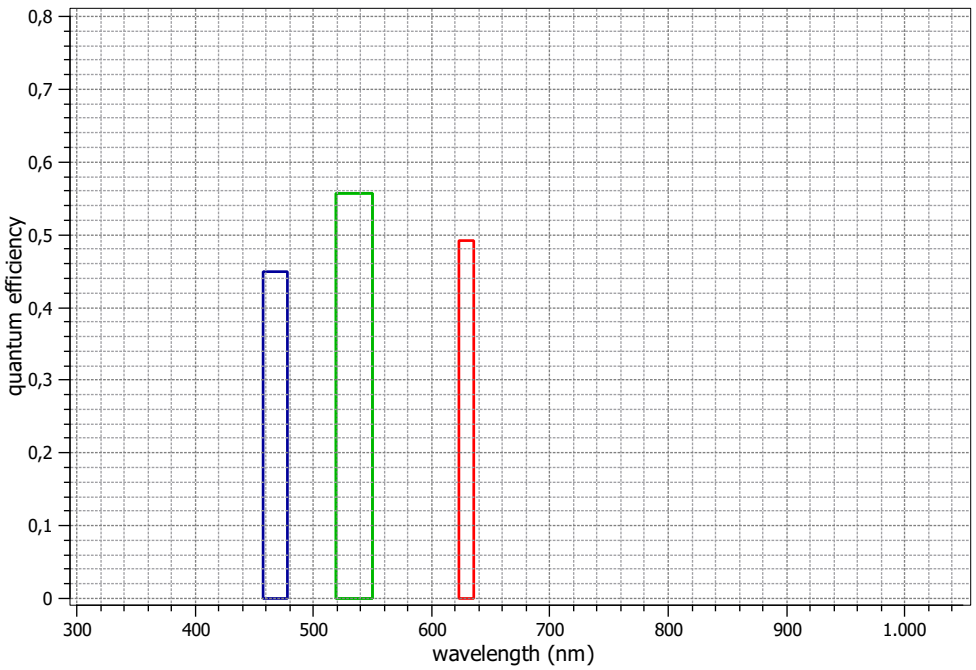
EMVA 1288 Data Sheet m0539

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-RGB Release 3, 12.04.2015, SN 0005(Matrix Vision) . 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

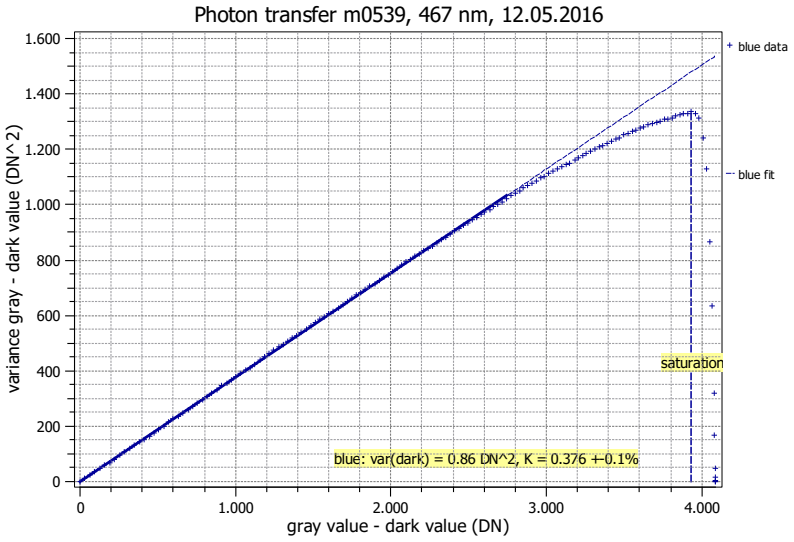
Vendor	MATRIX VISION
Model	mvBlueFOX3-2124C
Serial number	FF000302
Sensor diagonal	17.58 mm
Lens category	C-Mount
Resolution	4112 × 3008, 12 bit
Pixel size	3.45 μm × 3.45 μm
Sensor	IMX253
Sensor type	CMOS
Shutter type	Global
Overlap capabilities	Overlapping
Maximum frame rate	15.0 Hz
Interface type	USB3 Vision

