

# CAMERA CALIBRATION CERTIFICATE

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

Calibration date: 27.02.2002

SwissOptic AG, Heerbrugg

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

  
FOOT

Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 NM)  
 Filter on camera: --  
 C.F.L. : 153.15 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	-0.6	-0.1	1.6	0.2
20	-0.4	-1.1	-0.2	-0.9	-0.6
30	-0.9	-1.7	-0.5	-1.9	-1.2
40	-1.2	-2.0	-0.9	-1.8	-1.4
50	-1.6	-2.5	-1.2	-1.9	-1.8
60	-2.0	-2.1	-0.6	-2.0	-1.6
70	-1.3	-1.8	-0.8	-1.5	-1.3
80	-1.2	-0.6	0.0	-0.2	-0.5
90	0.3	0.1	0.6	0.3	0.3
100	0.5	0.7	1.5	1.4	1.0
110	0.9	1.0	2.4	2.1	1.6
120	1.2	0.9	1.6	2.0	1.4
130	0.5	0.4	1.5	1.9	1.0
140	-0.3	0.2	1.0	1.0	0.4
148	-1.8	-1.7	-0.6	0.1	-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	147	129	113	110	106	128	108	64	83
Tangential:	131	146	127	109	92	96	111	99	77	41

AWAR (Area weighted average resolution) in lp/mm: 103

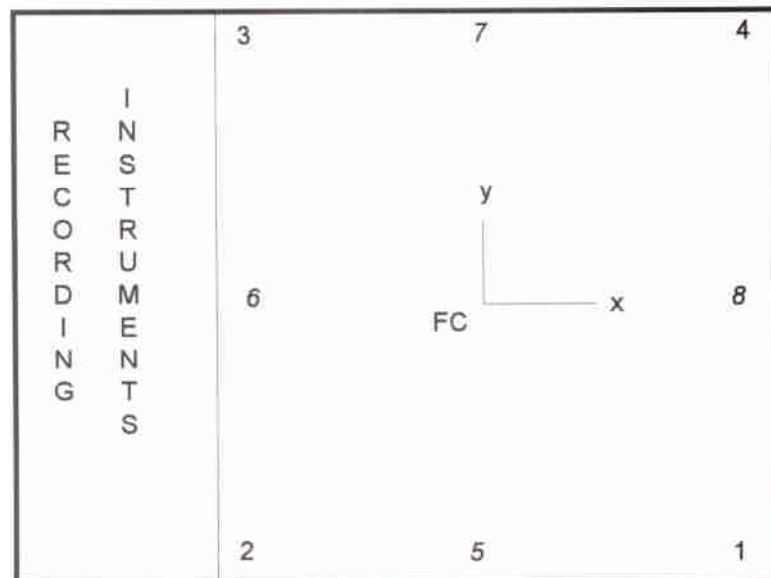
FO 012 Hao

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

	x (mm)	y (mm)
<b>PPA</b>	0.010	-0.009
<b>PPS</b>	0.008	-0.005

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

	x (mm)	y (mm)		x (mm)	y (mm)
<b>1</b>	106.001	-106.001	<b>5</b>	-0.001	-112.006
<b>2</b>	-106.003	-106.005	<b>6</b>	-112.004	0.002
<b>3</b>	-106.001	106.001	<b>7</b>	0.001	112.005
<b>4</b>	106.003	106.005	<b>8</b>	111.999	0.001

