

# CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC20  
LENS TYPE : 15/4 UAGA-F  
LENS NO. : 13158

Calibration date: 02.10.2000

SwissOptic AG, Heerbrugg

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



Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 NM)  
 Filter on camera: --  
 C.F.L. : 153.190 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	0.7	0.3	0.4	0.4	0.4
20	0.9	0.3	0.6	0.7	0.6
30	1.2	0.4	1.4	0.2	0.8
40	1.5	1.0	1.2	0.6	1.0
50	1.6	0.8	1.3	0.7	1.1
60	1.3	1.5	1.9	0.8	1.3
70	2.4	1.6	1.7	1.1	1.7
80	2.4	2.4	1.9	1.6	2.0
90	3.3	2.9	1.9	1.6	2.4
100	2.9	2.7	1.8	1.5	2.2
110	2.5	1.9	1.1	1.0	1.6
120	1.4	0.9	-1.5	-0.6	0.0
130	-0.8	-0.8	-3.2	-2.5	-1.8
140	-2.9	-1.9	-5.3	-5.2	-3.8
148	-3.5	-2.8	-6.0	-6.2	-4.6

**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:	93	93	92	80	62	67	72	96	71	47
Tangential:	93	82	72	61	58	61	61	56	49	41

AWAR (Area weighted average resolution) in lp/mm: 67

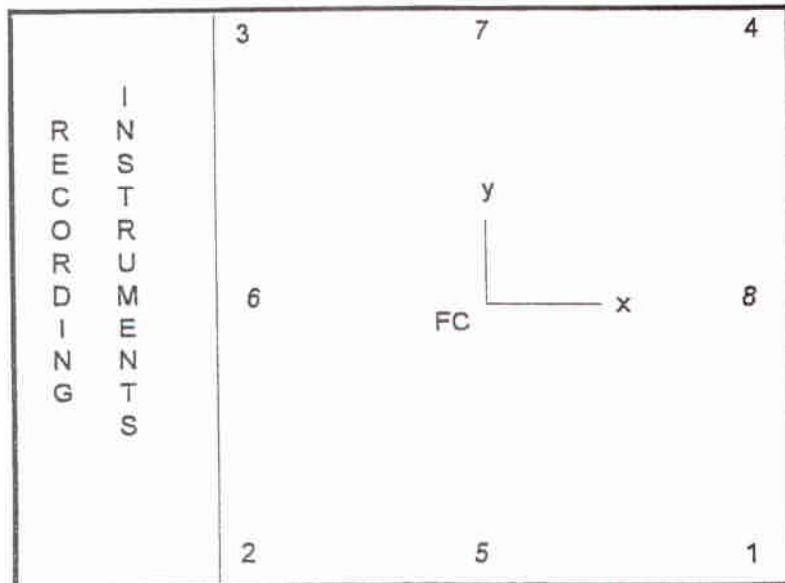


**Principal point of autocollimation (PPA) and principal point of symmetry (PPS) referred to central cross (FC), see diagram**

	x (mm)	y (mm)
PPA	0.002	0.015
PPS	-0.004	0.013

**Fiducial marks, referred to central cross (FC)**

	x (mm)	y (mm)		x (mm)	y (mm)
1	106.003	-106.005	5	0.002	-110.001
2	-106.001	-106.003	6	-110.001	0.003
3	-106.003	106.005	7	0.000	109.999
4	106.004	106.006	8	109.990	0.002

