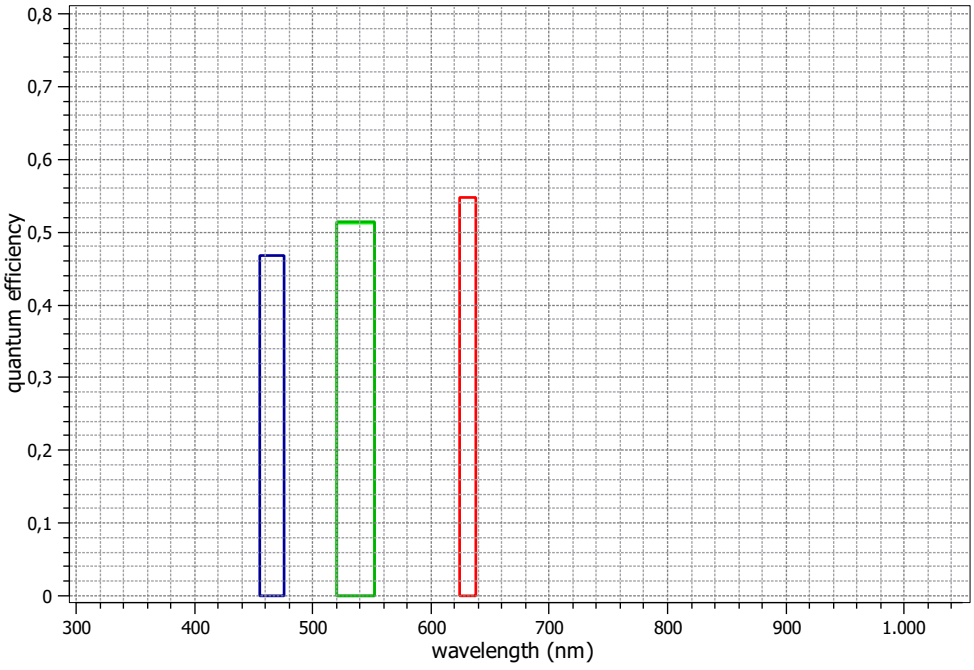
EMVA 1288 Summary Sheet

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 28.08.2017 . 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.

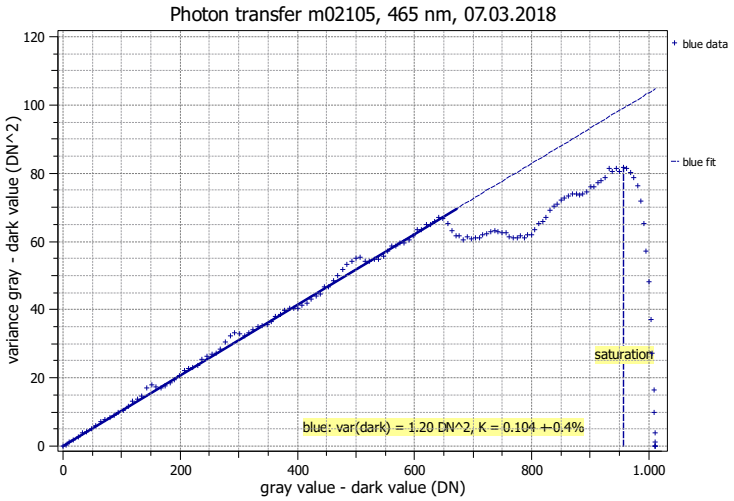
Vendor	Baumer
Model	VEXG-13C
Serial number	700001989167
Sensor diagonal	7.87 mm
Lens category	CS-Mount
Resolution	1280 × 1024, 10 bit
Pixel size	4.80 μm × 4.80 μm
Sensor	OnSemi PYTHON1300
Sensor type	CMOS
Shutter type	Global shutter
Overlap capabilities	Overlapped
Maximum frame rate	0.0 Hz
Interface type	GEV

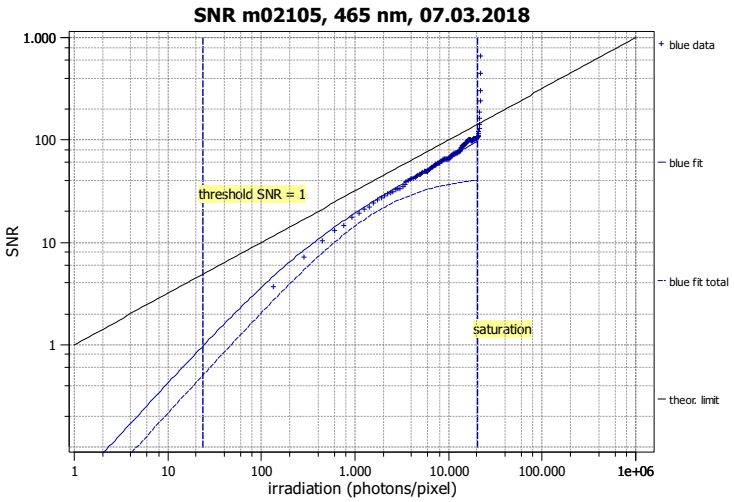
Type of data presented	Single
Operation point 1	
Wavelength centroid	465.2 nm
Wavelength FWHM	20.8 nm
Gain / BlackLevel	1.0 / 10.0
Operation point 2	
Wavelength centroid	535.8 nm
Wavelength FWHM	31.9 nm
Gain / BlackLevel	1.0 / 10.0
Operation point 3	
Wavelength centroid	630.8 nm
Wavelength FWHM	13.3 nm
Gain / BlackLevel	1.0 / 10.0
Optional data measured	
None	



