



Shenzhen Belling Efficiency Testing Lab



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Test report of

IES LM-79-08

Approved Method: Electrical and Photometric

Measurements of Solid-State Lighting Products

Beyond LED Technology

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1 General

1.1 Product Information

Manufacturer	Beyond LED Technology
Manufacturer Address	
Brand Name	Beyond LED Technology
Luminaire Type	Vertical Refrigerated Case Luminaires-center
Model Number	BLTCL25W60IN65K
Rated Inputs	AC 100-277V 50/60Hz
Rated Power	25 W
Nominal CCT	5000K
Date of Receipt Samples	2017-05-23

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
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
BLTCL25W60IN65K	119.99	60	0.223	26.193	0.980

3.1.2 Additional Test

Test Item	Model	Test Voltage (V)	Frequency (Hz)	Test Result
Power factor	XSY-CLP25L1550	120	60	0.980
		277	60	0.908
Total harmonic distortion	XSY-CLP25L1550	120	60	11.1%
		277	60	13.9%
Off state power (W)	XSY-CLP25L1550	120	60	0
	XSY-CLP25L1550	277	60	0

3.1.3 Photometric data

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
BLTCL25W60IN65K	2871.120	109.614	5128	84.1	13

3.1.4 Chromaticity Coordinate

Model Number	Duv	x	y	u'	v'
BLTCL25W60IN65K	0.0015	0.3419	0.3520	0.2091	0.4844



3.2 Goniophotometer System

3.2.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
BLTCL25W60IN65K	120.06	60	0.2154	25.3370	0.9794

3.2.2 Photometric data

Luminous Flux (lm)	Efficacy (lm/W)	Zonal Lumen in 10-90°(%lm)
2777.80	109.63	94.55



4 Test Data

XSJ-CLP25L1550

Test Condition

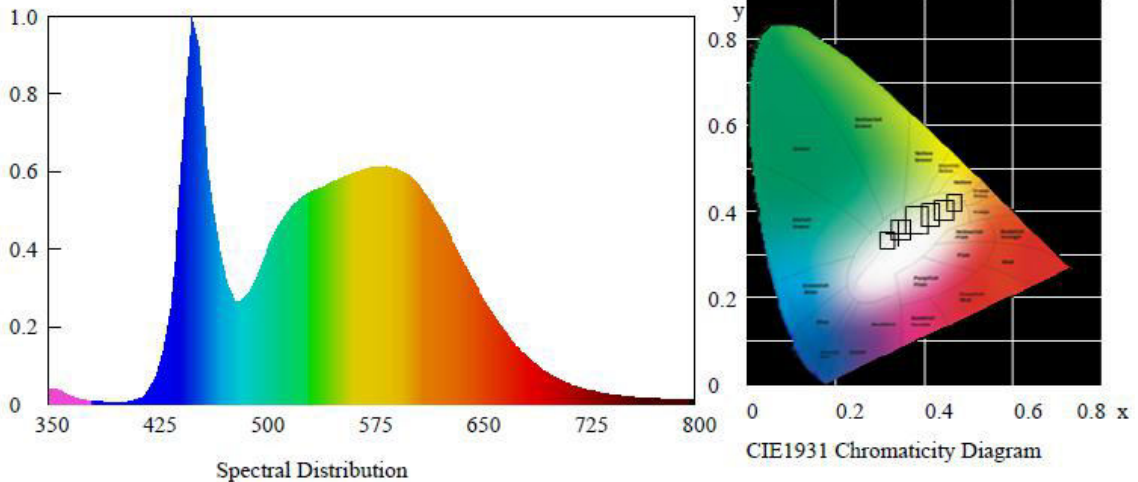
Temperature: 25°C

RH: 58%

Spectrum Range: 350-800 nm

Scan Step: 5 nm

Spectroradiometric Parameters

Chromaticity Coordinates: $x=0.3419$ $y=0.3520$ $u'=0.2091$ $v'=0.4844$

Correlated Color Temperature: 5128 K

Dominant Wavelength: 568.0 nm(E)

