



Shenzhen Belling Efficiency Testing Lab



TESTING
NVLAP LAB CODE 600102-0

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Test report of

IES LM-79-08

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Applicant:

LUMATEQ LIGHTING

Address:

4300 NW 37th Avenue, Miami, Florida, 33142

For Product:

Architectural Flood and Spot Luminaires

Model No.:

LF40BZ-110-277

Test laboratory: Shenzhen Belling Efficiency Testing Lab., 1/F., Building 1, 1F, No.1 building, Meibaohe industrial park, Dalang street, Shenzhen, Guangdong Prov.518101, China.

Complied by: Sam Chen

Review by: Jason Zhou

Project Engineer

Technical Manager

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Shenzhen Belling Efficiency Testing Lab. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the Federal Government.



1 General

1.1 Product Information

Manufacturer	Quicklite Electrical Co., Ltd.
Manufacturer Address	YUXING Industrial Park, Torch HiTech Industrial Zone, Yang Jiang East Road, ZHONGSHAN Guangdong
Brand Name	Lumateq
Luminaire Type	Architectural Flood and Spot Luminaires
Model Number	LF40BZ-110-277
Rated Inputs	AC 110-277V 50/60Hz
Rated Power	40W
Nominal CCT	5000K
LED Package, Array or Module	-
Date of Receipt Samples	2016-08-22

1.2 Standards or methods

- ANSI C78.377-2011: Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-2002: Harmonic Emission Limits-Related Power Quality Requirements for Lighting Equipment
- CIE Publication No.13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products



1.3 Equipment list

Device	Manufacture	Model No.	Serial No.	Calibration due date
Goniophotometric System	SENSING	GMS-3000	N.A	2016-09-22
AC Power Source	ALL POWER	APW-110N	992257	2016-08-28
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S13100234	2016-09-16
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2016-08-30
Integral Sphere	SENSING	SPR-600M	N.A	2016-08-28
Integral Sphere (2M)	SENSING	SD-20	N.A	2016-08-28
Digital Power Meter	YOKOGAWA	WT210	91L929742	2016-08-30
Optical Color and Electrical Measurement System	SENSING	SPR-3000	N.A	2016-08-28
Temperature/humidity/clock	VICTOR	VC230	57636	2016-09-14
Digital Anemometer	TECMAN	TD8901	026141	2016-09-14

Statement of Traceability: Shenzhen Belling Efficiency Testing Lab attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).



2 Test conducted and method

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within ± 0.2 percent under load.

2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

2.4 Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards. 4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

2.5 Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.



3 Test Result Summary

3.1 Integrating Sphere System

3.1.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
LF40BZ-110-277	120.01	60	0.329	39.048	0.989

3.1.2 Additional Test

Test Item	Model	Test Voltage (V)	Frequency (Hz)	Test Result
Power factor	LF40BZ-110-277	120	60	0.989
		277	60	0.942
Total harmonic distortion	LF40BZ-110-277	120	60	14.3%
		277	60	16.8%
Off state power (W)	LF40BZ-110-277	120	60	0
	LF40BZ-110-277	277	60	0

3.1.3 Photometric data

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
LF40BZ-110-277	5205.94	133.32	4915	72.3	30

3.1.4 Chromaticity Coordinate

Model Number	Duv	x	y	u'	v'
LF40BZ-110-277	0.0047	0.3486	0.3639	0.2091	0.4910



3.2 Goniophotometer System

3.2.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
LF40BZ-110-277	120.07	60	0.3282	39.048	0.991

3.2.2 Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Zonal Lumen in 0-90°(%lm)
5195.94	133.07	100.000



4 Test Data

Report of Spectroradiometric & Electric Analysis for Light Source

Model No.:
Sample SN:
Manufacturer:
Tested By:
Description:

