

EMVA 1288 Datasheet

This datasheet describes the specification according to the standard 1288 Standard for Characterization and Presentation of Specification Data for Image Sensors and Cameras of European Machine Vision Association (EMVA) (See www.standard1288.org).

Vendor	KAYA Instruments	Sensor	IMX255
Model	Iron255M	Sensor type	CMOS
Camera type	Monochrome	Shutter type	Global
Data type	Single	Overlap capabilities	Overlapping
Sensor type	CMOS	Frame rate	39 Hz
Lens category	C-Mount	Exposure control	by irradiance
Resolution	4096 x 2160 , 12 bits	Exposure time	6000.1328 μ s
Pixel size	3.45 μ m x 3.45 μ m	Illumination	Variable with constant exposure time
Maximum readout rate	57 fps	Irradiation Steps	50
Dark current compensation	No	Irradiation calibration accuracy	-
Interface type	CXP-12	Irradiation measurement error	-
Serial number	120002	Standart version	3.1
Firmware version	3.1-2020.4.13	Light source	Integrating Sphere
Sensor diagonal	16.1mm		

International Distributor



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Summary Sheet for Operation Point 1 at a Wavelength of 520 nm

Camera setting

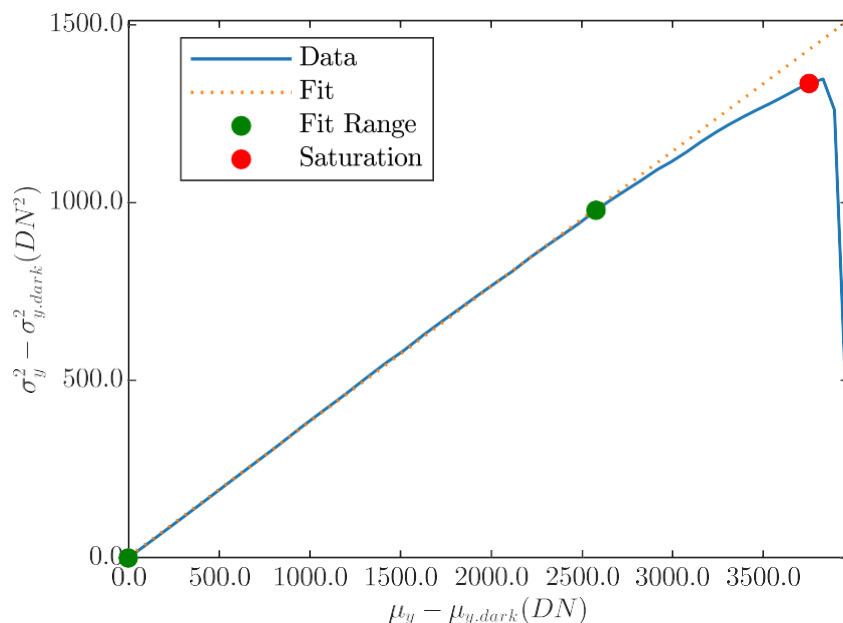
Gain
Black level

GainLevelx1
128

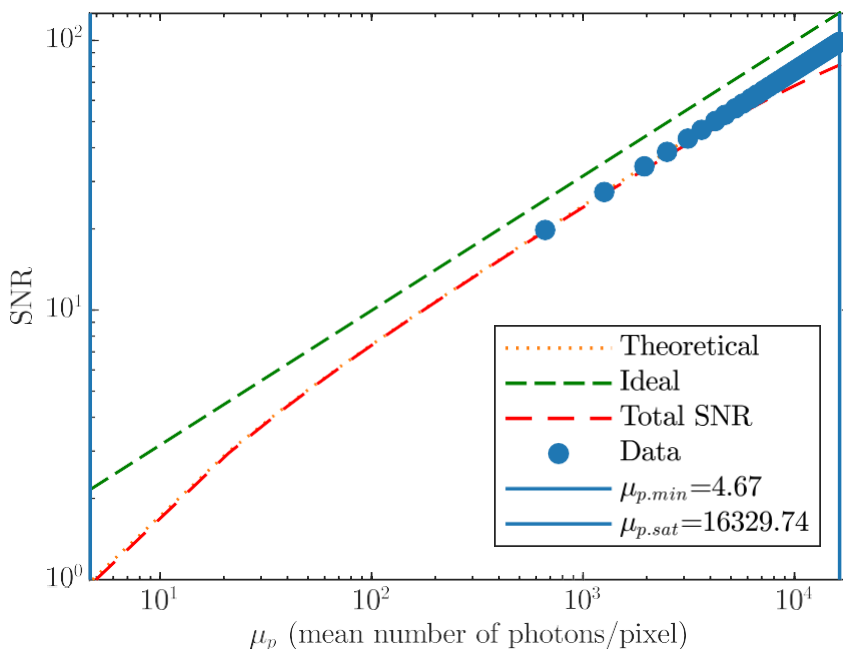
Operation point parameters

Environmental temperature 2.81
Camera body temperature 35
Sensor temperature 40.504
Processor temperature 40

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η 60.8115 %

System gain

K 0.38079 DN/e⁻
 $1/K$ 2.6261 e⁻/DN

Temporal dark noise

σ_d 2.2152 e⁻
 $\sigma_{y,dark}$ 0.89156 DN

Signal-to-noise ratio

SNR_{max} 99.6512
39.9697 dB
6.6388 bit
 $1/SNR_{max}$ 1.0035 %

Absolute sensitivity threshold

$\mu_{p,min}$ 4.6723 p
 $\mu_{p,min,area}$ 0.39255 p/μm²
 $\mu_{e,min}$ 2.8413 e⁻
 $\mu_{e,min,area}$ 0.23871 e⁻/μm²

