

# CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC30  
LENS TYPE : 15/4 UAG-S  
LENS NO. : 13258

Calibration date: 21.02.2000

SwissOptic AG, Heerbrugg

 **swissoptic**  
SwissOptic AG  
Heinrich-Wild-Strasse  
CH-9435 Heerbrugg  
Schweiz



RC30

15/4 UAG-S

No. 13258

21.02.2000

Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 NM)  
 Filter on camera: --  
 C.F.L. : 153.159 mm

Radial distortion (micrometers) referred to principal point of symmetry (PPS)  
 (Positive values denote image displacement away from center)

Radius mm	Half - Sides				Mean
	1	3	2	4	
10	0.2	-0.5	-0.1	-0.3	-0.1
20	0.0	-1.0	-0.3	-0.9	-0.5
30	-0.5	-1.6	-0.4	-1.8	-1.0
40	-0.7	-1.8	-0.8	-2.1	-1.3
50	-0.8	-2.3	-0.9	-2.4	-1.6
60	-1.3	-2.1	-0.6	-2.5	-1.6
70	-0.4	-1.6	-0.8	-1.9	-1.1
80	-0.4	-0.4	-0.1	-0.8	-0.4
90	1.0	0.3	0.3	-0.3	0.3
100	0.8	0.8	1.2	0.5	0.8
110	1.3	0.7	1.7	1.2	1.2
120	1.2	0.8	1.3	1.4	1.1
130	0.6	0.8	1.6	1.8	1.2
140	-0.2	1.2	1.1	1.4	0.8
148	-1.6	-1.0	-1.9	0.2	-1.0

#### Photographic resolution (line pairs per millimeter)

International 3-line test-chart, contrast (log) : 2.0

Aperture: 4.0  
 Filter: 450 NM  
 Film: KODAK PANATOMIC X 2412  
 Developer: KODAK HC110

Angle (deg)	0	5	10	15	20	25	30	35	40	45
Radial:	131	131	129	101	89	119	128	108	64	83
Tangential:	131	116	101	87	82	108	111	99	77	37

AWAR (Area weighted average resolution) in lp/mm: 100

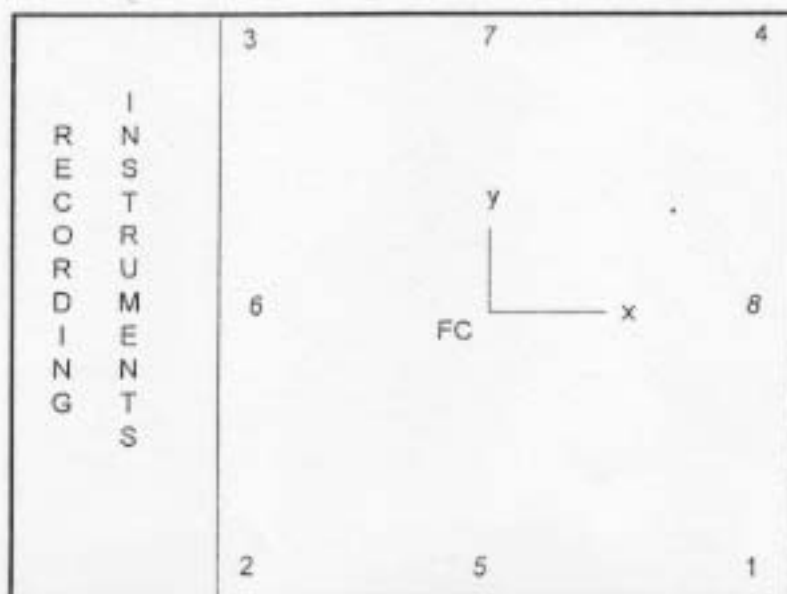


Principal point of autocollimation (PPA) and  
principal point of symmetry (PPS)  
referred to central cross (FC), see diagram

	x (mm)	y (mm)
PPA	0.005	-0.006
PPS	0.002	0.001

Fiducial marks, referred to central cross (FC)

	x (mm)	y (mm)		x (mm)	y (mm)
1	105.997	-105.997	5	-0.003	-112.004
2	-106.000	-106.002	6	-112.001	0.005
3	-106.001	106.001	7	0.000	112.004
4	106.001	106.003	8	112.000	0.004