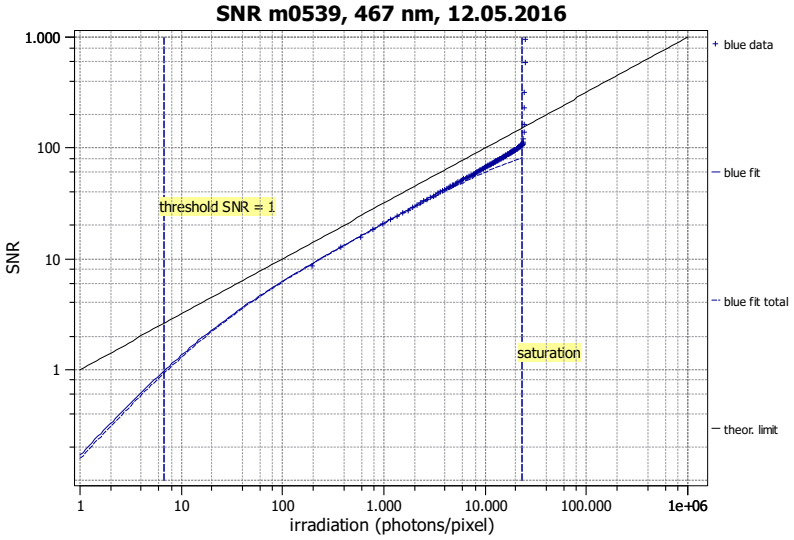
Type of data presented	Single
Operation point 1, (page ??)	
Wavelength centroid	467.3 nm
Wavelength FWHM	20.5 nm
Gain, black-level	0dB, 0.1
Operation point 2, (page ??)	
Wavelength centroid	534.2 nm
Wavelength FWHM	30.9 nm
Gain, black-level	0dB, 0.1
Operation point 3, (page ??)	
Wavelength centroid	629.5 nm
Wavelength FWHM	13.1 nm
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	27.9°C
Exposure time	16.00 ms	Camera body temperature	42.7°C
Frame rate	15.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	467 nm, 20.5 nm





Quantum efficiency

η	44.9%

Overall system gain

K	0.376 DN/e$^-$
$1/K$	2.659 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.93 DN
$DSNU_{1288}$	0.39 DN
σ_d	2.35 e$^-$
$DSNU_{1288}$	1.03 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	102
	40.2 dB
	6.7 bit
$1/SNR_{max}$	0.98 %
$PRNU_{1288}$	0.72 %

Nonlinearity

LE	0.24%
LE_{min}	-0.26%
LE_{max}	0.21%

Sensitivity & saturation

$\mu_{p,min}$	6.72 p
	0.565 p/μm^2
$\mu_{p,sat}$	23331 p
	1960 p/μm^2
$\mu_{e,min}$	3.02 e$^-$
	0.254 e$^-$/μm^2
$\mu_{e,sat}$	10477 e$^-$
	880 e$^-$/μm^2