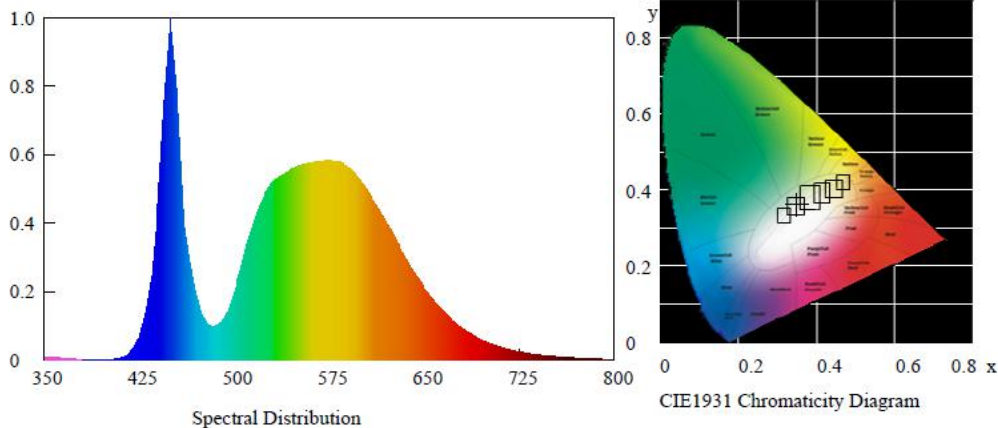
Application NO.:
Applicant:
Date:
Reviewed By:

Test Condition

Temperature: 25°C
Spectrum Range: 350-800 nm

RH: 58%
Scan Step: 5 nm

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.3486$ $y=0.3639$ $u'=0.2091$ $v'=0.4910$

Correlated Color Temperature: 4915 K

Dominant Wavelength: 568.0 nm(E)

