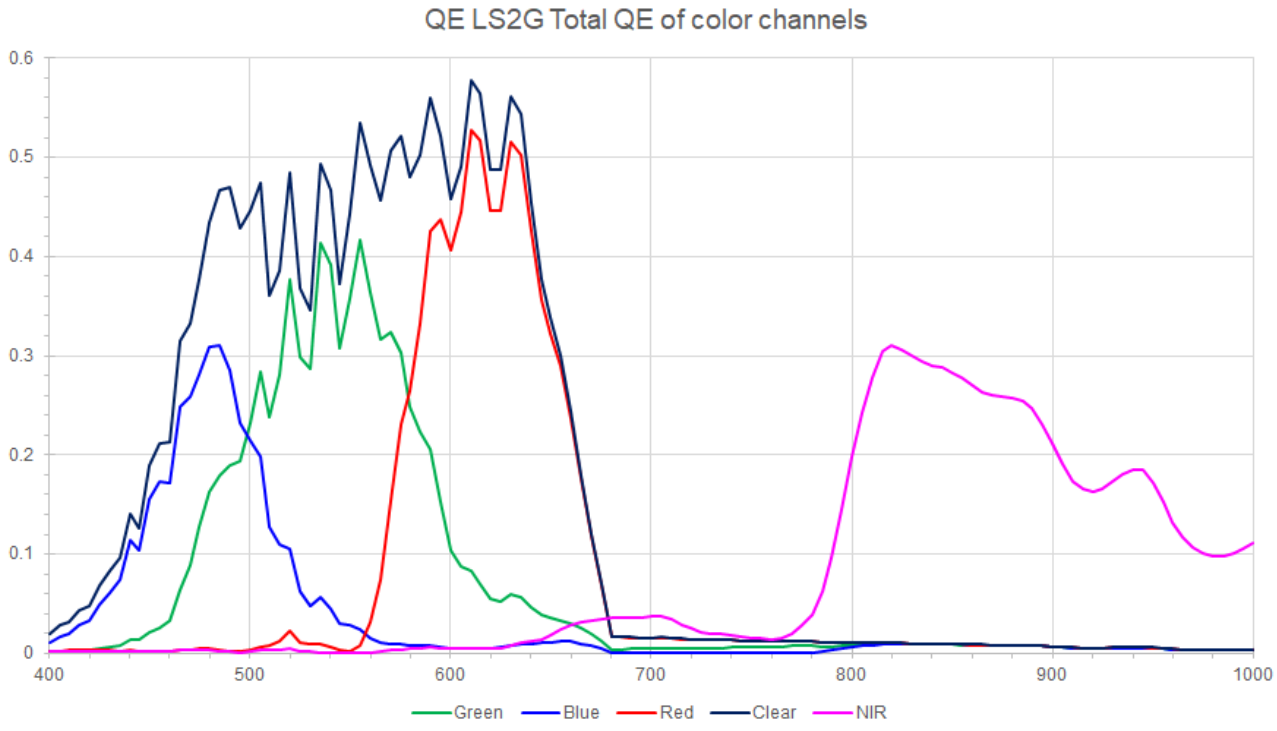
EMVA 1288 Datasheet

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	Photolitics	*Dark current compensation*	no compensation
Model	LS2G-6k-LS2G-6k-UIR-0140-Row-20-red-filter	*Interface type*	PH dev board/Camera Link
Data type	-	*Light source*	PH Dome (RED Cree channel) 625 nm
Sensor type	LS2G-6k-UIR-0140	*Light source non uniformity*	-
Diagonal	-	*Irradiation calibration accuracy*	-
Lens category	no lens	*Irradiation measurement error*	-
Resolution	500 x 1 pixels	*Standard version*	3.1
Pixel size	49.0 μm^2		
Maximum readout rate	-		

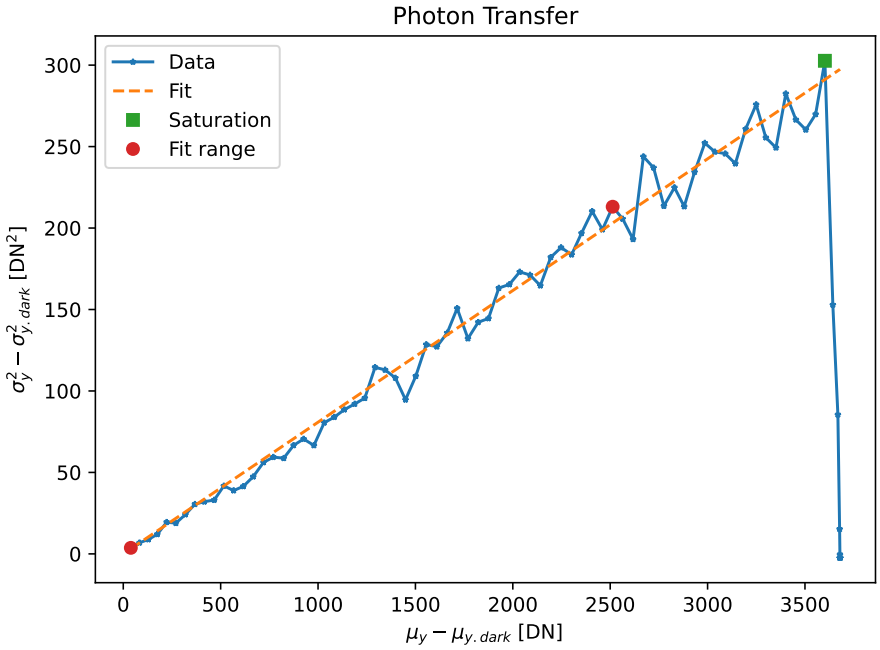
Operation Point: ***Variable illumination, Constant exposure*** *(Page 2)*

