

# CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC 30  
LENS TYPE : 30/4 NAT-S  
LENS NO. : 17111

Calibration date: 08.02.1994

LEICA AG, HEERBRUGG

The Leica logo, featuring the word "Leica" in a stylized, cursive font with a horizontal line underneath.

Leica Heerbrugg Ltd  
CH-8435 Heerbrugg

Calibration Department  
Supervisor



Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 NM)  
 Filter on camera: --  
 Principal distance for focussing distance 850 m : 302.97 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	0.4	0.3	0.3	0.9	0.4
20	0.6	0.0	0.6	0.9	0.5
30	1.0	0.1	1.5	0.8	0.8
40	1.1	1.0	1.5	1.8	1.3
50	1.5	1.4	1.8	2.6	1.8
60	1.5	1.5	2.9	2.6	2.1
70	2.1	1.2	2.9	3.0	2.3
80	1.1	1.0	2.6	3.1	1.9
90	1.5	1.1	2.0	3.2	1.9
100	-0.1	0.8	1.2	2.2	1.0
110	-1.0	-0.9	0.5	1.1	0.0
120	-2.4	-2.6	-1.8	-1.0	-1.9
130	-3.5	-3.2	-2.0	-1.4	-2.5
140	-3.8	-3.2	-1.5	-1.9	-2.6
148	-1.1	-1.8	1.6	-0.7	-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
Radial:	106	106	104	127	100	96
Tangential:	106	117	128	123	94	87

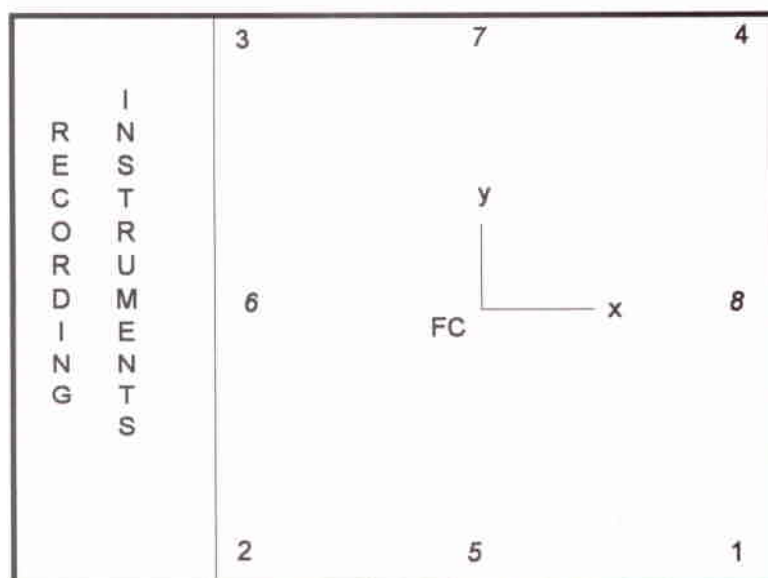
AWAR (Area weighted average resolution) in lp/mm: 109

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

	x (mm)	y (mm)
<b>PPA</b>	-0.003	0.024
<b>PPS</b>	-0.005	-0.026

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

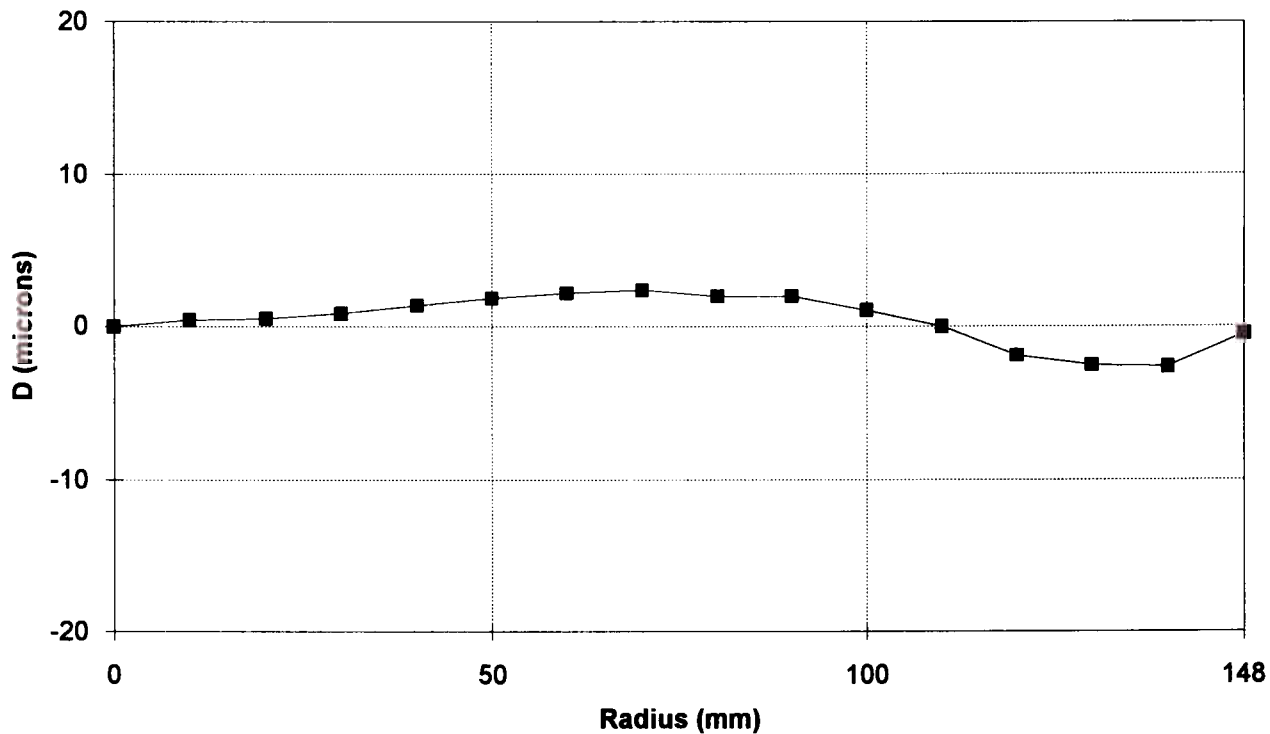
	x (mm)	y (mm)		x (mm)	y (mm)
<b>1</b>	106.002	-106.002	<b>5</b>	0.000	-112.000
<b>2</b>	-105.999	-105.999	<b>6</b>	-112.001	0.004
<b>3</b>	-106.005	106.005	<b>7</b>	-0.007	111.997
<b>4</b>	105.996	105.995	<b>8</b>	111.996	-0.003



