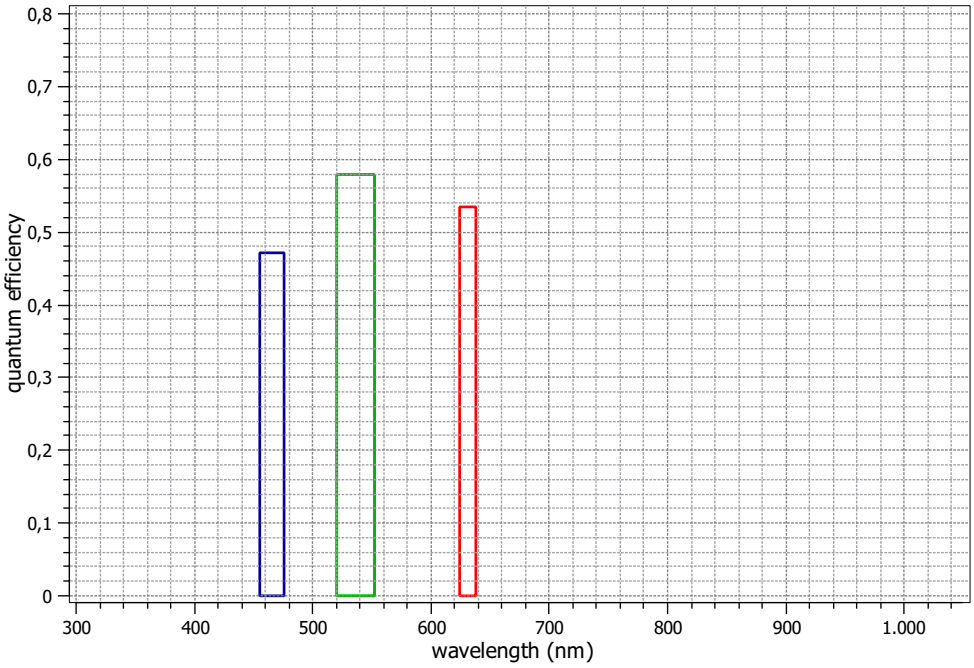
EMVA 1288 Summary Sheet

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) . 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.

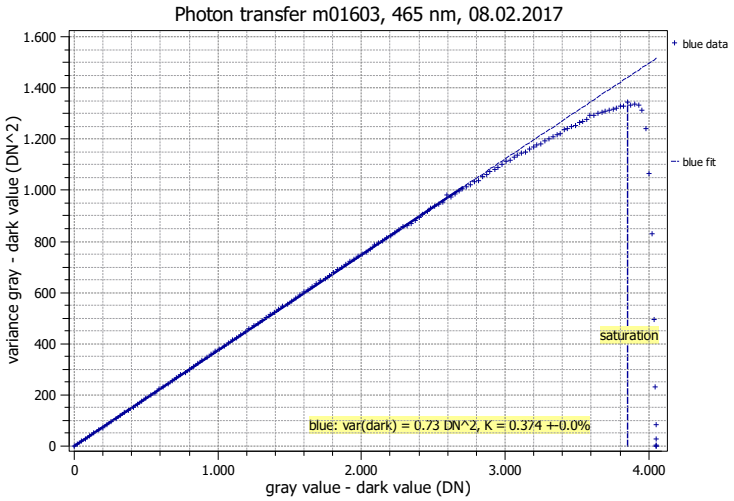
Vendor	Baumer
Model	VCXG-51C
Serial number	700001878390
Sensor diagonal	11.01 mm
Lens category	C-Mount
Resolution	2448 × 2048, 12 bit
Pixel size	3.45 μm × 3.45 μm
Sensor	Sony IMX264
Sensor type	CMOS
Shutter type	Global shutter
Overlap capabilities	Overlapped
Maximum frame rate	0.0 Hz
Interface type	GEV

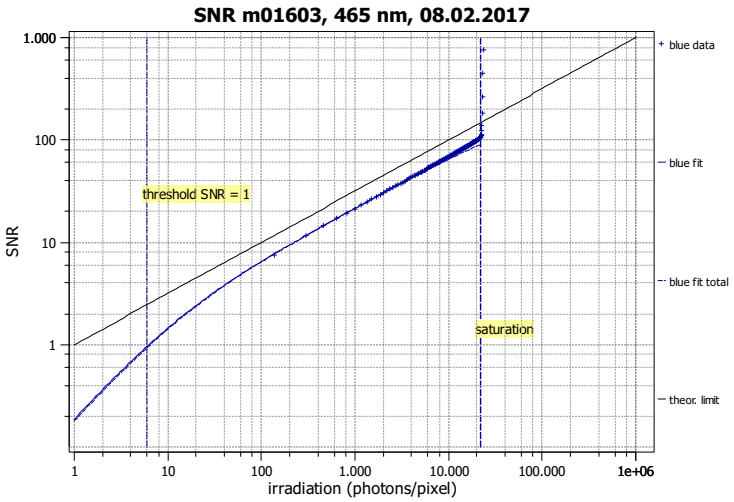
Type of data presented	Single
Operation point 1	
Wavelength centroid	465.3 nm
Wavelength FWHM	20.7 nm
Gain / BlackLevel	1.0 / 39
Operation point 2	
Wavelength centroid	535.8 nm
Wavelength FWHM	32.0 nm
Gain / BlackLevel	1.0 / 39
Operation point 3	
Wavelength centroid	631.0 nm
Wavelength FWHM	13.4 nm
Gain / BlackLevel	1.0 / 39
Optional data measured	
None	