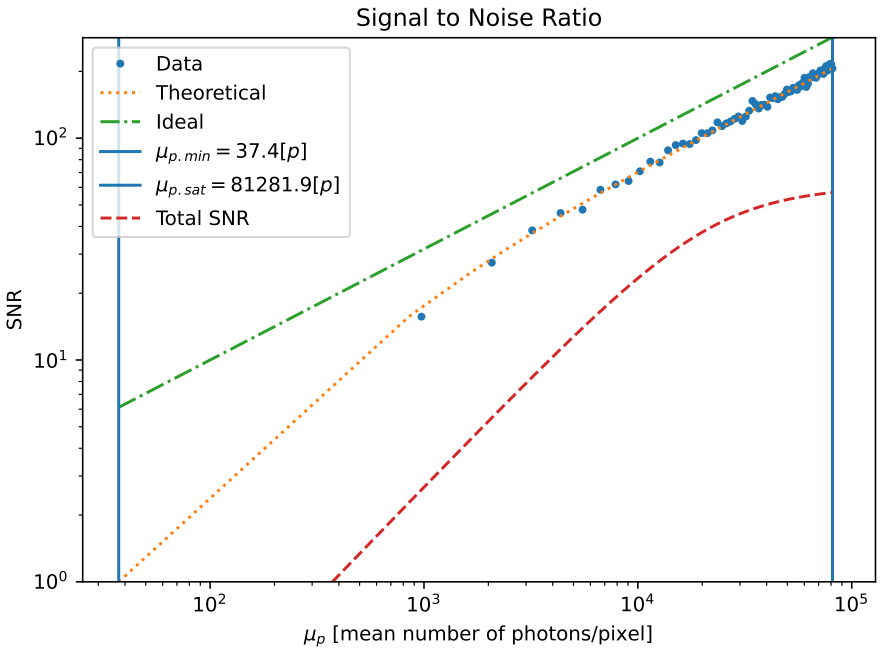
Camera setting		*Analyzed RoI Y*	(0, 1, 1)
Bit depth	12 bits	*Analyzed RoI X*	(2000, 2500, 1)
Operation point parameters		*RoI format - python style*	(start, stop+1, step)
Original image Y size	32	*Experiment*	LS2G-6k-UIR-0140–7u-LCG–DAC-0000-0050-4050-CH-A
Original image X size	6400		



Summary sheet for Operation Point: ***Variable illumination, Constant exposure*** (@ wavelength)

Camera setting		*Analyzed RoI Y*	(0, 1, 1)
Bit depth	12 bits	*Analyzed RoI X*	(2000, 2500, 1)
Operation point parameters		*RoI format - python style*	(start, stop+1, step)
Original image Y size	32	*Experiment*	LS2G-6k-UIR-0140–7u-LCG–DAC-0000-0050-4050-CH-A
Original image X size	6400		





Performance

Quantum efficiency

η	52.84	%

System gain

K	0.081	DN/e^-
1/K	12.372	e^-/DN

Temporal dark noise

σ_d	18.925	e^-
$\sigma_{y.dark}$	1.557	DN

Signal-to-Noise Ratio

SNR_{max}	207	
	46.33	dB
	7.7	bit
SNR_{max}^{-1}	0.483	%

Absolute sensitivity threshold

$\mu_{p.min}$	37.391	p
$\mu_{p.min.area}$	0.763	$p/\mu m^2$
$\mu_{e.min}$	19.759	e^-
$\mu_{e.min.area}$	0.403	$e^-/\mu m^2$

Saturation Capacity p

$\mu_{p.sat}$	81282	p
$\mu_{p.sat.area}$	1658.813	$p/\mu m^2$
$\mu_{e.sat}$	42952	e^-
$\mu_{e.sat.area}$	877	$e^-/\mu m^2$

Dynamic Range

DR	2174	
	66.7	dB
	11.1	bit

Spatial Nonuniformities

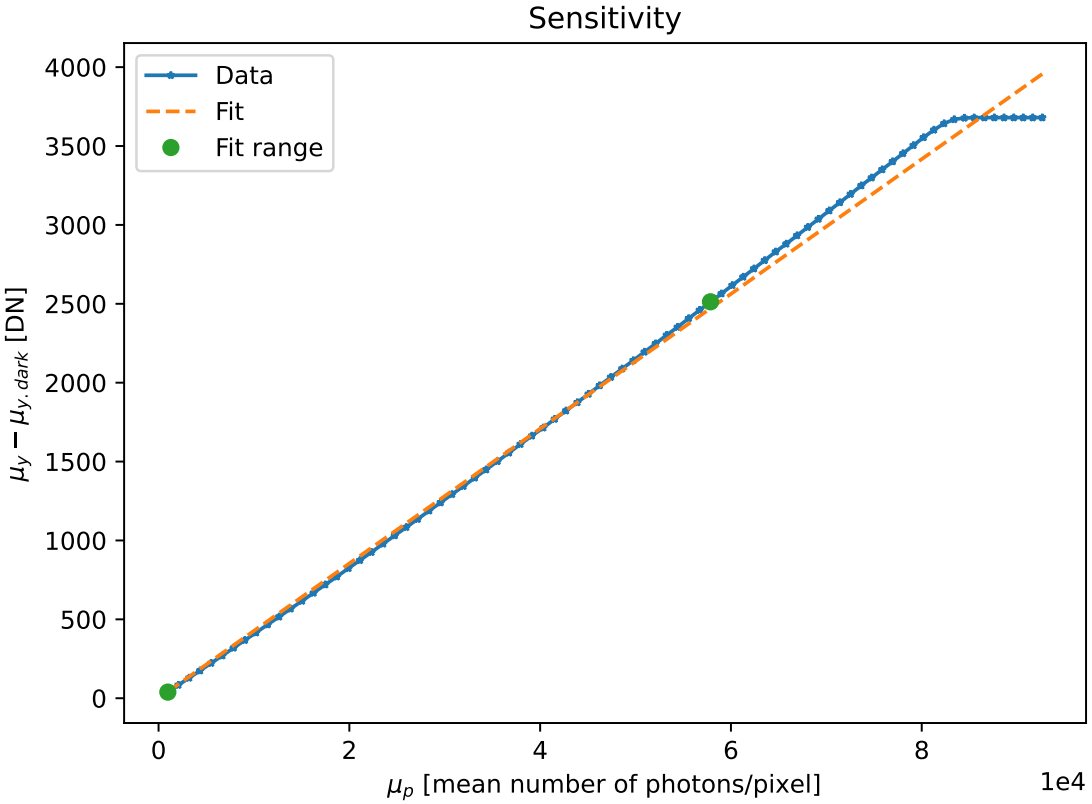
$DSNU_{1288}$	195.3	e^-
	15.8	DN
$PRNU_{1288}$	1.6	%