Dynamic range

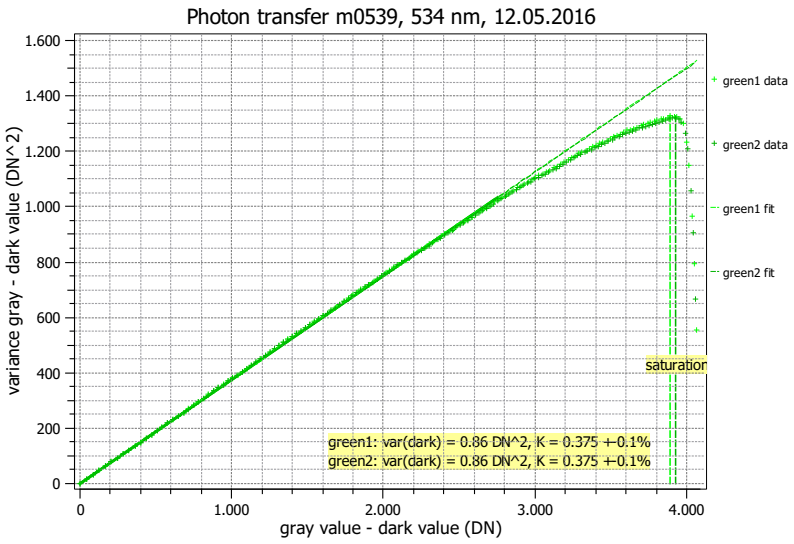
DR	3471
	70.8 dB
	11.8 bit

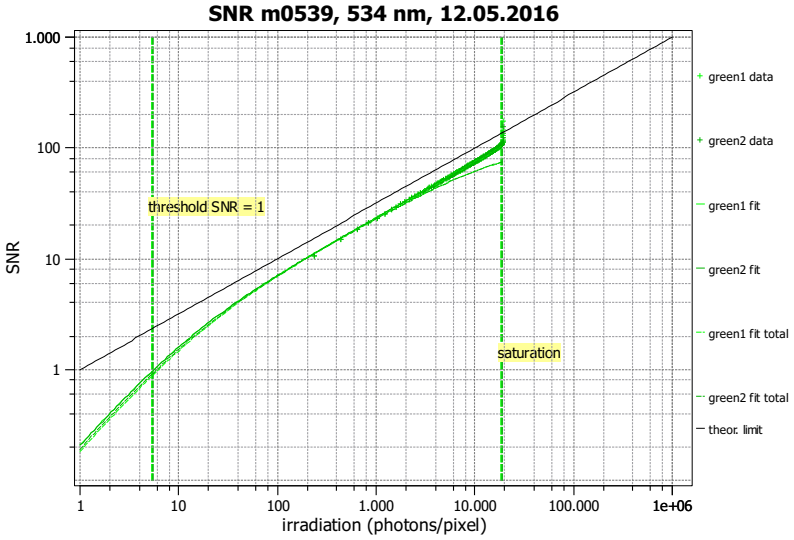
Dark current

$\mu_{c,mean}$	-1.2 DN/s
$\mu_{c,mean}$	-3.2 e$^-$/s
$\mu_{c,var}$	5.5 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	27.9°C
Exposure time	16.00 ms	Camera body temperature	42.7°C
Frame rate	15.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	534 nm, 30.9 nm





Quantum efficiency

η	55.7%

Overall system gain

K	0.375 DN/e$^-$
$1/K$	2.663 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.92 DN
$DSNU_{1288}$	0.54 DN
σ_d	2.34 e$^-$
$DSNU_{1288}$	1.43 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	102
	40.2 dB
	6.7 bit
$1/SNR_{max}$	0.98 %
$PRNU_{1288}$	0.92 %

Nonlinearity

LE	0.20%
LE_{min}	-0.24%
LE_{max}	0.17%

Sensitivity & saturation

$\mu_{p,min}$	5.41 p
	0.454 p/μm^2
$\mu_{p,sat}$	18621 p
	1564 p/μm^2
$\mu_{e,min}$	3.01 e$^-$
	0.253 e$^-$/μm^2
$\mu_{e,sat}$	10375 e$^-$
	872 e$^-$/μm^2

