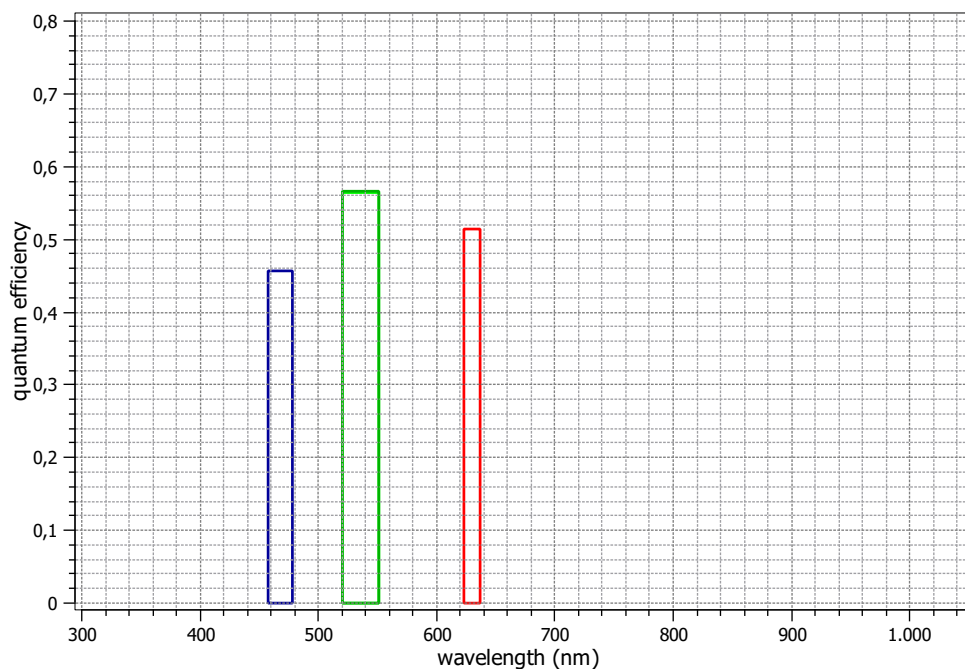


EMVA 1288 Data Sheet m0588

This datasheet describes the specification according to the standard 1288 for “Characterization and Presentation of Specification Data for Image Sensors and Cameras of the European Machine Vision Association (EMVA)” (see www.standard1288.org or the *Zenodo EMVA 1288 community*) release 3.0 with proprietary extensions from AEON. The measurements were performed with the AEON ACC3 Release 5, 06.06.2016, SN 0005(MatrixVision) . The performance parameters and estimated accuracy of the measurements are described in the technical report for the instrument, its calibration in the corresponding specification and calibration report.

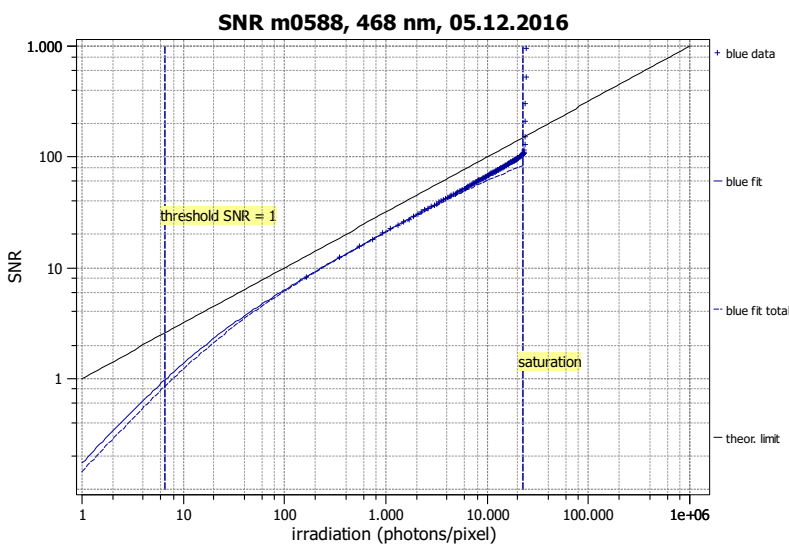
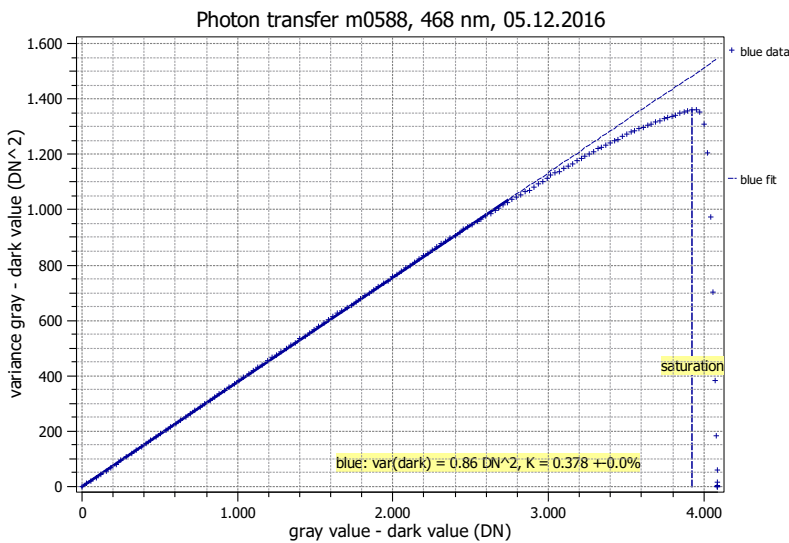
Measurements performed by T. Renner, Matrix Vision GmbH

