

DEUTSCHER KALIBRIERDIENST **DKD**

Kalibrierlaboratorium für die Meßgröße der geometrischen Optik
Calibration laboratory for measured quantities geometric optics

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)



Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

0702
DKD-K-05202
00-09

Gegenstand
Object Aerial Survey Camera

Hersteller
Manufacturer Carl Zeiss
D-73446 Oberkochen

Typ
Type RMK TOP 15

Fabrikat/Serien-Nr.
Serial number 144 116

Auftraggeber
Customer Taiwan Instruments Co., Ltd.
4 F, 272 Nanking E.R.D
ROW - 10566 Taipei

Auftragsnummer
Order No. 40 480

Anzahl der Seiten des Kalibrierscheines
Number of pages of the certificate 4

Datum der Kalibrierung
Date of calibration 29.09.00

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).

Der Deutsche Kalibrierdienst ist Unterzeichner des multilateralen Übereinkommens der European co-operation for Accreditation of Laboratories (EA) zur gegenseitigen Anerkennung der Kalibrierscheine.

Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

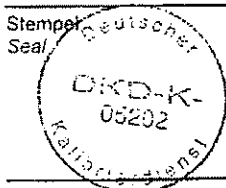
This calibration certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI).

The Deutscher Kalibrierdienst is signatory to the multilateral agreement of the European co-operation for Accreditation of Laboratories (EA) for the mutual recognition of calibration certificates.

The user is obliged to have the object recalibrated at appropriate intervals.

Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Auszüge oder Änderungen bedürfen der Genehmigung sowohl der Physikalisch-Technischen Bundesanstalt als auch des ausstellenden Kalibrierlaboratoriums. Kalibrierscheine ohne Unterschrift und Stempel haben keine Gültigkeit.

This calibration certificate may not be reproduced other than in full except with the permission of both the Physikalisch-Technische Bundesanstalt and the issuing laboratory. Calibration certificates without signature and seal are not valid.



Datum
Date 13.10.00

Leiter des Kalibrierlaboratoriums
Head of the calibration laboratory

Dr. Wiedenmann

Bearbeiter
Person in charge

Müller

Carl Zeiss
Industrielle Messtechnik GmbH
Mess- und Kalibrierzentrum
D - 73447 Oberkochen

Telefon 07364-20-3731
Telefax 07364-20-4511
E-Mail kalibrieren@zeiss.de

CAMERA TYPE: RMK TOP 15 SERIAL NO. 144116
 LENS TYPE: PLEOGON A3 SERIAL NO. 143104
 MAX. APERTURE: F/4 NOM. FOCAL LENGTH: 153 MM

1) CALIBRATED FOCAL LENGTH = 152.818 MM

2) DISTORTION /0.001 MM, REFERRING TO P.P. OF SYMMETRY PPS

S/MM=	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
5	0	0	1	1	2	2	3	3	2	2	1	-1	-2	-3	-3	-5
6	0	0	1	1	2	3	3	4	2	1	1	-2	-2	-4	-3	-5
7	0	0	1	1	2	3	4	4	4	3	2	1	1	0	-1	-3
8	0	1	1	1	2	2	4	4	3	2	1	0	0	0	-1	-2
AV.	0	0	1	1	2	3	3	4	3	2	1	0	-1	-2	-2	-4

3) P.P. OF AUTOCOLLIMATION AND FIDUCIAL CENTRE, REFERRING TO PPS

P.P. OF AUTOCOLLIMATION PPA X= .004 Y= -.006 MM
 FIDUCIAL CENTRE FC X= .012 Y= .004 MM
 CORNER FIDUCIAL CENTRE FCC X= .011 Y= .009 MM

4) FIDUCIAL MARKS, REFERRING TO PPS

X1= 113.021 X2=-112.988 X3= .011 X4= .012 MM
 Y1= .004 Y2= .005 Y3= 113.015 Y4=-112.971 MM
 DISTANCES 1-2= 226.009 3-4= 225.986 MM
 X5= 113.008 X6=-112.986 X7=-112.990 X8= 113.018 MM
 Y5= 113.009 Y6=-112.992 Y7= 113.003 Y8=-112.990 MM

5) PHOTOGRAPHIC RESOLVING POWER, IN CYCLES PER MM
 (AS PER DEFINITION, R. P. IS NOT A CALIBRATED DATUM)
 AREA WEIGHTED AVERAGE RESOLUTION 101

