

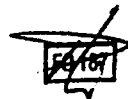
CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC30
LENS TYPE : 15/4 UAG-S
LENS NO. : 13335

Calibration date: 20.04.1999

SwissOptic AG, Heerbrugg

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



Aperture: 4.0
 Filter on goniometer: VIS (400 - 700 NM)
 Filter on camera: -
 C.F.L. : 153.478 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	-0.1	-0.4	-0.2	-0.4	-0.2
20	-0.4	-0.9	-0.4	-0.7	-0.6
30	-0.8	-1.1	-0.2	-1.1	-0.8
40	-0.8	-0.7	-0.4	-0.9	-0.7
50	-0.6	-0.6	-0.3	-0.7	-0.5
60	-0.9	-0.2	0.3	-0.6	-0.3
70	-0.1	0.5	0.1	0.0	0.1
80	-0.3	1.1	0.4	0.7	0.4
90	0.9	1.5	0.6	1.1	1.0
100	0.9	1.7	1.5	1.6	1.4
110	1.4	1.3	2.2	2.2	1.7
120	1.3	1.0	0.8	1.8	1.2
130	0.1	-0.5	0.7	0.8	0.2
140	-1.8	-1.9	-0.3	-0.8	-1.2
148	-3.1	-3.7	-2.1	-2.3	-2.8

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:	147	147	145	142	139	134	128	121	113	83
Tangential:	147	146	143	123	116	96	99	88	87	66

AWAR (Area weighted average resolution) in lp/mm: 113

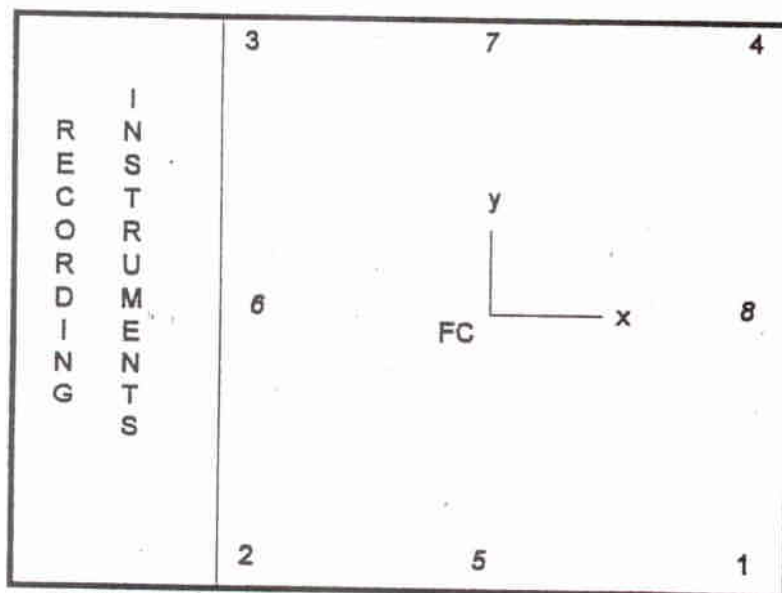


**Principal point of autocollimation (PPA) and
principal point of symmetry (PPS)
referred to central cross (FC), see diagram**

	x (mm)	y (mm)
PPA	0.000	0.008
PPS	0.001	0.004

Fiducial marks, referred to central cross (FC)

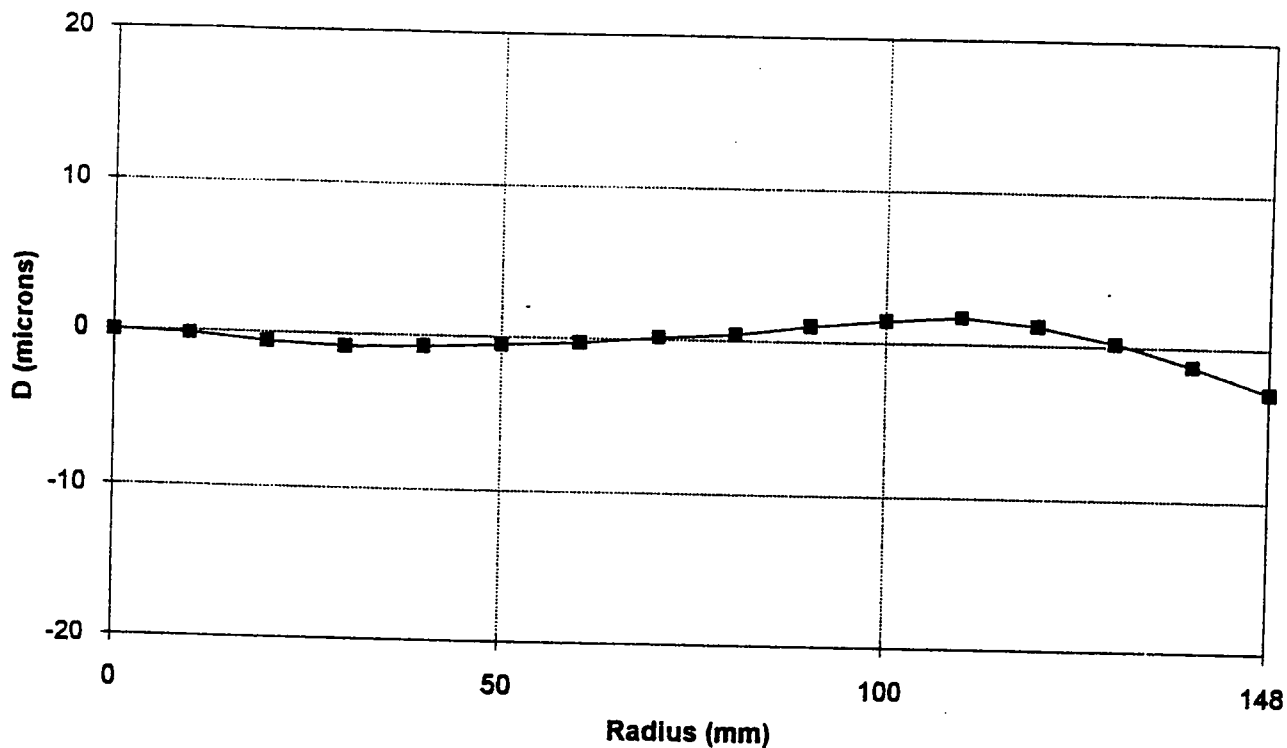
	x (mm)	y (mm)		x (mm)	y (mm)
1	106.003	-106.000	5	0.000	-112.002
2	-105.999	-106.001	6	-112.002	0.003
3	-106.004	106.001	7	0.002	112.002
4	105.999	106.000	8	112.003	-0.003



