

CAMERA CALIBRATION CERTIFICATE

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

Calibration date: 05.01.1998

SwissOptic AG, Heerbrugg

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

13158

Aperture: 4.0
 Filter on goniometer: VIS (400 - 700 NM)
 Filter on camera: --
 C.F.L. : 153.183 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	0.6	0.3	0.6	0.1	0.4
20	0.7	-0.1	1.1	0.1	0.4
30	0.6	0.5	1.2	-0.1	0.5
40	0.3	1.3	0.6	1.0	0.8
50	0.5	1.4	0.7	1.4	1.0
60	1.4	2.0	2.6	1.5	1.8
70	2.5	2.3	2.3	2.1	2.3
80	2.4	3.1	2.6	2.7	2.7
90	3.1	3.2	2.0	2.3	2.6
100	2.6	2.6	1.9	1.7	2.2
110	1.9	1.2	0.9	1.0	1.2
120	0.9	0.0	-1.4	-1.1	-0.4
130	-1.6	-1.6	-3.5	-3.0	-2.4
140	-3.2	-2.4	-5.2	-5.1	-3.9
148	-2.6	-2.9	-5.2	-5.9	-4.1

Photographic resolution (line pairs per millimeter)

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

Aperture: 4.0
 Filter: 450 NM
 Film: KODAK TECHNICAL PAN 2415
 Developer: KODAK HC110

Angle (deg)	0	5	10	15	20	25	30	35	40	45
Radial:	93	93	92	80	69	84	90	86	71	52
Tangential:	93	82	72	61	52	68	62	62	49	41

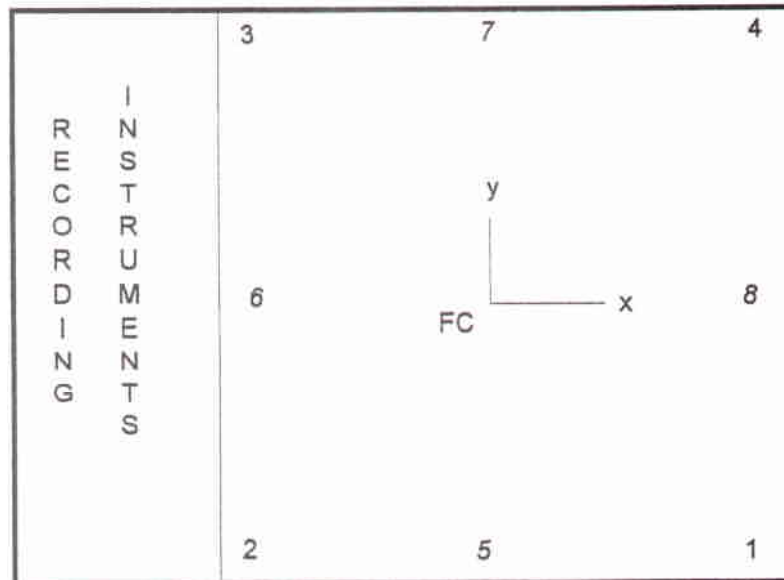
AWAR (Area weighted average resolution) in lp/mm: 70

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

	x (mm)	y (mm)
PPA	0.008	0.008
PPS	0.001	0.007

Fiducial marks, referred to central cross (FC)

	x (mm)	y (mm)		x (mm)	y (mm)
1	105.999	-105.999	5	0.003	-109.997
2	-105.999	-105.998	6	-109.999	0.003
3	-106.001	106.001	7	0.001	109.994
4	106.003	106.002	8	109.986	0.002

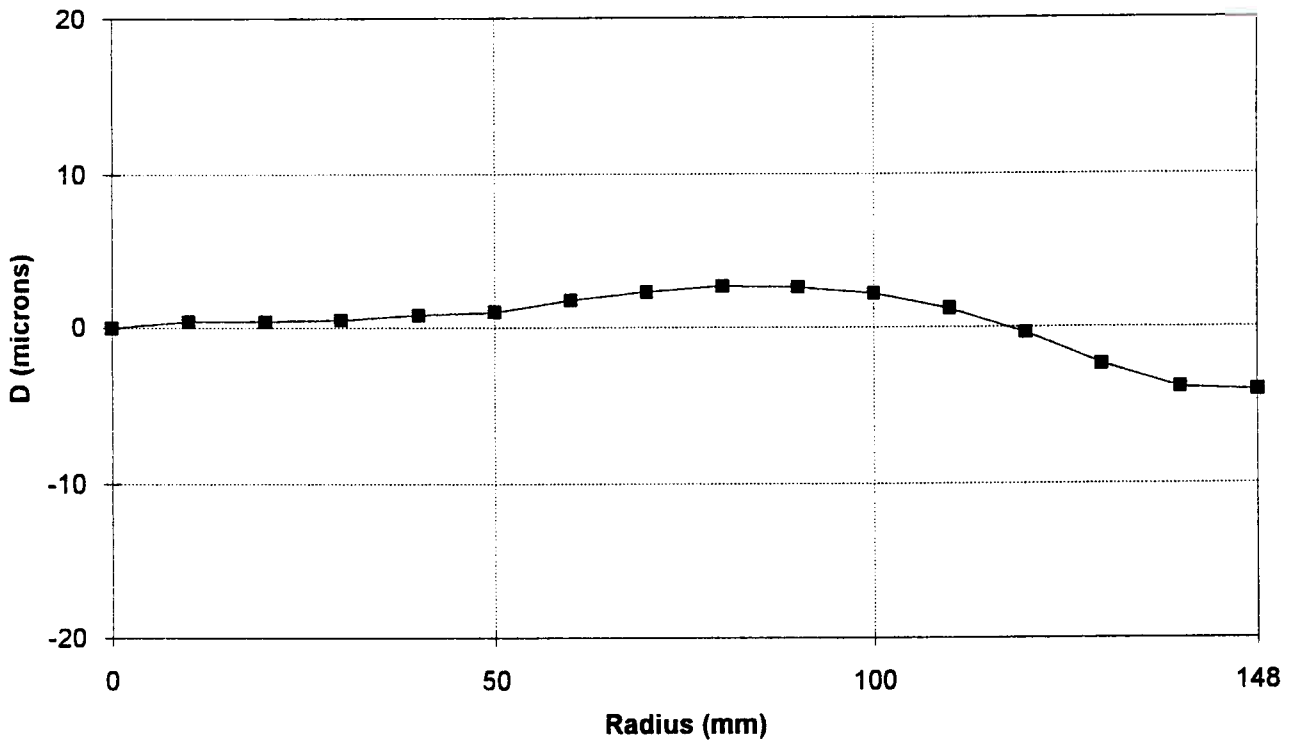


as seen on focal plane frame



Aperture: 4.0
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Mean radial distortion



Radial distortion for semi-diagonals referred to PPS

