

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	Teledyne IIS	Overlap capabilities	Yes
Model	Dragonfly S DR-U3-50S4M	Maximum readout rate	46.08
Firmware	2511.1.11.0	Dark current compensation	Yes
Data type	Single, typical	Interface type	USB3
Sensor type	CMOS	Light source	Integrating sphere
Diagonal	8.89	Light source non uniformity	< 0.16%
Lens category	C-Mount	Irradiation calibration accuracy	3%
Resolution	2448x2048 pixels	Standard version	4.0
Pixel size	2.74x2.74 μm		
Shutter type	Global Shutter		

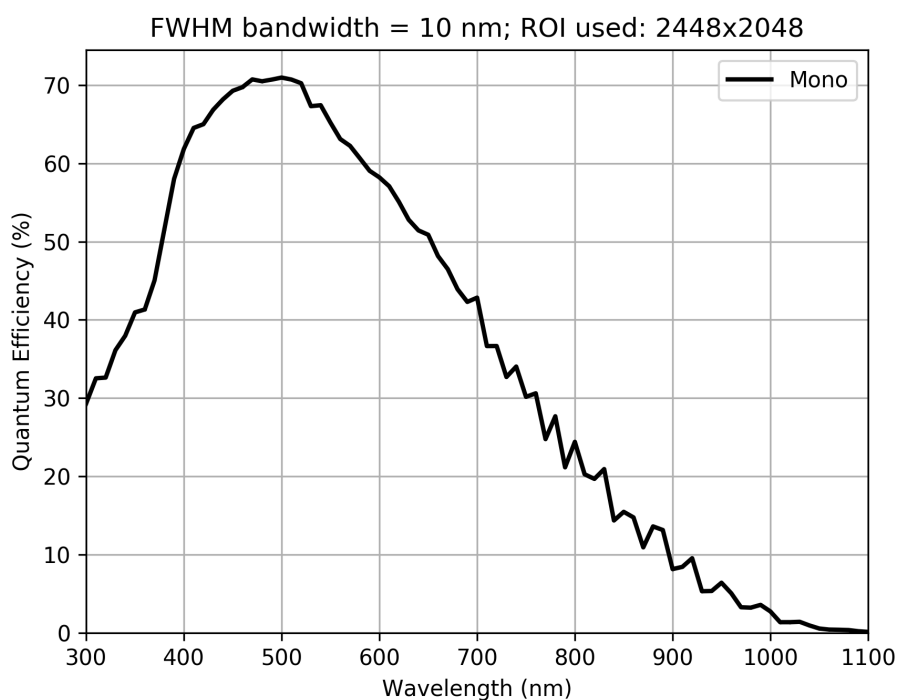
Operation Point: Mono channel (Page 2)

Camera setting

Pixel Format	Mono16
High Conversion Gain	Off
Gain	0.0
Black level	0.10
ADC bit depth	12
Device Temperature	57.65 °C

Operation point parameters

Wavelength	523.0 nm
Exposure minimum	42.0 μs
Exposure maximum	5699.0 μs
Exposure steps	50
Variation of Irradiation	Constant illumination with variable exposure time



Summary sheet for Operation Point: **Mono channel** (@523.0 nm wavelength)

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Performance

Quantum efficiency

η 67.06 %

System gain

K 6.545 DN/e⁻
1/K 0.153 e⁻/DN

Temporal dark noise

σ_d 2.735 e⁻
 $\sigma_{y.dark}$ 17.906 DN

Signal-to-Noise Ratio

SNR_{max} 99
39.92 dB
6.6 bit
 SNR_{max}^{-1} 1.009 %

Absolute sensitivity threshold

$\mu_{p.min}$ 4.825 p
 $\mu_{p.min.area}$ 0.643 p/ μm^2
 $\mu_{e.min}$ 3.236 e⁻
 $\mu_{e.min.area}$ 0.431 e⁻/ μm^2

Saturation Capacity

$\mu_{p.sat}$ 14636 p
 $\mu_{p.sat.area}$ 1949.444 p/ μm^2
 $\mu_{e.sat}$ 9814 e⁻
 $\mu_{e.sat.area}$ 1307 e⁻/ μm^2

Dynamic Range

DR 3033
69.6 dB

Spatial Nonuniformities

$DSNU_{1288}$ 0.5 e⁻
 $DSNU_{1288.row}$ 0.3 e⁻
 $DSNU_{1288.col}$ 0.0 e⁻
 $DSNU_{1288.pixel}$ 0.4 e⁻
 $PRNU_{1288}$ 0.5 %
 $PRNU_{1288.row}$ 0.3 %
 $PRNU_{1288.col}$ 0.3 %
 $PRNU_{1288.pixel}$ 0.3 %