Saturation capacity

$\mu_{p,sat}$ 16329.7396 p
 $\mu_{p,sat,area}$ 1371.9588 p/μm²
 $\mu_{e,sat}$ 9930.3675 e⁻
 $\mu_{e,sat,area}$ 834.3094 e⁻/μm²

Dynamic range

DR 3495.0034
70.869 dB
11.7711 bit

Spatial nonuniformities

$DSNU_{1288}$ 0.71193 e⁻
0.2711 DN
 $PRNU_{1288}$ 0.70511 %

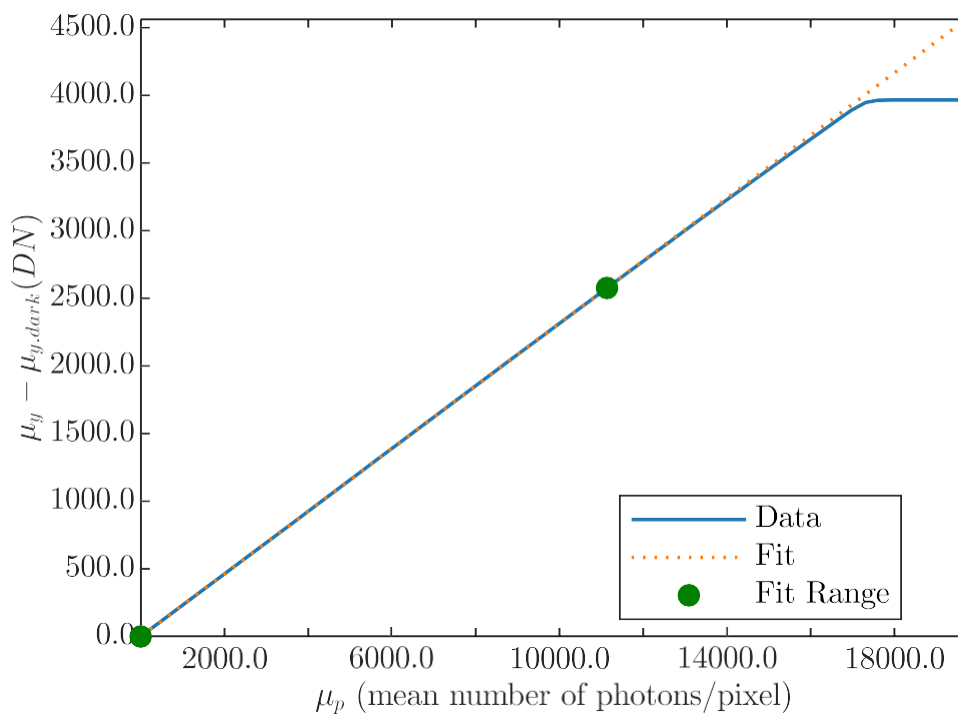
Linearity error

LE_{min} -0.46641 %
 LE_{max} 0.22633 %

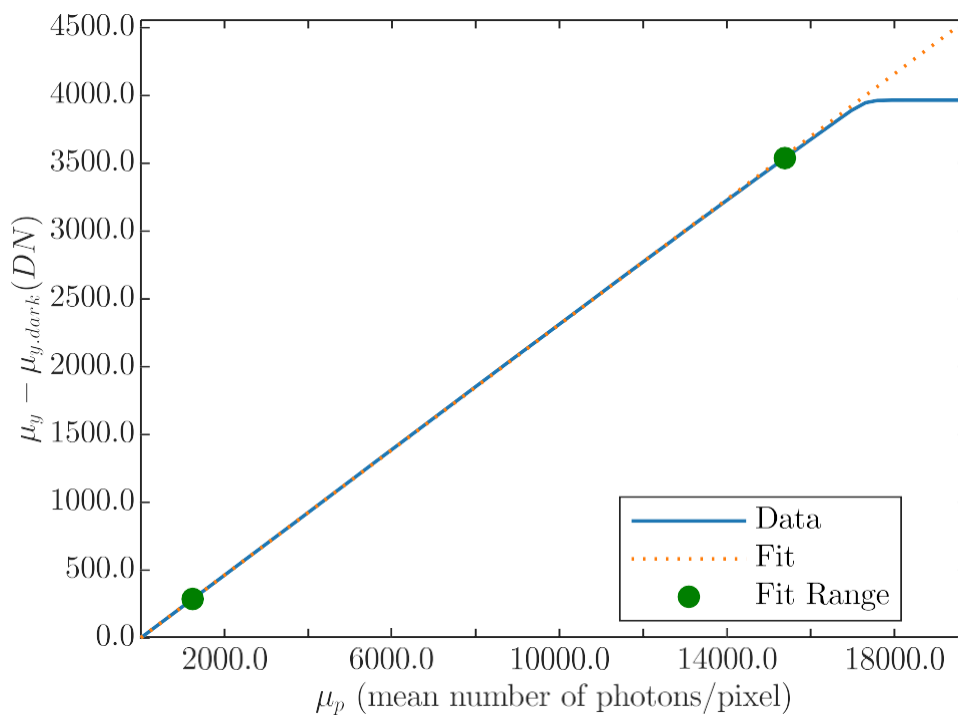