Luminous Flux: 2871.120 lm

Purity: 0.0821

Chromaticity Difference: 0.0015Duv

Peak Wavelength: 441.5 nm

Color Ratio: $K_r=33.6\%$ $K_g=54.9\%$ $K_b=11.5\%$

Bandwidth: -436.2nm

Radiant Flux: 7.968 W

Rendering Index: $R_a=84.1$

R1=83 R2=89 R3=93 R4=84 R5=83 R6=84 R7=88 R8=69

R9=13 R10=74 R11=83 R12=63 R13=85 R14=96 R15=78

Electric Parameters

Voltage: 119.99 V

Current: 0.223 A

Power Factor: 0.980

Power: 26.193 W

Luminous Efficacy: 109.614 lm/W



Zonal Flux Diagram

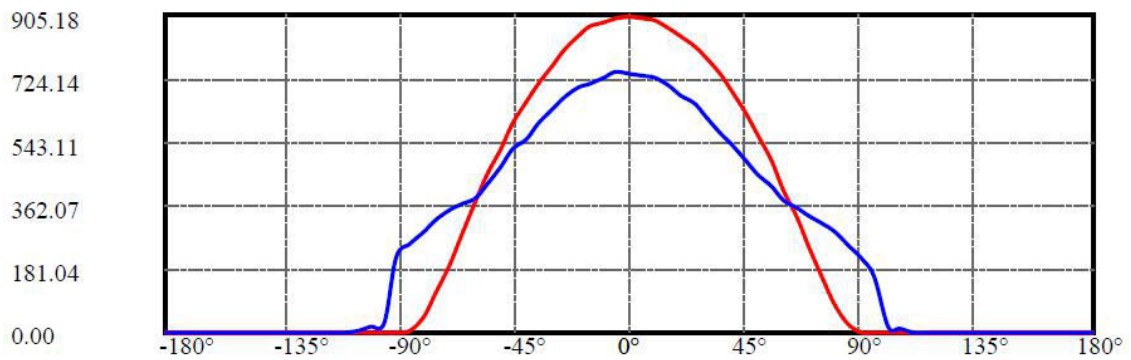
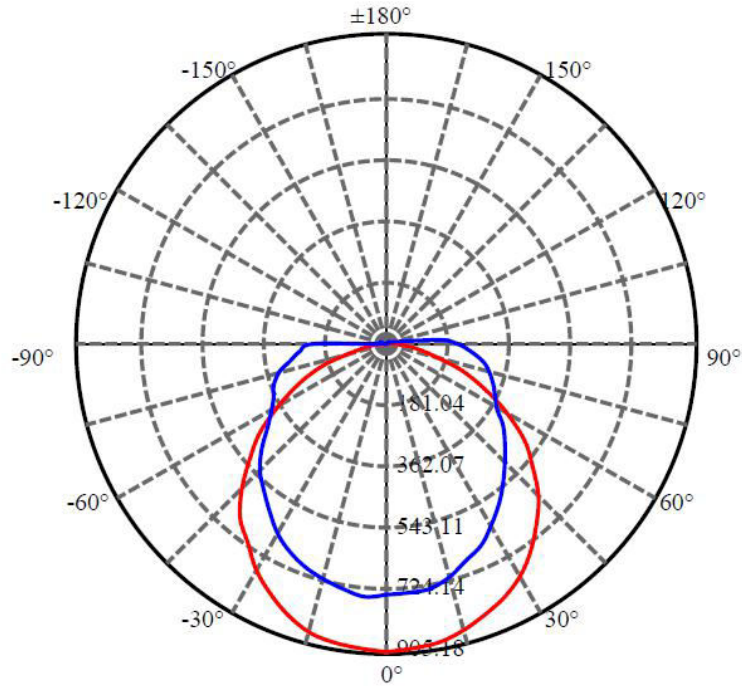
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	827.578	.000	.000	.000%	.000%
5.0	826.580	19.775	19.775	.712%	.712%
10.0	817.031	58.797	78.572	2.117%	2.829%
15.0	800.648	95.960	174.532	3.455%	6.283%
20.0	775.364	129.886	304.417	4.676%	10.959%
25.0	744.722	159.429	463.846	5.739%	16.698%
30.0	709.031	183.974	647.820	6.623%	23.321%
35.0	665.255	202.373	850.193	7.285%	30.607%
40.0	616.317	213.821	1064.014	7.697%	38.304%
45.0	564.511	218.640	1282.654	7.871%	46.175%
50.0	509.330	216.985	1499.639	7.811%	53.987%
55.0	453.488	209.349	1708.987	7.536%	61.523%
60.0	393.525	195.785	1904.772	7.048%	68.571%
65.0	340.214	178.373	2083.145	6.421%	74.993%
70.0	294.863	160.806	2243.951	5.789%	80.782%
75.0	253.167	143.246	2387.197	5.157%	85.938%
80.0	214.172	125.047	2512.244	4.502%	90.440%
85.0	177.975	106.556	2618.799	3.836%	94.276%
90.0	136.870	86.207	2705.006	3.103%	97.379%
95.0	39.361	48.253	2753.260	1.737%	99.117%
100.0	12.628	14.127	2767.386	.509%	99.625%
105.0	3.586	4.338	2771.725	.156%	99.781%
110.0	1.744	1.393	2773.118	.050%	99.831%
115.0	1.420	.801	2773.919	.029%	99.860%
120.0	1.266	.653	2774.572	.024%	99.884%
125.0	1.181	.566	2775.138	.020%	99.904%
130.0	1.167	.511	2775.649	.018%	99.923%
135.0	1.125	.463	2776.112	.017%	99.939%
140.0	.970	.388	2776.500	.014%	99.953%
145.0	.928	.317	2776.816	.011%	99.965%
150.0	.900	.269	2777.086	.010%	99.974%
155.0	.886	.226	2777.312	.008%	99.982%
160.0	.844	.181	2777.493	.007%	99.989%
165.0	.830	.138	2777.631	.005%	99.994%
170.0	.773	.095	2777.726	.003%	99.997%
175.0	.745	.054	2777.781	.002%	99.999%
180.0	.816	.019	2777.799	.001%	100.000%



Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]



C0/C180: 

C90/C270: 

Field angle(10%Imax):C0/180Left:76.9 Right:79.4

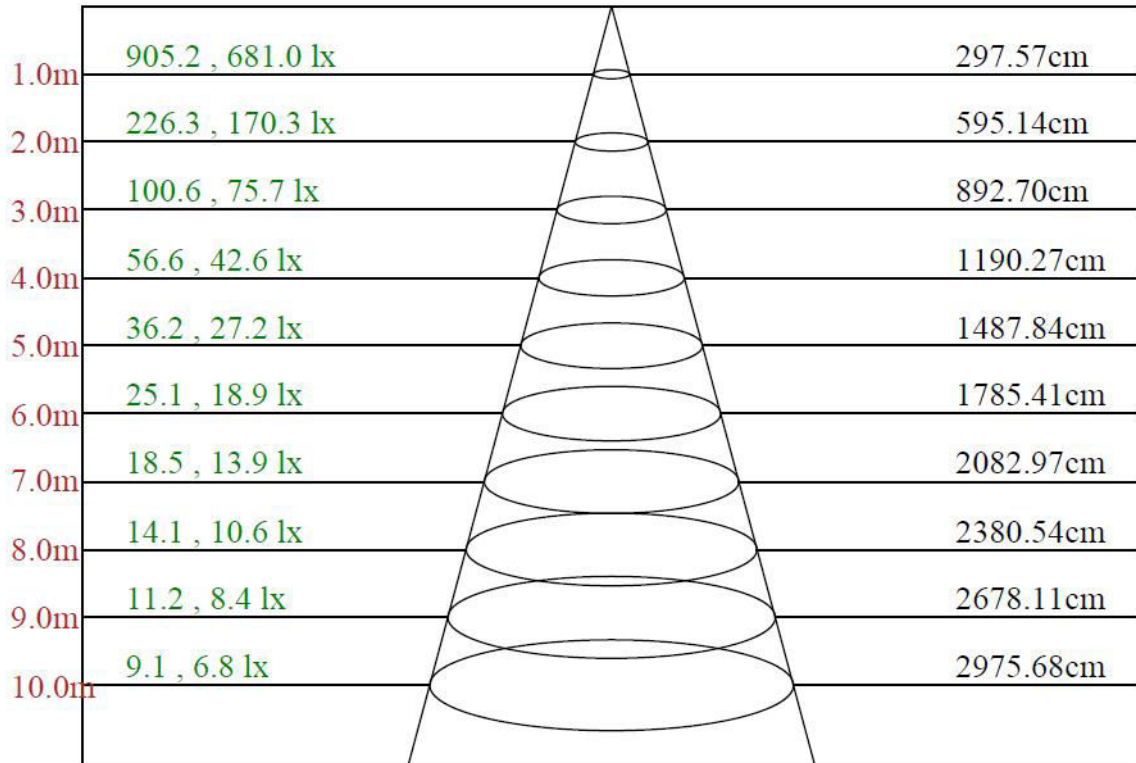
:C90/270Left:88.8 Right:102.9

Beam Angle(50%Imax):C0/180Left:55.0 Right:57.5

:C90/270Left:58.2 Right:66.1



Lux distance Curve



Max , Ave Beam angle of C157.5plane112.14

**Luminous Intensity Distribution Data**

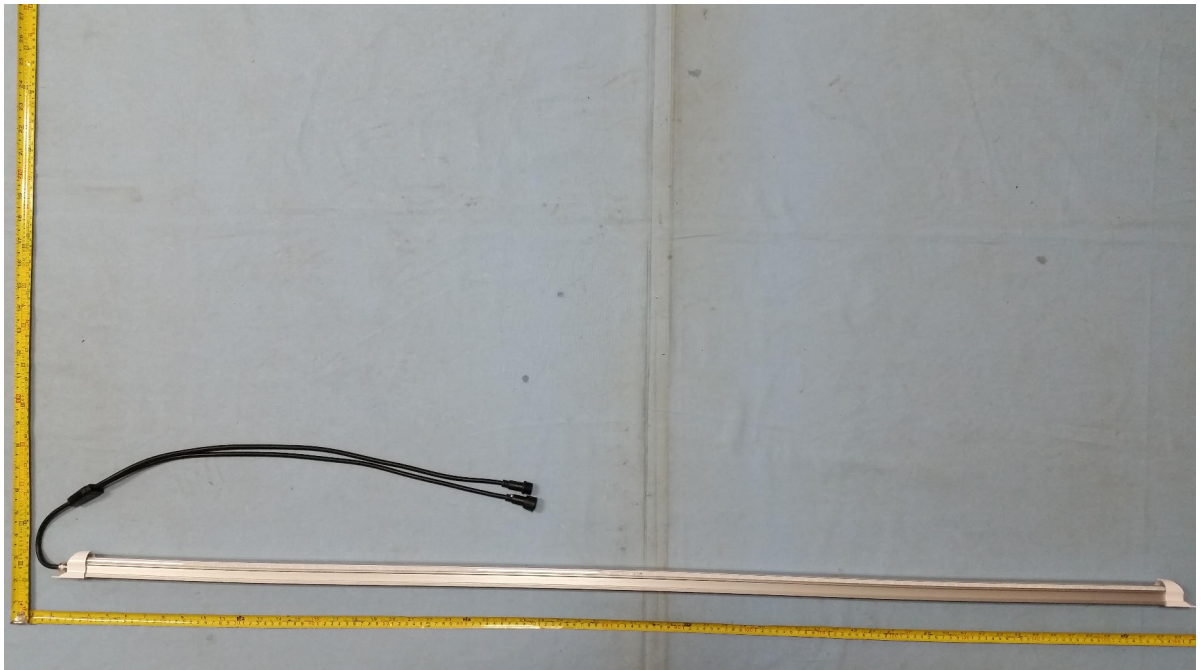
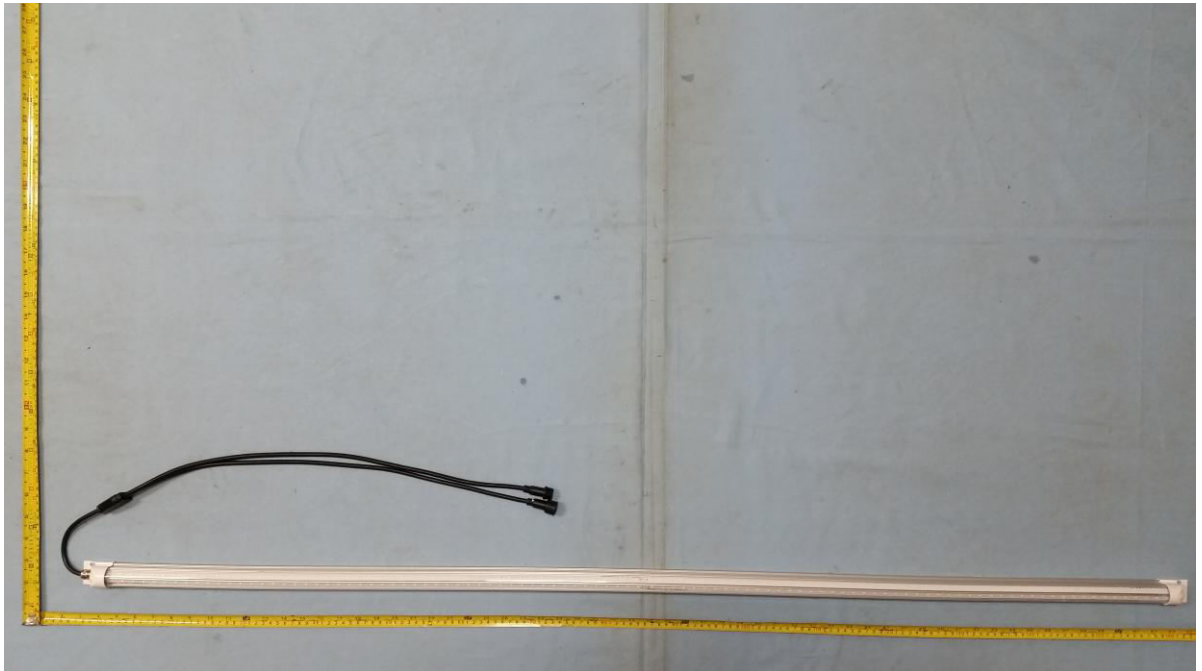
C/ γ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	897.98	893.70	885.83	865.13	841.95	816.98	781.65	737.33	683.78
22.5	899.33	896.85	883.35	867.15	846.23	821.93	787.50	736.20	677.48
45.0	834.08	825.53	815.18	806.63	788.18	756.00	727.65	695.03	641.48
67.5	758.03	750.38	748.35	733.28	703.13	678.15	650.03	599.85	559.13
90.0	734.18	731.93	725.40	705.15	673.43	651.38	614.93	569.70	533.25
112.5	757.35	753.08	750.38	732.15	701.55	677.70	643.28	592.65	551.93
135.0	834.53	832.05	822.38	810.45	781.43	741.60	708.30	667.58	603.68
157.5	905.18	899.10	891.68	875.48	849.83	816.08	768.83	712.13	647.33
180.0	897.98	893.70	884.93	869.18	842.18	803.25	758.25	707.63	660.60
202.5	899.33	903.15	895.73	877.28	840.60	798.98	753.98	703.80	648.90
225.0	834.08	836.10	826.20	805.28	782.10	745.43	705.38	666.23	626.40
