Proline PL39000M Testing

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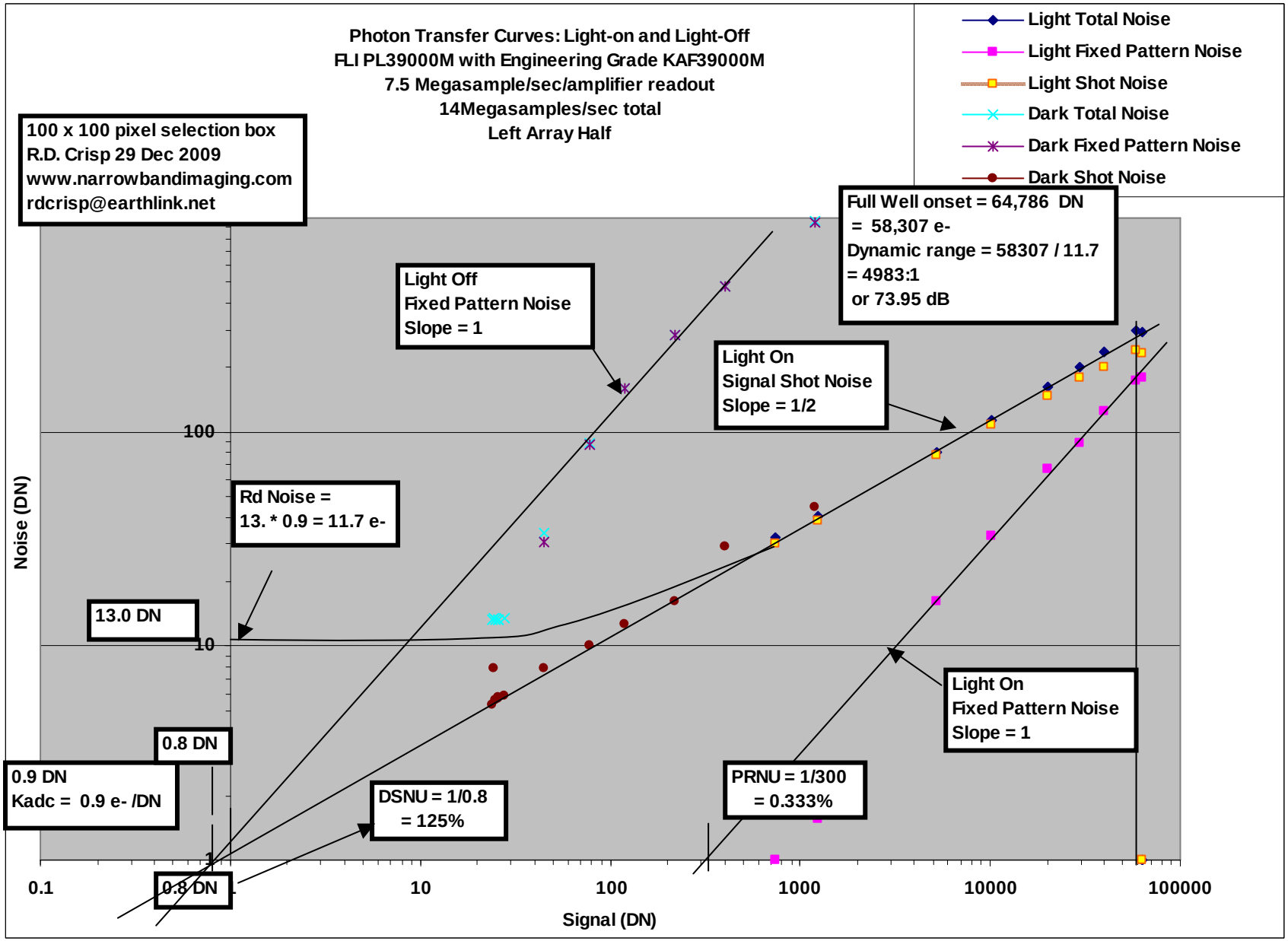
Testing Overview

- A PL39000M (monochrome) camera from FLI was tested using Photon Transfer Methods
- The KAF39000M sensor has dual output amplifiers: so two sets of curves were measured to characterize both sides of the array
- Parameters Measured: Read Noise, Full Well, Kadc, PRNU, DSNU (for each side of array)

Results

	Left side	Right Side	Units
Read Noise (7.5MHz readout/ADC, 14MHz overall)	11.7	11.7	electrons
Kadc	0.9	0.9	e-/DN
PRNU	0.33	0.33	percent
DSNU	125	111	percent
Full Well onset	58,307	56,836	electrons