Dynamic range

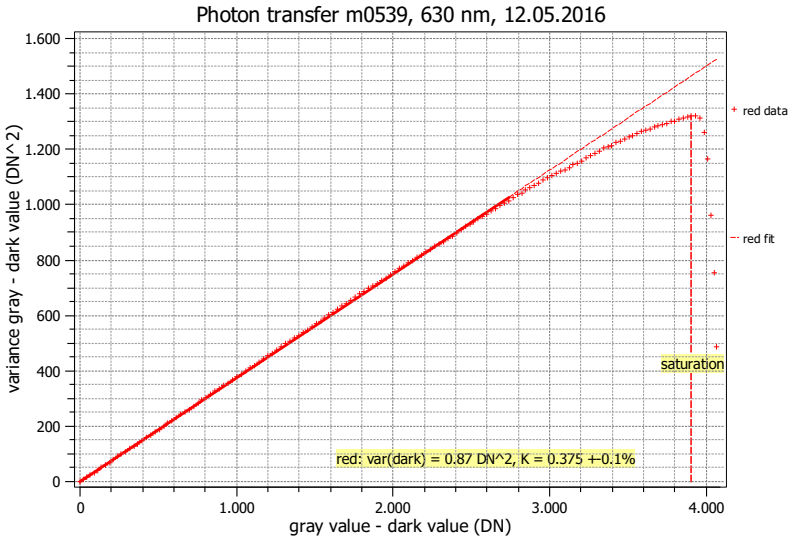
DR	3443
	70.7 dB
	11.7 bit

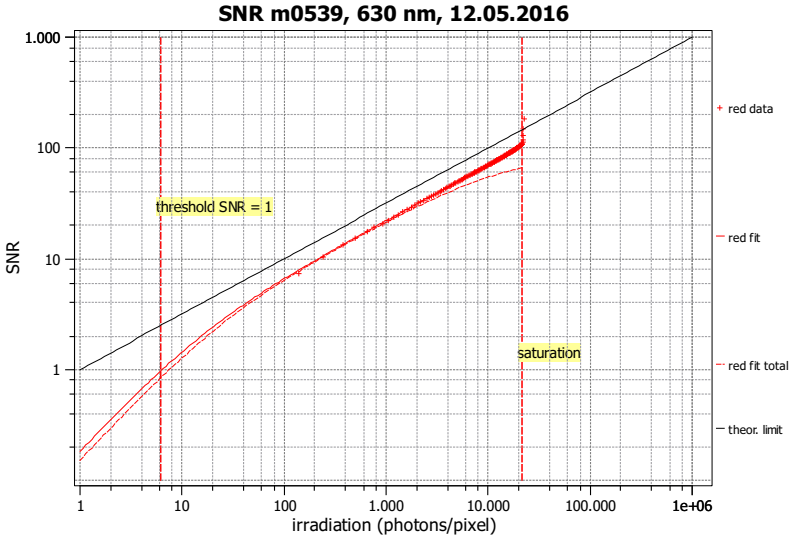
Dark current

$\mu_{c,mean}$	-1.2 DN/s
$\mu_{c,mean}$	-3.2 e$^-$/s
$\mu_{c,var}$	5.5 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	27.9°C
Exposure time	16.00 ms	Camera body temperature	42.7°C
Frame rate	15.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.1 nm





Quantum efficiency

η	49.1%

Overall system gain

K	0.375 DN/e$^-$
$1/K$	2.667 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.93 DN
$DSNU_{1288}$	0.68 DN
σ_d	2.37 e$^-$
$DSNU_{1288}$	1.80 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	102
	40.2 dB
	6.7 bit
$1/SNR_{max}$	0.98 %
$PRNU_{1288}$	1.16 %

Nonlinearity

LE	0.35%
LE_{min}	-0.45%
LE_{max}	0.26%

Sensitivity & saturation

$\mu_{p,min}$	6.19 p
	0.520 p/μm^2
$\mu_{p,sat}$	21381 p
	1796 p/μm^2
$\mu_{e,min}$	3.04 e$^-$
	0.255 e$^-$/μm^2
$\mu_{e,sat}$	10506 e$^-$
	883 e$^-$/μm^2

Dynamic range

DR	3455
	70.8 dB
	11.8 bit

Dark current

$\mu_{c,mean}$	-0.9 DN/s
$\mu_{c,mean}$	-2.3 e$^-$/s
$\mu_{c,var}$	5.9 e$^-$/s