



Terrestrial Calibration # 1 of DSS 439 SN1007 60mm VIS lens

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Special Notes

1. Terrestrial Calibration Data was collected on 27 June 2012
2. IMU Boresight Initial Calibration has not been computed

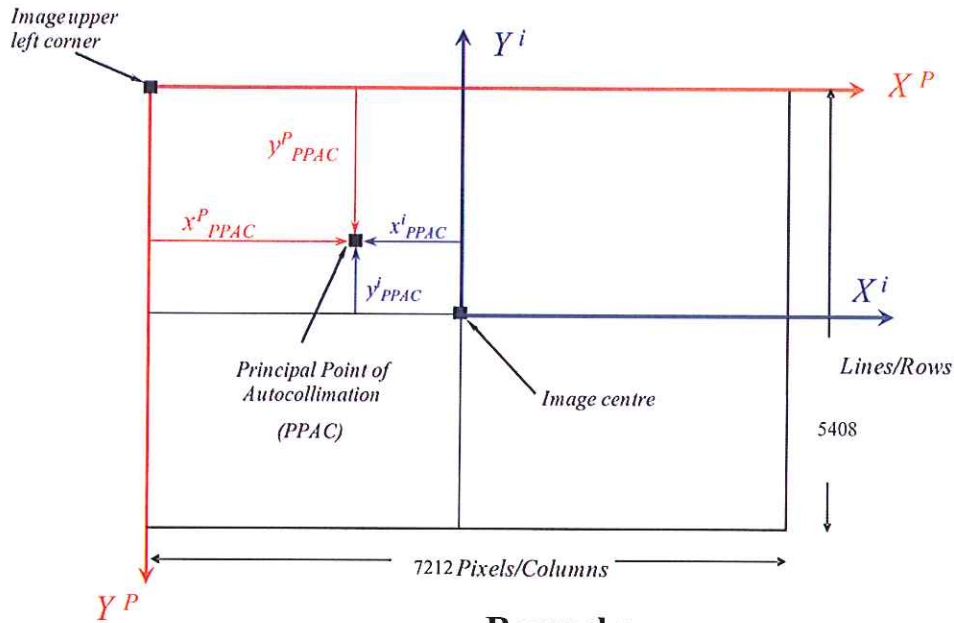
Table 1: Serial Numbers of the DSS Components

Component	SN
CCS	3996
IMU	N/A
Digital Back	30R0854281
Lens (60mm)	8907335
AE Prism Finder	N/A
CIR Filter	N/A
VIS Filter	36944
Camera Body	1017

Table 2: Camera Calibrated Parameters of DSS 439 SN1007 - 60mm lens - VIS

Parameter	Value	Accuracy
f (mm)	60.374	0.009 mm
x_{PPAC}^P (pixels) +	3651.45	0.4 pixels
y_{PPAC}^P (pixels) +	2724.16	0.4 pixels
x_{PPAC}^i (mm) ++	0.309	0.0036 mm
y_{PPAC}^i (mm) ++	-0.137	0.0036 mm

- + x_{PPAC}^P and y_{PPAC}^P are the offsets of the principal point of Autocollimation measured from image upper left corner, (image size 7212 pixels x 5408 lines) see Figure 1
- ++ x_{PPAC}^i and y_{PPAC}^i are measured from image centre (pixel size = 6.8 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 439 SN1007 - 60mm lens - VIS

Radial Distance (mm)	Radial Distortion (Pixel)	Radial Distortion (microns)
1.00	-0.00	-0.020
2.00	-0.02	-0.158
3.00	-0.08	-0.533
4.00	-0.19	-1.262
5.00	-0.36	-2.460
6.00	-0.62	-4.242
7.00	-0.99	-6.718
8.00	-1.47	-9.997
9.00	-2.09	-14.184
10.00	-2.85	-19.380
11.00	-3.78	-25.678
12.00	-4.88	-33.170
13.00	-6.17	-41.938
14.00	-7.66	-52.056
15.00	-9.35	-63.592
16.00	-11.26	-76.602
17.00	-13.40	-91.131
18.00	-15.77	-107.212
19.00	-18.36	-124.865
20.00	-21.19	-144.092
21.00	-24.25	-164.881
22.00	-27.53	-187.197
23.00	-31.03	-210.987
24.00	-34.73	-236.174
25.00	-38.63	-262.653
26.00	-42.69	-290.294
27.00	-46.90	-318.933
28.00	-51.23	-348.375
29.00	-55.64	-378.384
30.00	-60.10	-408.689
31.00	-64.55	-438.971

Table 4: Calibrated USGS Lens Distortion Coefficients - SN1007

Coefficient	Value
K1	-1.9776193e-005
K2	+3.8169642e-009
K3	+1.4867870e-012

Table 5: Camera Calibrated Gain Value and Default Settings for DSS 439 SN1007 - 60mm lens

Filter Type	Calibrated Parameter	Calibrated Value
VIS	k (Gain value)	N/A
	ISO (Default)	200
	Exposure Compensation	0
CIR	k (Gain value)	N/A
	ISO (Default)	200
	Exposure Compensation	0

Table 6: Terrestrial Initial Boresight Calibration Results - SN 1007 - 60mm lens - VIS

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