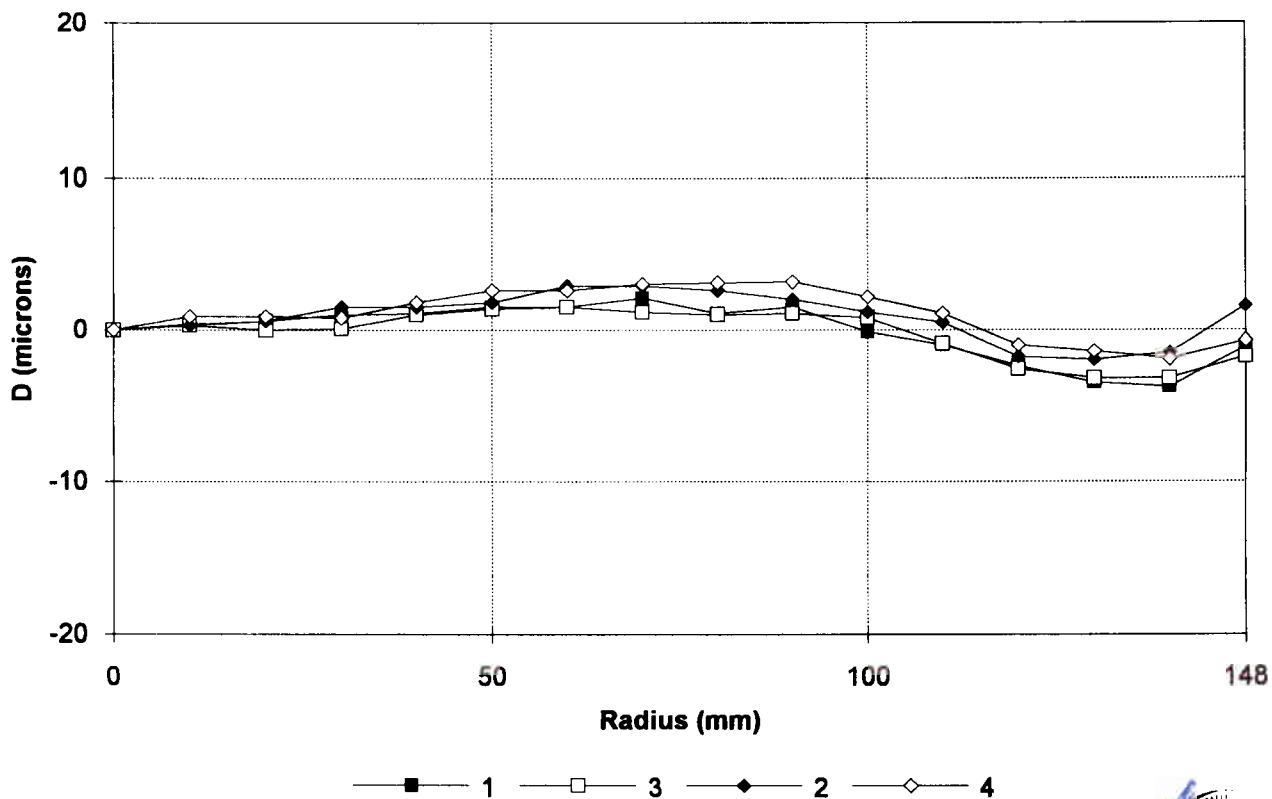
as seen on focal plane frame

Aperture: 4.0  
Filter on goniometer: VIS (400 - 700 NM)  
Filter on camera: --  
Principal distance for focussing distance 850 m : 302.97 mm

### Mean radial distortion



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



—■— 1    —□— 3    —◆— 2    —◇— 4

