

# CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC30  
LENS TYPE : 15/4 UAG-S  
LENS NO. : 13301

Calibration date: 24.02.2003

LEICA AG, HEERBRUGG

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



RC30

15/4 UAG-S

No. 13301

24.02.2003

Aperture: 4.0  
 Filter on goniometer: 450 NM  
 Filter on camera: --  
 C.F.L. : 153.51 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	-1.6	-1.0	-1.4	-1.1
20	-1.6	-2.8	-1.9	-2.4	-2.1
30	-2.4	-3.3	-2.7	-3.4	-2.9
40	-2.6	-3.1	-3.3	-3.2	-3.0
50	-2.4	-3.4	-2.9	-3.2	-2.9
60	-2.3	-3.0	-3.2	-3.1	-2.9
70	-1.7	-3.1	-3.5	-2.5	-2.7
80	-1.1	-2.8	-2.9	-1.4	-2.0
90	1.1	-2.0	-1.8	-0.6	-0.8
100	2.1	-0.7	0.7	0.9	0.7
110	1.9	1.0	2.7	2.8	2.1
120	1.9	2.2	3.5	2.8	2.6
130	0.8	1.5	3.7	2.9	2.2
140	-0.5	1.3	2.8	2.8	1.6
148	-2.3	0.4	2.0	1.6	0.4

**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	123	134	128	121	113	83
Tangential:	147	146	127	109	103	108	88	88	87	66

AWAR (Area weighted average resolution) in lp/mm: 109



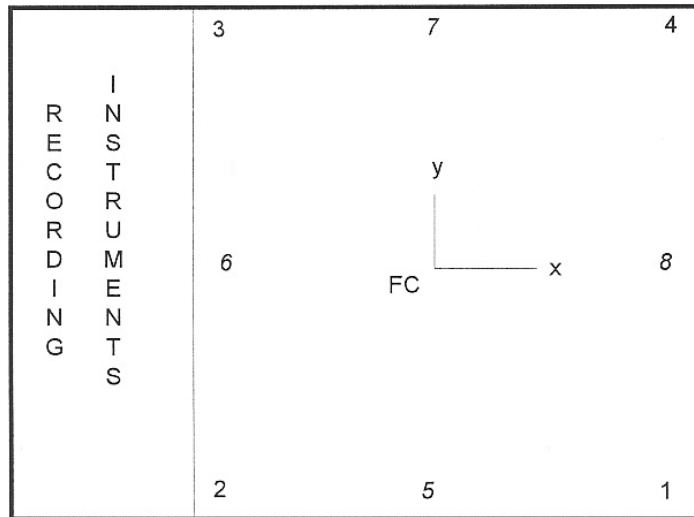
**Principal point of autocollimation (PPA) and  
principal point of symmetry (PPS)**

referred to central cross (FC), see diagram

	x (mm)	y (mm)
PPA	0.003	0.004
PPS	-0.002	0.010

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

	x (mm)	y (mm)		x (mm)	y (mm)
1	106.002	-106.004	5	0.003	-111.998
2	-105.992	-105.993	6	-111.992	0.007
3	-106.004	106.006	7	-0.010	111.997
4	105.995	105.996	8	111.998	-0.004



