



71770
2X4 LED Panel Light



RoHS

0-10V Dimmable



QPL ID #
PBU8ZA6Q



Model:		71770
OVERALL LAMP PARAMETERS	Input Voltage	120-277 VAC 60HZ
	Input Current	0.33A Max @ 120V; 0.15A Max @ 240V
	Input Power	50W
	Power Factor	PF ≥0.95
	Luminance	5,449 LM
	Luminous Efficiency	104 LM/W
	CRI	>80
	Beam Angle	112°
	Main Structure	Aluminium Frame + Polystyrene Lens
LED DRIVER	Output Voltage	12-24 VDC
	Output Current	0.48A
	Driver Efficiency	88%
	Brand	Weipeng WPC
LED	LED Manufacturer	Runlite
	LED Type	2835 SMD
	LED Quantity	336 PCS
	LED Efficacy	130 LM/W
	Color Temperature	3000K
Photocell	-	N/A
LIFESPAN & ENVIRONMENT	Lifespan	50,000+ Hrs.
	Warranty	5 Years
	IP Rating	IP21 Dry Locations
	Operating Temperature	-20℃---40℃
	Storage Temperature.Humidity	-40℃---80℃ , 10--90% RH
SAFETY&EMC	Safety Norms	UL1598,UL8750, EN60598, EN61347-2-13, EN62031, EN62471
	Withstand Voltage	I/P-FG: 2121VDC
	Grounding Resistance	25A 100mΩ
	Electromagnetic Compatibility	EN55015, EN61000-2-3, EN61000-3-3, EN61547
OTHERS	Dimension	Pls refer to attached dimension drawing
	Net Weight	0.6KG
	Gross Weight	0.8KG
	Q'ty / Carton纸箱	2 PCS
	Volume	0.52Cbm/carton
	Housing Color	White



Shenzhen Belling Efficiency Testing Lab



NVLAP LAB CODE 600102-0

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Version 1.0

Total pages 15

Test report of

IES LM-79-08

Approved Method: Electrical and Photometric

Measurements of Solid-State Lighting Products

Applicant:

Morris Products Inc.

Address:

53 Carey rd. Queensbury, NY 12804

For Product:

2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model No.:

71770, 71771, 71772

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.

Cherie Tang

Jason Zhou

Complied by: Cherie Tang

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 used 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.



Model name	CCT(K)	Total Luminous(lm)	Power(W)	Luminous Efficacy(lm/W)
71770	3000K	5449.180	52.32	104.151
71771	4000K	5632.732 * ¹	52.33 * ²	107.639 * ³
71772	5000K	5816.283	52.34	111.125

*1: This value is calculated and the calculation formula is as below:

$$5632.732 = (5816.283 - 5449.180) / 2 + 5449.180$$

*2: This value is calculated and the calculation formula is as below:

$$52.33 = (52.32 + 52.34) / 2$$

*3: This value is calculated and the calculation formula is as below:

$$107.639 = 5632.732 / 52.33$$



1 General

1.1 Product Information

Manufacturer	Morris Products inc.
Manufacturer Address	53 Carey Rd. Queensbury, NY 12804
Brand Name	MORRIS
Luminaire Type	2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces
Model Number	71770, 71771, 71772
Rated Inputs	AC 100-277V 50/60Hz
Rated Power	50 W
Nominal CCT	3000K / 5000K
Date of Receipt Samples	2017-01-05

1.2 Standards or methods

- ANSI C78.377-2015: 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	2017-09-21
AC Power Source	ALL POWER	APW-110N	992257	2017-08-27
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S13100234	2017-09-15
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2017-08-29
Integral Sphere	SENSING	SPR-600M	N.A	2017-08-27
Integral Sphere (2M)	SENSING	SD-20	N.A	2017-08-27
Digital Power Meter	YOKOGAWA	WT210	91L929742	2017-08-29
Optical Color and Electrical Measurement System	SENSING	SPR-3000	N.A	2017-08-27
Temperature/humidity/clock	VICTOR	VC230	57636	2017-09-13
Digital Anemometer	TECMAN	TD8901	026141	2017-09-13

