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Terrestrial Calibration # 1 of DSS 322 SN0087 60mm VIS lens

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Special Notes

1. Terrestrial Calibration Data was collected on 11 March 2008
2. IMU Boresight Initial Calibration has been computed

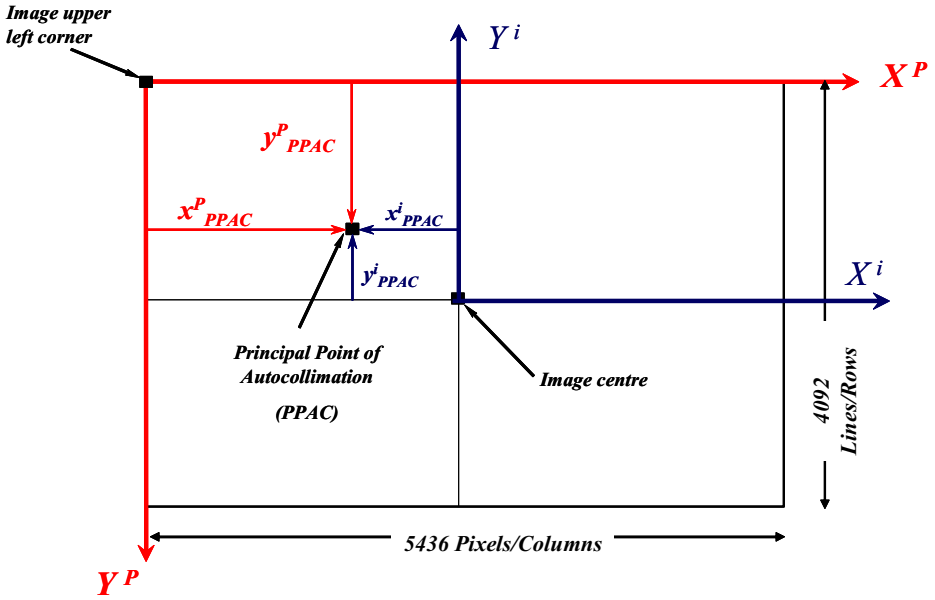
Table 1: Serial Numbers of the DSS Components

Component	SN
CCS	C00037
IMU	N/A
Digital Back	200621951A
Lens (60 mm)	8933778
AE Prism Finder	N/A
IR Filter	N/A
VIS Filter	680SP70572-4
Camera Body	N/A

Table 2: Camera Calibrated Parameters of DSS 322 SN0087 - 60mm lens - VIS

Parameter	Value	Accuracy
f (mm)	59.936	0.009 mm
x^{P}_{PPAC} (pixels) $^{+}$	2678.90	0.4 pixels
y^{P}_{PPAC} (pixels) $^{+}$	2054.87	0.4 pixels
x^{i}_{PPAC} (mm) $^{++}$	-0.352	0.0036 mm
y^{i}_{PPAC} (mm) $^{++}$	-0.080	0.0036 mm

- $^{+}x^{P}_{PPAC}$ 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 SN0087 – 60mm lens - VIS

Radial Distance (mm)	Radial Distortion (Pixel)	Radial Distortion (microns)
1.00	-0.00	-0.021
2.00	-0.02	-0.171
3.00	-0.06	-0.576
4.00	-0.15	-1.362
5.00	-0.29	-2.653
6.00	-0.51	-4.570
7.00	-0.80	-7.228
8.00	-1.19	-10.742
9.00	-1.69	-15.217
10.00	-2.31	-20.755
11.00	-3.05	-27.452
12.00	-3.93	-35.394
13.00	-4.96	-44.663
14.00	-6.15	-55.331
15.00	-7.50	-67.460
16.00	-9.01	-81.106
17.00	-10.70	-96.312
18.00	-12.57	-113.114
19.00	-14.62	-131.536
20.00	-16.84	-151.592
21.00	-19.25	-173.285
22.00	-21.85	-196.608
23.00	-24.62	-221.543
24.00	-27.56	-248.059
25.00	-30.68	-276.118
26.00	-33.96	-305.668
27.00	-37.41	-336.647
28.00	-41.00	-368.985
29.00	-44.73	-402.601
30.00	-48.60	-437.403
31.00	-52.59	-473.292

Table 4: Calibrated Lens Distortion Coefficients - SN0087

Coefficient	Value
K1	-1.7320413e-009
K2	+4.1642268e-017
K3	-3.4715677e-025

Table 5: Camera Calibrated Gain Value and Default Settings for DSS 322 SN0087 – 60mm lens

Filter Type	Calibrated Parameter	Calibrated Value
VIS	k (Gain value)	0.99
	ISO (Default)	300
	Exposure Compensation (Default)	-0.7
CIR	k (Gain value)	0.99
	ISO (Default)	200
	Exposure Compensation (Default)	-1.6

Table 6: Terrestrial Initial Boresight Calibration Results – SN0087 – 60mm Lens - VIS

Parameter	Value (arcmin)	Accuracy (arcmin)
Tx	N/A	N/A
Ty	N/A	N/A
Tz	N/A	N/A