EMVA 1288 Summary Sheet for Operating Point 1

Type of data	Single	Gain / BlackLevel	1.0 / 39
Exposure control	By irradiance	Environmental temperature	25.9°C
Exposure time	824.00 µs	Camera body temperature	36.3°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	465 nm, 20.7 nm





Quantum efficiency

η	47.2%

Overall system gain

K	0.374 DN/e$^-$
$1/K$	2.674 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.86 DN
$DSNU_{1288}$	0.28 DN
σ_d	2.15 e$^-$
$DSNU_{1288}$	0.76 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	101
	40.1 dB
	6.7 bit
$1/SNR_{max}$	0.99 %
$PRNU_{1288}$	0.52 %

Nonlinearity

LE	0.17%
LE_{min}	-0.11%
LE_{max}	0.23%

Sensitivity & saturation

$\mu_{p,min}$	6.02 p
	0.506 p/µm^2
$\mu_{p,sat}$	21775 p
	1829 p/µm^2
$\mu_{e,min}$	2.84 e$^-$
	0.239 e$^-$/µm^2
$\mu_{e,sat}$	10276 e$^-$
	863 e$^-$/µm^2

Dynamic range

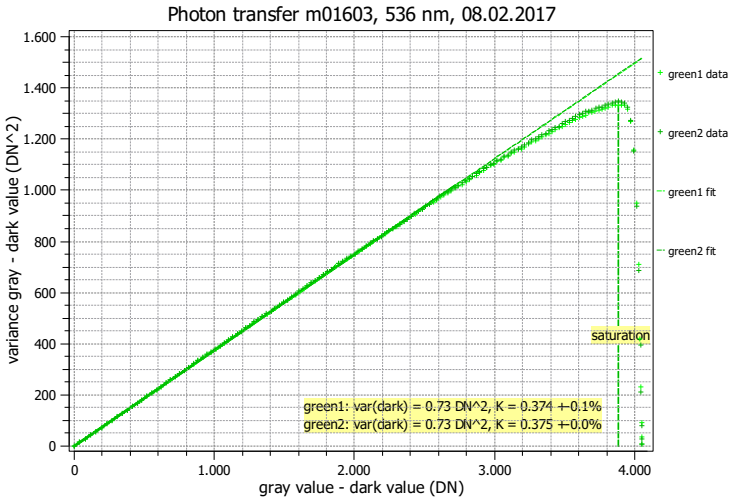
DR	3615
	71.2 dB
	11.8 bit

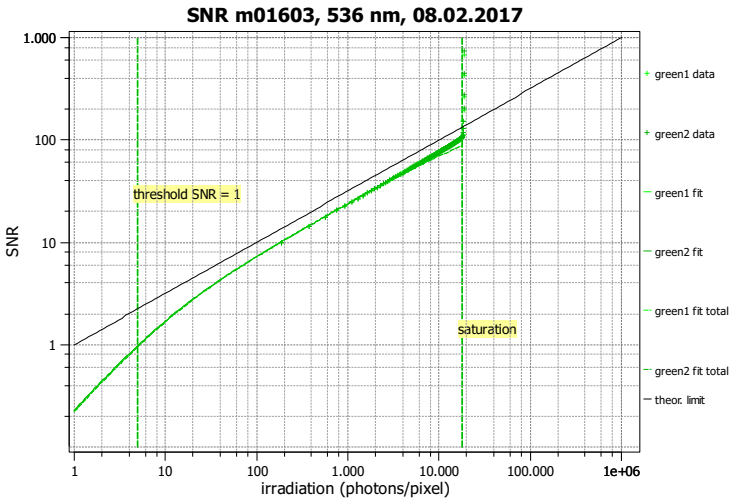
Dark current

$\mu_{c,mean}$	-0.4 DN/s
$\mu_{c,mean}$	-1.0 e$^-$/s
$\mu_{c,var}$	0.1 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 2

Type of data	Single	Gain / BlackLevel	1.0 / 39
Exposure control	By irradiance	Environmental temperature	25.9°C
Exposure time	824.00 µs	Camera body temperature	36.3°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	536 nm, 32.0 nm





Quantum efficiency

η	58.0%

Overall system gain

K	0.374 DN/e$^-$
$1/K$	2.673 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.85 DN
$DSNU_{1288}$	0.26 DN
σ_d	2.15 e$^-$
$DSNU_{1288}$	0.68 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	102
	40.1 dB
	6.7 bit
$1/SNR_{max}$	0.98 %
$PRNU_{1288}$	0.58 %