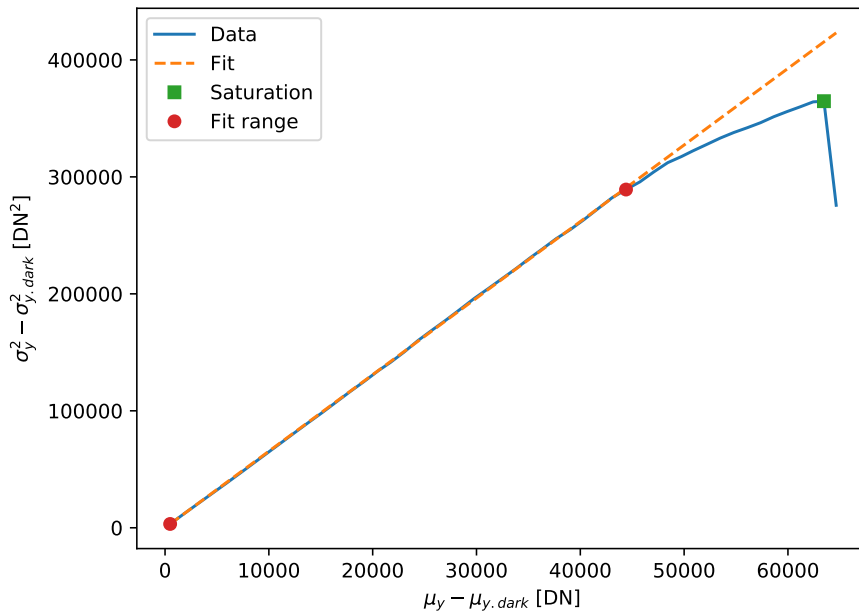
Linearity error

LE_{min} -0.703 %
 LE_{max} 0.156 %

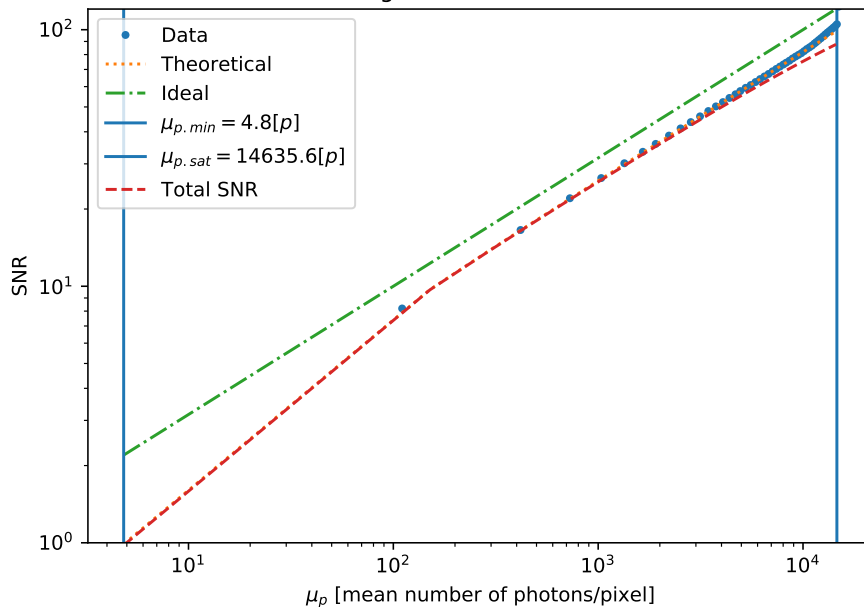
Dark current