Dark current

$\mu_{l,mean}$ 26.3265 e⁻/s
10.025 DN/s
 $\mu_{l,var}$ 2.5136 e⁻/s
0.36449 DN/s

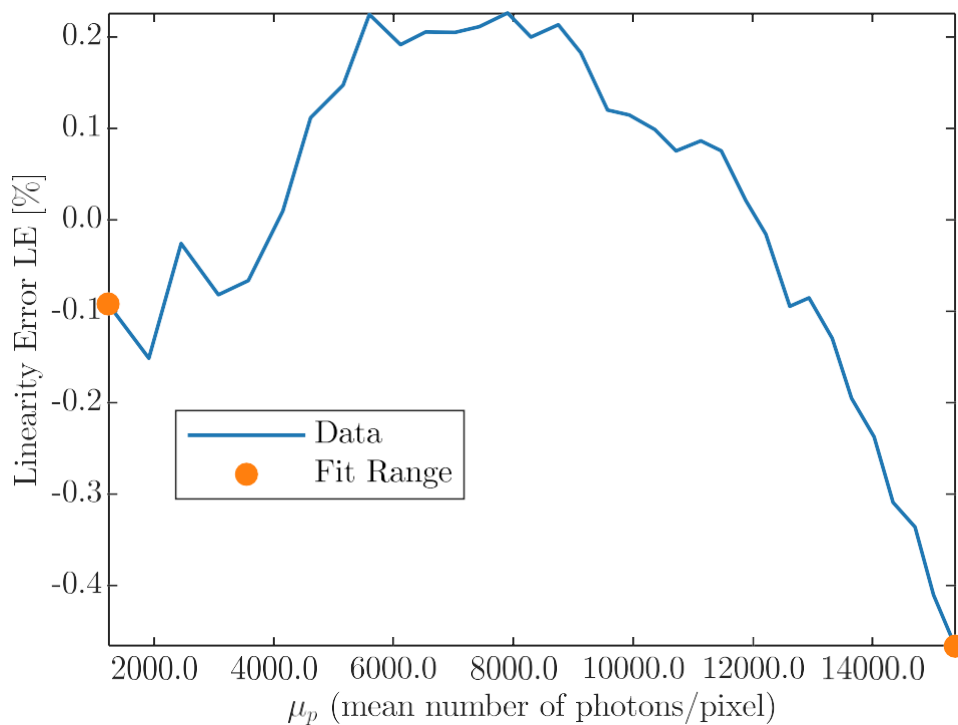
Sensitivity



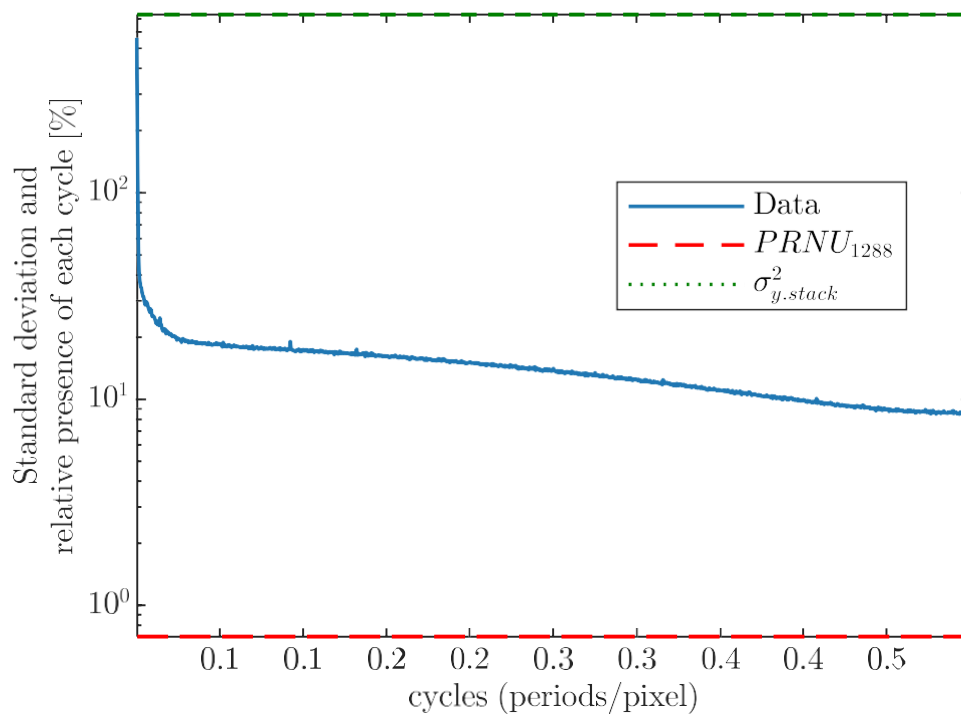
Linearity



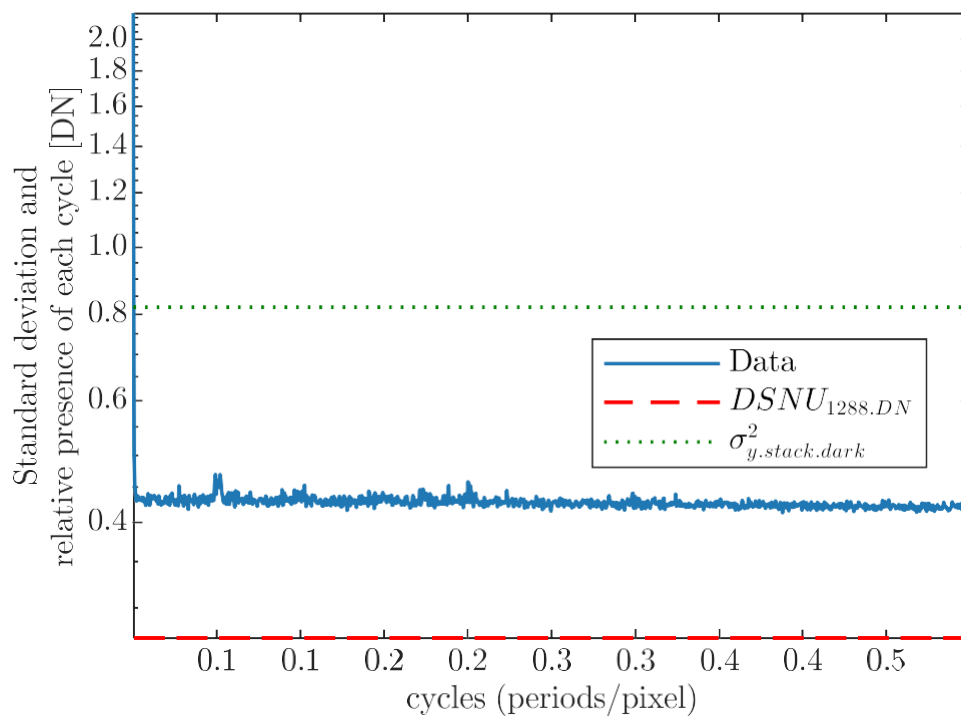
Deviation Linearity



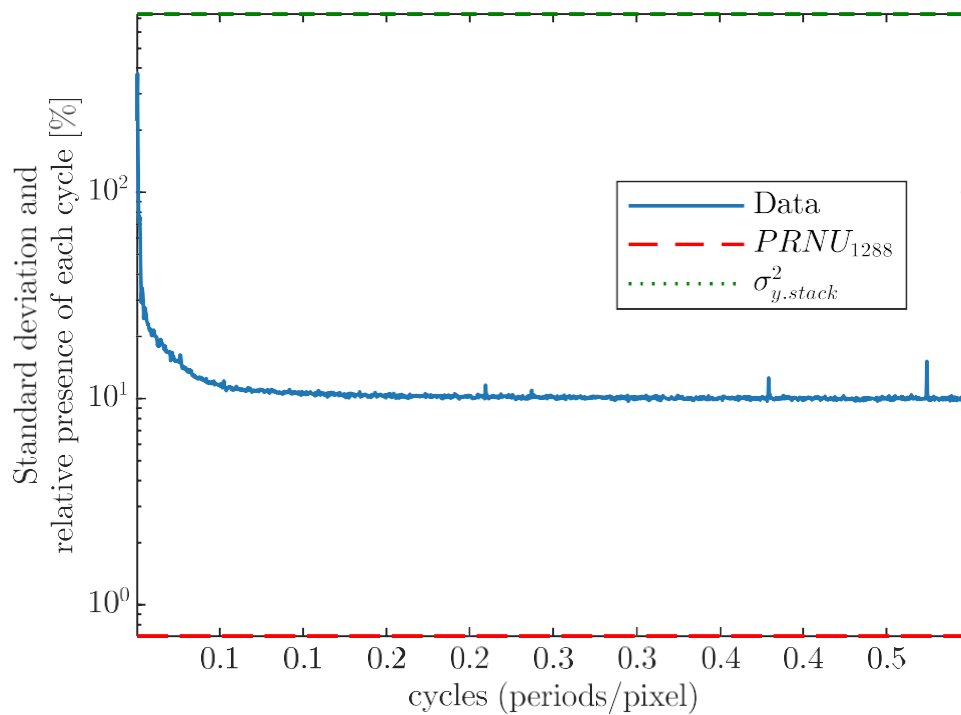
Horizontal Spectrogram PRNU



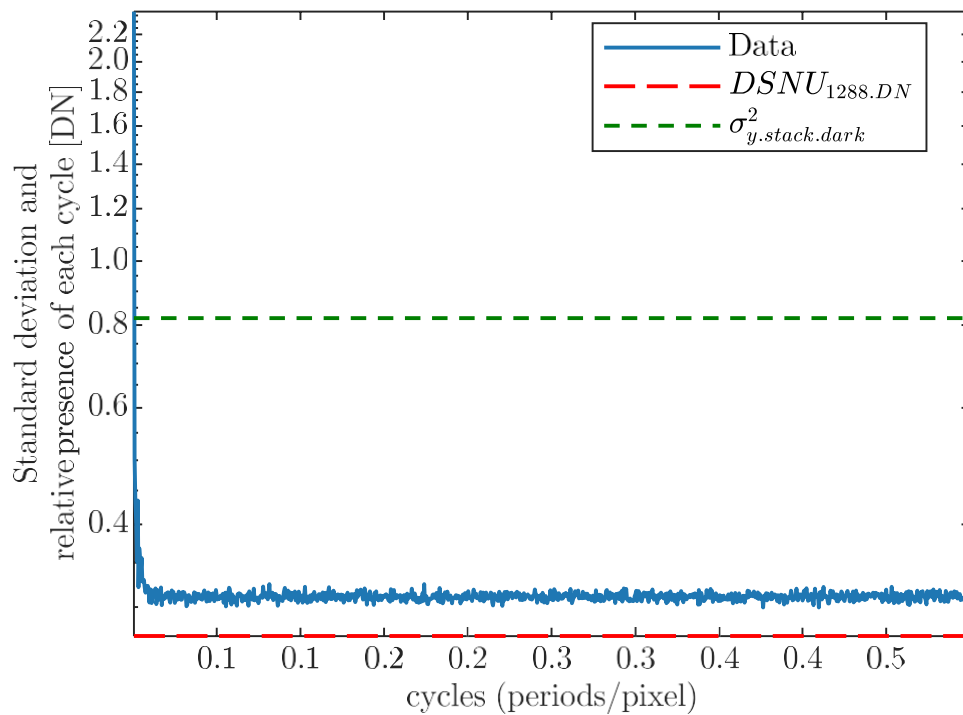