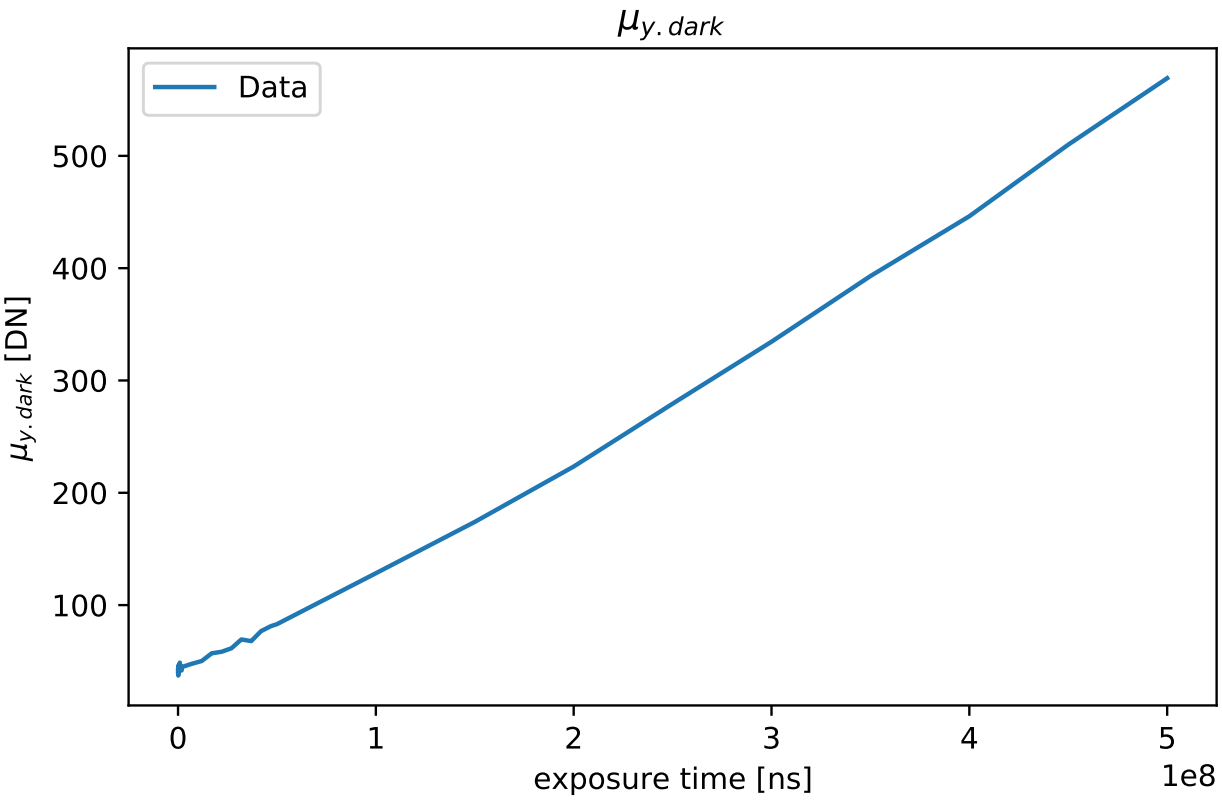
Linearity error

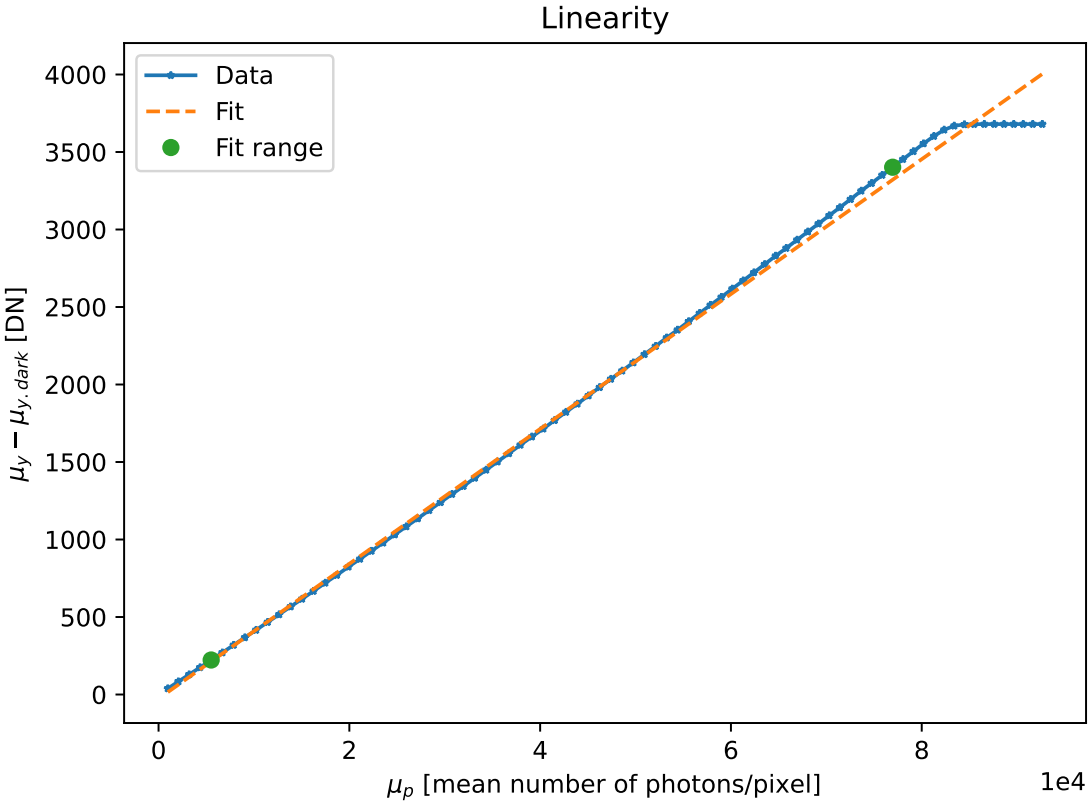
LE_{min}	-2.032	%
LE_{max}	4.436	%

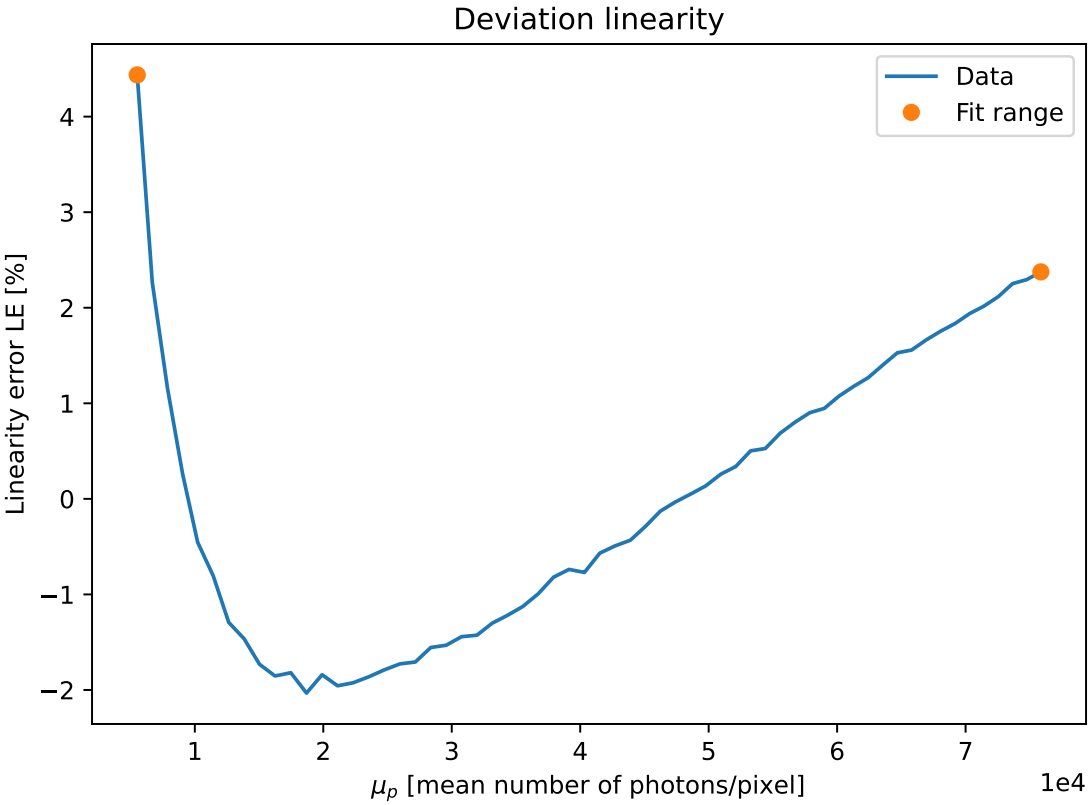