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
71770	120.06	60	0.447	52.32	0.974
71771	120.04	60	0.445	52.34	0.979

3.1.2 Additional Test

Test Item	Model	Test Voltage (V)	Frequency (Hz)	Test Result
Power factor	71770	120	60	0.974
		277	60	0.914
	71771	120	60	0.979
		277	60	0.920
Total harmonic distortion	71770	120	60	10.7%
		277	60	16.3%
	71771	120	60	11.4%
		277	60	17.1%
Off state power (W)	71770	120	60	0
	71771	277	60	0

3.1.3 Photometric data

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
71770	5449.180	104.151	2887	84.0	14
71771	5816.283	111.125	4885	84.5	14

3.1.4 Chromaticity Coordinate

Model Number	Duv	x	y	u'	v'
71770	0.0000	0.4452	0.4068	0.2547	0.5237
71771	0.0043	0.3495	0.3637	0.2097	0.4911



3.2 Goniophotometer System

3.2.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
71770	120.08	60	0.4298	51.11	0.9903

3.2.2 Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	S/MH (C0/180)	S/MH (C90/270)	Zonal Lumen in 0-60°(%lm)
5285.80	103.42	1.24	1.18	77.363



4 Test Data

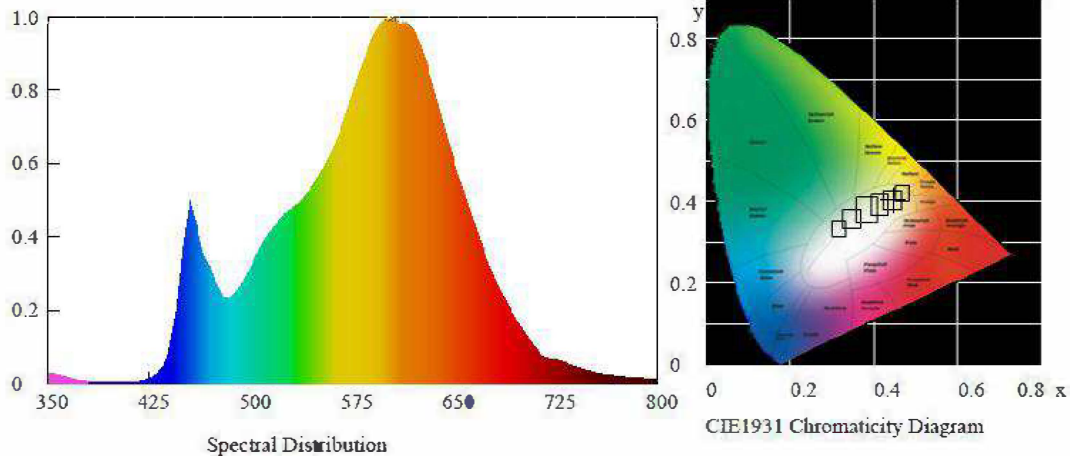
71770

Test Condition

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

RH: 58%
Scan Step: 5 nm

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.4452$ $y=0.4068$ $u'=0.2547$ $v'=0.5237$

Correlated Color Temperature: 2887 K

Dominant Wavelength: 582.0 nm(E)