Nonlinearity

LE	0.18%
LE_{min}	-0.11%
LE_{max}	0.26%

Sensitivity & saturation

$\mu_{p,min}$	4.90 p
	0.411 p/µm^2
$\mu_{p,sat}$	17850 p
	1500 p/µm^2
$\mu_{e,min}$	2.84 e$^-$
	0.238 e$^-$/µm^2
$\mu_{e,sat}$	10348 e$^-$
	869 e$^-$/µm^2

Dynamic range

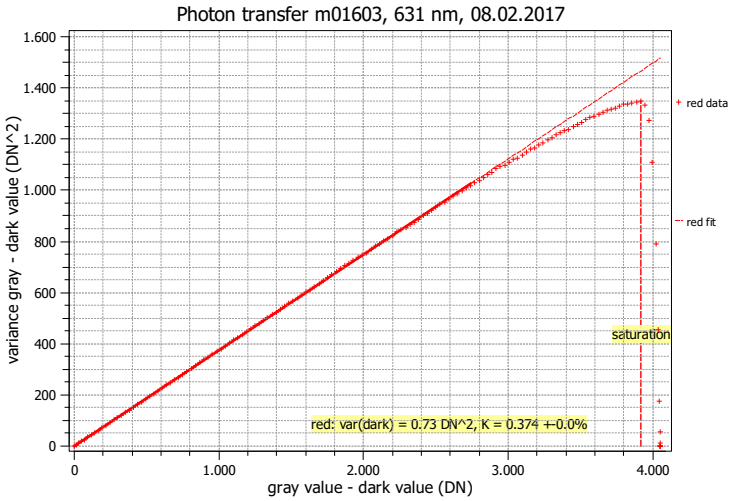
DR	3646
	71.2 dB
	11.8 bit

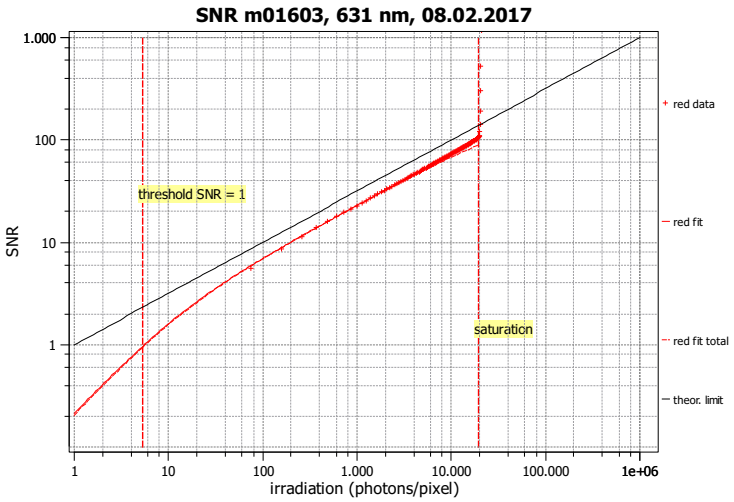
Dark current

$\mu_{c,mean}$	-0.4 DN/s
$\mu_{c,mean}$	-1.0 e$^-$/s
$\mu_{c,var}$	0.1 e$^-$/s

EMVA 1288 Summary Sheet for Operating Point 3

Type of data	Single	Gain / BlackLevel	1.0 / 39
Exposure control	By irradiance	Environmental temperature	25.9°C
Exposure time	824.00 µs	Camera body temperature	36.3°C
Frame rate	10.0 Hz	Internal temperature(s)	—
Data transfer mode	BayerRG12	Wavelength, centr., FWHM	631 nm, 13.4 nm





Quantum efficiency

η	53.4%

Overall system gain

K	0.374 DN/e$^-$
$1/K$	2.673 e$^-$/DN

Temporal dark noise & DSNU

$\sigma_{y.dark}$	0.85 DN
$DSNU_{1288}$	0.25 DN
σ_d	2.15 e$^-$
$DSNU_{1288}$	0.67 e$^-$

Signal-to-noise ratio & PRNU

SNR_{max}	102
	40.2 dB
	6.7 bit
$1/SNR_{max}$	0.98 %
$PRNU_{1288}$	0.55 %

Nonlinearity

LE	0.13%
LE_{min}	-0.16%
LE_{max}	0.09%

Sensitivity & saturation

$\mu_{p,min}$	5.31 p
	0.446 p/µm^2
$\mu_{p,sat}$	19622 p
	1649 p/µm^2
$\mu_{e,min}$	2.83 e$^-$
	0.238 e$^-$/µm^2
$\mu_{e,sat}$	10481 e$^-$
	881 e$^-$/µm^2

Dynamic range

DR	3698
	71.4 dB
	11.9 bit

Dark current

$\mu_{c,mean}$	-0.4 DN/s
$\mu_{c,mean}$	-1.0 e$^-$/s
$\mu_{c,var}$	0.1 e$^-$/s