Vendor	MATRIX VISION	Type of data presented	Single
Model	mvBlueCOUGAR-X1012bC	Operation point 1, (page ??)	
Serial number	GX015763	Wavelength centroid	468.0 nm
Sensor diagonal	17.53 mm	Wavelength FWHM	20.0 nm
Lens category	C-Mount	Gain, black-level	0dB / 0.1
Resolution	4096 × 3008, 12 bit	Operation point 2, (page ??)	
Pixel size	3.45 μm × 3.45 μm	Wavelength centroid	536.0 nm
Sensor	IMX304	Wavelength FWHM	31.0 nm
Sensor type	CMOS	Gain, black-level	0dB / 0.1
Shutter type	Global	Operation point 3, (page ??)	
Overlap capabilities	Overlapping	Wavelength centroid	630.0 nm
Maximum frame rate	4.8 Hz	Wavelength FWHM	13.0 nm
Interface type	GigE Vision	Gain, black-level	0dB / 0.1
		Optional data measured	
		None	



EMVA 1288 Summary Sheet for Operating Point 1

Type of data	Single	Gain, black-level	0dB / 0.1
Exposure control	By irradiance	Environmental temperature	24.1°C
Exposure time	16.00 ms	Camera body temperature	38.8°C
Frame rate	4.8 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	468 nm, 20.0 nm