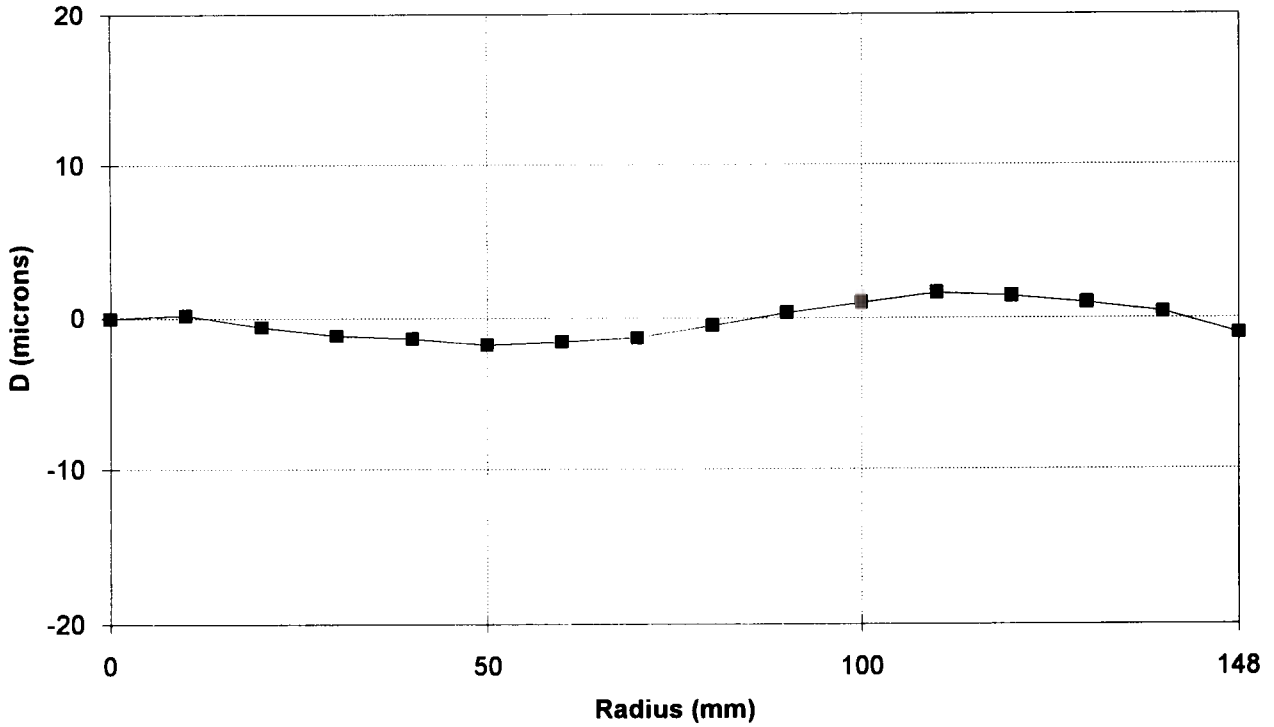


as seen on focal plane frame

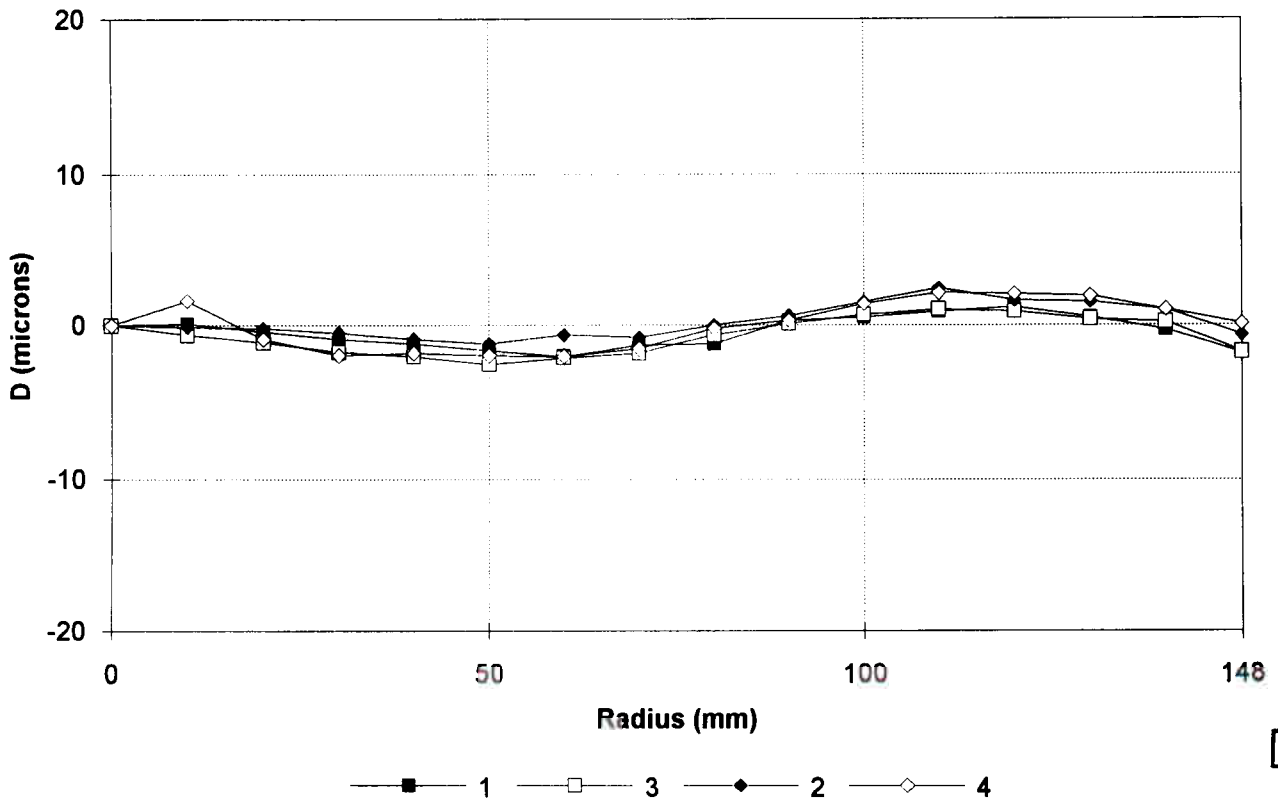
FC 0 *Handwritten signature*

Aperture: 4.0  
Filter on goniometer: VIS (400 - 700 NM)  
Filter on camera: --  
C.F.L. : 153.15 mm

### Mean radial distortion



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



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