



Calibration Certificate

N^o 00117317

Object Digital Aerial Survey Camera
Manufacturer Z/I Imaging D-73431 Aalen
Type DMC-Panchromatic
Serial Number 00117317

Calibration performed at:
Carl Zeiss Jena

Number of pages of the certificate 7

Date of Calibration 28.Aug.2008

Certified	Date	Division Head	Person in Charge
	12.Sep.2008	(H. Sohnle)	(S. Schröder)

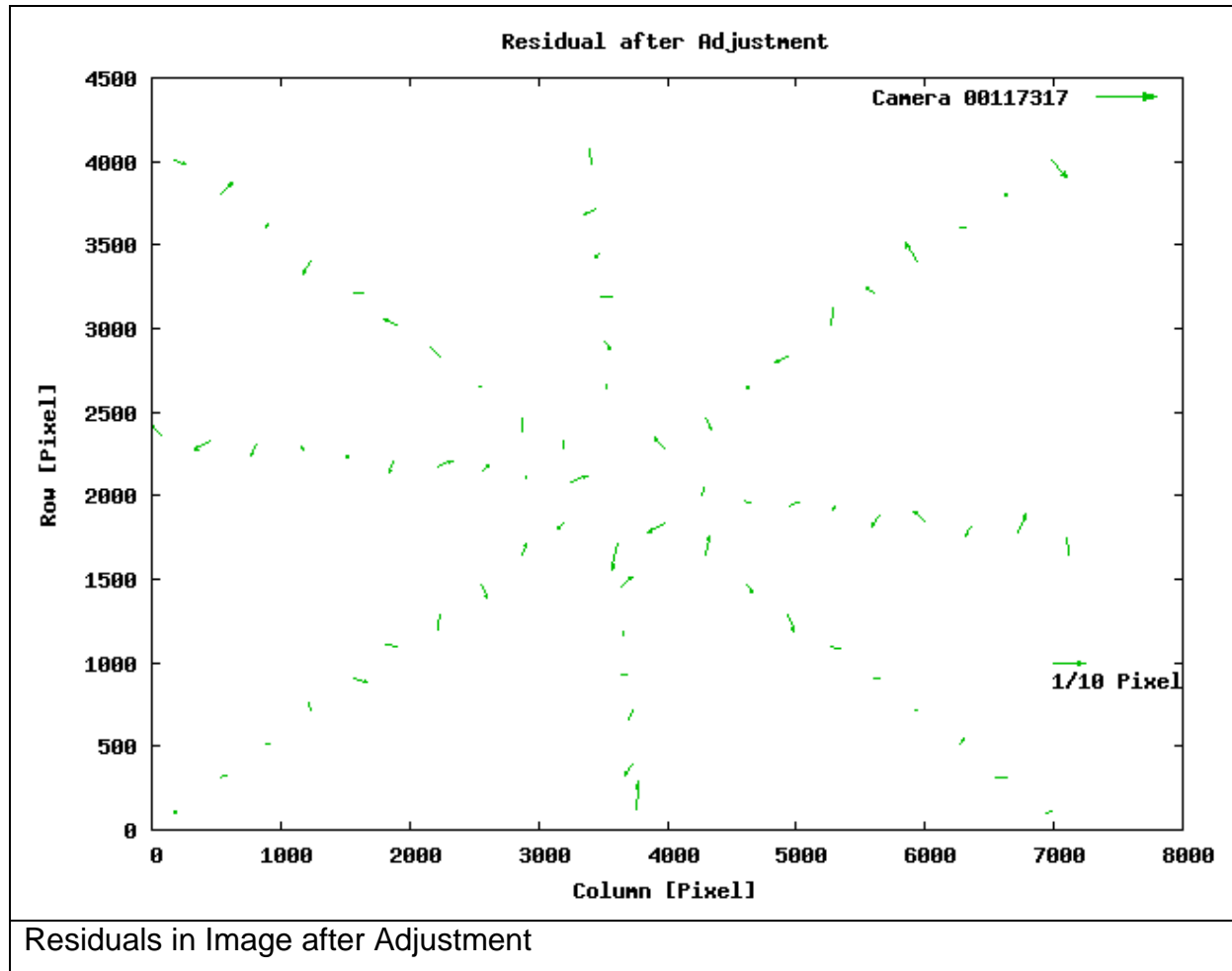
Geometric Calibration Protocol

Calibration Parameters for single camera head

Camera Type	DMC-Panchromatic
Nominal Focal Length	0.12 m
Serial Number	00117317

	Param	Adjusted	Std.dev.
Principal Point [m]	x_0	4.363E-05	6.046E-06
	y_0	-0.0001474	3.658E-06
Focal Length [m]	Δf	-0.0004241	1.055E-06
Radial Distortion	K_1	0.85	0.0271
	K_2	-420.5	24.42
	K_3	5485	6431
Decentering distortion	P_1	9.815E-06	0.0001378
	P_2	0.000297	6.939E-05
In Plane Distortion	B_1	2.424E-06	7.038E-06
	B_2	2.548E-05	4.046E-06