Horizontal Spectrogram DSNU



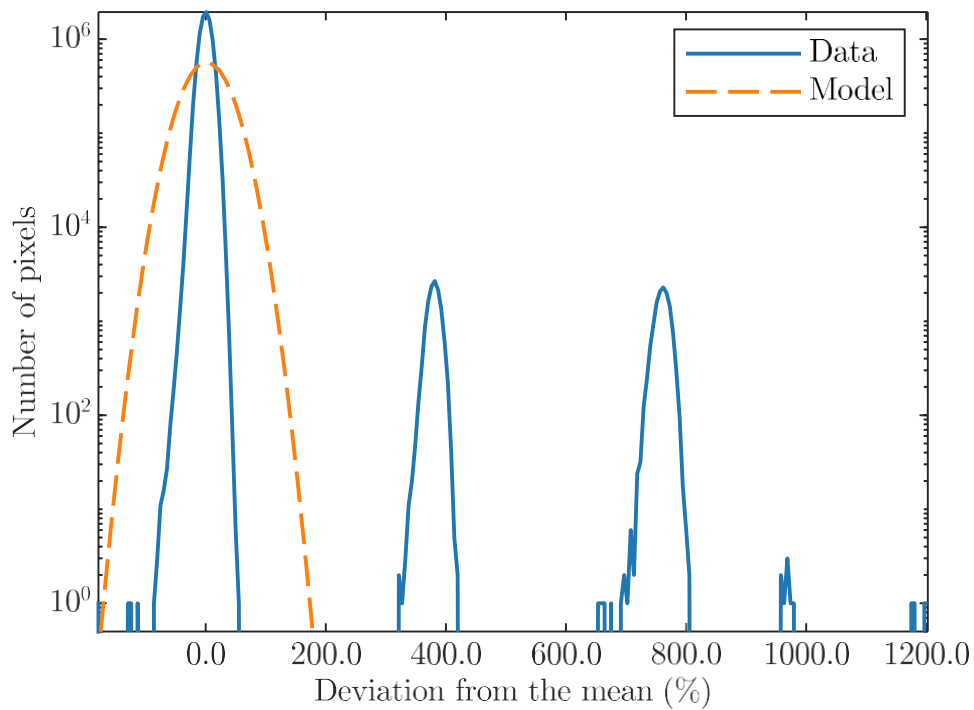
Vertical Spectrogram PRNU



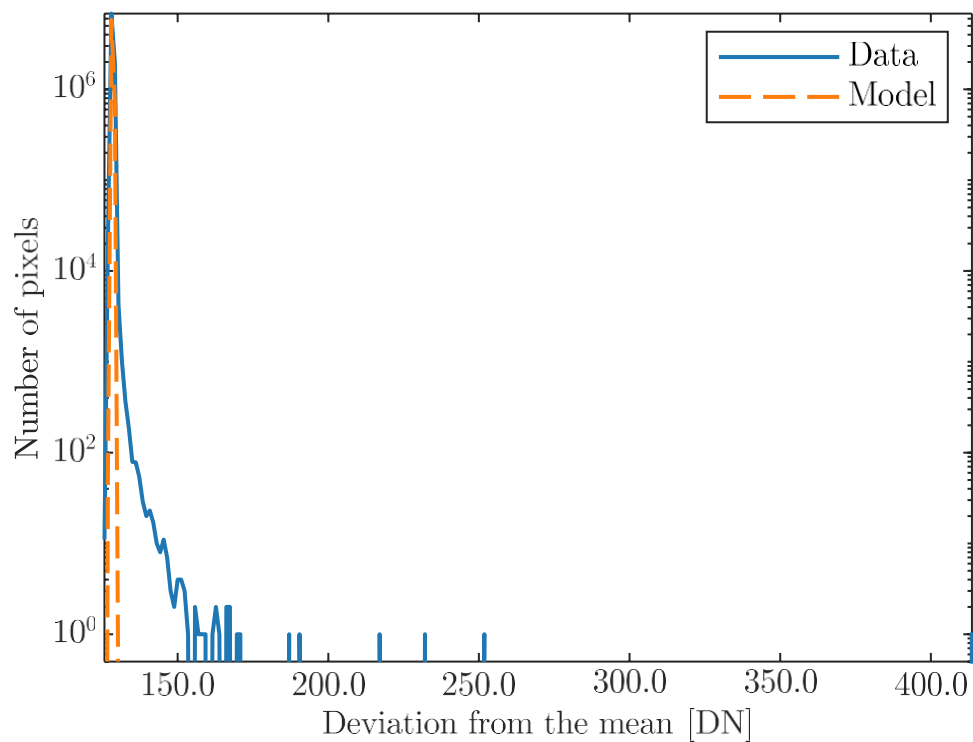
Vertical Spectrogram DSNU



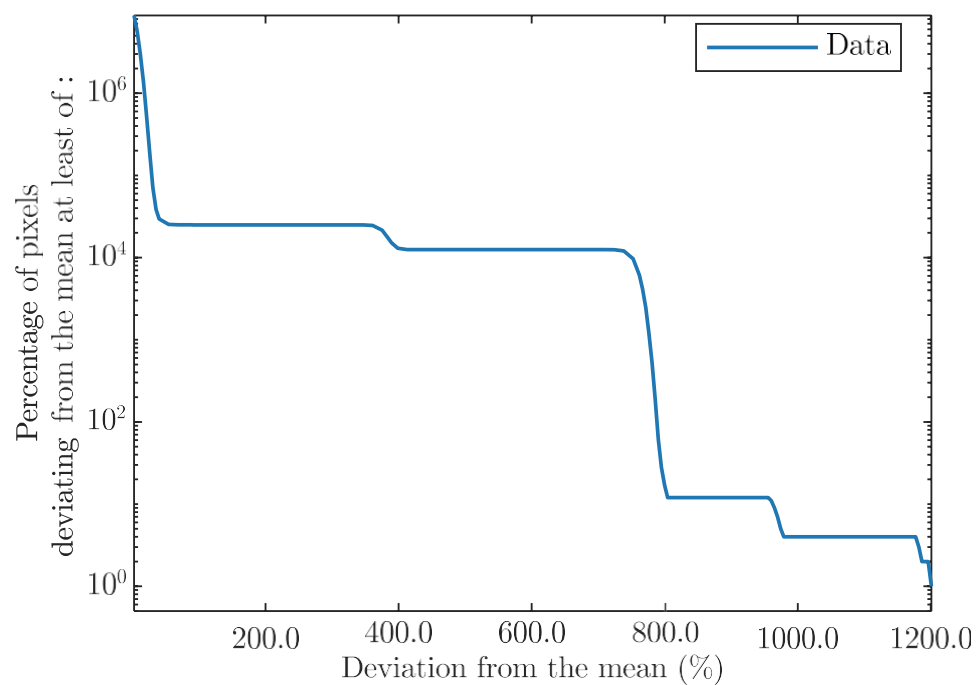
Logarithmic Histogram PRNU



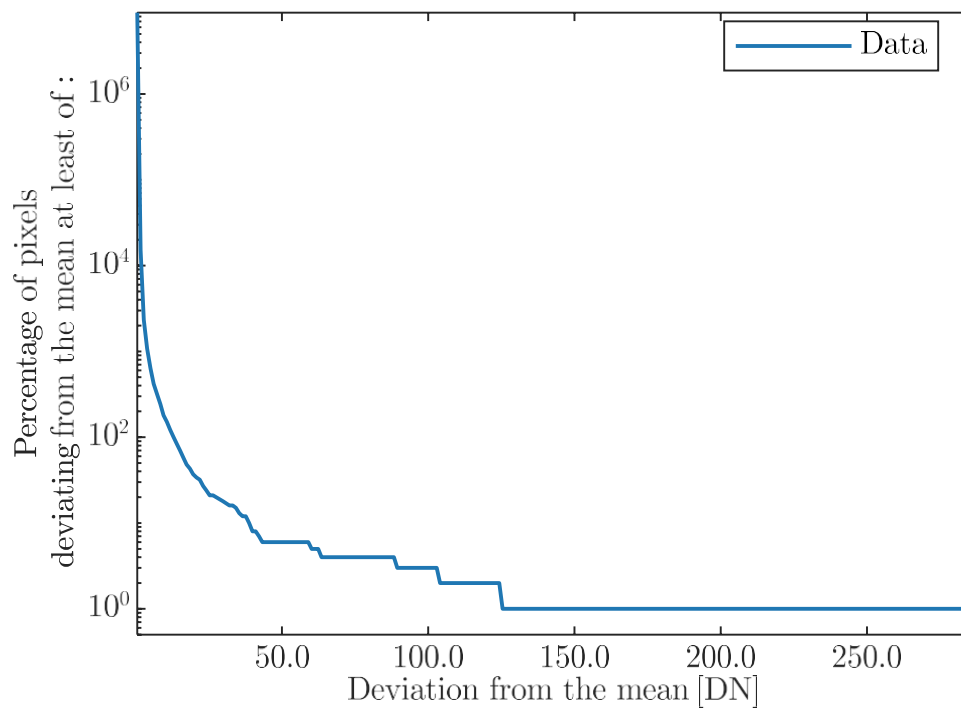
Logarithmic Histogram DSNU



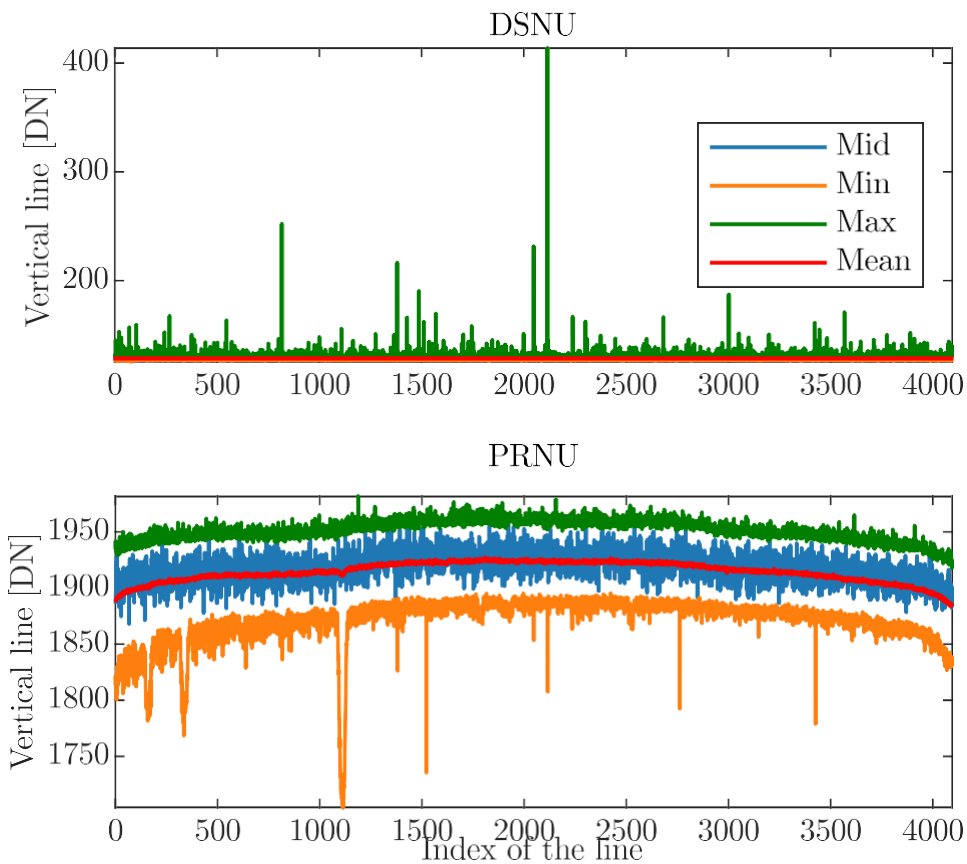
Accumulated Log Histogram PRNU



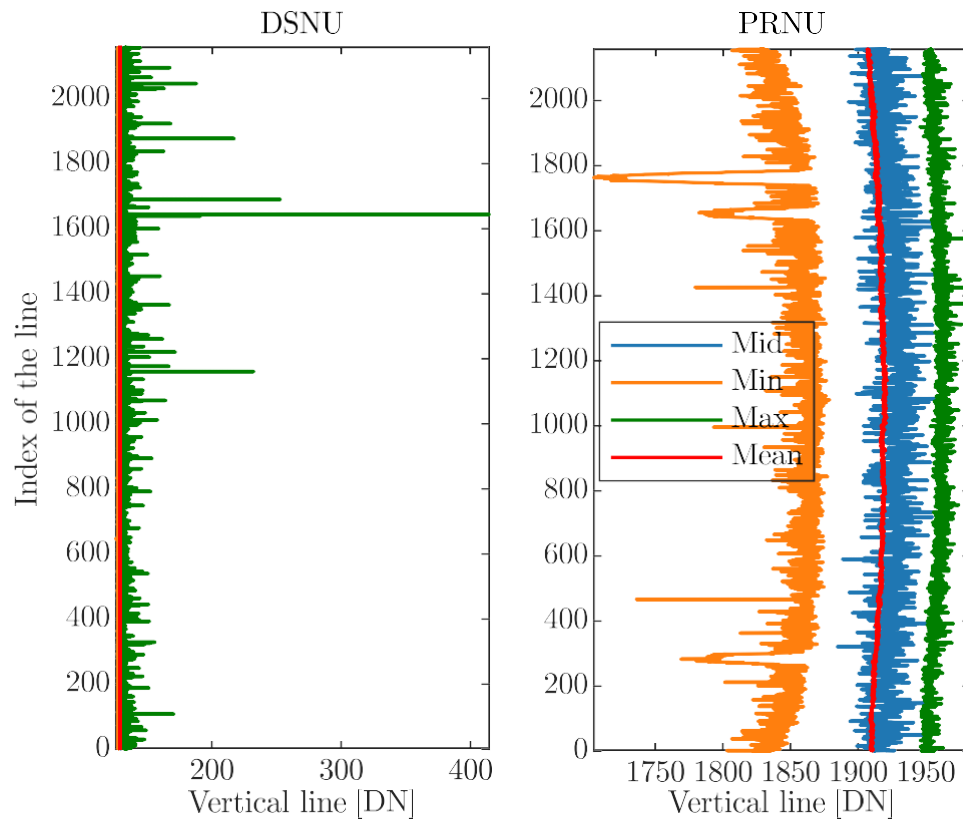