Luminous Flux: 5449.180 lm

Purity: 0.5588

Chromaticity Difference: 0.0000Duv

Peak Wavelength: 560.6 nm

Color Ratio: $K_r=46.3\%$ $K_g=46.1\%$ $K_b=7.6\%$

Bandwidth: 192.5nm

Radiant Flux: 14.234 W

Rendering Index: $R_a=84.0$

$R_1=84$ $R_2=95$ $R_3=93$ $R_4=81$ $R_5=84$ $R_6=94$ $R_7=81$ $R_8=60$

$R_9=14$ $R_{10}=88$ $R_{11}=82$ $R_{12}=75$ $R_{13}=87$ $R_{14}=97$ $R_{15}=76$

Electric Parameters

Voltage: 120.06 V

Current: 0.447 A

Power Factor: 0.974

Power: 52.32 W

Luminous Efficacy: 104.151 lm/W



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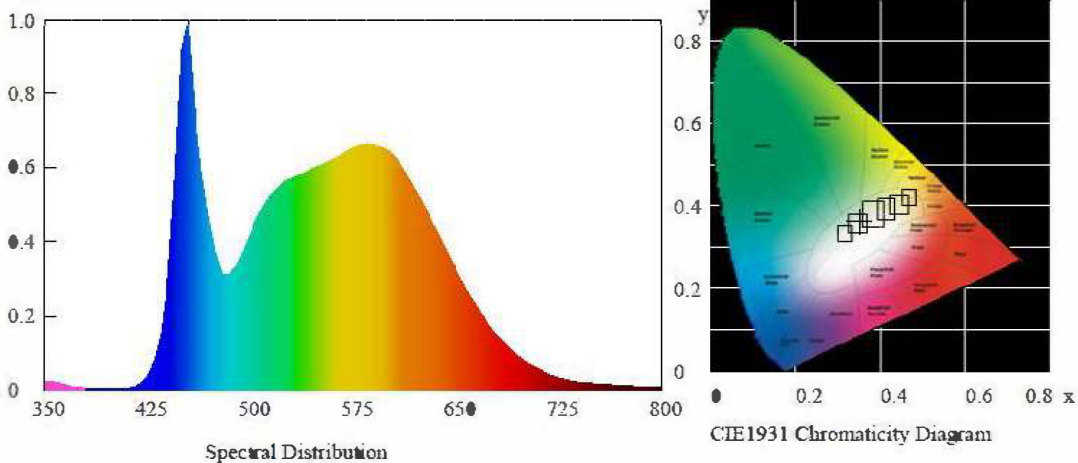
Test Condition

Temperature: 25°C

RH: 58%

Spectrum Range: 350-800 nm

Scan Step: 5 nm

Spectroradiometric ParametersChromaticity Coordinates: $x=0.3495$ $y=0.3637$ $u'=0.2097$ $v'=0.4911$

Correlated Color Temperature: 4885 K

Dominant Wavelength: 569.0 nm(E)

