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CAMERA CALIBRATION CERTIFICATE

CAMERA TYPE :	RC30
LENS TYPE :	15/4 UAG-S
LENS NO. :	13211

Calibration date: 28.11.1996

LEICA AG, HEERBRUGG

Leica

Leica Heerbrugg Ltd
CH-9435 Heerbrugg
Calibration Department
Supervisor FO 189

RC30 15/4 UAG-S No. 13211 28.11.1996

Aperture: 4.0
Filter on goniometer: VIS (400 - 700 NM)
Filter on camera: --
C.F.L. : 153.13 mm

Radial distortion (micrometers) referred to principal point of symmetry (PPS)
(Positive values denote image displacement away from center)

Radius	Half - Sides				Mean
mm	1	3	2	4	
10	0.5	0.2	0.0	0.2	0.2
20	0.7	0.2	0.2	0.0	0.2
30	0.5	-0.1	0.2	-0.6	0.0
40	0.3	-0.1	-0.5	-0.7	-0.2
50	0.2	-0.7	-0.8	-1.1	-0.6
60	-0.5	-0.5	-0.7	-1.7	-0.8
70	0.4	-0.3	-1.4	-1.6	-0.7
80	0.3	0.5	-1.3	-1.5	-0.5
90	1.9	1.1	-1.3	-1.0	0.1
100	2.0	1.5	-0.6	-0.1	0.7
110	2.5	0.8	0.4	0.1	0.9
120	2.4	0.7	-0.4	-0.1	0.6
130	1.4	0.3	-0.7	-0.6	0.1
140	0.0	1.1	-1.5	-1.5	-0.4
148	-0.6	2.9	-1.5	-1.5	-0.1

Photographic resolution (line pairs per millimeter)

International 3-line test-chart, contrast (log) : 2.0
Aperture: 4.0
Filter: 450 NM
Film: KODAK TECHNICAL PAN 2415
Developer: KODAK HC110

Angle (deg)	0	5	10	15	20	25	30	35	40	45
Radial:	83	93	103	113	87	95	101	96	90	74
Tangential:	83	92	90	87	92	86	78	88	87	59

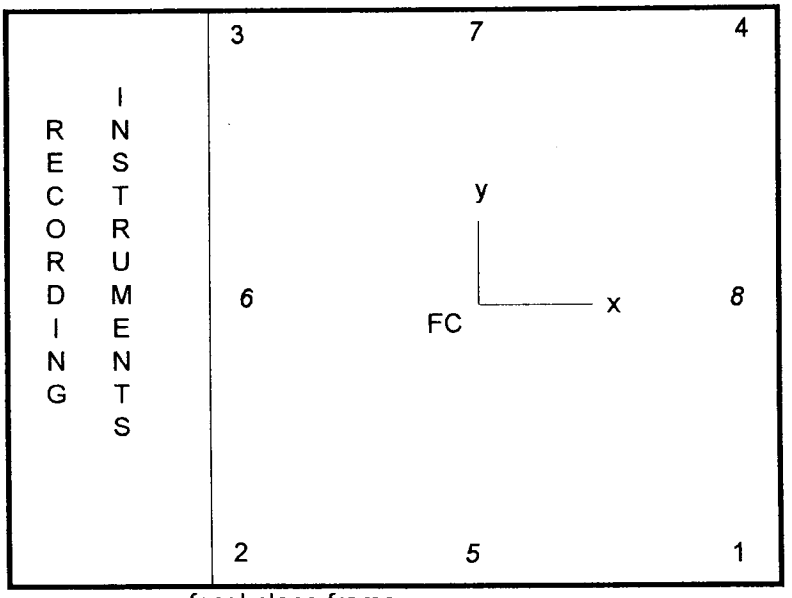
AWAR (Area weighted average resolution) in lp/mm: 91

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

	x (mm)	y (mm)
PPA	0.000	-0.006
PPS	0.003	-0.014

Fiducial marks, referred to central cross (FC)

	x (mm)	y (mm)		x (mm)	y (mm)
1	106.000	-106.003	**5**	0.003	-110.010
2	-106.002	-106.000	**6**	-110.006	-0.001
3	-105.999	106.002	**7**	-0.009	109.995
4	106.000	105.998	**8**	109.998	-0.005



