

CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC20
LENS TYPE : 21/4 NAGA-F
LENS NO. : 7176

Calibration date: 07.12.1999

SwissOptic AG, Heerbrugg

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

Aperture: 4.0
 Filter on goniometer: 450 NM
 Filter on camera: --
 Principal distance for focussing distance 900 m : 214.745 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	1.1	0.4	0.9	0.8	0.8
20	1.7	0.4	1.9	1.1	1.2
30	2.3	1.3	2.7	1.9	2.0
40	3.9	2.9	3.9	3.4	3.5
50	4.3	3.5	4.2	4.3	4.0
60	2.8	3.3	3.5	3.3	3.2
70	1.8	1.9	1.7	2.0	1.8
80	0.0	0.7	0.6	2.5	0.9
90	-0.7	0.8	-1.0	1.1	0.0
100	-1.9	-0.7	-1.3	-0.1	-1.0
110	-2.8	-2.3	-2.2	-1.0	-2.0
120	-3.3	-3.4	-2.5	-2.5	-2.9
130	-3.8	-3.2	-2.2	-2.0	-2.8
140	-1.2	-1.4	-0.1	-1.1	-0.9
148	1.6	-0.4	2.0	-0.2	0.7

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
Radial:	75	84	83	81	63	48	46	49
Tangential:	75	74	65	62	59	55	50	45

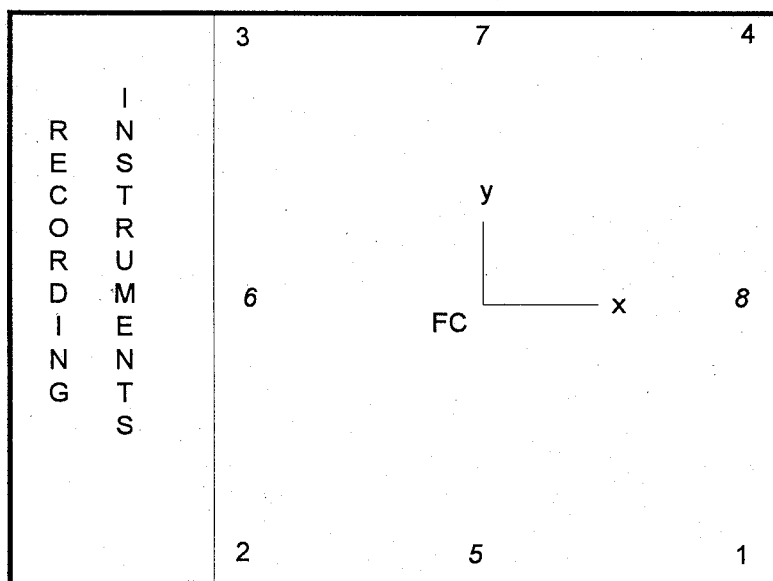
AWAR (Area weighted average resolution) in lp/mm: 58

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

	x (mm)	y (mm)
PPA	-0.010	-0.003
PPS	-0.017	-0.025

Fiducial marks, referred to central cross (FC)

	x (mm)	y (mm)		x (mm)	y (mm)
1	106.000	-106.003	5	-0.005	-110.005
2	-106.004	-106.004	6	-110.007	-0.002
3	-106.000	106.002	7	-0.003	110.004
4	106.003	106.003	8	110.002	0.004

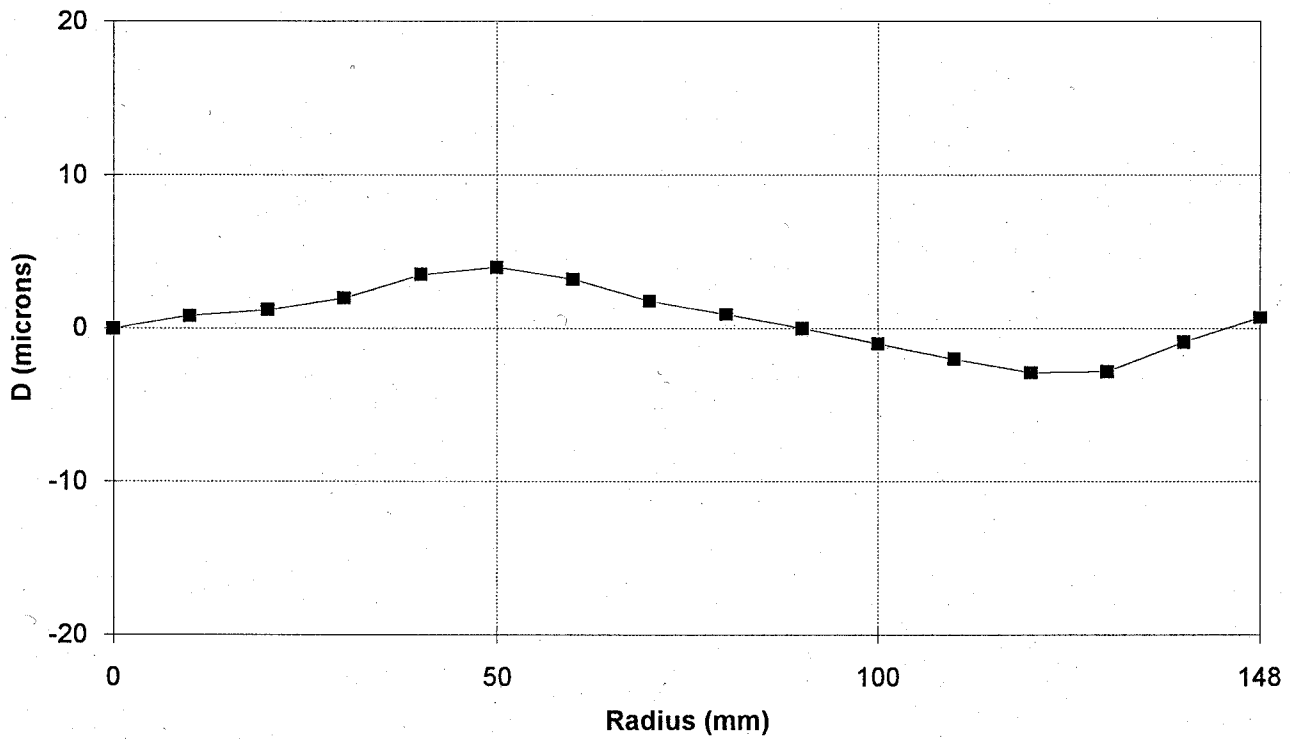


as seen on focal plane frame

FC488

Aperture: 4.0
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Mean radial distortion



Radial distortion for semi-diagonals referred to PPS