Adjusted Focal length = 0.12+ dc =0.1195759 [m]



Max Residual [μm]: 0.8

Threshold [μm]: 8.5

Remarks:

The images after the post processing are distortion free. For interior orientation parameters of the DMC virtual image see section: "Calibration Parameter of the virtual images".

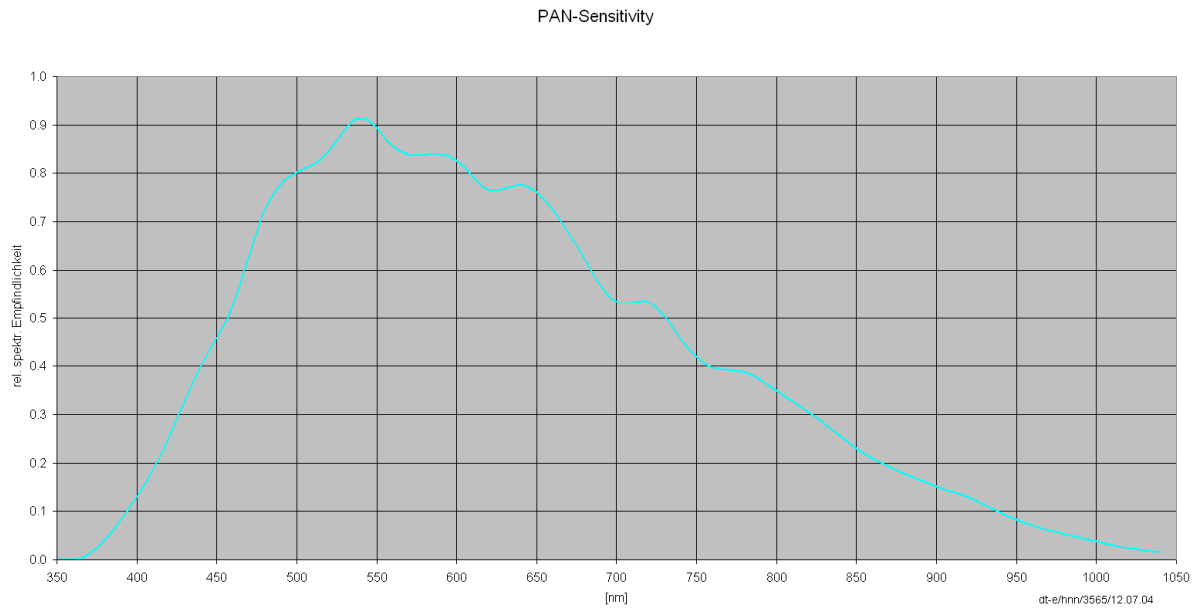
The calibration model is explained in the section "Calibration Model" at the end of this documentation.

Radiometric Calibration Protocol

In this section you'll find the radiometric calibration results.

Camera ID	00117317
Sensor Revision Number	2
Lens Revision Number	1
Filter Revision Number	-
Aperture Revision Number	1