Luminous Flux: 5205.94 lm

Purity: 0.1364

Chromaticity Difference: 0.0047Duv

Peak Wavelength: 441.1 nm

Color Ratio: $K_r=32.9\%$ $K_g=58.7\%$ $K_b=8.4\%$

Bandwidth: -437.6nm

Radiant Flux: 10.919 W

Rendering Index: $R_a=72.3$

$R_1=69$ $R_2=77$ $R_3=83$ $R_4=72$ $R_5=69$ $R_6=68$ $R_7=83$ $R_8=57$

$R_9=30$ $R_{10}=46$ $R_{11}=68$ $R_{12}=36$ $R_{13}=72$ $R_{14}=90$ $R_{15}=64$

Electric Parameters

Voltage: 120.01 V

Current: 0.329 A

Power Factor: 0.989

Power: 39.048 W

Luminous Efficacy: 133.32 lm/W

SENSING Instruments Co.,Ltd

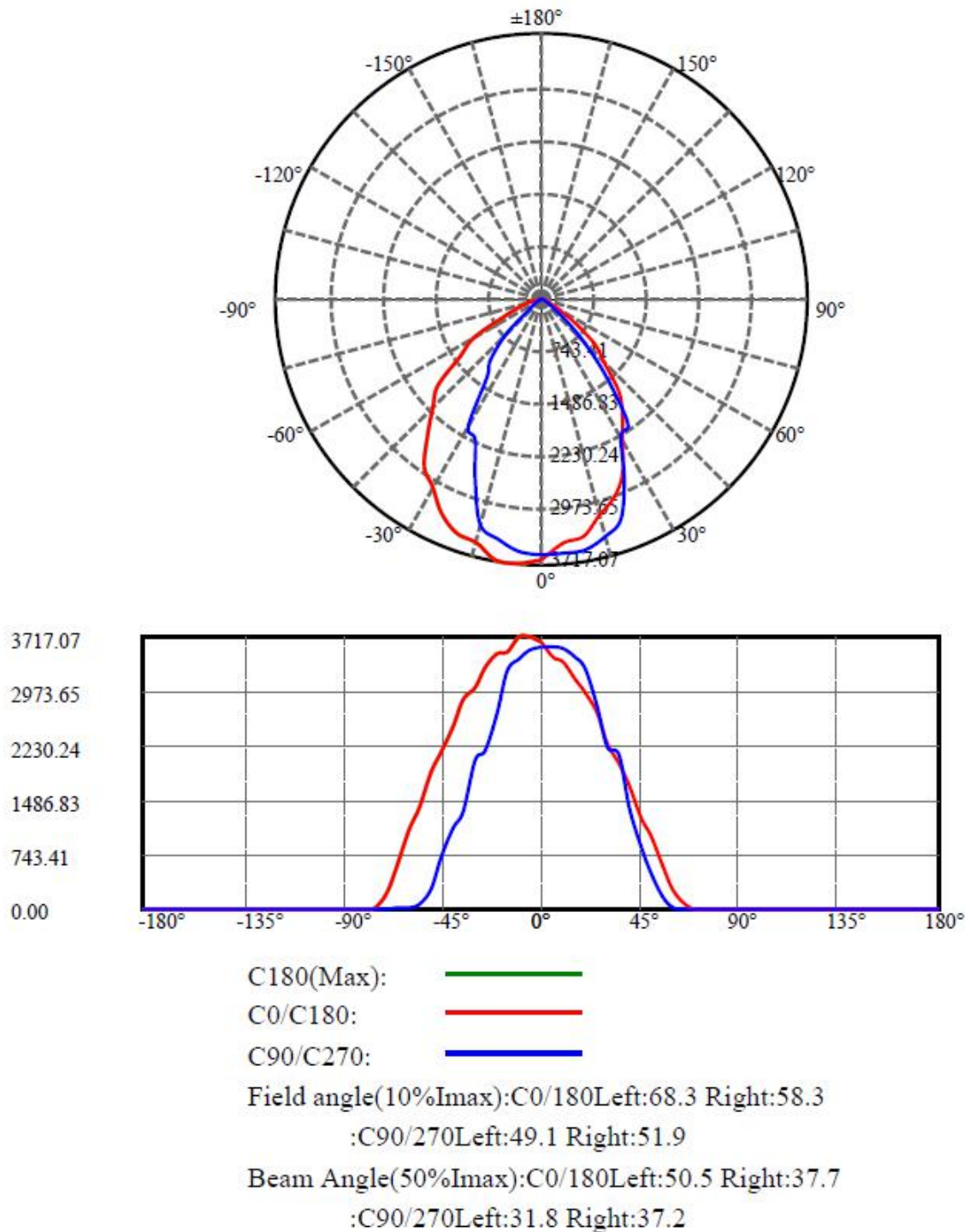
**Zonal Flux Diagram**

Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3580.232	.000	.000	.000%	.000%
5.0	3538.202	85.099	85.099	1.638%	1.638%
10.0	3454.459	250.150	335.248	4.814%	6.452%
15.0	3323.788	402.081	737.329	7.738%	14.190%
20.0	3088.042	528.425	1265.754	10.170%	24.360%
25.0	2715.464	608.681	1874.435	11.715%	36.075%
30.0	2341.305	639.938	2514.373	12.316%	48.391%
35.0	1983.263	636.823	3151.196	12.256%	60.647%
40.0	1594.093	596.855	3748.051	11.487%	72.134%
45.0	1184.225	514.428	4262.479	9.901%	82.035%
50.0	785.575	398.027	4660.506	7.660%	89.695%
55.0	441.438	266.794	4927.300	5.135%	94.830%
60.0	227.813	154.696	5081.995	2.977%	97.807%
65.0	88.610	76.923	5158.918	1.480%	99.287%
70.0	24.855	28.730	5187.648	.553%	99.840%
75.0	3.287	7.356	5195.004	.142%	99.982%
80.0	.095	.905	5195.909	.017%	99.999%
85.0	.000	.026	5195.935	.000%	100.000%
90.0	.000	.000	5195.935	.000%	100.000%
95.0	.000	.000	5195.935	.000%	100.000%
100.0	.000	.000	5195.935	.000%	100.000%
105.0	.000	.000	5195.935	.000%	100.000%
110.0	.000	.000	5195.935	.000%	100.000%
115.0	.000	.000	5195.935	.000%	100.000%
120.0	.000	.000	5195.935	.000%	100.000%
125.0	.000	.000	5195.935	.000%	100.000%
130.0	.000	.000	5195.935	.000%	100.000%
135.0	.000	.000	5195.935	.000%	100.000%
140.0	.000	.000	5195.935	.000%	100.000%
145.0	.000	.000	5195.935	.000%	100.000%
150.0	.000	.000	5195.935	.000%	100.000%
155.0	.000	.000	5195.935	.000%	100.000%
160.0	.000	.000	5195.935	.000%	100.000%
165.0	.000	.000	5195.935	.000%	100.000%
170.0	.000	.000	5195.935	.000%	100.000%
175.0	.000	.000	5195.935	.000%	100.000%
180.0	.000	.000	5195.935	.000%	100.000%

