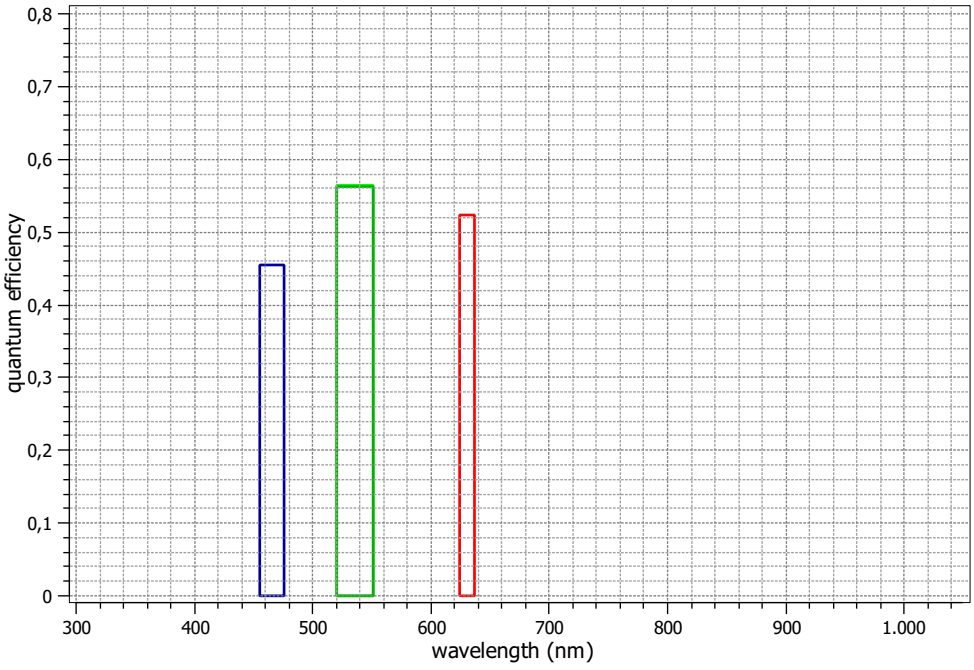
EMVA 1288 Summary Sheet

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, 15.08.2015, SN 0001(Baumer), recalibrated 26.08.2019 . 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 Technical and Application Support Center, Baumer Optronic GmbH.

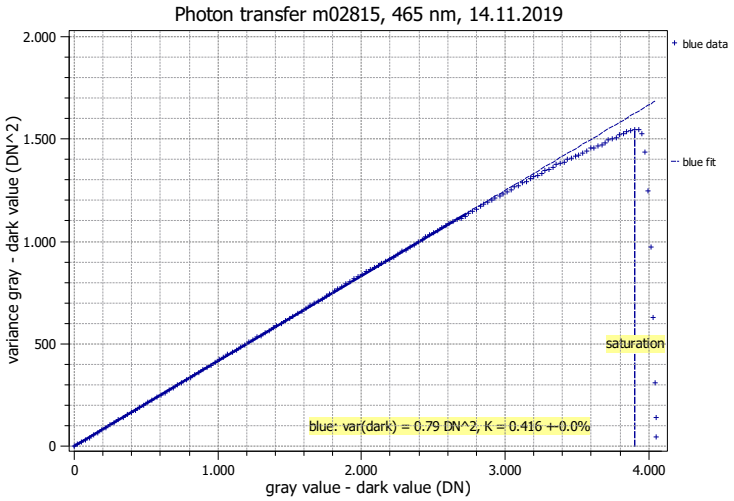
Vendor	Baumer
Model	VCXG-51C.I.PTP
Serial number	700002883347
Sensor diagonal	11.01 mm
Lens category	C-Mount
Resolution	2448 × 2048, 12 bit
Pixel size	3.45 μm × 3.45 μm
Sensor	Sony IMX264
Sensor type	CMOS
Shutter type	Global shutter
Overlap capabilities	Overlapped
Maximum frame rate	0.0 Hz
Interface type	GEV

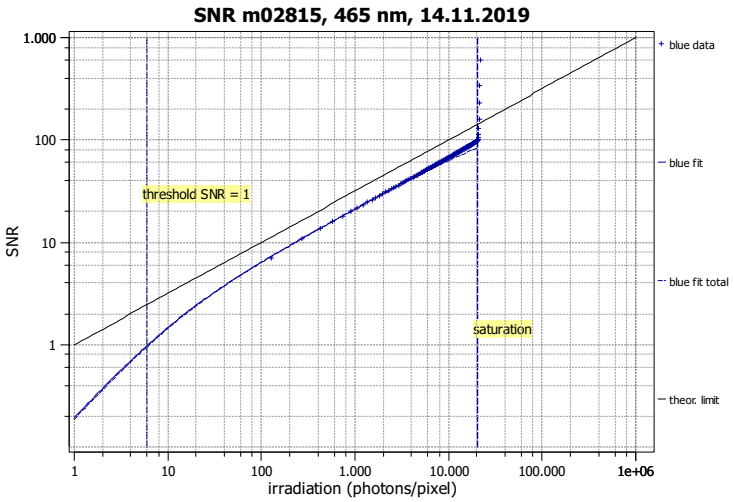
Type of data presented	Single
Operation point 1	
Wavelength centroid	465.1 nm
Wavelength FWHM	20.5 nm
Gain / BlackLevel	1.0 / 39.0
Operation point 2	
Wavelength centroid	535.7 nm
Wavelength FWHM	31.9 nm
Gain / BlackLevel	1.0 / 39.0
Operation point 3	
Wavelength centroid	630.3 nm
Wavelength FWHM	13.2 nm
Gain / BlackLevel	1.0 / 39.0
Optional data measured	
None	