247.5	758.03	765.00	747.23	731.70	711.68	681.98	650.70	620.33	570.83
270.0	734.18	741.15	727.20	708.98	695.25	667.58	636.08	597.83	553.73
292.5	757.35	758.93	752.18	736.43	714.83	688.95	663.30	628.88	581.63
315.0	834.53	841.95	819.68	807.98	785.48	758.25	723.38	684.90	646.88
337.5	905.18	902.70	896.85	878.18	848.03	811.35	771.30	724.05	674.10
360.0	897.98	893.70	885.83	865.13	841.95	816.98	781.65	737.33	683.78
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	625.05	560.03	489.38	407.03	326.25	240.08	154.13	81.23	24.53
22.5	623.93	565.43	498.38	411.08	335.48	261.68	203.40	150.75	123.53
45.0	586.80	537.53	474.75	425.48	376.88	330.30	300.83	270.23	238.28
67.5	516.83	470.03	428.85	382.95	359.33	336.83	311.40	284.85	247.73
90.0	490.05	451.35	413.33	375.30	352.80	331.88	310.73	285.30	248.63
112.5	502.43	454.73	414.68	366.30	342.68	319.28	295.20	270.90	235.58
135.0	545.18	495.68	442.35	391.05	333.68	296.55	267.75	240.30	206.10
157.5	589.73	526.73	453.83	369.90	294.08	224.10	164.03	123.98	103.73
180.0	595.35	520.20	449.10	369.23	277.20	193.50	114.98	47.03	7.88
202.5	589.28	520.20	460.13	390.15	313.43	241.88	179.55	146.25	112.73
225.0	569.70	511.43	460.80	409.28	353.03	320.85	298.35	259.88	215.33
247.5	527.40	478.80	433.13	382.50	359.55	342.00	316.58	279.90	243.68