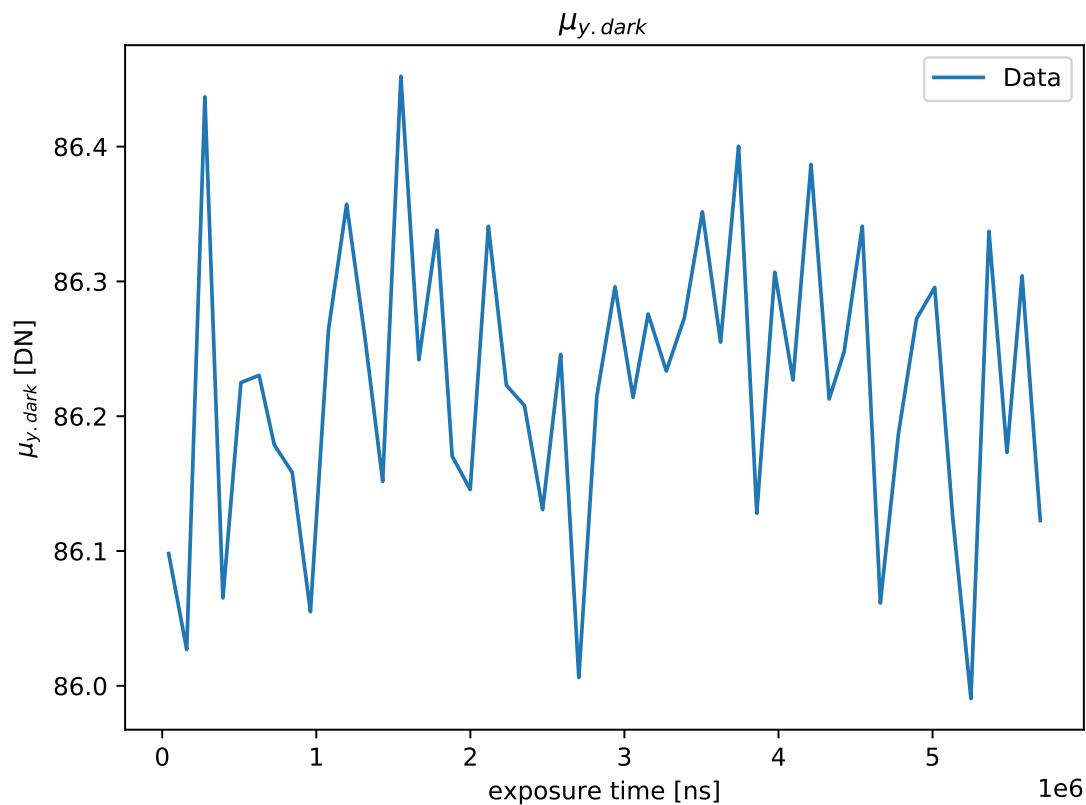
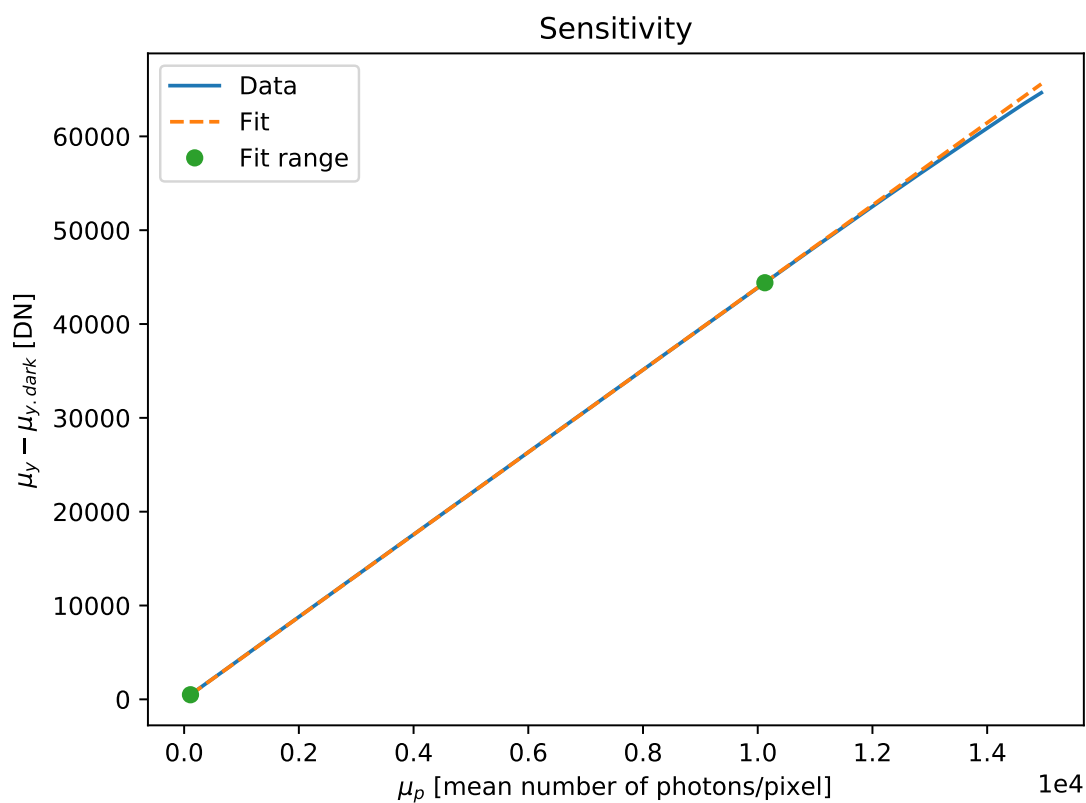
$\mu_{I.mean}$ 1.350 e⁻/s
8.833 DN/s
 $\mu_{I.var}$ -0.002 e⁻/s
-0.013 DN/s