FIELD ANGLE /DEG = 0 7 14 21 28 35 42

RADIAL LINES 130 129 126 136 115 95 86
 TANGENTIAL LINES 130 128 123 113 101 78 72

FILM: KODAK PANATOMIC X 3412 SPEED 40 AFS
 DEVELOPED IN AGFA G 74 C AVIPHOT

6) Filter

7) Magazines

8) Measuring uncertainty

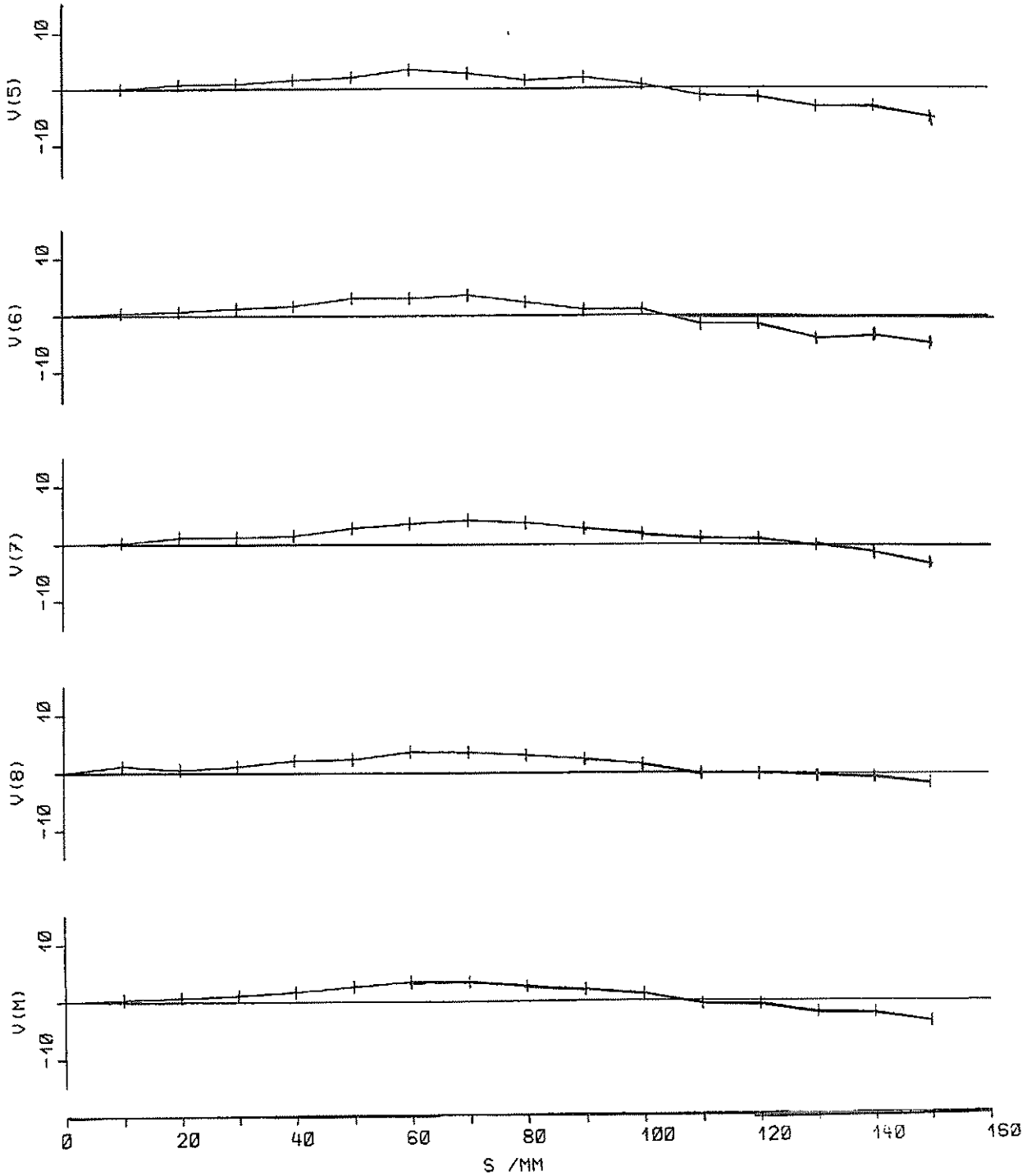
Distortion: U = 3 µm ; Point of symmetrie and collimation: U = 3 µm ; Image center: U = 5 µm ; Camera constant: U = 5 µm

The specification indicates the upgraded measuring uncertainty resulting from the multiplication of the standard measuring uncertainty by the factor k = 2. It was determined in conformity with DKD-3. The values of the measurement parameter lie within the specified range with a probability of 95%.