Dark current

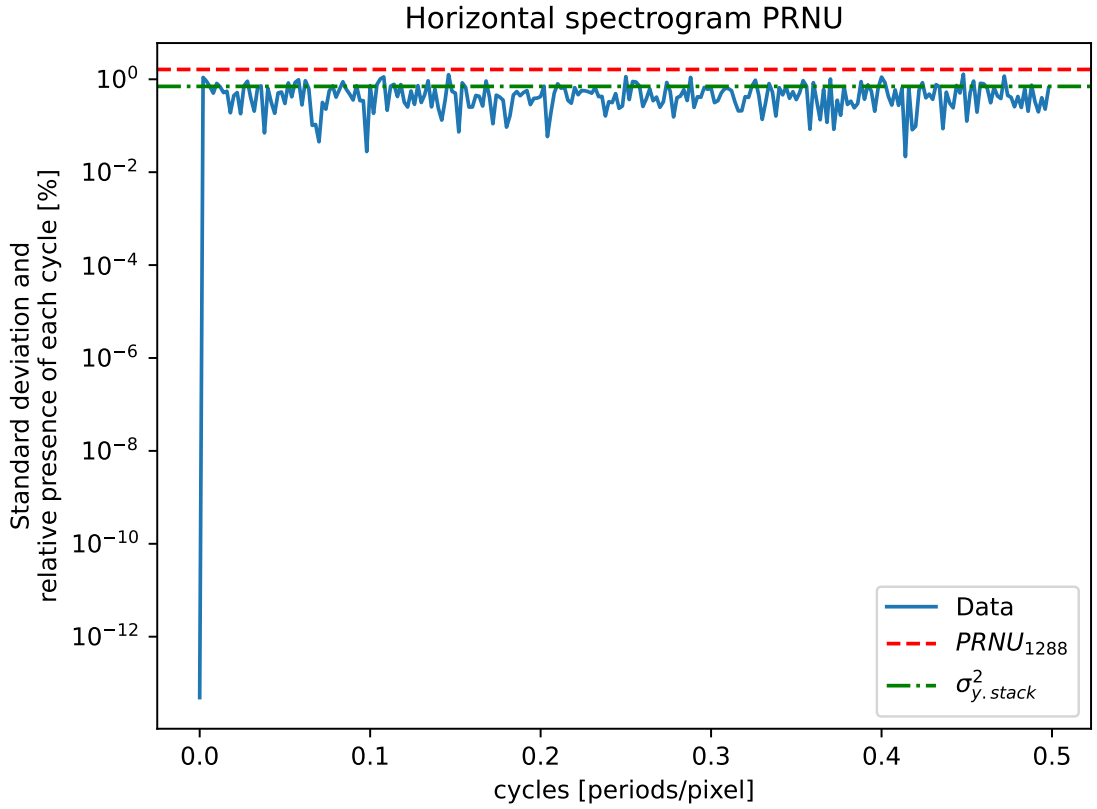
$\mu_{I.mean}$	1354.469	e^-/s
	109.476	DN/s
$\mu_{I.var}$	1570.483	e^-/s
	126.936	DN/s