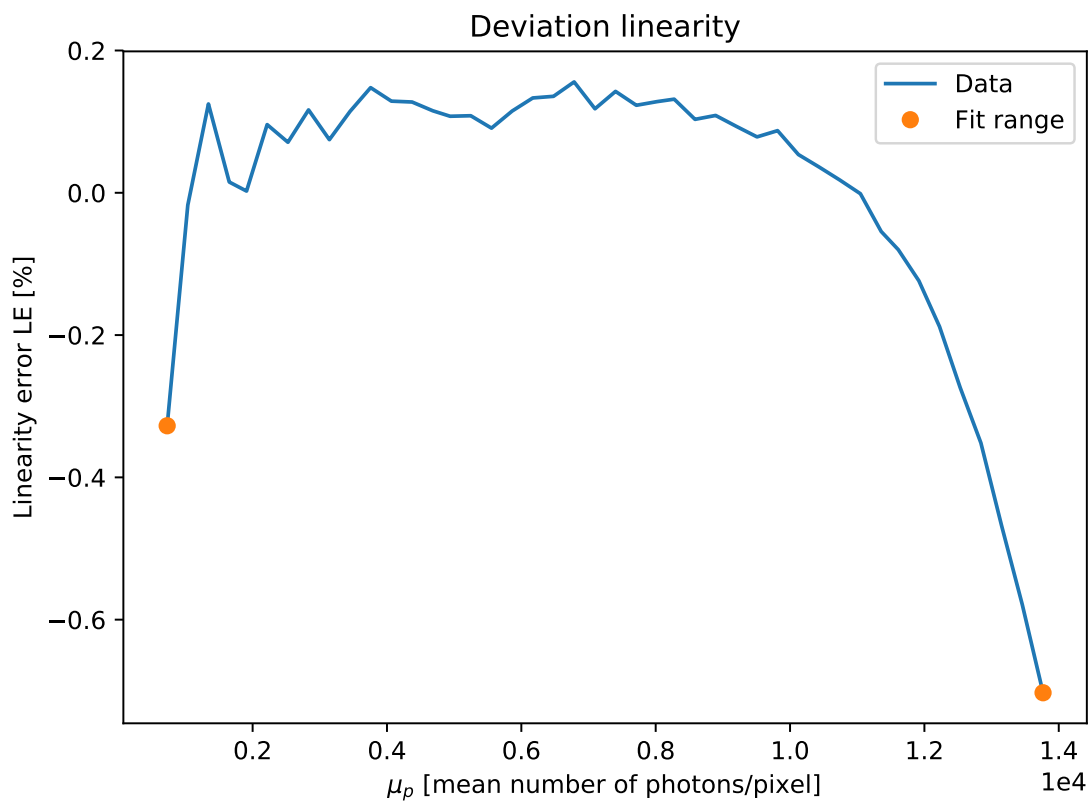
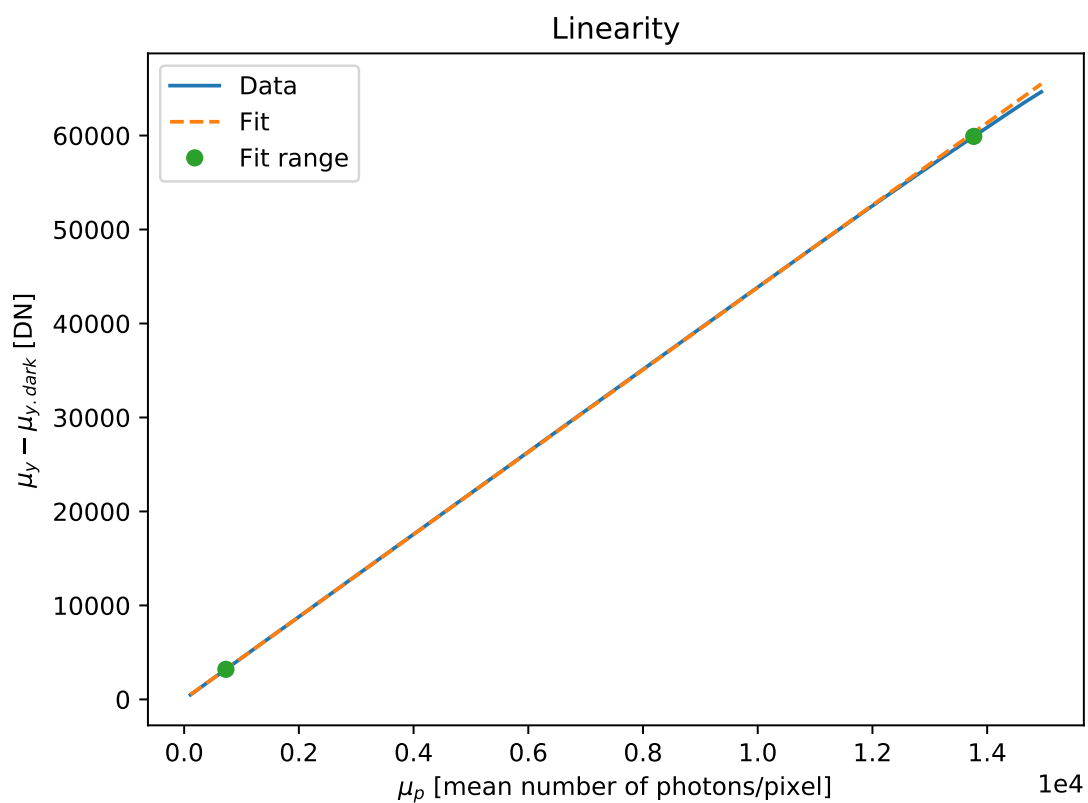
Photon Transfer