EMVA 1288 Summary Sheet for Operating Point 1

Type of data	Single	Gain / BlackLevel	1.0 / 39.0
Exposure control	By irradiance	Environmental temperature	24.7°C
Exposure time	796.00 μs	Camera body temperature	31.8°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	465 nm, 20.5 nm





Quantum efficiency

η	45.5%

Overall system gain

K	0.416 DN/e$^-$
$1/K$	2.401 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.89 DN
$DSNU_{1288}$	0.28 DN
σ_d	2.02 e$^-$
$DSNU_{1288}$	0.66 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	97
	39.7 dB
	6.6 bit
$1/SNR_{max}$	1.04 %
$PRNU_{1288}$	0.59 %

Nonlinearity

LE	0.21%
LE_{min}	-0.13%
LE_{max}	0.29%

Sensitivity & saturation

$\mu_{p,min}$	5.91 p
	0.497 p/μm^2
$\mu_{p,sat}$	20491 p
	1722 p/μm^2
$\mu_{e,min}$	2.69 e$^-$
	0.226 e$^-$/μm^2
$\mu_{e,sat}$	9316 e$^-$
	783 e$^-$/μm^2

Dynamic range

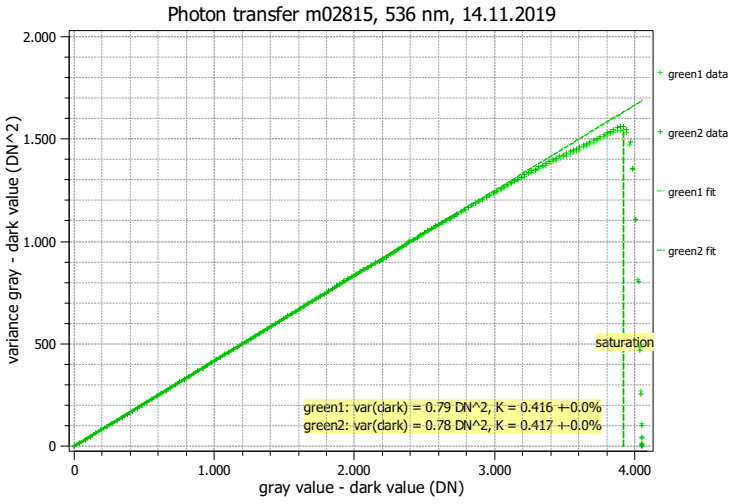
DR	3465
	70.8 dB
	11.8 bit

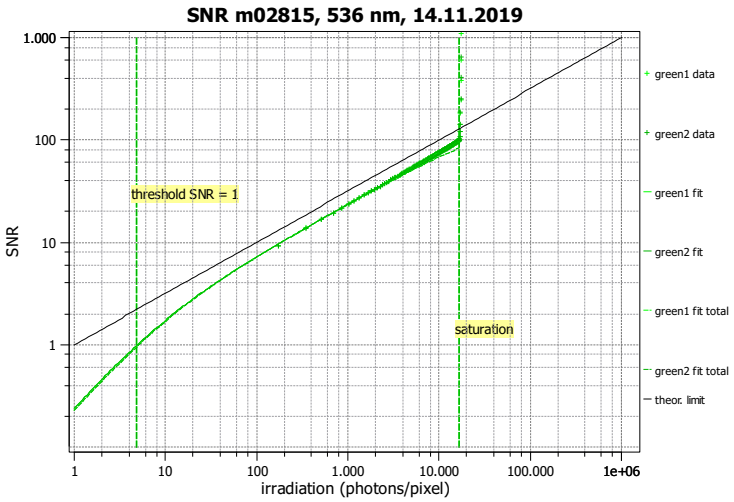
Dark current

$\mu_{c,mean}$	-0.2 DN/s
$\mu_{c,mean}$	-0.5 e$^-$/s
$\mu_{c,var}$	1.0 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 2

Type of data	Single	Gain / BlackLevel	1.0 / 39.0
Exposure control	By irradiance	Environmental temperature	24.7°C
Exposure time	796.00 µs	Camera body temperature	31.8°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	536 nm, 31.9 nm





