

# CAMERA CALIBRATION CERTIFICATE

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

Calibration date: 08.12.1994

LEICA AG, HEERBRUGG

*Leica*

*Leica Heerbrugg Ltd  
CH-9435 Heerbrugg*

*Calibration Department  
Supervisor*

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311

Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 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	-0.3	-1.3	-0.2	-0.9	-0.6
20	-0.8	-2.1	-0.5	-1.6	-1.2
30	-1.4	-2.2	-0.4	-1.7	-1.4
40	-1.0	-2.0	-0.3	-1.5	-1.2
50	-0.5	-2.2	0.3	-1.1	-0.8
60	-0.5	-1.7	1.6	-0.7	-0.3
70	0.4	-1.9	1.5	-0.4	-0.1
80	0.1	-1.2	1.8	0.1	0.2
90	1.3	-0.4	1.9	0.5	0.8
100	0.3	-0.6	2.4	0.7	0.7
110	0.5	-0.2	2.3	1.2	0.9
120	0.7	-0.5	1.1	0.2	0.3
130	-0.3	-0.1	0.8	1.3	0.4
140	-2.5	0.2	-1.3	1.3	-0.5
148	-2.1	-0.2	-1.2	1.3	-0.5

**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:	117	117	115	101	98	119	114	108	90	83
Tangential:	117	116	114	109	103	108	111	111	87	52

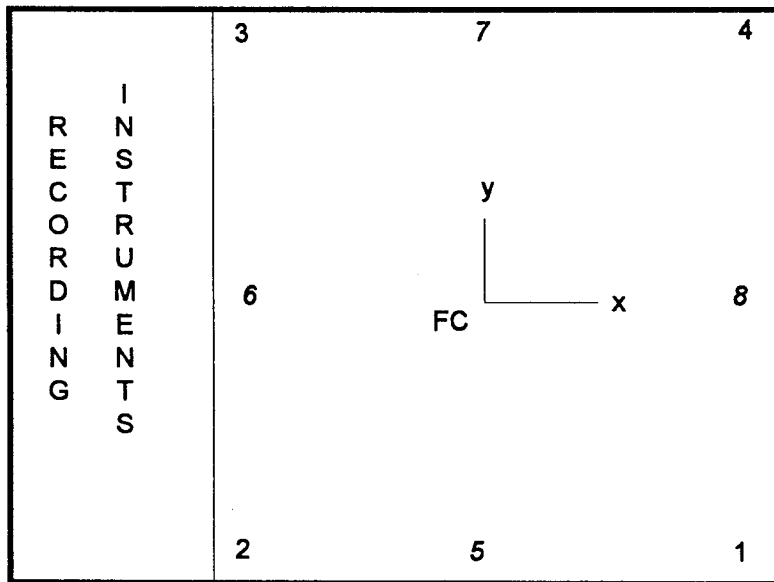
AWAR (Area weighted average resolution) in lp/mm: 106

**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	0.007
PPS	-0.001	-0.001

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

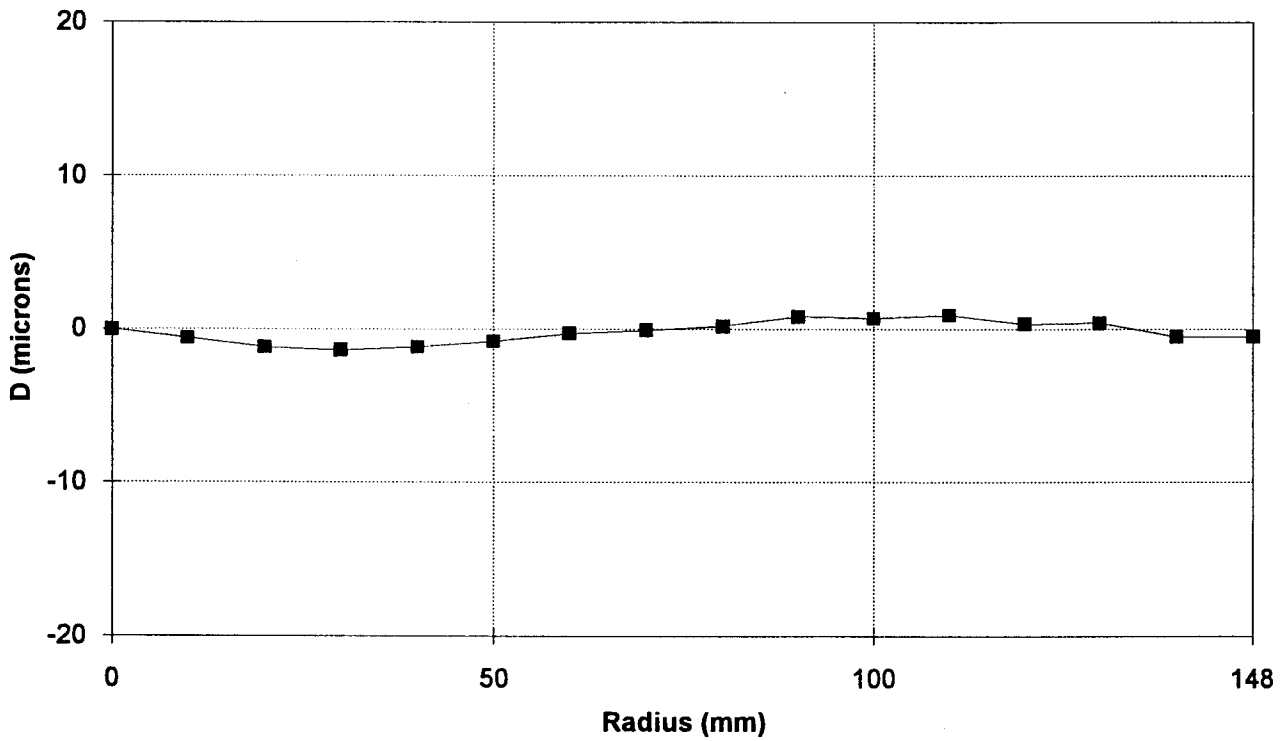
	x (mm)	y (mm)		x (mm)	y (mm)
1	105.998	-105.997	5	-0.002	-112.005
2	-106.003	-106.003	6	-111.998	0.000
3	-105.999	105.998	7	0.000	112.004
4	106.001	106.001	8	112.004	0.002