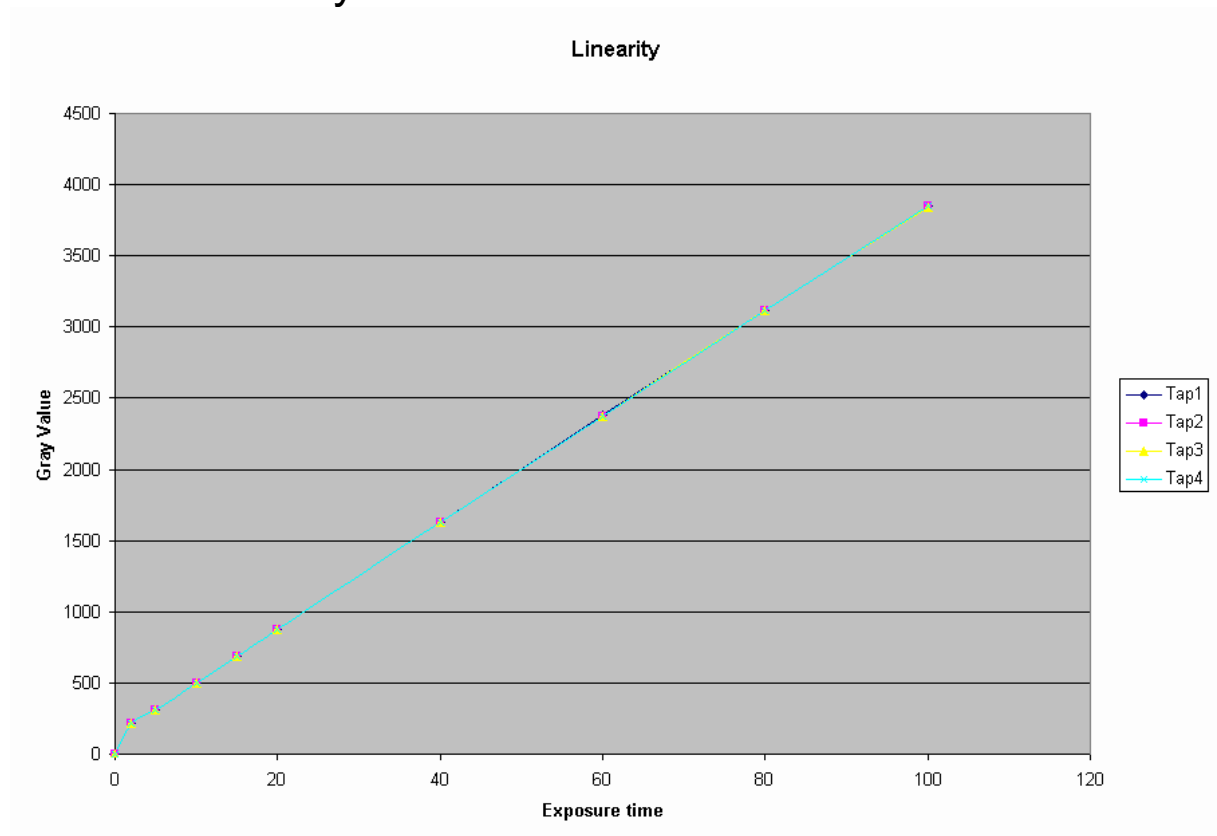
Sensitivity of camera



Remark:

Measurement is done without the influence of the shutter and the Analog/Digital converter. This graph is similar for the same lens and filter revision numbers. For more details see Appendix: "Radiometric Calibration Model".