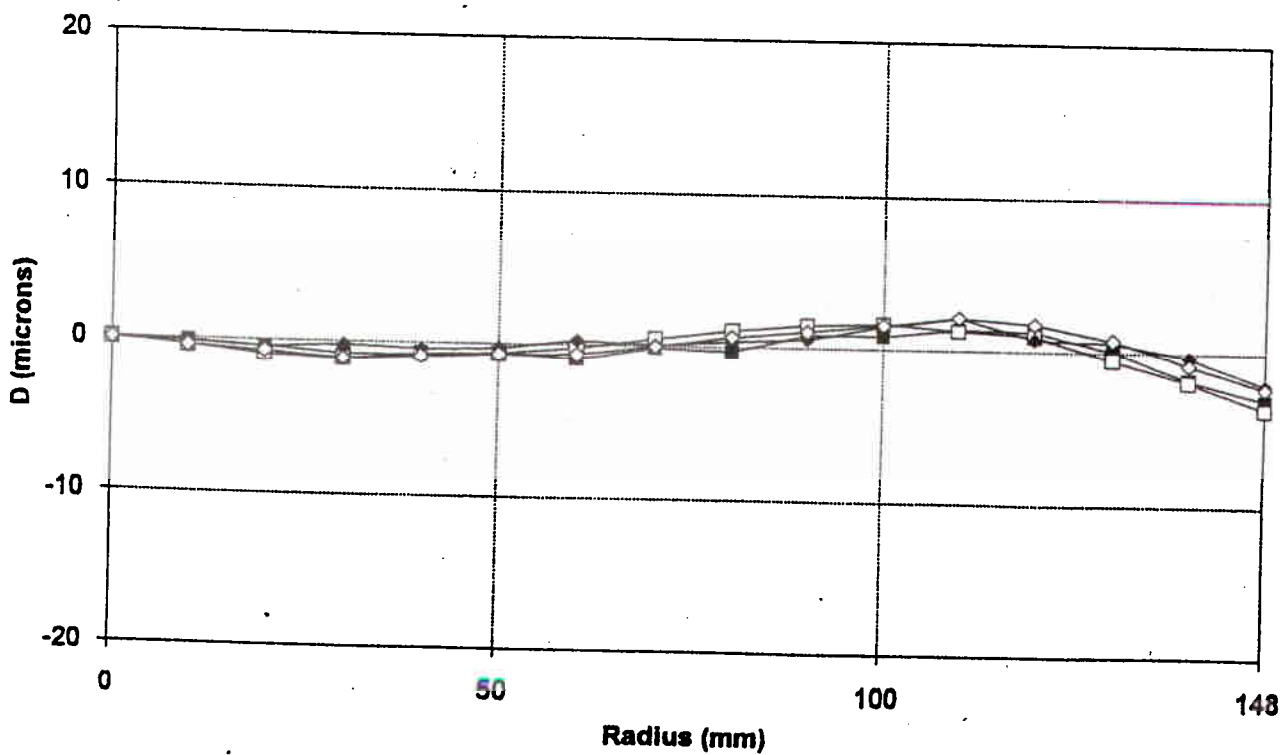
as seen on focal plane frame

Aperture: 4.0
Filter on goniometer: VIS (400 - 700 NM)
Filter on camera: -
C.F.L. : 153.478 mm

Mean radial distortion



Radial distortion for semi-diagonals referred to PPS



—■— 1 —□— 3 —◆— 2 —◇— 4