270.0	520.43	474.75	419.40	383.63	363.38	347.18	321.30	285.98	252.68
292.5	539.78	492.30	447.53	391.95	368.10	346.28	321.08	285.53	249.53
315.0	598.05	542.48	490.73	431.55	361.58	328.73	300.15	269.10	216.45
337.5	612.23	547.65	479.48	409.05	326.03	256.73	191.25	145.58	121.28
360.0	625.05	560.03	489.38	407.03	326.25	240.08	154.13	81.23	24.53
C/ γ (°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	2.25	0.45	0.23	0.45	0.45	0.45	0.45	0.68	0.68
22.5	99.90	7.43	1.80	1.35	1.13	1.13	1.13	1.13	1.13
45.0	188.33	53.33	19.13	2.70	1.80	1.35	1.13	0.90	1.35
67.5	208.13	156.15	18.90	9.00	1.80	1.35	1.13	1.13	0.90
90.0	208.35	155.48	16.88	13.73	1.80	1.13	1.35	1.13	0.68
112.5	191.48	67.73	13.73	7.20	2.48	2.03	1.80	1.58	1.35
135.0	152.55	27.00	10.13	2.70	2.03	1.80	1.58	1.58	1.58
157.5	52.65	4.73	1.35	1.58	1.35	1.58	1.35	1.13	1.13
180.0	0.45	0.45	0.68	0.68	0.45	0.45	0.90	0.68	0.68
202.5	55.58	2.93	1.58	1.58	1.80	1.58	1.35	1.13	1.13
225.0	161.33	25.65	4.73	2.70	2.70	1.80	1.80	1.80	1.58
247.5	200.25	28.80	55.13	3.60	2.70	2.03	1.58	1.35	1.58
270.0	215.10	29.93	16.65	3.38	1.80	1.35	1.13	1.13	1.13
292.5	205.43	35.55	18.90	3.15	2.03	1.58	1.13	1.13	1.35
315.0	171.45	26.78	20.25	2.25	2.03	1.58	1.13	1.35	1.35
337.5	76.73	7.43	2.03	1.35	1.58	1.58	1.35	1.13	1.13
360.0	2.25	0.45	0.23	0.45	0.45	0.45	0.45	0.68	0.68



