APPLANIX
A TRIMBLE COMPANY

Terrestrial Calibration # 1 of DSS 322 SN0082 60mm CIR lens

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DISCLAIMER

Special Notes

1. Terrestrial Calibration Data was collected on February 14, 2006
2. IMU Boresight Initial Calibration has not been computed

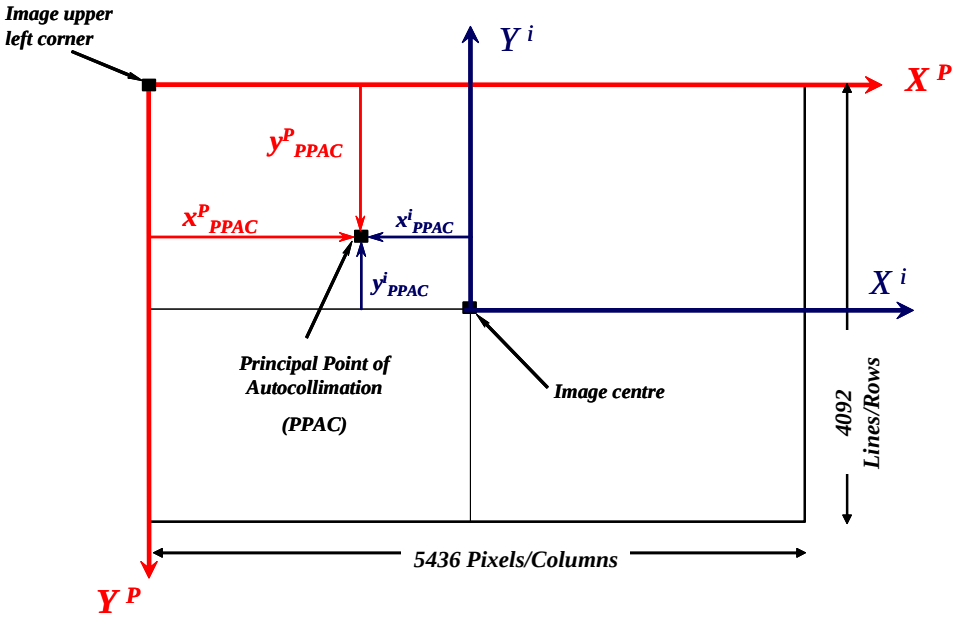
Table 1: Serial Numbers of the DSS Components

Component	SN
CCS	C00062
IMU	N/A
Digital Back	200519951
Lens (60 mm)	8913840
AE Prism Finder	020816
IR Filter	32355
Camera Body	019203

Table 2: Camera Calibrated Parameters of DSS 322 SN 0082 - 60mm lens - CIR

Parameter	Value	Accuracy
f *(mm)*	60.269	0.009 mm
x^{P}_{PPAC} *(pixels)* $^{+}$	2662.67	0.4 pixel
y^{P}_{PPAC} *(pixels)* $^{+}$	2045.58	0.4 pixel
x^{i}_{PPAC} *(mm)* $^{++}$	-0.498	0.0036
y^{i}_{PPAC} *(mm)* $^{++}$	0.004	0.0036

- $^{+}x^{P}_{PPAC}$ and y^{P}_{PPAC} are the offsets of the principal point of Autocollimation measured from image upper left corner, (image size 5436 pixels x 4092 lines) see Figure 1
- $^{++}x^{i}_{PPAC}$ and y^{i}_{PPAC} are measured from image centre (pixel size = 9 microns) see Figure 1



Remarks

1. X ^{i} and Y ^{i}: Image Coordinate Frame – **Right** Handed System
2. X ^{P} and Y ^{P}: Pixel/Monitor Coordinate Frame – **Left** Handed System

Figure 1: An Example of The Principal Point Offsets in a generic DSS Digital Image

Table 3 Radial Lens Distortion Table of DSS 322 SN 0082 – 60 mm lens - CIR

Radial Distance (mm)	Radial Distortion (Pixel)	Radial Distortion (microns)
1.00	-0.00	-0.020
2.00	-0.02	-0.163
3.00	-0.06	-0.551
4.00	-0.14	-1.304
5.00	-0.28	-2.543
6.00	-0.49	-4.387
7.00	-0.77	-6.951
8.00	-1.15	-10.350
9.00	-1.63	-14.694
10.00	-2.23	-20.090
11.00	-2.96	-26.639
12.00	-3.83	-34.437
13.00	-4.84	-43.575
14.00	-6.01	-54.135
15.00	-7.35	-66.189
16.00	-8.87	-79.800
17.00	-10.56	-95.021
18.00	-12.43	-111.888
19.00	-14.49	-130.425
20.00	-16.74	-150.636
21.00	-19.17	-172.508
22.00	-21.78	-196.004
23.00	-24.56	-221.063
24.00	-27.51	-247.598
25.00	-30.61	-275.489
26.00	-33.84	-304.584
27.00	-37.19	-334.693
28.00	-40.62	-365.583
29.00	-44.11	-396.978
30.00	-47.62	-428.550
31.00	-51.10	-459.916

Table 4: Calibrated Lens Distortion Coefficients - SN0082

Coefficient	Value
K1	-1.6543368e-009
K2	+2.0528191e-017
K3	+1.1388335e-024

Table 5: Camera Calibrated Gain Value and Default Settings for DSS 322 SN0082– 60 mm lens

Filter Type	Calibrated Parameter	Calibrated Value
VIS	k (Gain value)	0.87
	ISO (Default)	300
	Exposure Compensation (Default)	-0.7
CIR	k (Gain value)	1.74
	ISO (Default)	200
	Exposure Compensation (Default)	-1.3