Luminous Flux: 5816.283 lm

Purity: 0.1391

Chromaticity Difference: 0.0043Duv

Peak Wavelength: 447.9 nm

Color Ratio: $K_r=34.2\%$ $K_g=54.1\%$ $K_b=11.7\%$

Bandwidth: -444.9nm

Radiant Flux: 18.129 W

Rendering Index: $R_a=84.5$

R1=83 R2=91 R3=96 R4=81 R5=82 R6=87 R7=87 R8=68

R9=14 R10=79 R11=81 R12=57 R13=86 R14=98 R15=77

Electric Parameters

Voltage: 120.04 V

Current: 0.445 A

Power Factor: 0.979

Power: 52.34 W

Luminous Efficacy: 111.125 lm/W

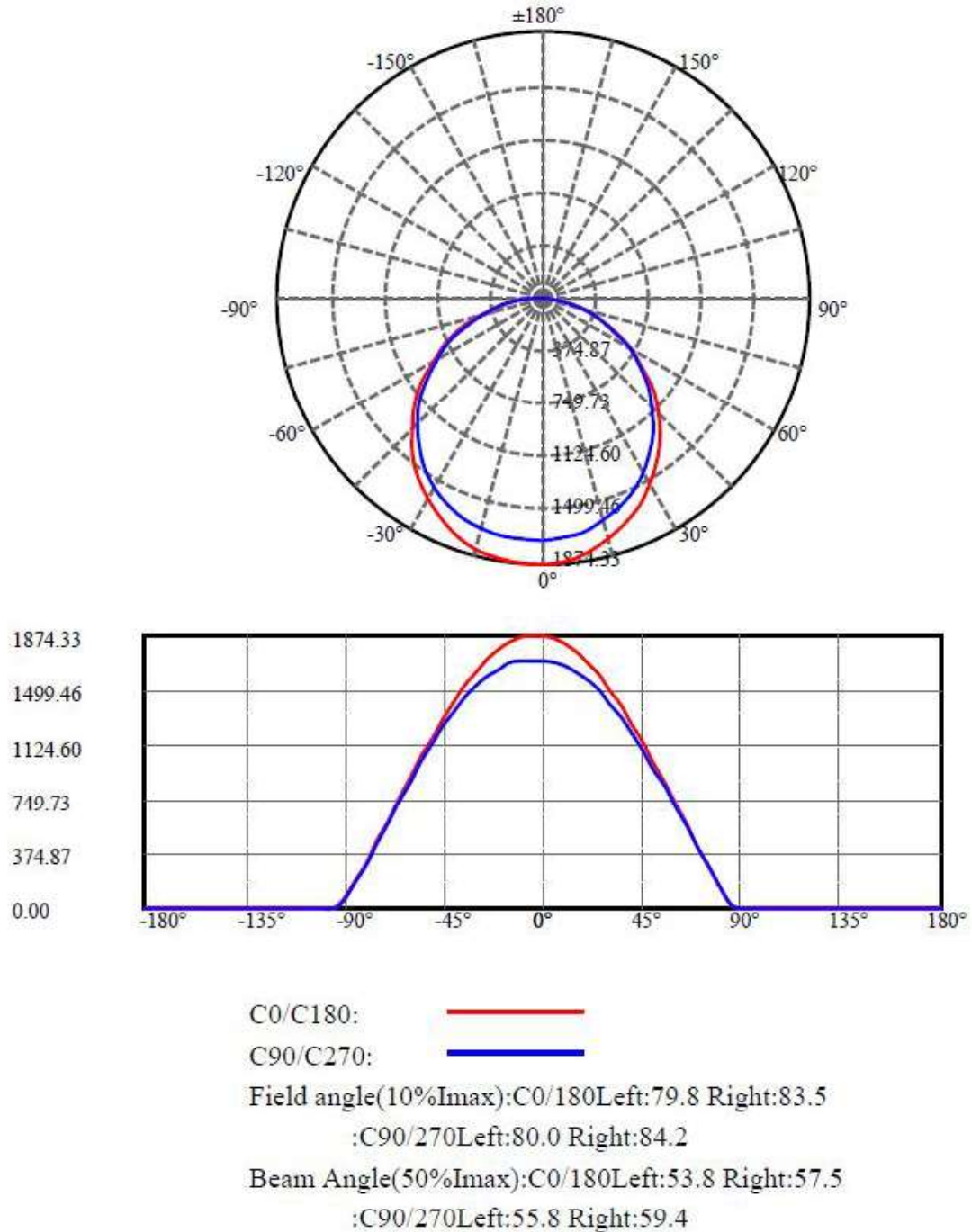
**Zonal Flux Diagram**

Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1798.399	0.000	0	.000%	.000%
5.0	1792.129	42.932	42.932	.812%	.812%
10.0	1771.231	127.547	170.479	2.413%	3.225%
15.0	1733.266	208.091	378.57	3.937%	7.162%
20.0	1680.208	281.711	660.281	5.330%	12.492%
25.0	1611.941	345.907	1006.188	6.544%	19.036%
30.0	1530.439	398.574	1404.762	7.540%	26.576%
35.0	1434.539	437.811	1842.573	8.283%	34.859%
40.0	1326.334	462.142	2304.714	8.743%	43.602%
45.0	1207.098	470.902	2775.616	8.909%	52.511%
50.0	1078.923	464.024	3239.64	8.779%	61.289%
55.0	945.291	442.542	3682.182	8.372%	69.662%
60.0	804.461	407.094	4089.276	7.702%	77.363%