as seen on focal plane frame



RC30

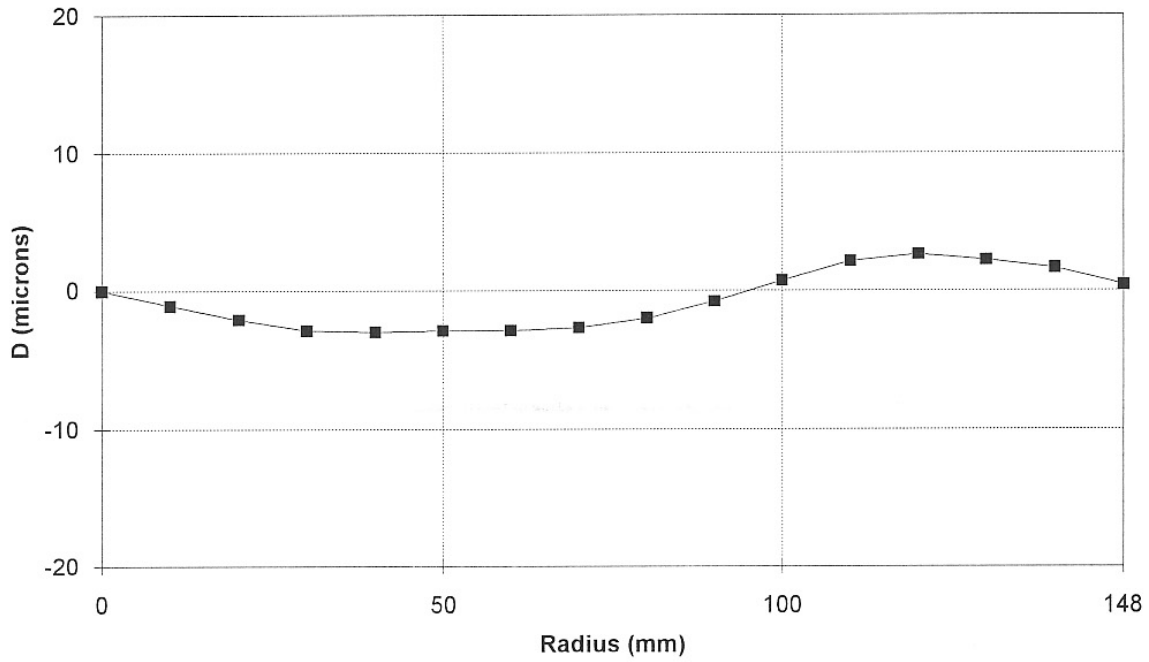
15/4 UAG-S

No. 13301

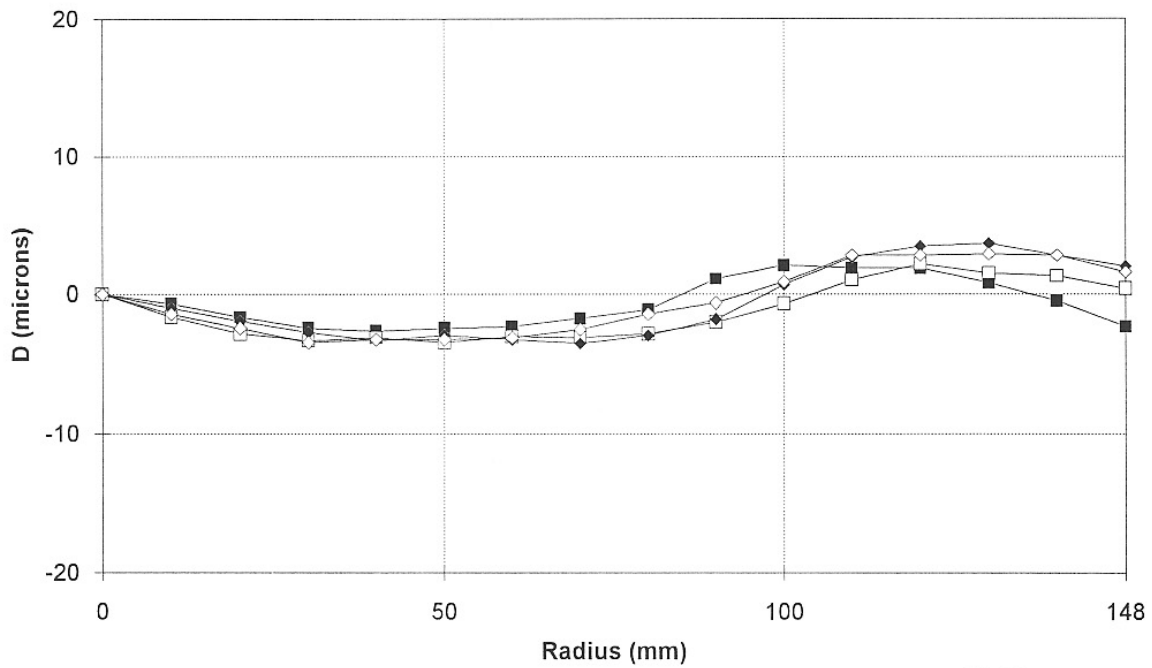
24.02.2003

Aperture: 4.0  
Filter on goniometer: 450 NM  
Filter on camera: --  
C.F.L. : 153.51 mm

### Mean radial distortion



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



■ 1    □ 3    ◆ 2    ◇ 4

