

# CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE : RC30  
LENS TYPE : 15/4 UAG-S  
LENS NO. : 13240

Calibration date: 10.03.1994

LEICA AG, HEERBRUGG

*Leica*

*Leica Heerbrugg Ltd  
CH-9435 Heerbrugg*

*Calibration Department  
Supervisor*



Aperture: 4.0  
 Filter on goniometer: VIS (400 - 700 NM)  
 Filter on camera: --  
 C.F.L. : 152.63 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	-0.2	-0.8	-0.2	-0.4	-0.4
20	-0.5	-1.4	-0.5	-0.9	-0.8
30	-0.9	-2.1	-0.6	-1.8	-1.3
40	-1.1	-2.4	-1.0	-2.1	-1.6
50	-1.4	-3.3	-1.0	-2.0	-1.9
60	-1.8	-3.2	-0.4	-2.5	-1.9
70	-1.0	-2.7	-0.4	-1.7	-1.4
80	-1.2	-1.5	0.0	-0.3	-0.7
90	0.1	-1.0	0.2	0.4	0.0
100	0.5	0.3	1.4	2.0	1.0
110	1.0	0.8	2.0	2.9	1.6
120	1.7	1.4	1.9	3.0	2.0
130	1.0	1.4	2.2	2.7	1.8
140	-1.0	-0.1	0.8	0.5	0.0
148	-2.5	-1.2	0.3	-0.3	-0.9

**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	113	123	134	128	86	80	83
Tangential:	117	130	101	109	103	96	99	79	69	52

AWAR (Area weighted average resolution) in lp/mm: 98

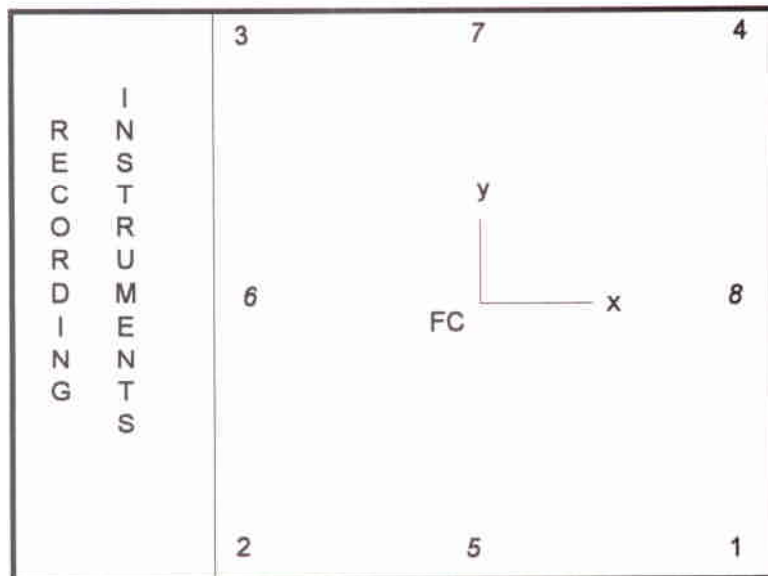


**Principal point of autocollimation (PPA) and  
principal point of symmetry (PPS)**  
referred to central cross (FC), see diagram

	x (mm)	y (mm)
<b>PPA</b>	0.004	-0.001
<b>PPS</b>	0.004	-0.002

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

	x (mm)	y (mm)		x (mm)	y (mm)
<b>1</b>	105.999	-105.997	<b>5</b>	-0.003	-112.000
<b>2</b>	-106.002	-106.001	<b>6</b>	-112.001	-0.002
<b>3</b>	-106.001	105.999	<b>7</b>	0.003	111.997
<b>4</b>	106.002	106.001	<b>8</b>	111.992	0.002

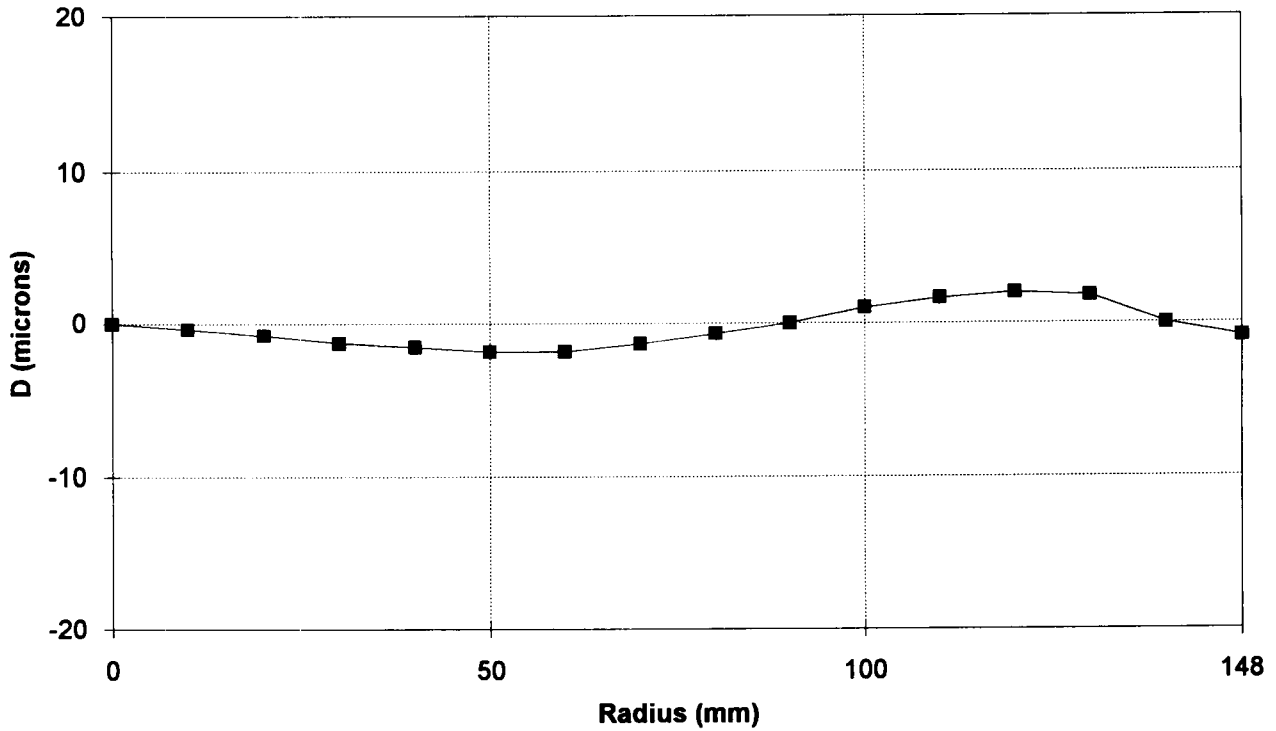


as seen on focal plane frame



Aperture: 4.0  
Filter on goniometer: VIS (400 - 700 NM)  
Filter on camera: --  
C.F.L. : 152.63 mm

**Mean radial distortion**



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