EMVA 1288 Summary Sheet for Operating Point 1

Type of data	Single	Gain / BlackLevel	1.0 / 10.0
Exposure control	By irradiance	Environmental temperature	23.9°C
Exposure time	430.00 μs	Camera body temperature	31.3°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG10	Wavelength, centr., FWHM	465 nm, 20.8 nm





Quantum efficiency

η	46.8%

Overall system gain

K	0.104 DN/e$^-$
$1/K$	9.656 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	1.09 DN
$DSNU_{1288}$	1.95 DN
σ_d	10.19 e$^-$
$DSNU_{1288}$	18.87 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	97
	39.8 dB
	6.6 bit
$1/SNR_{max}$	1.03 %
$PRNU_{1288}$	2.25 %

Nonlinearity

LE	1.33%
LE_{min}	-1.69%
LE_{max}	0.97%

Sensitivity & saturation

$\mu_{p,min}$	23.7 p
	1.03 p/μm^2
$\mu_{p,sat}$	20263 p
	879 p/μm^2
$\mu_{e,min}$	11.1 e$^-$
	0.48 e$^-$/μm^2
$\mu_{e,sat}$	9493 e$^-$
	412 e$^-$/μm^2

Dynamic range

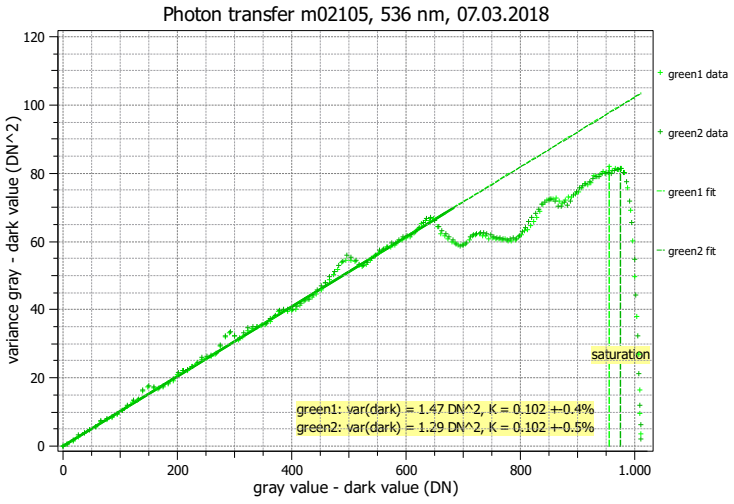
DR	857
	58.7 dB
	9.7 bit

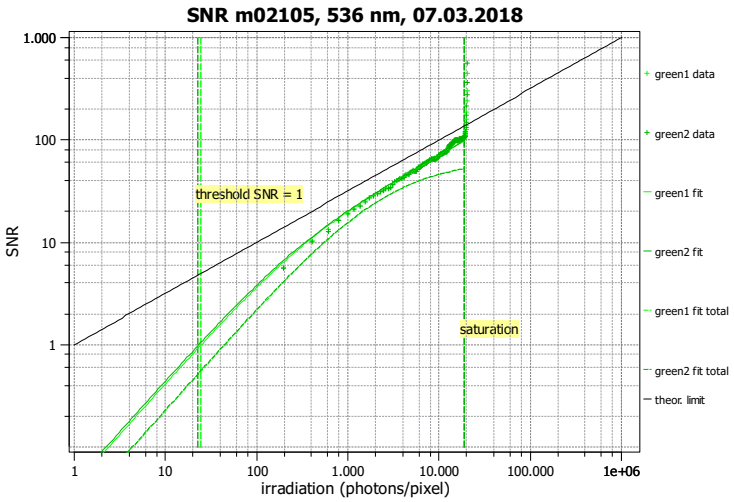
Dark current

$\mu_{c,mean}$	5.8 DN/s
$\mu_{c,mean}$	56.4 e$^-$/s
$\mu_{c,var}$	23.6 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 2

Type of data	Single	Gain / BlackLevel	1.0 / 10.0
Exposure control	By irradiance	Environmental temperature	23.9°C
Exposure time	430.00 μs	Camera body temperature	31.3°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG10	Wavelength, centr., FWHM	536 nm, 31.9 nm