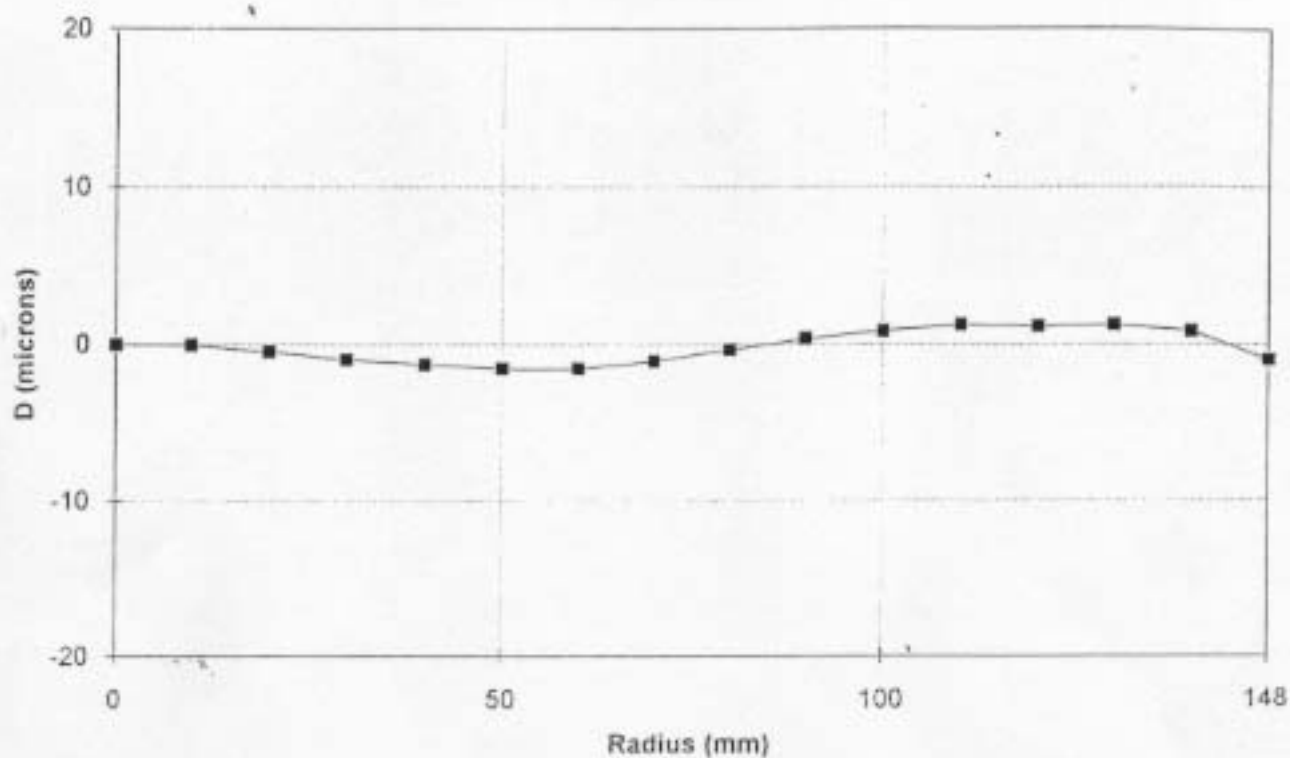


as seen on focal plane frame

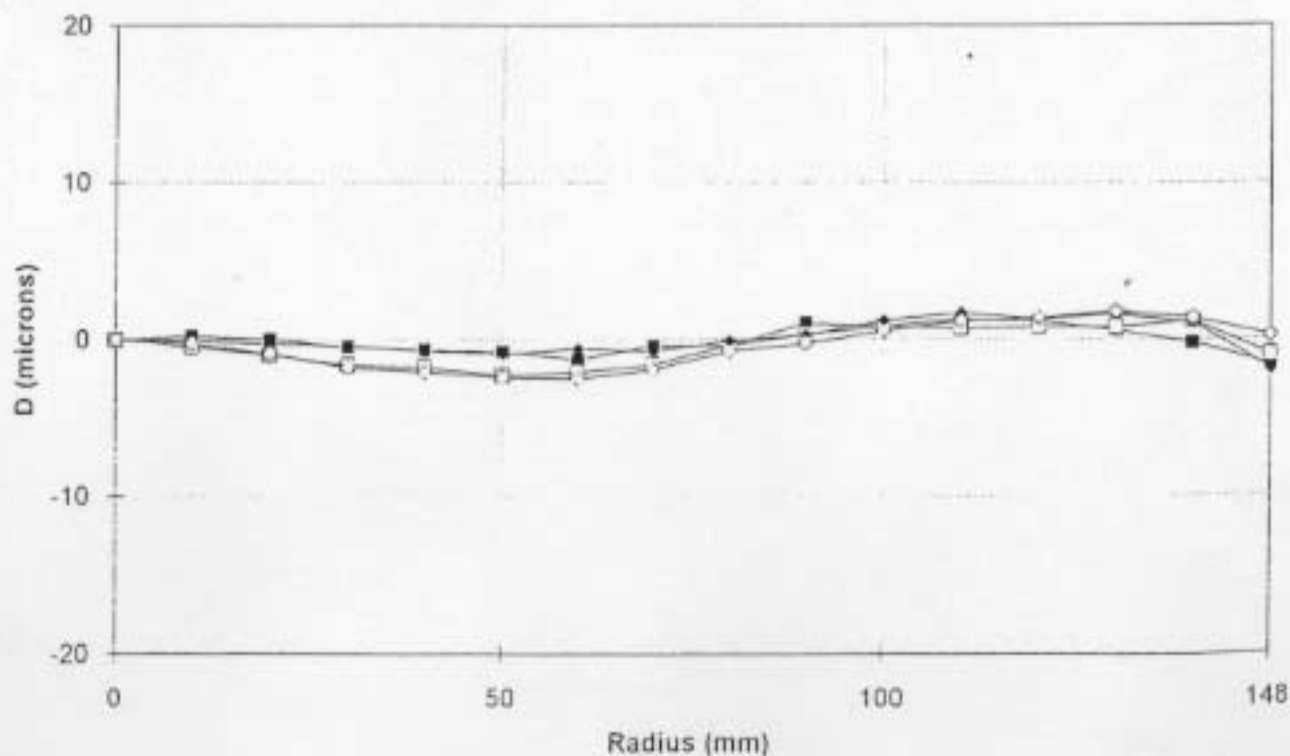
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Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 NM)  
 Filter on camera: --  
 C.F.L.: 153.159 mm

### Mean radial distortion



### Radial distortion for semi-diagonals referred to PPS



■ — 1    □ — 3    ● — 2    ○ — 4

SE-LCT  
Antenna offset



Hight  $1298+283=1581$  m.m. over  
projection center

All measurement in millimeter