Quantum efficiency

η 45.7%

Overall system gain

K 0.378 DN/e⁻

$1/K$ 2.646 e⁻/DN

Temporal dark noise & DSNU

$\sigma_{y,dark}$ 0.93 DN

DSNU₁₂₈₈ 0.65 DN

σ_d 2.33 e⁻

DSNU₁₂₈₈ 1.73 e⁻

Signal-to-noise ratio & PRNU

SNR_{max} 102

40.2 dB

6.7 bit

$1/SNR_{max}$ 0.98 %

PRNU₁₂₈₈ 0.69 %

Nonlinearity

LE 0.17%

LE_{min} -0.15%

LE_{max} 0.18%

Sensitivity & saturation

$\mu_{p,min}$ 6.57 p

0.552 p/ μm^2

$\mu_{p,sat}$ 22721 p

1909 p/ μm^2

$\mu_{e,min}$ 3.00 e⁻

0.252 e⁻/ μm^2

$\mu_{e,sat}$ 10380 e⁻

872 e⁻/ μm^2

Dynamic range

DR 3461

70.8 dB

11.8 bit

Dark current

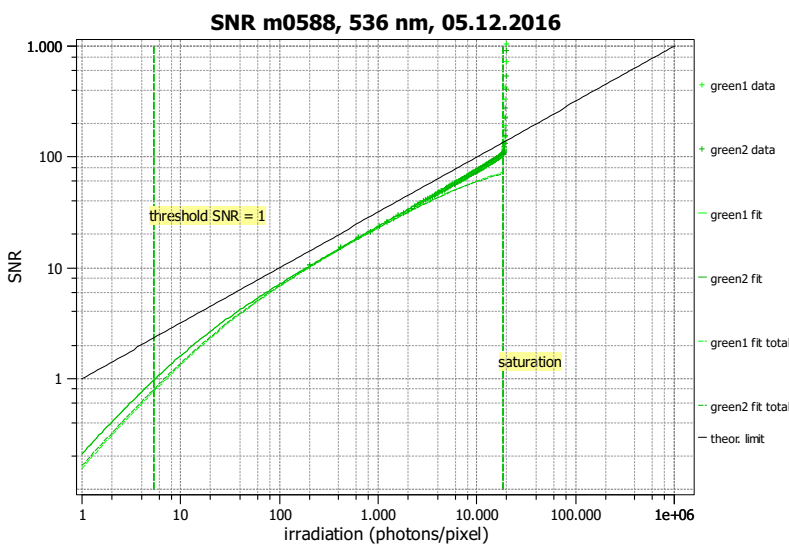
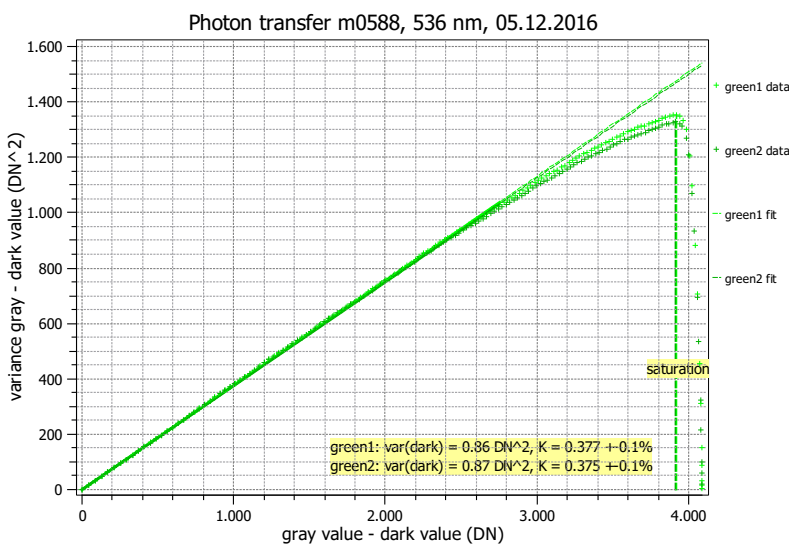
$\mu_{c,mean}$ -2.7 DN/s

$\mu_{c,mean}$ -7.3 e⁻/s

$\mu_{c,var}$ 6.9 e⁻/s

EMVA 1288 Summary Sheet for Operating Point 2

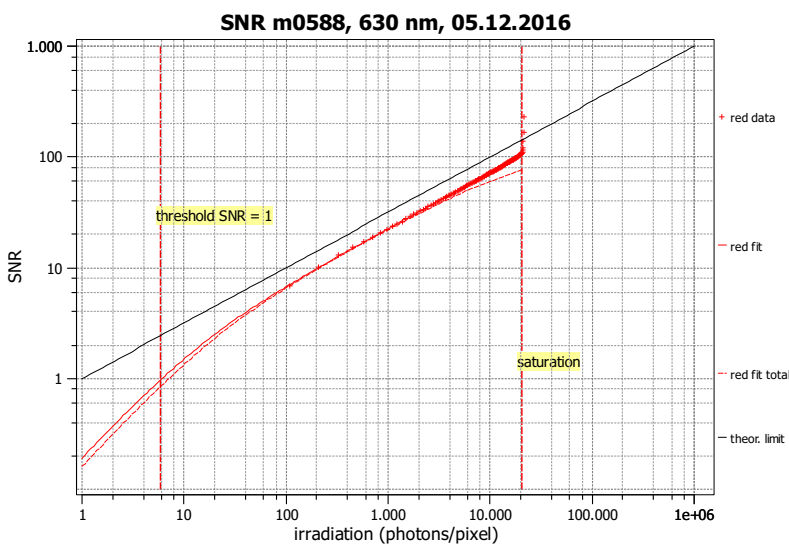
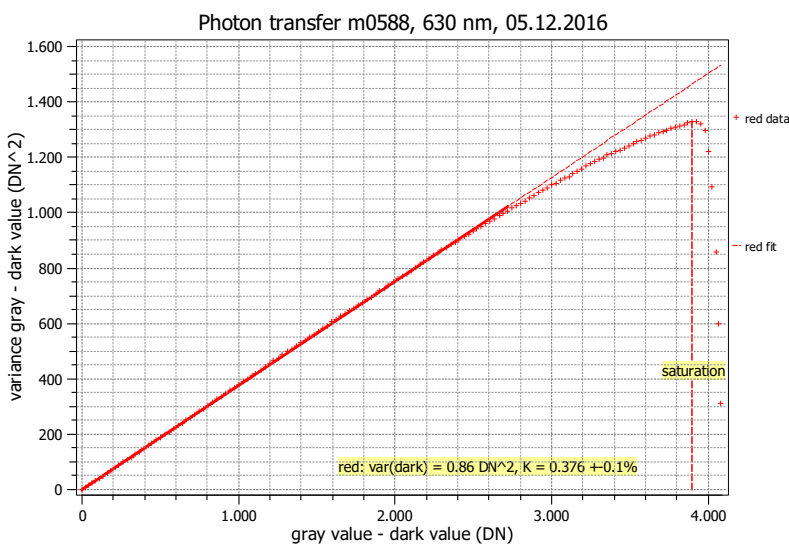
Type of data	Single	Gain, black-level	0dB / 0.1
Exposure control	By irradiance	Environmental temperature	24.1°C
Exposure time	16.00 ms	Camera body temperature	38.8°C
Frame rate	4.8 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	536 nm, 31.0 nm