as seen on focal plane frame

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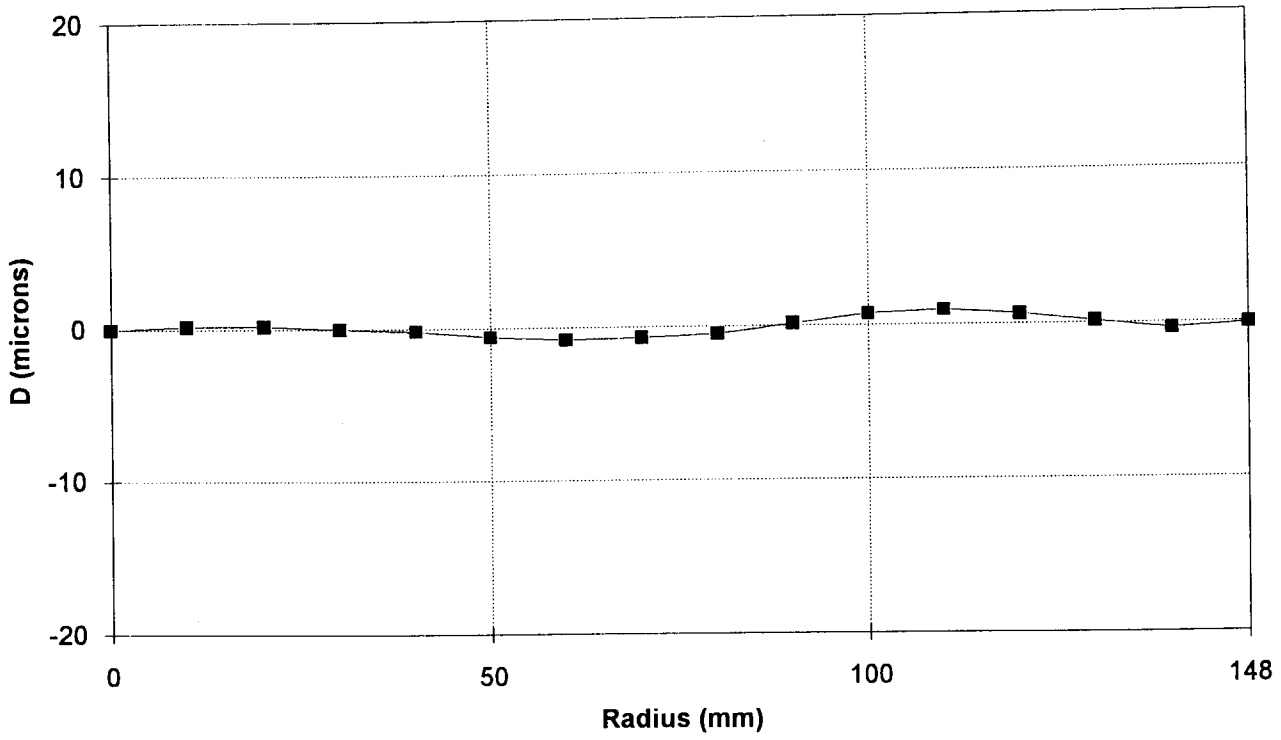
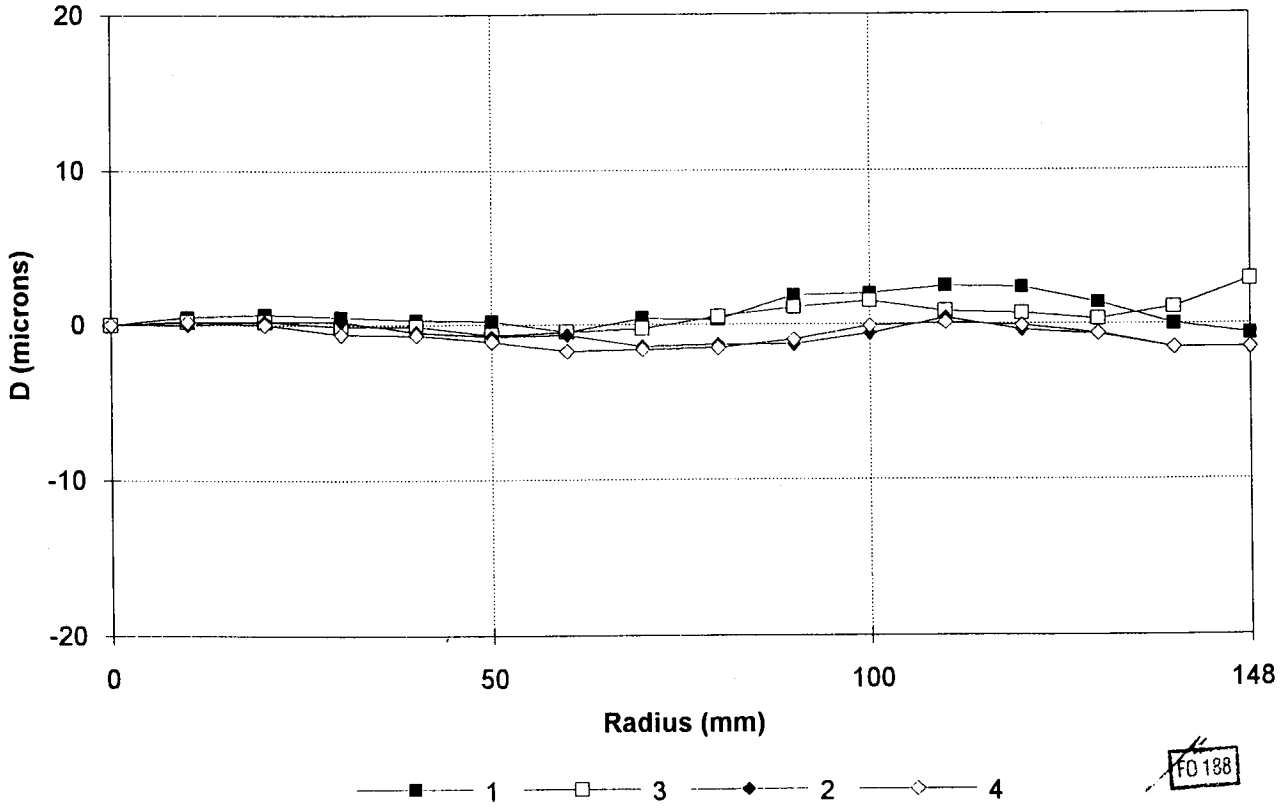
Mean radial distortion



Radial distortion for semi-diagonals referred to PPS



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