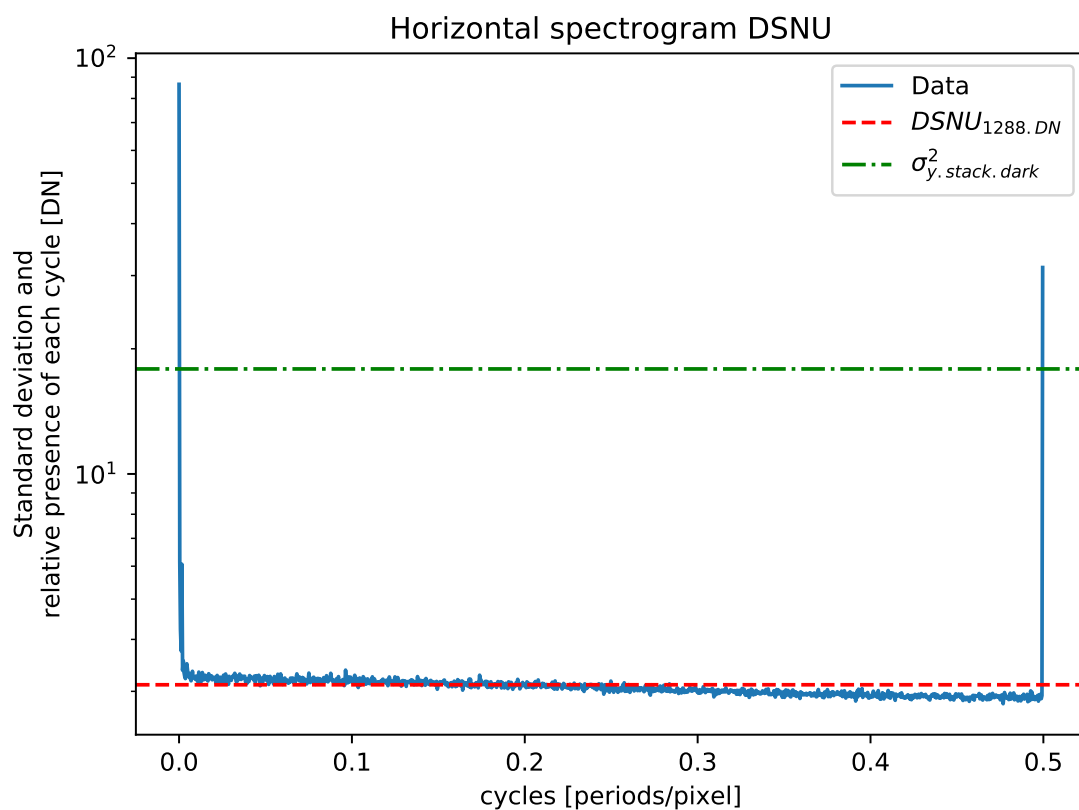
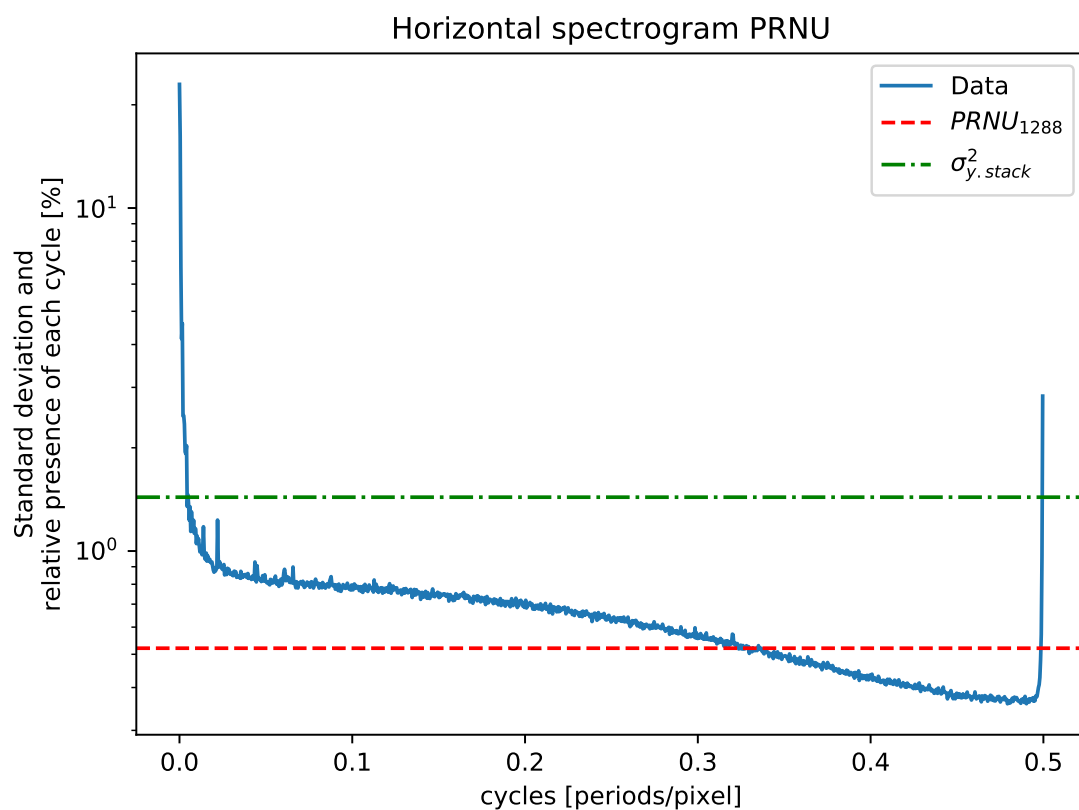