Photon Transfer Curves: Light-on and Light-Off
FLI PL39000M with Engineering Grade KAF39000M
7.5 Megasample/sec/amplifier readout
14Megasamples/sec total
Left Array Half
100 x 100 pixel selection box
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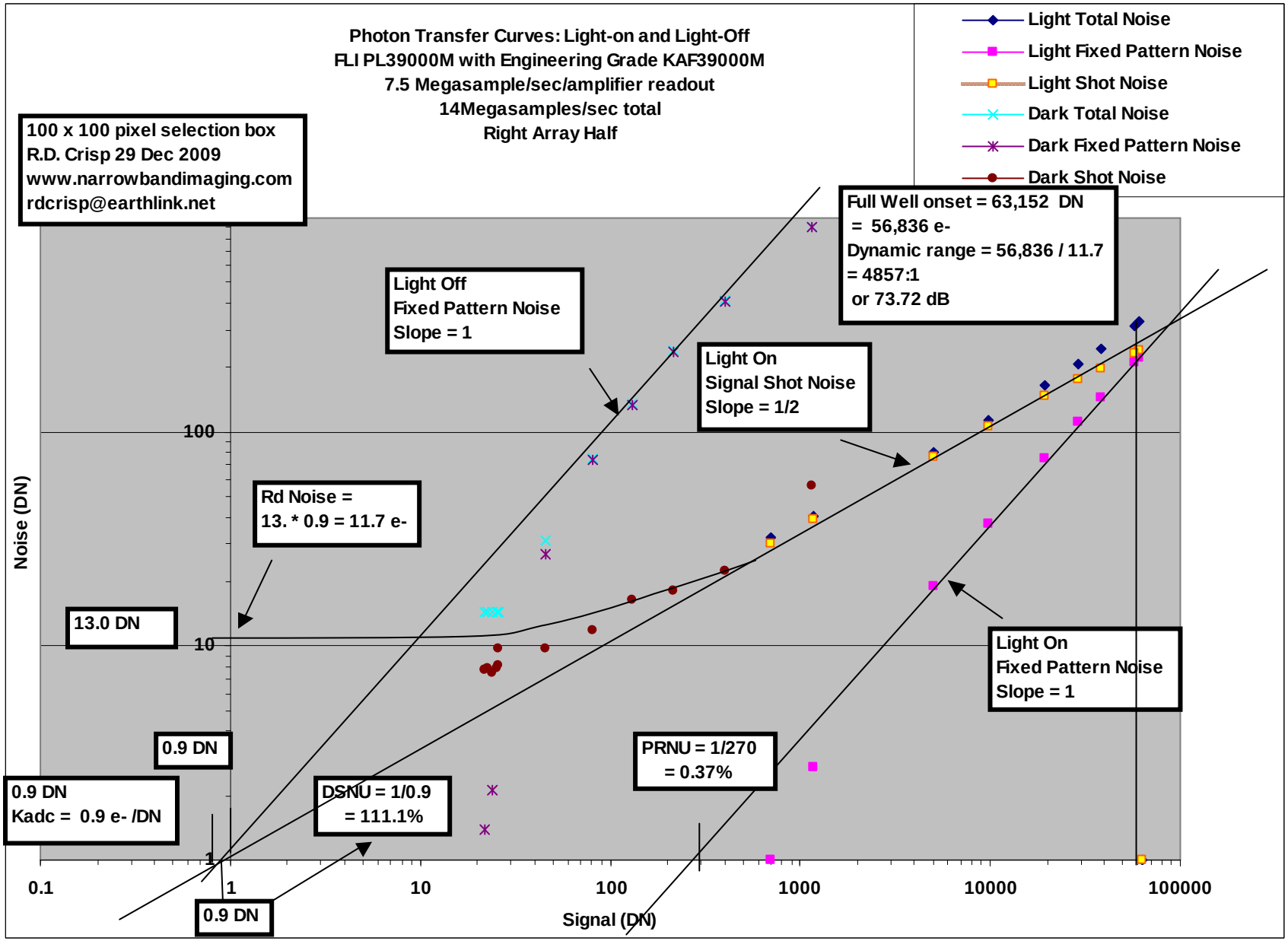
Light Total Noise
Light Fixed Pattern Noise
Light Shot Noise
Dark Total Noise
Dark Fixed Pattern Noise
Dark Shot Noise
Full Well onset = 64,786 DN
= 58,307 e-
Dynamic range = 58307 / 11.7
= 4983:1
or 73.95 dB
Light Off
Fixed Pattern Noise
Slope = 1
Light On
Signal Shot Noise
Slope = 1/2
Rd Noise =
13. * 0.9 = 11.7 e-
13.0 DN
0.8 DN
0.9 DN
Kadc = 0.9 e- /DN
DSNU = 1/0.8
= 125%
PRNU = 1/300
= 0.333%
Light On
Fixed Pattern Noise
Slope = 1
Noise (DN)
Signal (DN)
100
10
1
0.1
0.8 DN
10
100
1000
10000
100000


Photon Transfer Curves: Light-on and Light-Off
FLI PL39000M with Engineering Grade KAF39000M
7.5 Megasample/sec/amplifier readout
14Megasamples/sec total
Right Array Half
Light Total Noise
Light Fixed Pattern Noise
Light Shot Noise
Dark Total Noise
Dark Fixed Pattern Noise
Dark Shot Noise
100 x 100 pixel selection box
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Full Well onset = 63,152 DN
= 56,836 e-
Dynamic range = 56,836 / 11.7
= 4857:1
or 73.72 dB
Light Off
Fixed Pattern Noise
Slope = 1
Light On
Signal Shot Noise
Slope = 1/2
Rd Noise =
13. * 0.9 = 11.7 e-
13.0 DN
Light On
Fixed Pattern Noise
Slope = 1
0.9 DN
PRNU = 1/270
= 0.37%
0.9 DN
Kadc = 0.9 e- /DN
DSNU = 1/0.9
= 111.1%
0.9 DN
Noise (DN)
100
10
1
0.1
1
10
100
1000
10000
100000
Signal (DN)