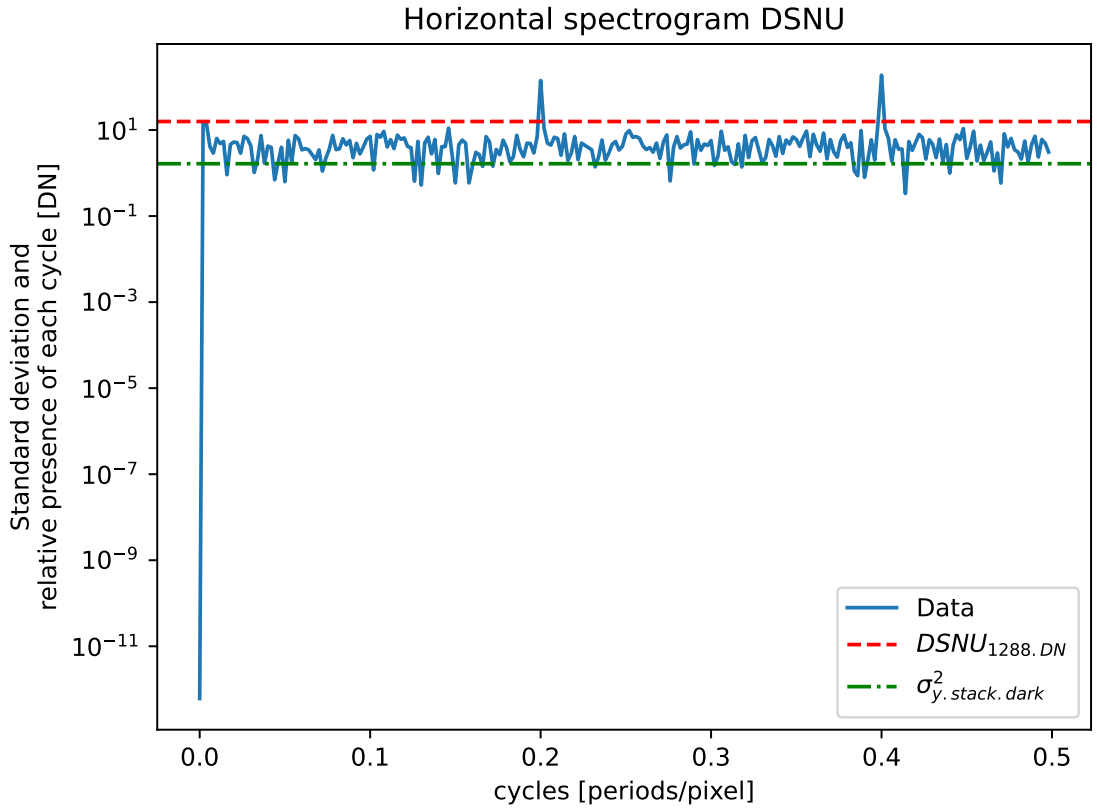

Sensitivity
Data
Fit
Fit range
4000
3500
3000
2500
2000
1500
1000
500
0
$\mu_y - \mu_{y.dark}$ [DN]
0
2
4
6
8
μ_p [mean number of photons/pixel]
1e4

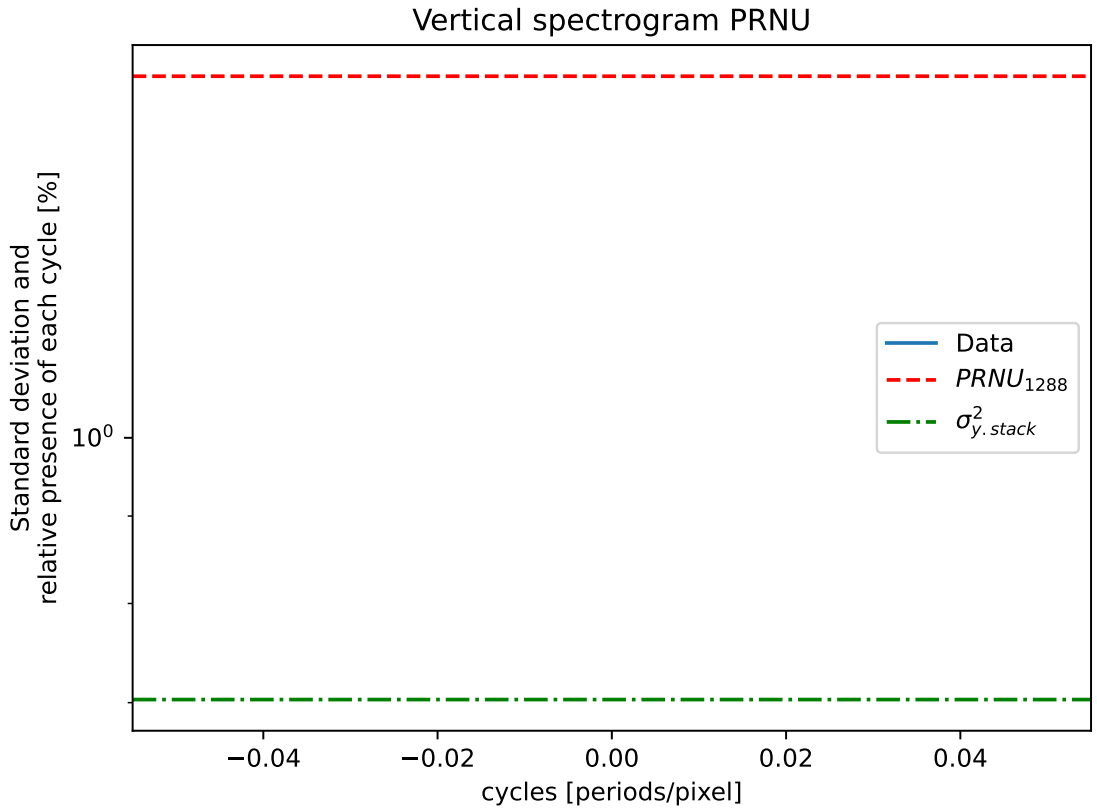

$\mu_{y.dark}$
Data
500
400
300
200
100
$\mu_{y.dark}$ [DN]
0
1
2
3
4
5
exposure time [ns]
1e8