Accumulated Log Histogram DSNU



Horizontal Profile

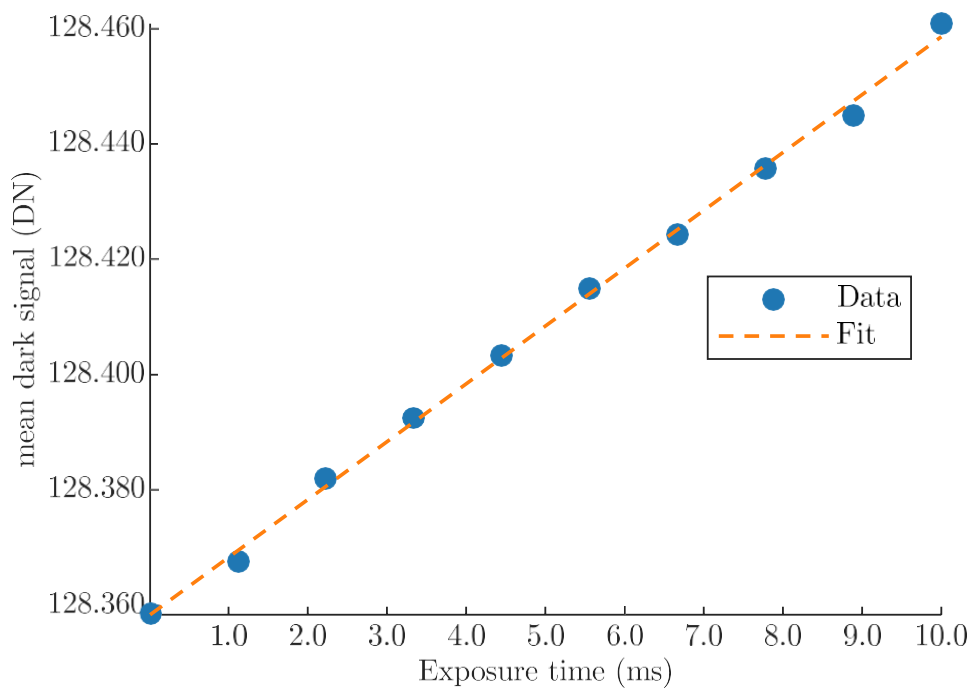


Vertical Profile

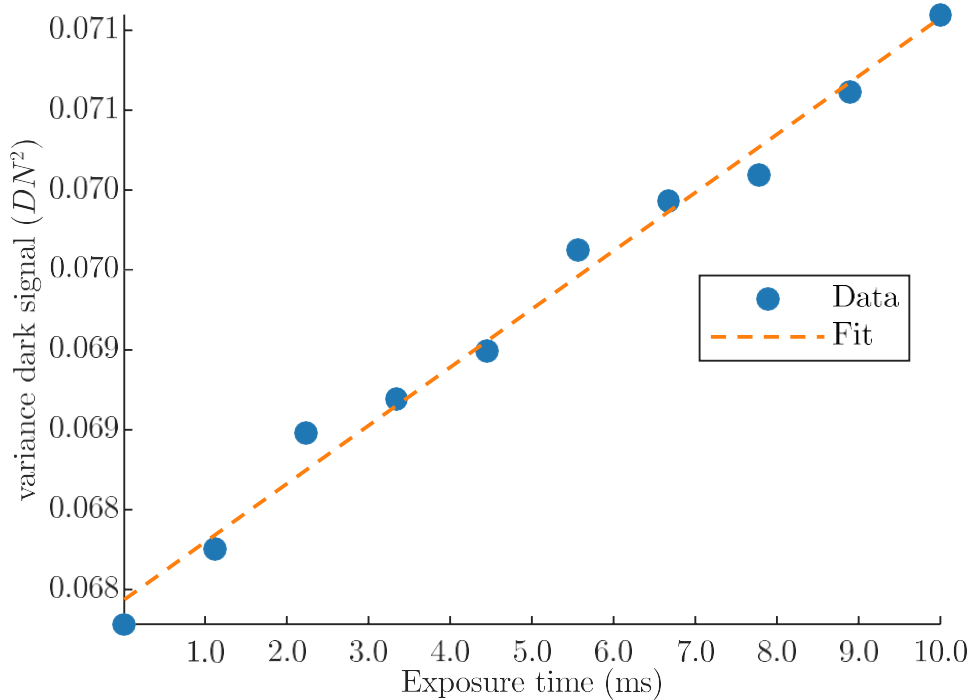


Dark Current

Dark Current from Mean



Dark Current from Variance



Acceptance Test Result (Not part of EMVA1288 standard)

Test Date

17-Nov-2020 15:22:05

Tester Name

Tester

Table 1: Acceptance test summary (Not part of EMVA1288 standard)