65.0	659.916	358.829	4448.106	6.789%	84.152%
70.0	513.049	299.986	4748.092	5.675%	89.827%
75.0	370.013	233.807	4981.899	4.423%	94.251%
80.0	232.550	164.149	5146.048	3.105%	97.356%
85.0	103.562	94.106	5240.153	1.780%	99.136%
90.0	27.400	37.670	5277.824	.713%	99.849%
95.0	0.000	7.979	5285.803	.151%	100.000%
100.0	0.000	0.000	5285.803	.000%	100.000%
105.0	0.000	0.000	5285.803	.000%	100.000%
110.0	0.000	0.000	5285.803	.000%	100.000%
115.0	0.000	0.000	5285.803	.000%	100.000%
120.0	0.000	0.000	5285.803	.000%	100.000%
125.0	0.000	0.000	5285.803	.000%	100.000%
130.0	0.000	0.000	5285.803	.000%	100.000%
135.0	0.000	0.000	5285.803	.000%	100.000%
140.0	0.000	0.000	5285.803	.000%	100.000%
145.0	0.000	0.000	5285.803	.000%	100.000%
150.0	0.000	0.000	5285.803	.000%	100.000%
155.0	0.000	0.000	5285.803	.000%	100.000%
160.0	0.000	0.000	5285.803	.000%	100.000%
165.0	0.000	0.000	5285.803	.000%	100.000%
170.0	0.000	0.000	5285.803	.000%	100.000%
175.0	0.000	0.000	5285.803	.000%	100.000%
180.0	0.000	0.000	5285.803	.000%	100.000%

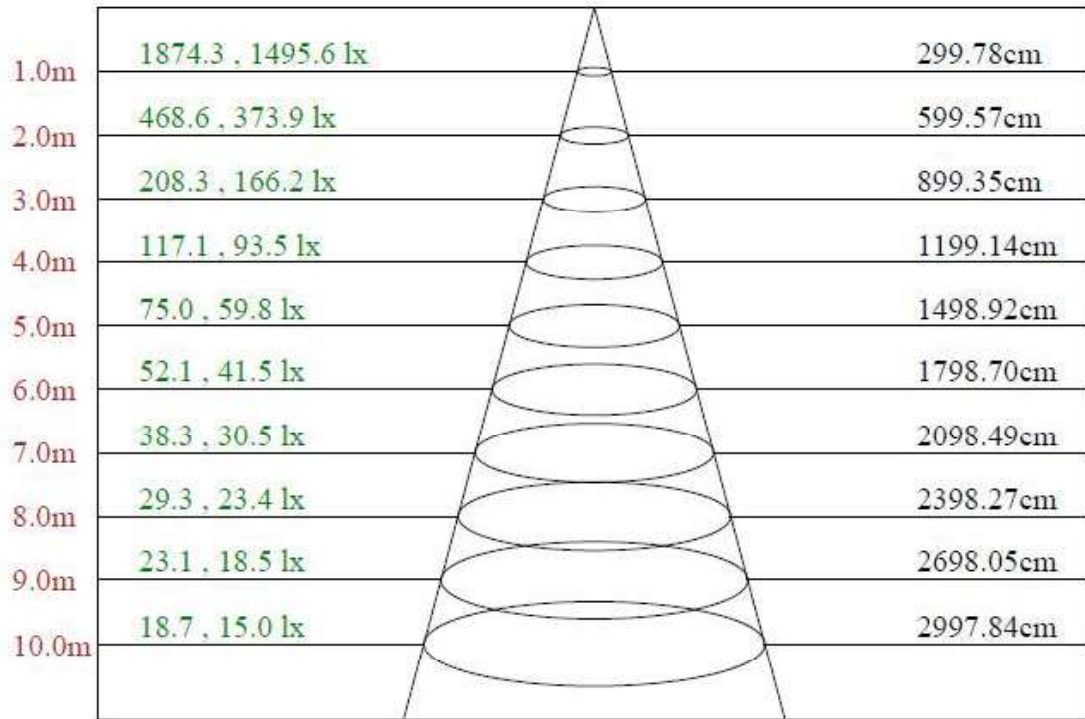
**Luminous Intensity Distribution Diagram**

Light Distribution Curve [Unit:cd]