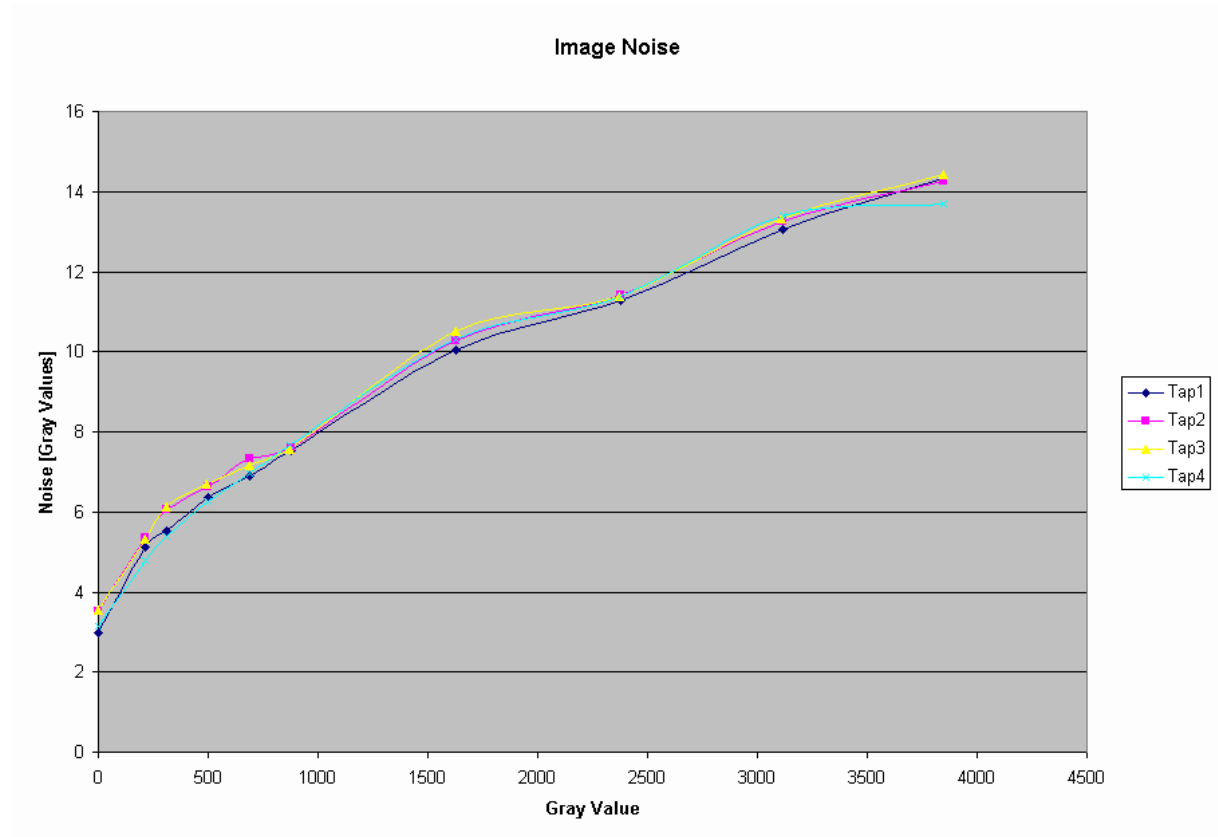
Sensor Linearity



Remark:

The sensor linearity is measured for each camera. For more details see Appendix: "Radiometric Calibration Model".

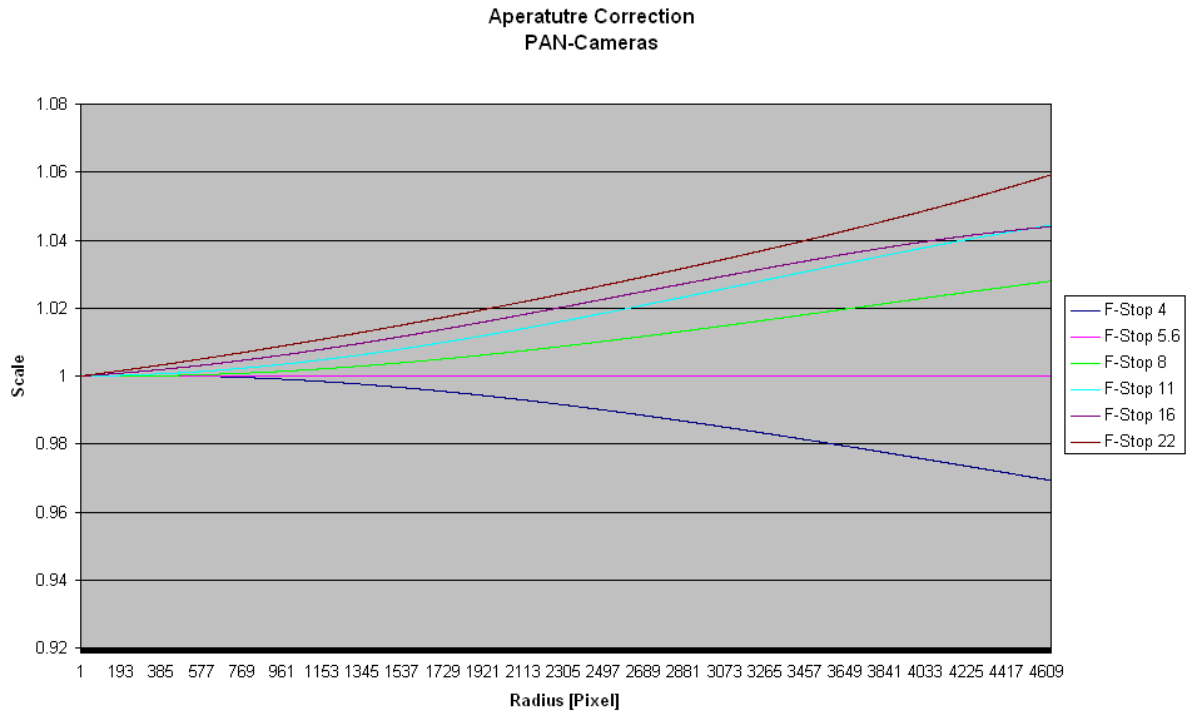
Sensor Noise



Remark:

The sensor noise is measured for each camera. For more details see Appendix: "Radiometric Calibration Model".

Aperture Correction



Remark:

This measurement is similar for the same aperture revision number. For more details see Appendix: "Radiometric Calibration Model".

Defect Pixel List

Number of defect pixels: 0

Number of defect clusters: 0

Number of defect columns: 2

Nr Row Column

Defect Column	RowStart	ColumnStart	RowEnd	ColumnEnd
0	519	3704	2047	3704
1	2048	6553	2815	6553

Remark

See Appendix for definition of defect pixels and maximal allowed numbers.