0702
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RMK TOP 15 NO. 144116
PLEOGON A3 4/153 NO. 143104
CFL=152.818 MM

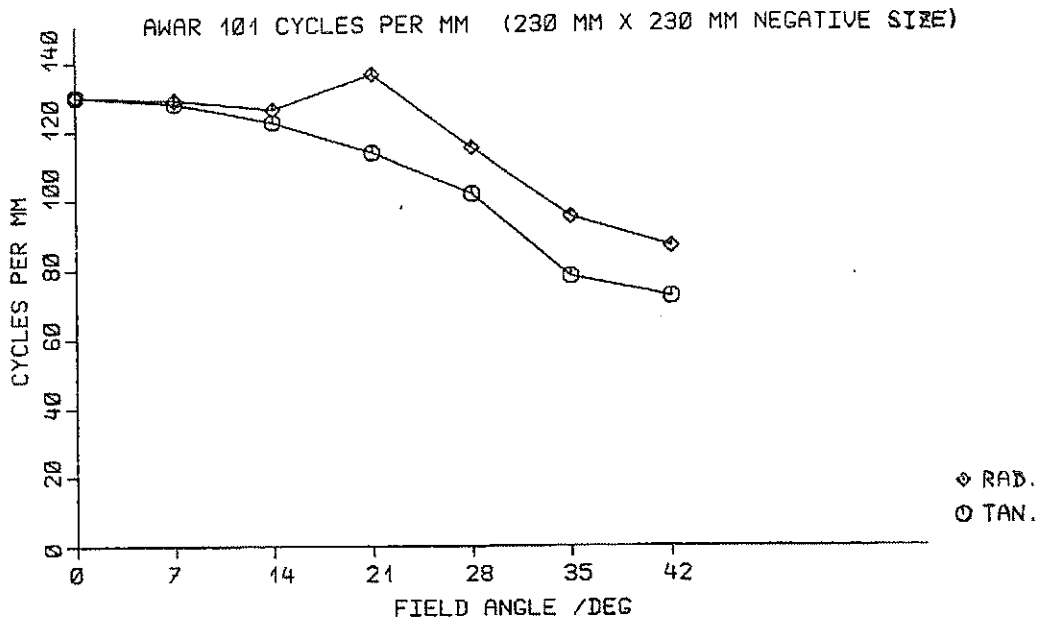
DISTORTION /0.001 MM, REFERRING TO PPS



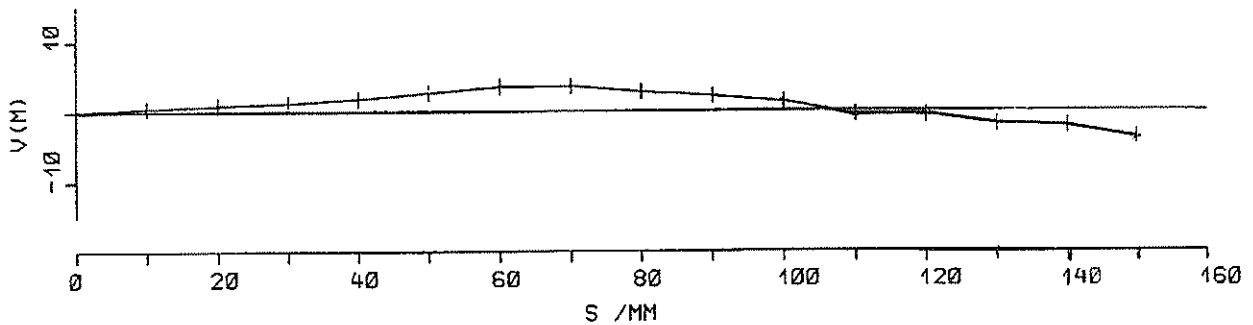
RMK TOP 15

NO. 144116

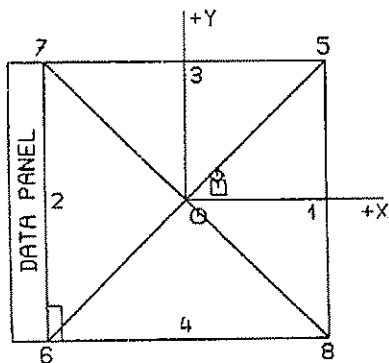
PHOTOGRAPHIC RESOLVING POWER



DEPARTURE OF AVERAGE DISTORTION FROM ZERO REFERENCE



PRINCIPAL POINT (PPA, PPS) AND FIDUCIAL CENTRE (FC)



COORDINATES, REFERRING TO PPS

	X / MM	Y / MM
○ PPA	0.004	-0.006
□ FC	0.012	0.004
◇ FCC (CORNER FIDUCIAL CENTRE)	0.011	0.009

— 0.01 MM, X-AXIS AS DEFINED BY FIDUCIAL MARK COORDINATES

$$\alpha(6) = 0.0^0 \quad \alpha(8) = \alpha(6) + 90^0$$