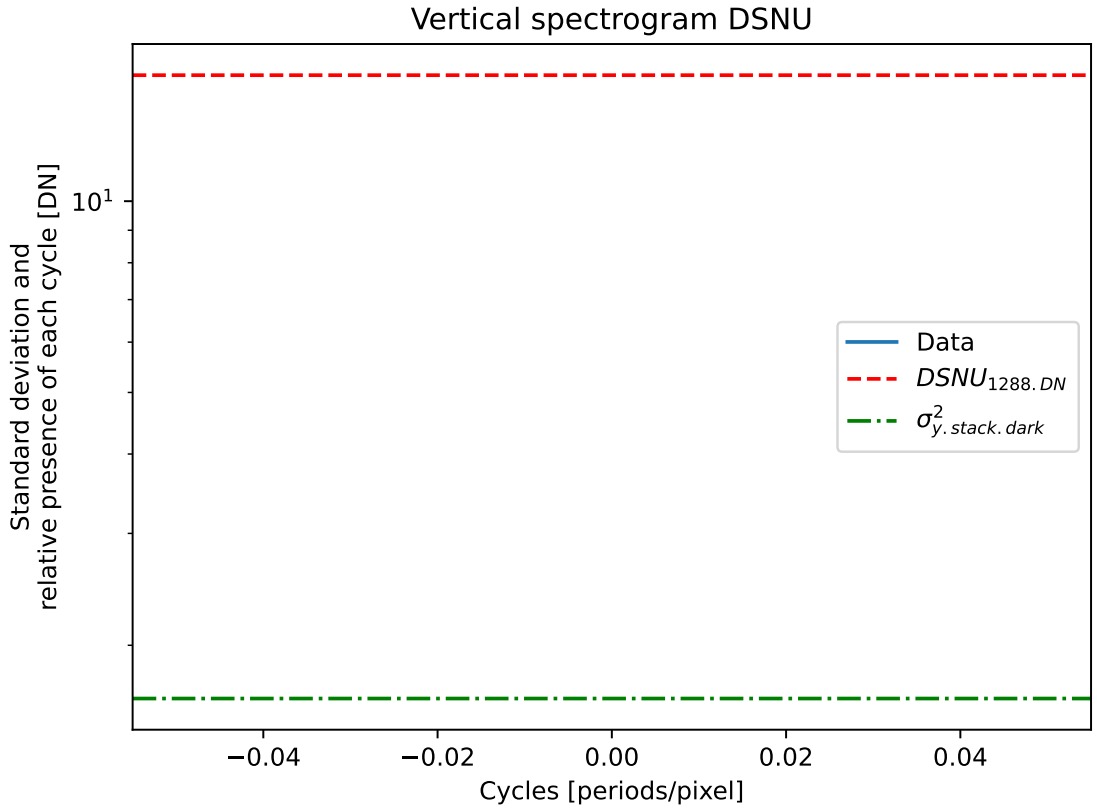

Linearity
Data
Fit
Fit range
4000
3500
3000
2500
2000
1500
1000
500
0
$\mu_y - \mu_{y,dark}$ [DN]
0
2
4
6
8
μ_p [mean number of photons/pixel]
1e4