Quantum efficiency

η	51.2%

Overall system gain

K	0.102 DN/e$^-$
$1/K$	9.769 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	1.21 DN
$DSNU_{1288}$	1.95 DN
σ_d	11.52 e$^-$
$DSNU_{1288}$	19.02 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	98
	39.8 dB
	6.6 bit
$1/SNR_{max}$	1.02 %
$PRNU_{1288}$	1.60 %

Nonlinearity

LE	1.38%
LE_{min}	-1.73%
LE_{max}	1.03%

Sensitivity & saturation

$\mu_{p,min}$	24.1 p
	1.05 p/μm^2
$\mu_{p,sat}$	18781 p
	815 p/μm^2
$\mu_{e,min}$	12.4 e$^-$
	0.54 e$^-$/μm^2
$\mu_{e,sat}$	9622 e$^-$
	418 e$^-$/μm^2

Dynamic range

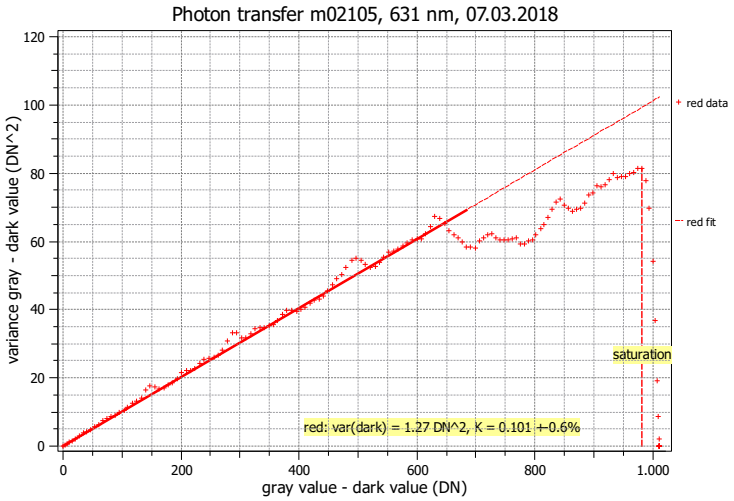
DR	778
	57.8 dB
	9.6 bit

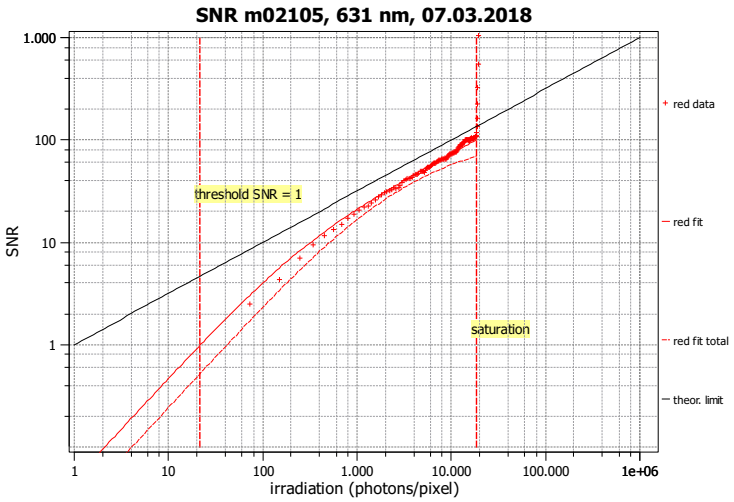
Dark current

$\mu_{c,mean}$	5.8 DN/s
$\mu_{c,mean}$	56.4 e$^-$/s
$\mu_{c,var}$	23.7 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 3

Type of data	Single	Gain / BlackLevel	1.0 / 10.0
Exposure control	By irradiance	Environmental temperature	23.9°C
Exposure time	430.00 μs	Camera body temperature	31.3°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG10	Wavelength, centr., FWHM	631 nm, 13.3 nm





Quantum efficiency

η	54.8%

Overall system gain

K	0.101 DN/e$^-$
$1/K$	9.884 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	1.13 DN
$DSNU_{1288}$	1.95 DN
σ_d	10.77 e$^-$
$DSNU_{1288}$	19.29 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	100
	40.0 dB
	6.6 bit
$1/SNR_{max}$	1.00 %
$PRNU_{1288}$	1.03 %

Nonlinearity

LE	1.53%
LE_{min}	-1.95%
LE_{max}	1.12%

Sensitivity & saturation

$\mu_{p,min}$	21.3 p
	0.92 p/μm^2
$\mu_{p,sat}$	18353 p
	797 p/μm^2
$\mu_{e,min}$	11.7 e$^-$
	0.51 e$^-$/μm^2
$\mu_{e,sat}$	10055 e$^-$
	436 e$^-$/μm^2

Dynamic range

DR	863
	58.7 dB
	9.8 bit

Dark current

$\mu_{c,mean}$	5.8 DN/s
$\mu_{c,mean}$	57.2 e$^-$/s
$\mu_{c,var}$	24.6 e$^-$/s