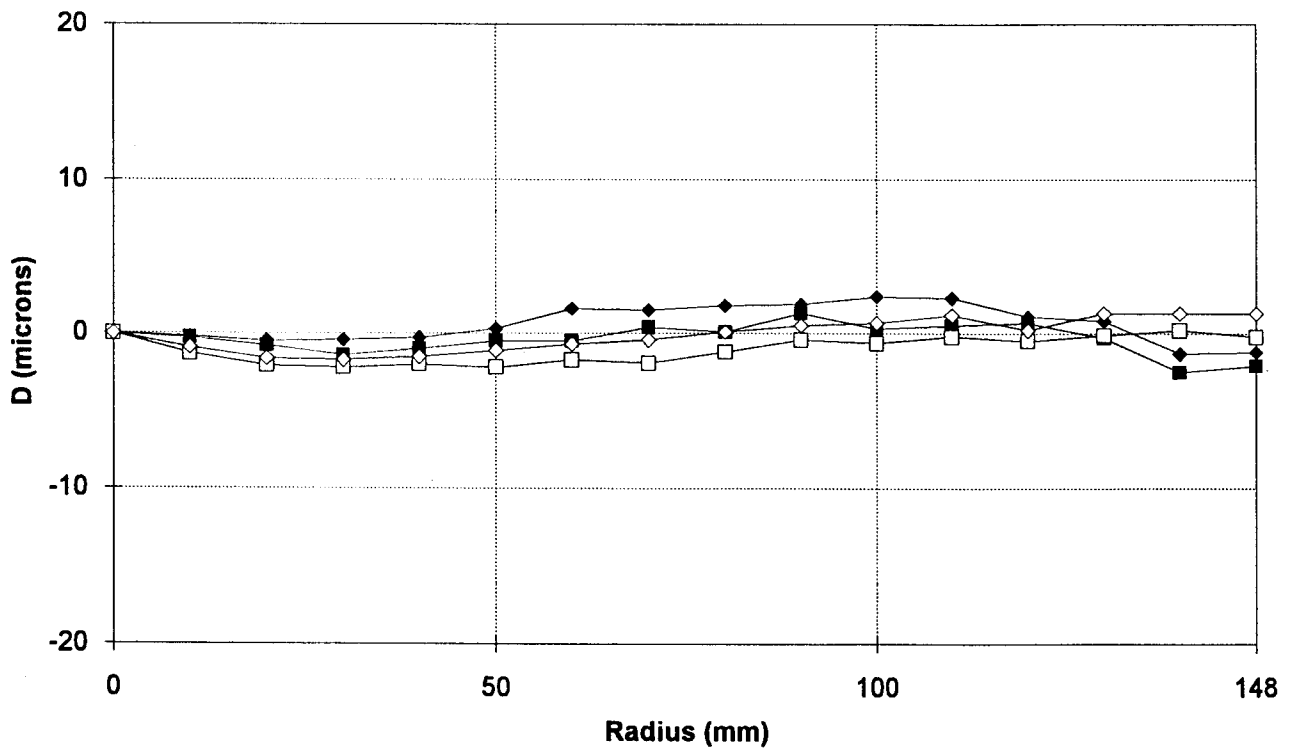
as seen on focal plane frame

Aperture: 4.0  
Filter on goniometer: VIS (400 - 700 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

311