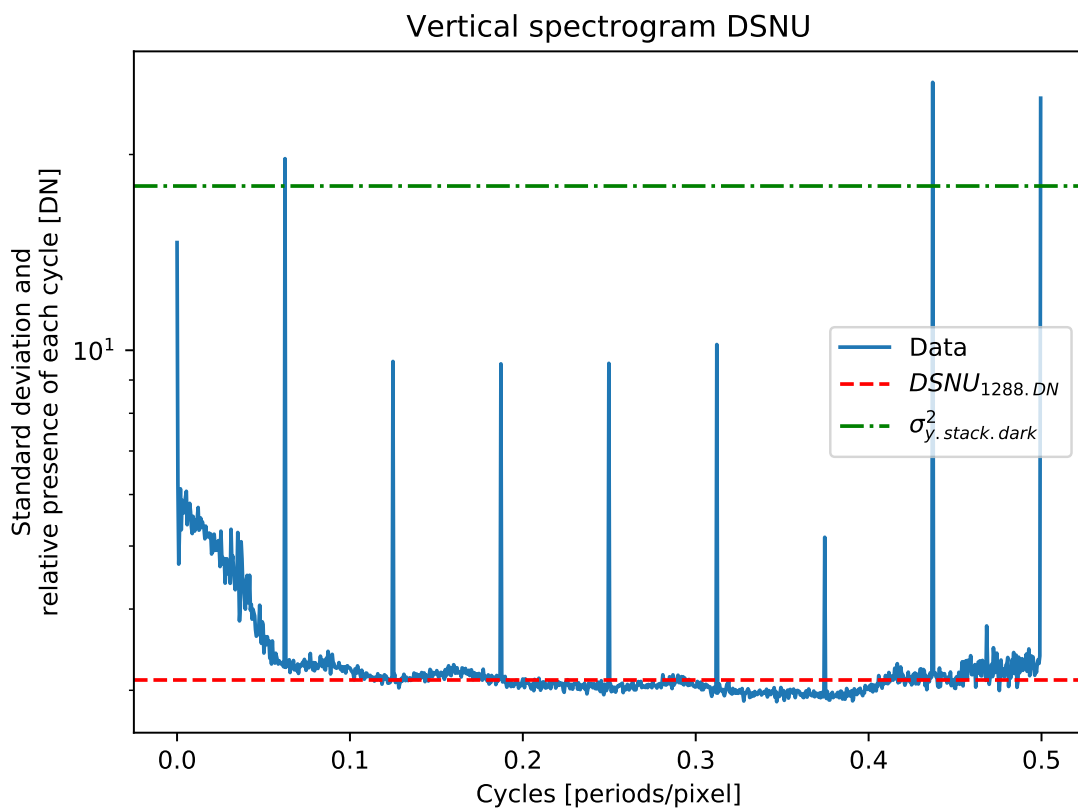
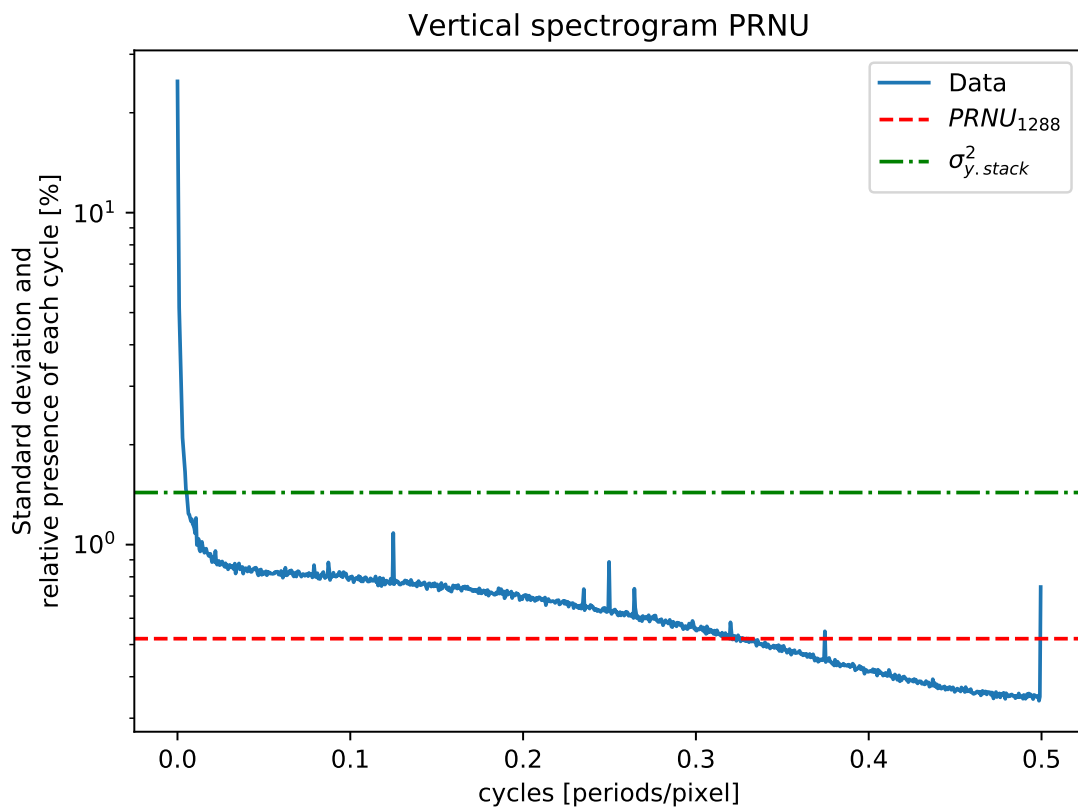
Signal to Noise Ratio