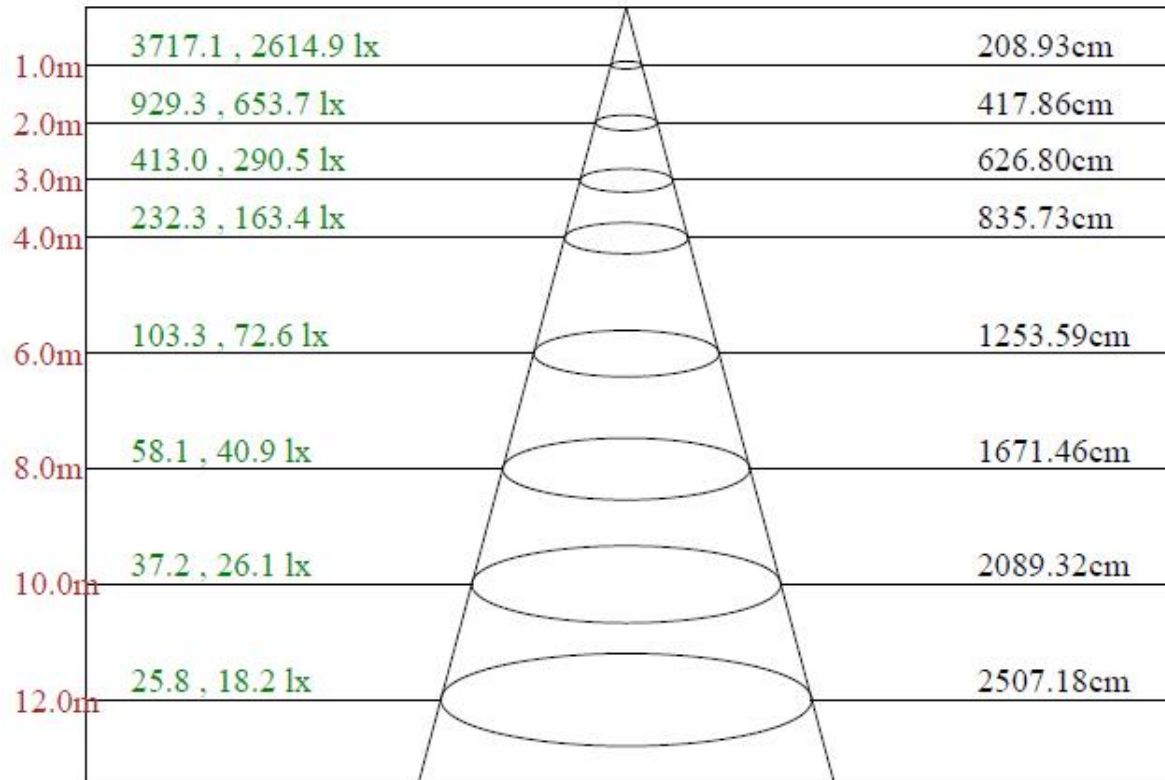
**Luminous Intensity Distribution Diagram**

Light Distribution Curve [Unit:cd]