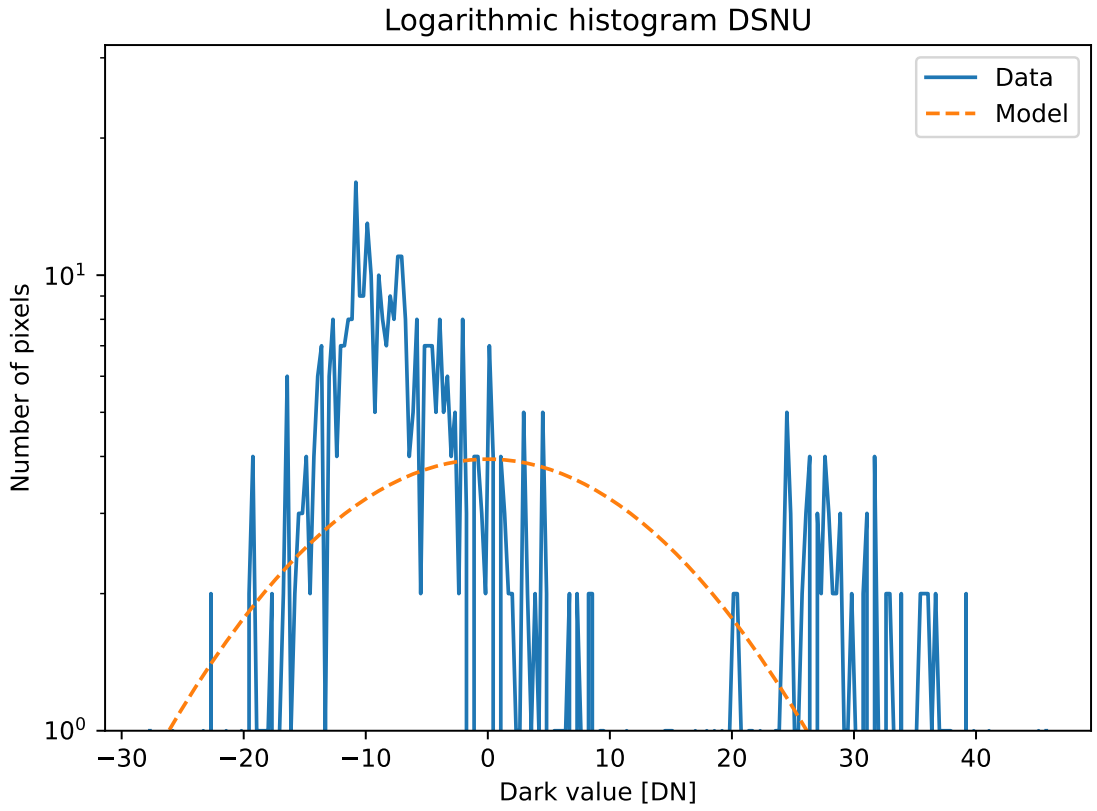

Deviation linearity
Data
Fit range
4
3
2
1
0
−1
−2
Linearity error LE [%]
1
2
3
4
5
6
7
μ_p [mean number of photons/pixel]
1e4

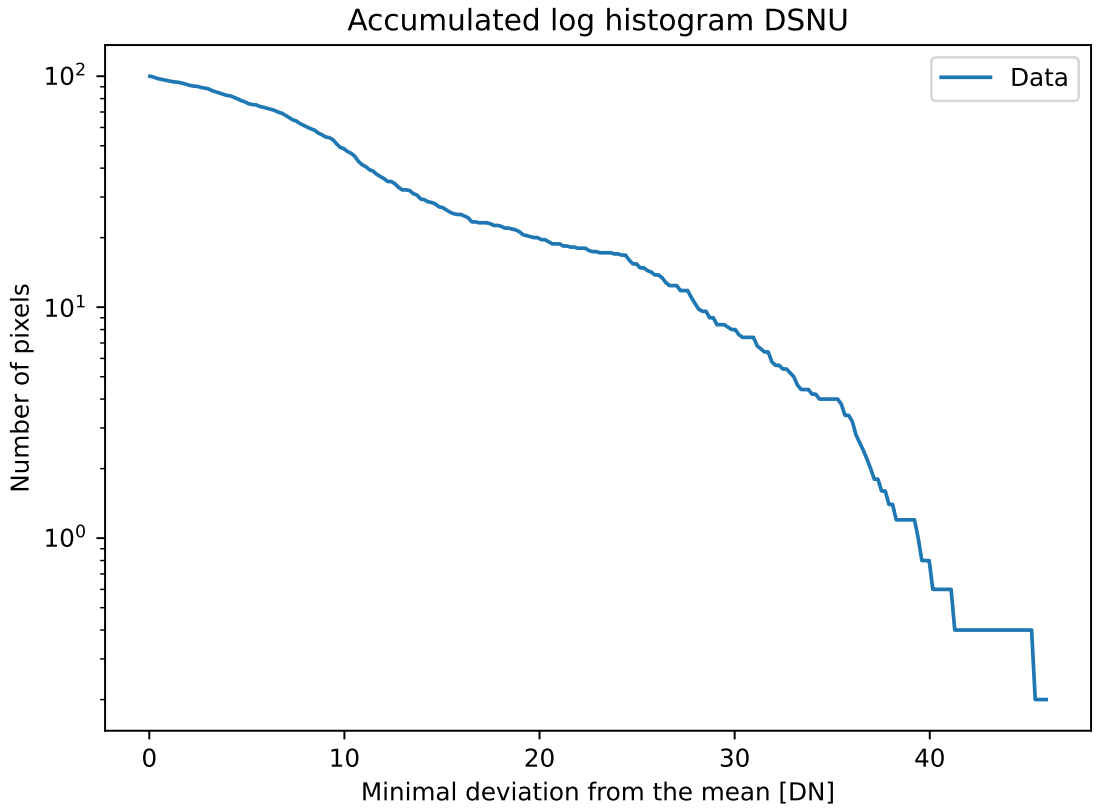

Horizontal spectrogram PRNU
Standard deviation and relative presence of each cycle [%]
10^{0}
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
0.0
0.1
0.2
0.3
0.4
0.5
cycles [periods/pixel]
Data
$PRNU_{1288}$
$\sigma^2_{y.\,stack}$