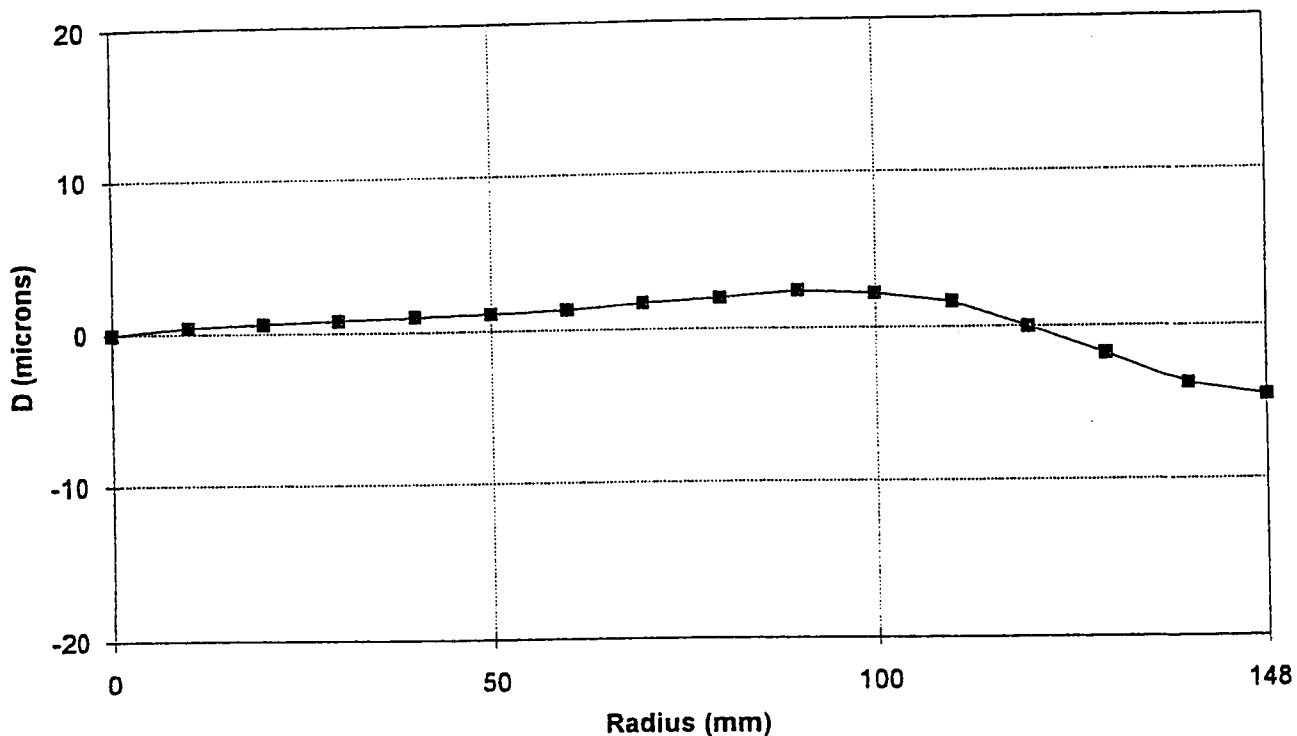


as seen on focal plane frame

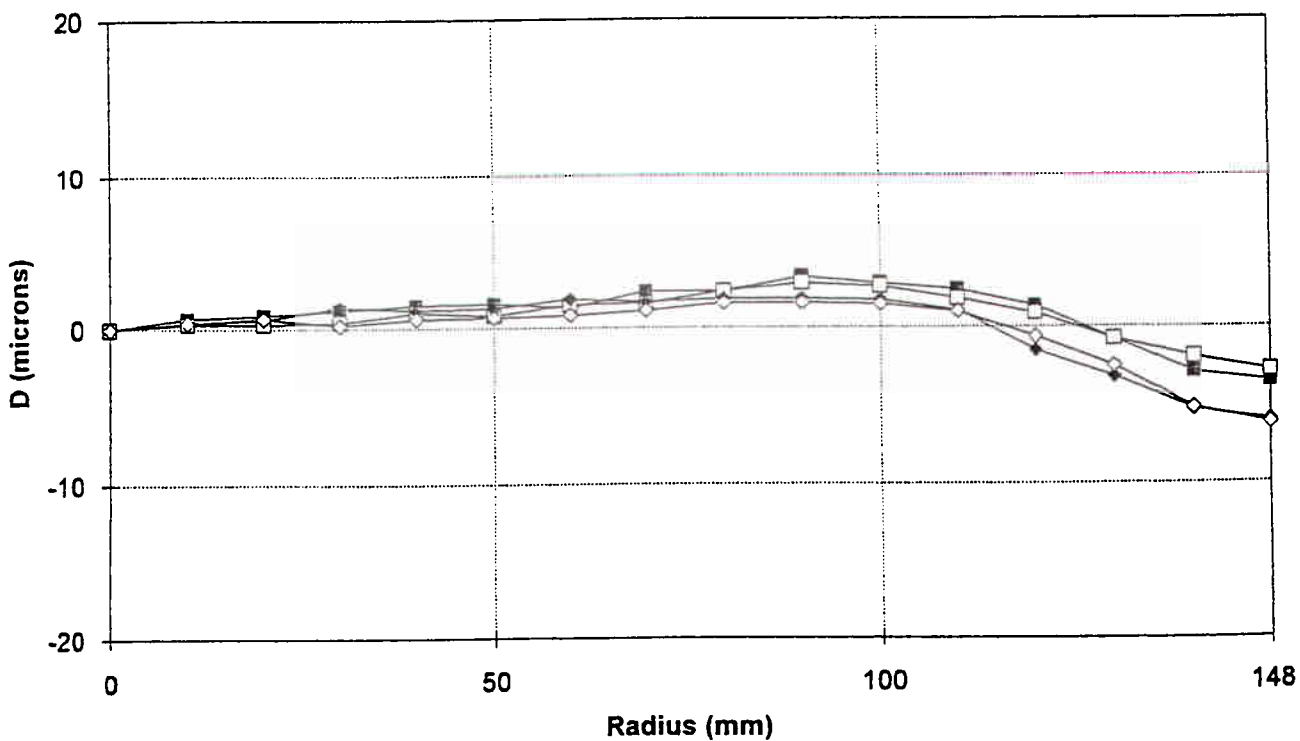
FD282

Aperture: 4.0  
Filter on goniometer: VIS (400 - 700 NM)  
Filter on camera: -  
C.F.L. : 153.190 mm

### Mean radial distortion



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



■ 1    ◻ 3    ◆ 2    ◊ 4

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