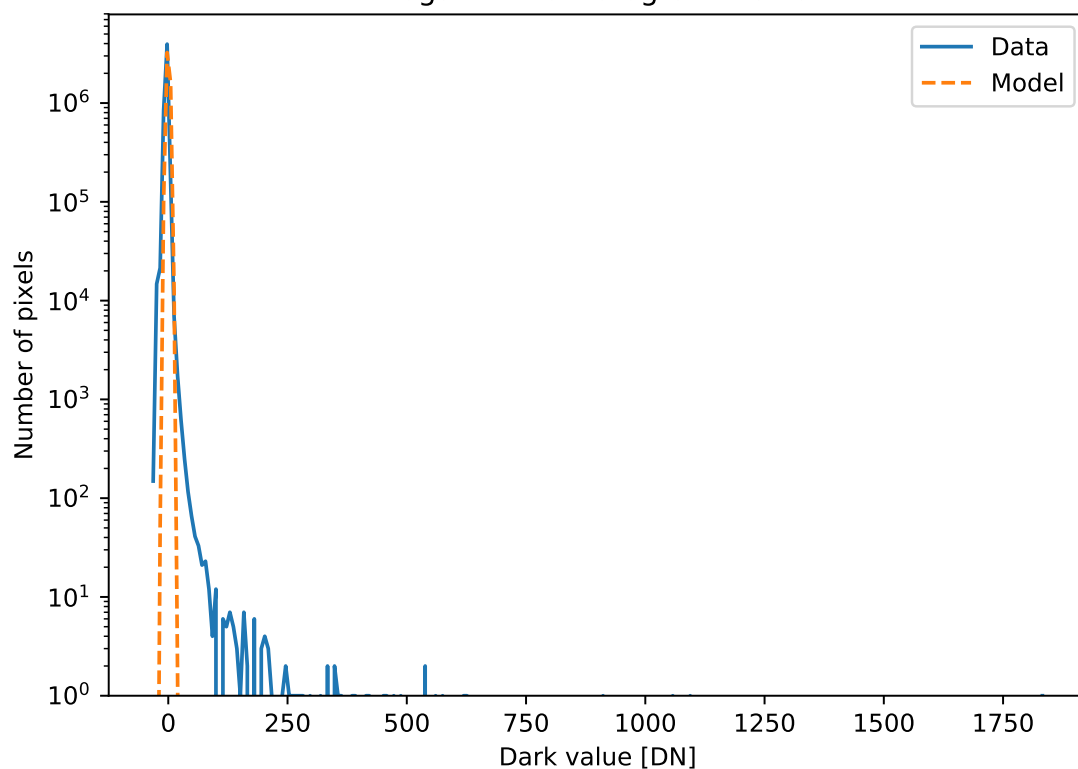




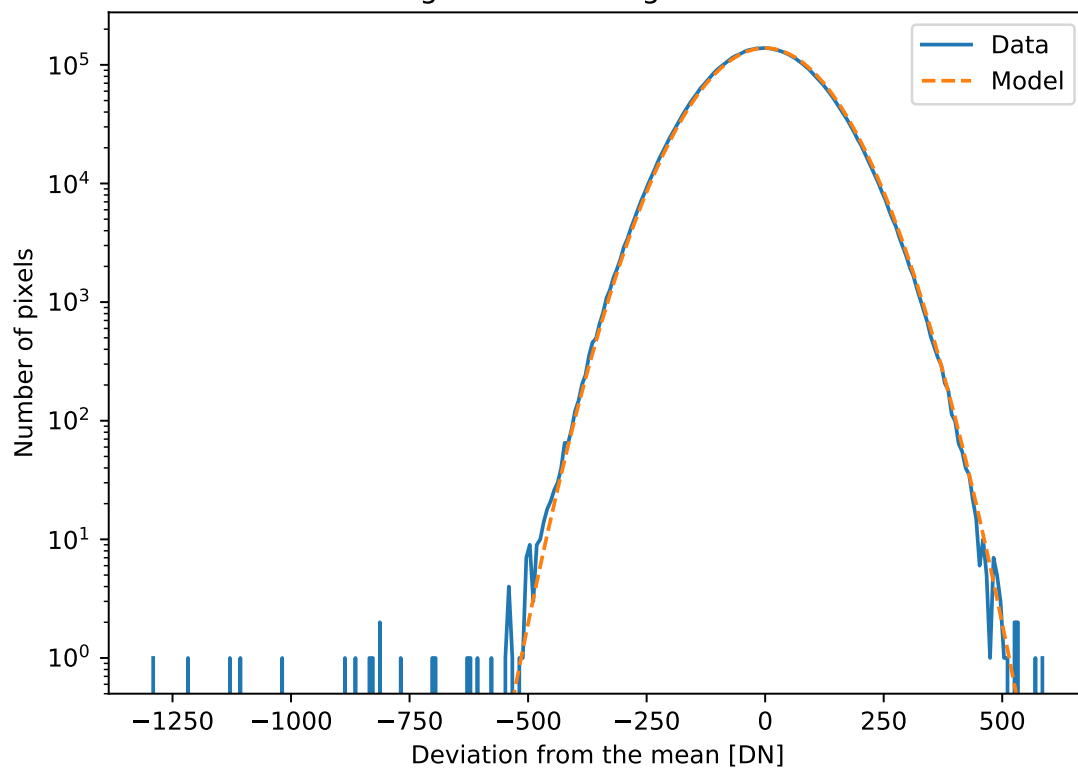




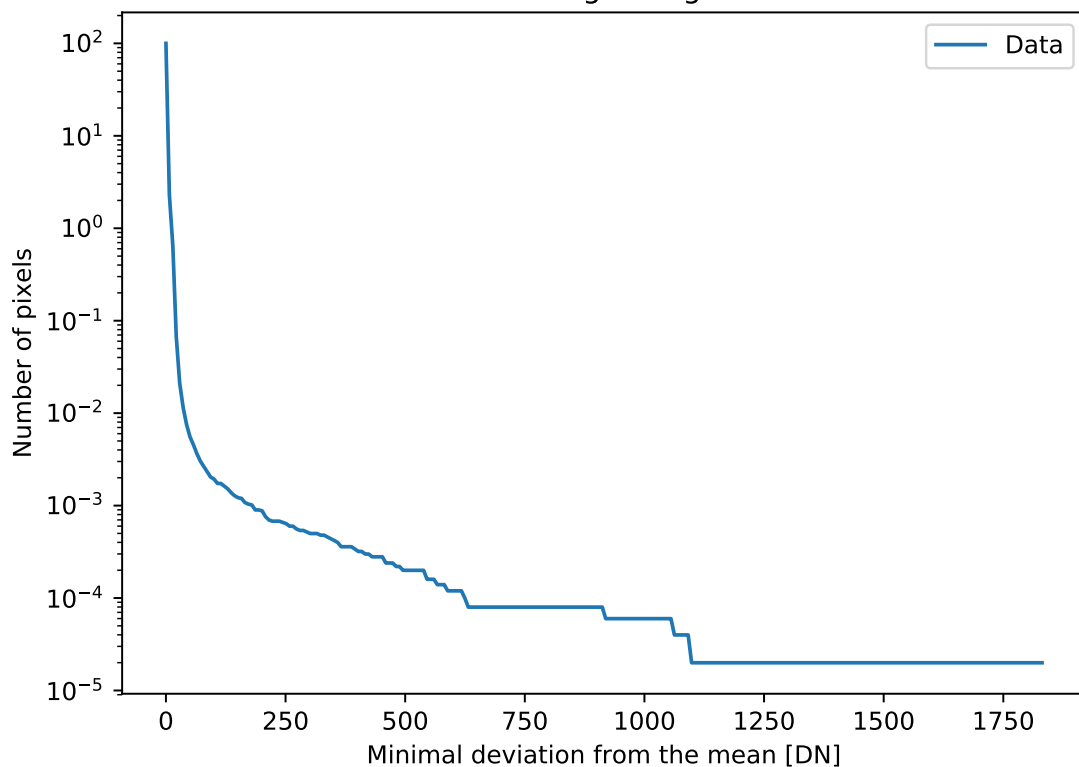
Logarithmic histogram DSNU



Logarithmic histogram PRNU



Accumulated log histogram DSNU



Accumulated log histogram PRNU