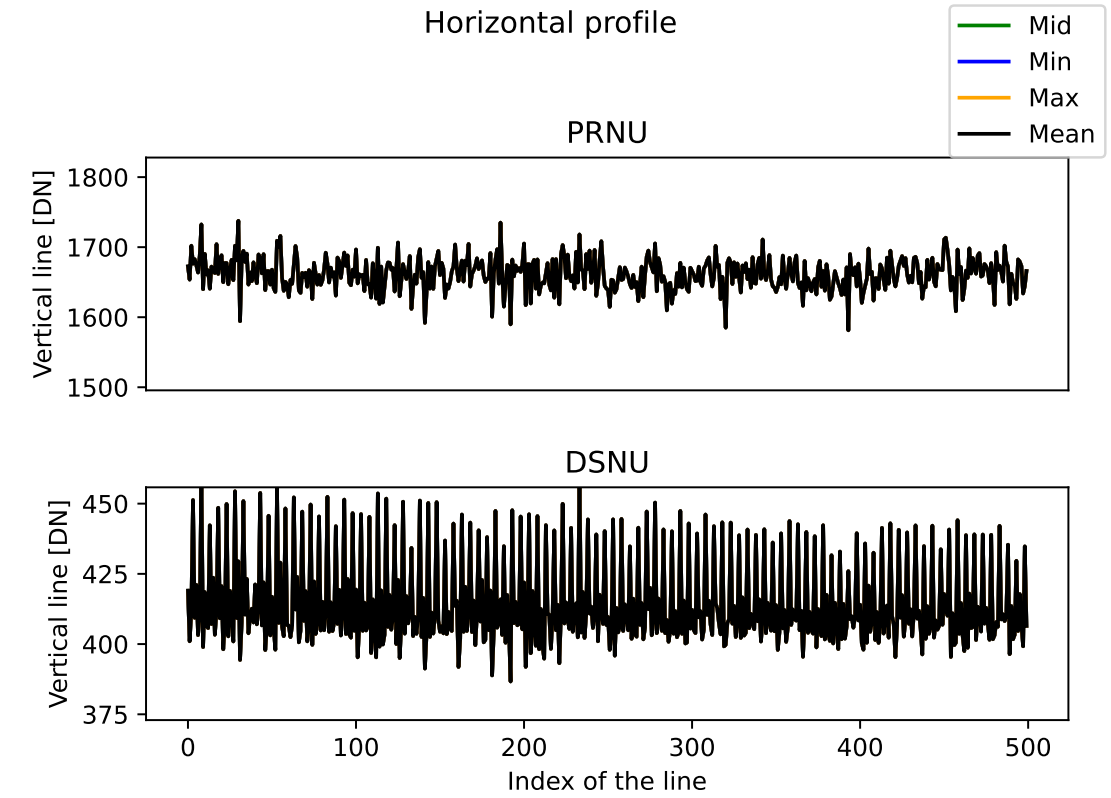

Horizontal spectrogram DSNU
Standard deviation and relative presence of each cycle [DN]
10^{1}
10^{-1}
10^{-3}
10^{-5}
10^{-7}
10^{-9}
10^{-11}
0.0
0.1
0.2
0.3
0.4
0.5
cycles [periods/pixel]
Data
$DSNU_{1288.\,DN}$
$\sigma^2_{y.\,stack.\,dark}$

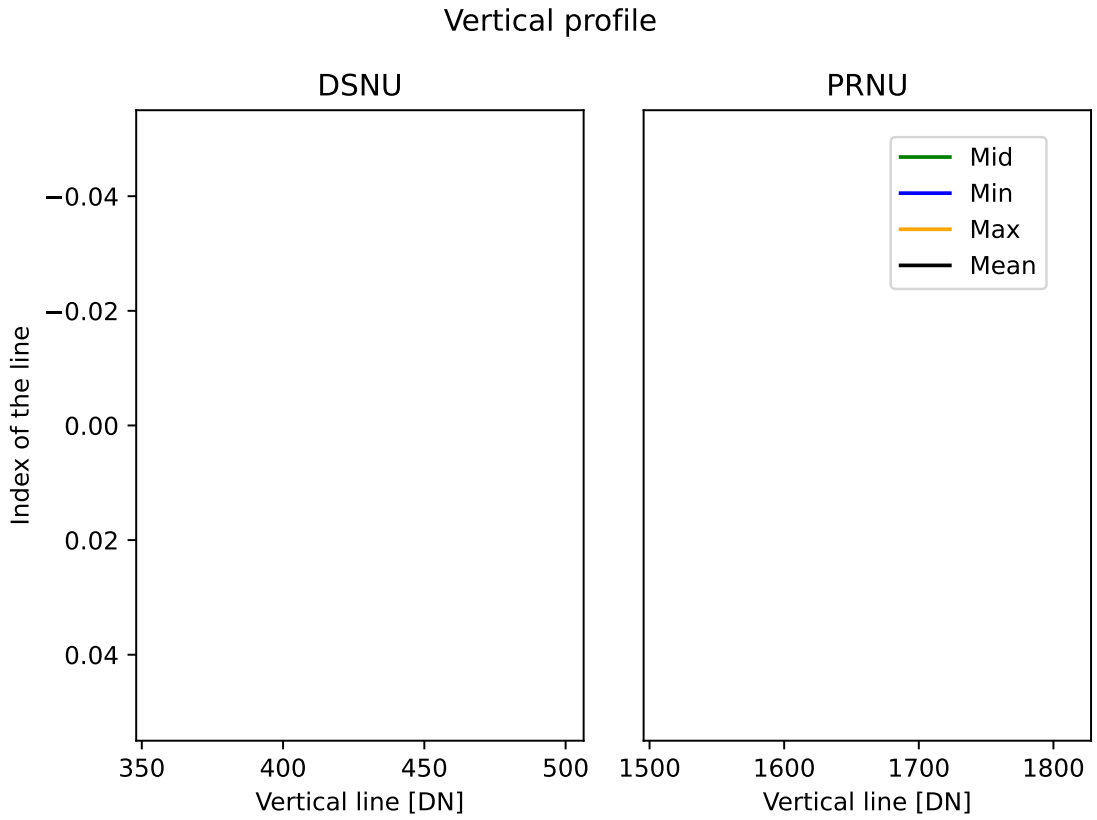

Vertical spectrogram PRNU
Standard deviation and relative presence of each cycle [%]
10^0
Data
$PRNU_{1288}$
$\sigma^2_{y.stack}$
−0.04
−0.02
0.00
0.02
0.04
cycles [periods/pixel]


Vertical spectrogram DSNU
Standard deviation and relative presence of each cycle [DN]
10^1
Data
$DSNU_{1288.DN}$
$\sigma^2_{y.stack.dark}$
−0.04
−0.02
0.00
0.02
0.04
Cycles [periods/pixel]


Logarithmic histogram DSNU
Data
Model
Number of pixels
10^1
10^0
−30
−20
−10
0
10
20
30
40
Dark value [DN]


Accumulated log histogram DSNU
Data
Number of pixels
10^2
10^1
10^0
0
10
20
30
40
Minimal deviation from the mean [DN]


Horizontal profile
Mid
Min
Max
Mean
PRNU
Vertical line [DN]
1800
1700
1600
1500
DSNU
Vertical line [DN]
450
425
400
375
0
100
200
300
400
500
Index of the line


Vertical profile
DSNU
PRNU
Mid
Min
Max
Mean
Index of the line
−0.04
−0.02
0.00
0.02
0.04
350
400
450
500
Vertical line [DN]
1500
1600
1700
1800
Vertical line [DN]