C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	0.68	0.68	0.68	0.68	0.90	0.90	0.68	0.90	0.68
22.5	1.13	0.90	0.90	0.90	1.13	0.90	0.90	0.68	0.68
45.0	1.13	0.90	0.90	0.90	0.90	0.90	0.68	0.68	0.68
67.5	1.13	1.13	0.90	1.13	0.90	0.90	0.90	0.90	0.90
90.0	0.90	0.90	1.13	0.90	0.90	0.90	0.68	0.68	0.45
112.5	1.58	1.13	0.90	0.90	0.90	0.68	0.90	0.68	0.68
135.0	1.35	1.13	1.13	0.90	0.90	0.90	0.90	0.90	0.68
157.5	1.13	0.90	0.90	1.13	0.90	0.68	0.68	0.90	0.90
180.0	0.90	0.90	0.90	0.68	0.90	0.68	0.90	0.68	0.90
202.5	1.13	0.90	0.90	0.90	0.90	0.68	0.90	0.90	0.68
225.0	1.35	0.90	0.90	0.90	0.90	0.90	0.68	0.90	0.68
247.5	1.35	1.13	0.90	1.13	0.90	0.90	0.90	0.68	0.68
270.0	1.13	1.13	0.90	0.90	0.90	0.90	0.90	0.68	0.68
292.5	1.13	0.90	0.90	0.90	0.90	0.90	0.90	0.68	0.90
315.0	1.13	0.90	1.13	0.90	0.90	0.90	0.90	0.68	0.90
337.5	0.90	1.13	0.90	0.68	0.45	0.90	0.90	0.90	0.90
360.0	0.68	0.68	0.68	0.68	0.90	0.90	0.68	0.90	0.68
C/γ(°)	180.0								
0.0	0.90								
22.5	0.68								
45.0	0.90								
67.5	0.68								
90.0	0.90								
112.5	0.90								
135.0	0.68								
157.5	0.90								
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247.5	0.68								
270.0	0.90								
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360.0	0.90								



Photo Document



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