Test Number	Test Name	Test Status	Numeric Value	Margins	Failure Description
1	Dead Pixels	Pass	0	≤ 10	
2	Dead Clusters	Pass	0	≤ 0	
3	QE	Pass	60.8	≥ 55	
4	SNR	Pass	40.0	≥ 38	
5	DR	Pass	70.9	≥ 67	
6	Flash	Pass	-	-	
7	Uart	Pass	-	-	
8	SensorControl	Pass	-	-	
9	SensorLVDS	Pass	-	-	
10	Temperature	Pass	-	-	
11	Voltages	Pass	-	-	
12	MACOM	Pass	-	-	
13	GPIO	Pass	-	-	
14	DRAM	Pass	-	-	

Table 2: Dead pixels summary (Not part of EMVA1288 standard)

Number	Column	Row	Deviation from mean DSNU [DN]	Deviation from mean PRNU [%]
-	-	-	-	-

Summary Sheet for calibration of User Set Factory (Not part of EMVA1288 standard)

Camera setting

Gain	GainLevelx1
Black level	128
Frame rate	39 Hz
Exposure time	6000.1328 μ s

Operation point parameters

Environmental temperature	2.81
Camera body temperature	2.81
Sensor temperature	40.504

Spectrum of Calibration light source

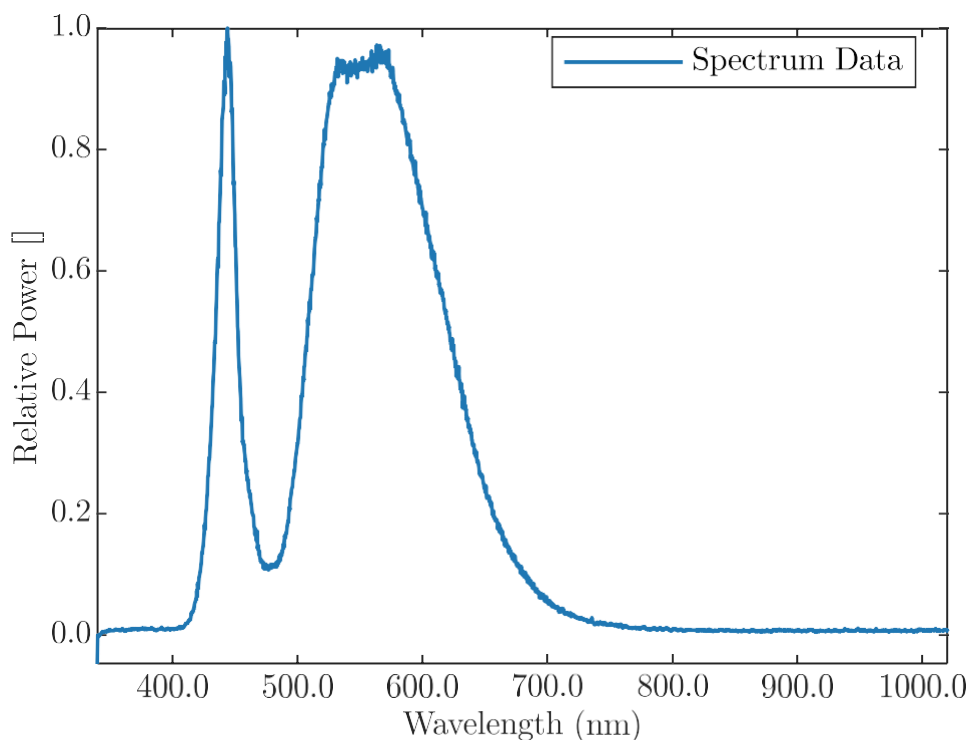


Table 3: Calibrated features summary

Number	Feature	Calibration Status
1	DSNU	Yes
2	PRNU	Yes
3	Bad Pixels	Yes

Dead Pixels

Table 4: Dead pixels summary

Number	Column	Row	Deviation from mean DSNU [DN]	Deviation from mean PRNU [%]
-	-	-	-	-

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