Quantum efficiency

η	56.4%

Overall system gain

K	0.416 DN/e$^-$
$1/K$	2.404 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.89 DN
$DSNU_{1288}$	0.27 DN
σ_d	2.02 e$^-$
$DSNU_{1288}$	0.65 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	97
	39.7 dB
	6.6 bit
$1/SNR_{max}$	1.03 %
$PRNU_{1288}$	0.62 %

Nonlinearity

LE	0.21%
LE_{min}	-0.11%
LE_{max}	0.31%

Sensitivity & saturation

$\mu_{p,min}$	4.76 p
	0.400 p/µm^2
$\mu_{p,sat}$	16609 p
	1395 p/µm^2
$\mu_{e,min}$	2.69 e$^-$
	0.226 e$^-$/µm^2
$\mu_{e,sat}$	9375 e$^-$
	788 e$^-$/µm^2

Dynamic range

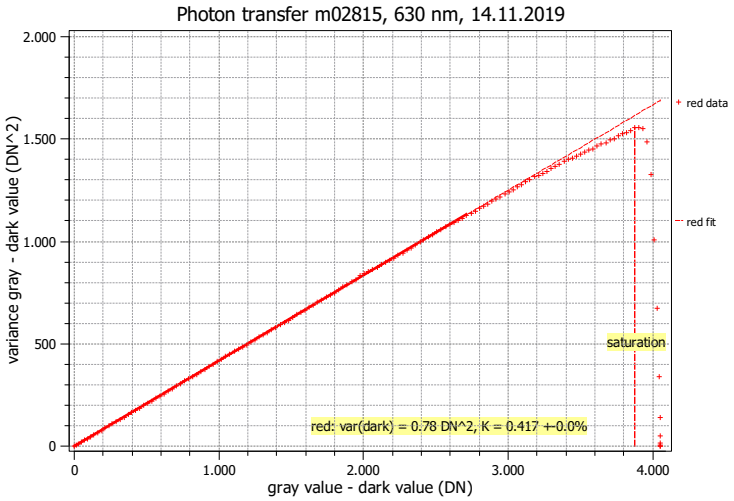
DR	3486
	70.8 dB
	11.8 bit

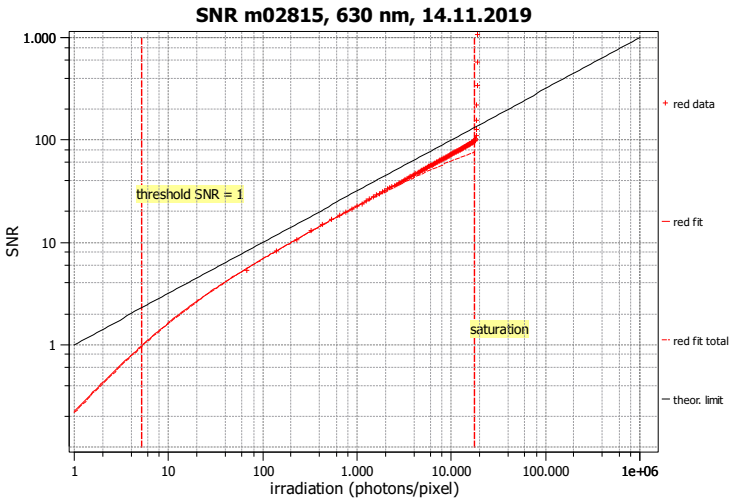
Dark current

$\mu_{c,mean}$	-0.2 DN/s
$\mu_{c,mean}$	-0.5 e$^-$/s
$\mu_{c,var}$	1.1 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 3

Type of data	Single	Gain / BlackLevel	1.0 / 39.0
Exposure control	By irradiance	Environmental temperature	24.7°C
Exposure time	796.00 μs	Camera body temperature	31.8°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	630 nm, 13.2 nm





Quantum efficiency

η	52.3%

Overall system gain

K	0.417 DN/e$^-$
$1/K$	2.400 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.88 DN
$DSNU_{1288}$	0.23 DN
σ_d	2.01 e$^-$
$DSNU_{1288}$	0.56 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	96
	39.7 dB
	6.6 bit
$1/SNR_{max}$	1.04 %
$PRNU_{1288}$	0.82 %

Nonlinearity

LE	0.11%
LE_{min}	-0.08%
LE_{max}	0.13%

Sensitivity & saturation

$\mu_{p,min}$	5.13 p
	0.431 p/μm^2
$\mu_{p,sat}$	17781 p
	1494 p/μm^2
$\mu_{e,min}$	2.68 e$^-$
	0.225 e$^-$/μm^2
$\mu_{e,sat}$	9291 e$^-$
	781 e$^-$/μm^2

Dynamic range

DR	3465
	70.8 dB
	11.8 bit

Dark current

$\mu_{c,mean}$	-0.3 DN/s
$\mu_{c,mean}$	-0.8 e$^-$/s
$\mu_{c,var}$	0.9 e$^-$/s