Lux distance Curve



Max , Ave

Beam angle of C180 plane 112.06

**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	1872.47	1852.04	1814.89	1759.16	1690.43	1603.12	1504.66	1396.92	1274.32
22.5	1866.90	1846.46	1811.17	1757.30	1690.43	1606.83	1510.24	1400.64	1283.61
45.0	1816.74	1803.74	1774.02	1729.44	1666.28	1590.11	1497.23	1395.07	1278.04
67.5	1749.87	1738.72	1718.29	1677.42	1619.84	1551.10	1463.80	1363.49	1252.03
90.0	1701.57	1692.28	1668.13	1623.55	1567.82	1499.09	1413.64	1317.05	1211.16
112.5	1746.15	1733.15	1697.86	1651.42	1590.11	1512.10	1424.79	1328.19	1216.74
135.0	1798.17	1777.73	1742.44	1690.43	1625.41	1541.82	1448.94	1346.77	1229.74
157.5	1835.32	1813.03	1774.02	1718.29	1647.70	1558.54	1463.80	1356.06	1235.31
180.0	1872.47	1874.33	1859.47	1826.03	1775.88	1707.14	1629.12	1532.53	1428.50
202.5	1866.90	1868.76	1852.04	1820.46	1770.30	1705.29	1625.41	1530.67	1422.93
225.0	1816.74	1826.03	1813.03	1779.59	1736.87	1677.42	1599.40	1510.24	1404.35
247.5	1749.87	1757.30	1751.73	1720.15	1684.85	1630.98	1562.25	1476.80	1380.20
270.0	1701.57	1703.43	1701.57	1683.00	1645.84	1599.40	1538.10	1452.65	1361.63
292.5	1746.15	1746.15	1742.44	1727.58	1688.57	1640.27	1578.97	1497.23	1396.92
315.0	1798.17	1800.02	1788.88	1768.45	1727.58	1673.71	1606.83	1519.53	1421.07
337.5	1835.32	1840.89	1829.75	1800.02	1755.44	1694.14	1619.84	1528.81	1424.79
360.0	1872.47	1852.04	1814.89	1759.16	1690.43	1603.12	1504.66	1396.92	1274.32
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	1144.29	1006.83	865.65	718.90	570.29	421.68	282.36	148.61	26.01
22.5	1153.58	1016.11	871.22	730.04	581.43	432.82	289.79	154.18	31.58
45.0	1151.72	1014.26	874.93	735.61	587.01	438.40	295.36	161.61	35.30
67.5	1127.57	997.54	863.79	726.33	579.57	432.82	289.79	156.04	31.58
90.0	1086.70	958.53	835.93	698.46	553.57	416.11	278.64	148.61	27.86
112.5	1092.28	965.96	837.78	698.46	551.71	408.67	274.93	143.04	22.29
135.0	1101.56	969.67	837.78	694.75	549.85	404.96	267.50	131.89	16.72
157.5	1105.28	969.67	832.21	681.74	540.57	395.67	258.21	128.18	9.29
180.0	1304.04	1179.58	1047.69	902.80	759.76	609.30	460.69	319.51	182.05
202.5	1307.76	1177.73	1042.12	899.08	756.05	605.58	455.11	313.94	176.47
225.0	1298.47	1168.44	1034.69	897.23	750.47	600.01	455.11	310.22	172.76
247.5	1272.46	1148.00	1017.97	882.37	737.47	592.58	449.54	306.51	169.04
270.0	1255.74	1136.86	1012.40	874.93	735.61	588.86	447.68	306.51	170.90
292.5	1289.18	1168.44	1038.40	900.94	757.91	607.44	462.55	319.51	183.90
315.0	1309.62	1192.59	1055.12	913.94	770.91	622.30	473.69	332.51	198.76
337.5	1313.33	1192.59	1056.98	915.80	776.48	631.59	479.26	339.94	202.48
360.0	1144.29	1006.83	865.65	718.90	570.29	421.68	282.36	148.61	26.01
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	55.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
202.5	52.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.0	42.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
247.5	44.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270.0	48.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
292.5	55.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
315.0	65.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
337.5	74.30	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****