Lux distance Curve



Max , Ave

Beam angle of C180plane91.20

**Luminous Intensity Distribution Data**

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	3648.81	3433.92	3373.24	3143.19	2958.64	2678.02	2253.30	1982.79	1692.06
22.5	3580.55	3375.77	3345.43	3208.92	2981.39	2791.78	2392.34	2030.82	1798.24
45.0	3552.74	3385.88	3337.85	3256.95	3034.48	2817.06	2417.62	1858.91	1419.02
67.5	3542.63	3464.26	3476.90	3385.88	3181.11	2758.92	2078.86	1879.14	1441.78
90.0	3578.02	3570.44	3552.74	3431.39	3274.65	2763.97	2217.90	2101.61	1391.21
112.5	3585.60	3615.94	3542.63	3413.69	3304.99	2935.88	2258.35	2035.88	1666.78
135.0	3572.96	3610.89	3519.87	3431.39	3304.99	3085.04	2741.22	2126.89	1767.90
157.5	3580.55	3580.55	3373.24	3315.10	3289.82	3006.67	2794.31	2493.47	2152.17
180.0	3648.81	3717.07	3712.01	3517.35	3481.95	3297.40	3029.42	2862.57	2485.88
202.5	3580.55	3661.45	3595.72	3522.40	3345.43	3120.43	2915.66	2566.78	2177.45
225.0	3552.74	3598.24	3469.31	3403.58	3221.56	2756.39	2167.34	1906.95	1666.78
247.5	3542.63	3532.51	3413.69	3335.32	2870.15	2250.77	2066.22	1709.75	1087.84
270.0	3578.02	3542.63	3411.17	3249.37	2678.02	2159.76	2038.41	1335.60	1105.54
292.5	3585.60	3517.35	3390.94	3196.28	2655.26	2045.99	1919.59	1355.82	956.38
315.0	3572.96	3502.18	3393.47	3181.11	2877.74	2288.69	1810.88	1553.01	1229.42
337.5	3580.55	3502.18	3363.13	3188.69	2948.52	2690.66	2359.48	1932.23	1467.06
360.0	3648.81	3433.92	3373.24	3143.19	2958.64	2678.02	2253.30	1982.79	1692.06

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	1244.58	981.66	582.22	256.10	69.02	3.29	0.00	0.00	0.00
22.5	1406.38	953.85	501.32	243.46	58.91	0.00	0.00	0.00	0.00
45.0	1216.78	653.01	294.02	94.30	13.40	0.00	0.00	0.00	0.00
67.5	824.92	465.93	182.78	23.51	3.29	0.00	0.00	0.00	0.00
90.0	850.20	478.57	162.56	23.51	3.29	0.00	0.00	0.00	0.00
112.5	1004.41	602.45	268.74	48.79	10.87	0.00	0.00	0.00	0.00
135.0	1510.03	850.20	465.93	185.31	36.15	3.29	0.00	0.00	0.00
157.5	1783.07	1322.96	809.75	501.32	165.09	18.46	0.00	0.00	0.00
180.0	2137.00	1871.55	1396.27	1080.26	597.39	240.93	28.57	0.76	0.00
202.5	1684.47	1269.87	908.35	637.84	266.21	69.02	13.40	0.76	0.00
225.0	1128.29	744.02	491.21	165.09	33.62	18.46	5.82	0.00	0.00
247.5	910.87	450.76	122.11	36.15	23.51	10.87	0.76	0.00	0.00
270.0	706.10	276.32	58.91	33.62	20.98	5.82	0.76	0.00	0.00
292.5	685.87	286.43	53.85	31.10	18.46	3.29	0.00	0.00	0.00
315.0	738.96	521.55	225.76	43.74	20.98	8.34	0.00	0.00	0.00
337.5	1115.65	840.09	539.24	240.93	76.60	15.93	3.29	0.00	0.00
360.0	1244.58	981.66	582.22	256.10	69.02	3.29	0.00	0.00	0.00

C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
202.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
247.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
292.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
315.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
337.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
67.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
112.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
202.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
247.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
292.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
315.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
337.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
360.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C/γ(°)	180.0
0.0	0.00
22.5	0.00
45.0	0.00
67.5	0.00
90.0	0.00
112.5	0.00
135.0	0.00
157.5	0.00
180.0	0.00
202.5	0.00
225.0	0.00
247.5	0.00
270.0	0.00
292.5	0.00
315.0	0.00
337.5	0.00
360.0	0.00



Photo Document



****End of test report****