Quantum efficiency	
η	56.4%
Overall system gain	
K	0.377 DN/e ⁻
$1/K$	2.652 e ⁻ /DN
Temporal dark noise & DSNU	
$\sigma_{y,dark}$	0.93 DN
DSNU ₁₂₈₈	0.91 DN
σ_d	2.34 e ⁻
DSNU ₁₂₈₈	2.41 e ⁻
Signal-to-noise ratio & PRNU	
SNR _{max}	102
	40.2 dB
	6.7 bit
$1/SNR_{max}$	0.98 %
PRNU ₁₂₈₈	0.97 %
Nonlinearity	
LE	0.18%
LE _{min}	-0.14%
LE _{max}	0.22%
Sensitivity & saturation	
$\mu_{p,min}$	5.33 p
	0.448 p/ μm^2
$\mu_{p,sat}$	18403 p
	1546 p/ μm^2
$\mu_{e,min}$	3.01 e ⁻
	0.253 e ⁻ / μm^2
$\mu_{e,sat}$	10381 e ⁻
	872 e ⁻ / μm^2
Dynamic range	
DR	3450
	70.8 dB
	11.8 bit
Dark current	
$\mu_{c,mean}$	-2.7 DN/s
$\mu_{c,mean}$	-7.2 e ⁻ /s
$\mu_{c,var}$	6.9 e ⁻ /s

EMVA 1288 Summary Sheet for Operating Point 3

Type of data	Single	Gain, black-level	0dB / 0.1
Exposure control	By irradiance	Environmental temperature	24.1°C
Exposure time	16.00 ms	Camera body temperature	38.8°C
Frame rate	4.8 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.0 nm



Quantum efficiency

η 51.4%

Overall system gain

K 0.376 DN/e⁻
 $1/K$ 2.663 e⁻/DN

Temporal dark noise & DSNU

$\sigma_{y,dark}$ 0.93 DN
 DSNU₁₂₈₈ 0.66 DN
 σ_d 2.35 e⁻
 DSNU₁₂₈₈ 1.75 e⁻

Signal-to-noise ratio & PRNU

SNR_{max} 102
 40.2 dB
 6.7 bit
 $1/SNR_{max}$ 0.98 %
 PRNU₁₂₈₈ 0.89 %

Nonlinearity

LE 0.27%
 LE_{min} -0.37%
 LE_{max} 0.18%

Sensitivity & saturation

$\mu_{p,min}$ 5.88 p
 0.494 p/ μm^2
 $\mu_{p,sat}$ 20335 p
 1709 p/ μm^2
 $\mu_{e,min}$ 3.03 e⁻
 0.254 e⁻/ μm^2
 $\mu_{e,sat}$ 10459 e⁻
 879 e⁻/ μm^2

Dynamic range

DR 3456
 70.8 dB
 11.8 bit

Dark current

$\mu_{c,mean}$ -2.4 DN/s
 $\mu_{c,mean}$ -6.3 e⁻/s
 $\mu_{c,var}$ 7.4 e⁻/s