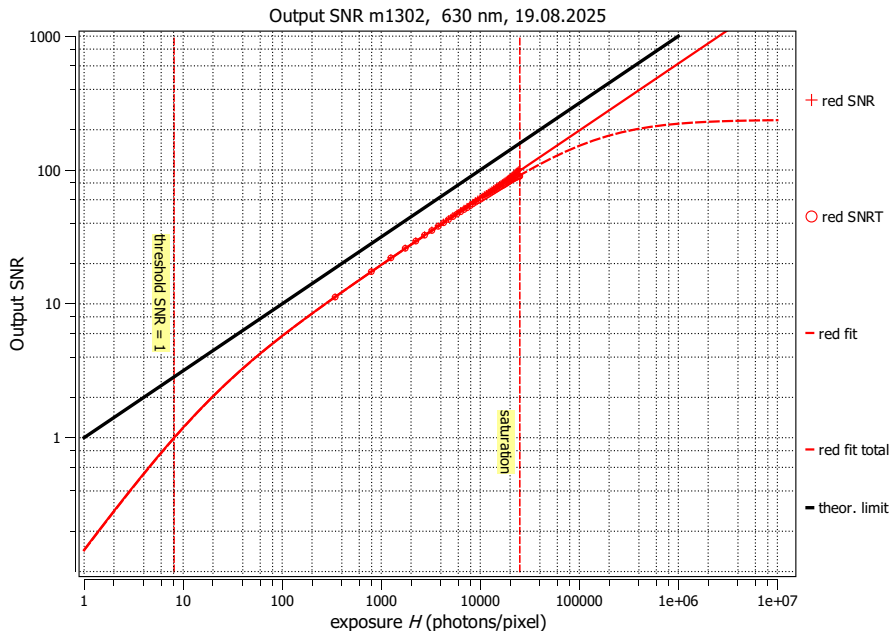
Summary Sheet for Operation Point 3 at a Wavelength of 630 nm

Type of data	Single	Gain, black-level	0.0dB, 0.1
Exposure control	By irradiance	Environmental temperature	25.7°C
Exposure time	2.000 ms	Camera body temperature	34.7°C
Frame rate	44.5 Hz	Internal temperature(s)	48.0°C, 38.0°C
Data transfer mode	BayerRG12p	Wavelength, centr., FWHM	630 nm, 13.3 nm

Photon Transfer



Signal-to-Noise Ratio



Quantum efficiency

η	39.0%

Overall system gain

K	0.4070 DN/e$^-$
$1/K$	2.457 e$^-$/DN

Temporal dark noise

σ_d	2.51 e$^-$
$\sigma_{y.\mathrm{dark}}$	1.06 DN

Signal-to-noise ratio

$\mathrm{SNR}_{\max}$	98.8
	39.9 dB
$1/\mathrm{SNR}_{\max}$	1.012 %

Absolute sensitivity threshold

$\mu_{e.\mathrm{min}}$	3.15 e$^-$
$\mu_{e.\mathrm{min.area}}$	0.420 e$^-/\mu$m^2

Saturation capacity

$\mu_{e.\mathrm{sat}}$	9770 e$^-$
$\mu_{e.\mathrm{sat.area}}$	1301 e$^-/\mu$m^2

Dynamic range

DR	3098
	69.82 dB

Spatial nonuniformities

DSNU_{1288}	0.363 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{col}}$	0.062 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{row}}$	0.010 e$^-$
$\mathrm{DSNU}_{1288.\mathrm{pix}}$	0.357 e$^-$
PRNU_{1288}	0.421 %
$\mathrm{PRNU}_{1288.\mathrm{col}}$	0.035 %
$\mathrm{PRNU}_{1288.\mathrm{row}}$	0.016 %
$\mathrm{PRNU}_{1288.\mathrm{pix}}$	0.420 %

Linearity error

LE	0.19%

Dark current

$\mu_{c.\mathrm{mean}}$	9.14E-01 e$^-$/s
$\mu_{c.\mathrm{var}}$	9.19E-01 e$^-$/s

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