



Shenzhen Belling Efficiency Testing Lab Co., Ltd



Report No.:BL201013002-9

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Version 1.0

Total pages 22

## Test report of

### IES LM-79-08

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

**Applicant:**

RAB Lighting Inc

**Address:**

Northvale, New Jersey, 07647, USA

**For Product:**

LED Corn Lamp

**Model No.:**

HID-50-EX39-850-BYP-ADJ

Test laboratory: Shenzhen Belling Efficiency Testing Lab Co., Ltd, 1Floor, No.1 Building, Meibaohe Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong Prov.518101 China.

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Complied by: Jarvis zhang

Review by: Jason zhou

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Project Engineer

Technical Manager

Note: The test data was only valid for the test sample(s). 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 Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement By NVLAP, NIST, or any agency of the U.S. Government.



# 1 General

## 1.1 Product Information

<b>Manufacturer</b>	RAB Lighting Inc
<b>Manufacturer Address</b>	Northvale, New Jersey, 07647, USA
<b>Brand Name</b>	/
<b>Luminaire Type</b>	LED Corn Lamp
<b>Model Number</b>	HID-50-EX39-850-BYP-ADJ
<b>Rated Inputs</b>	AC 100-277V 50/60Hz
<b>Rated Power</b>	50 W
<b>Nominal CCT</b>	5000K
<b>Date of Receipt Samples</b>	2020-07-06
<b>Date of test</b>	2020-07-07 to 2020-07-16
<b>Burning Time Before Test</b>	0hour(For New Products)

## 1.2 Standards or methods

- ANSI C78.377-2017: Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-10:2014: Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment - Solid State
- 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	2021-04-02
AC Power Source	ALL POWER	APW-110N	992257	2021-04-02
Total Luminous Flux Standard Lamp	SENSING	110V/100W	S1510065	2021-04-08
Total Spectral Radiant Flux Standard Lamp	SENSING	12V/20W	LSD12201731	2021-04-08
Digital Power Meter	YOKOGAWA	WT310	C2QM02030V	2021-04-02
Integral Sphere	SENSING	SPR-600M	N.A	2021-04-02
Digital Power Meter	YOKOGAWA	WT210	91L929742	2021-04-02
Optical Color and Electrical Measurement System	SENSING	SPR-3000	S1101108	2021-04-02
Environment Measurer	XUYAO	HS-1	N/A	2021-04-08
Environment Measurer	XUYAO	HS-1	N/A	2021-04-08
Stop watch	KISLO	K610	N/A	2021-04-27
Digital Anemometer	TECMAN	TD8901	026141	2020-09-10

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

### 1.4 Description

- Declaration: RAB Lighting Inc declare that their product with model HID-50-EX39-850-BYP-ADJ are the same to the product in the report BL200717010-9 and is authorized by original applicant to use their test data.
- Note: All the data in previous report BL200717010-9 is shared in report.



## 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  $\pm 0.2$  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.  $4\pi$  geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

Integrating Sphere Uncertainty: The uncertainty of the light output (luminous flux) measurements is  $U=1.8\%$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is  $U=20\text{K}$  ( $K=2$ ), at the 95% confidence level. The uncertainty of the CRI is  $U=1.8(K=2)$ , at the 95% confidence level. The uncertainty of power meter AC current  $U=0.18\%$  of rdg, AC Voltage  $U=0.16\%$  of rdg, Power  $U=0.20\%$  ( $K=2$ ), at the 95% confidence level.



## 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.

Goniophotometer Uncertainty :The uncertainty of the luminous intensity is  $U=1.6\%$  ( $K=2$ ), at the 95% confidence level.



## 3 Test Result Summary

### 3.1 Integrating Sphere System (Total operating time for integrating sphere test: 1.0 hour)

#### 3.1.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
HID-50-EX39-850-BYP-ADJ	120.08	60	0.419	49.78	0.989
	277.06	60	0.200	50.32	0.908

#### 3.1.2 Photometric data

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
HID-50-EX39-850-BYP-ADJ	7905.06	158.8	4969	84.7	19
	7784.50	154.7	5024	85.1	19

#### 3.1.3 Chromaticity Coordinate

Model Number	Duv	x	y	u'	v'
HID-50-EX39-850-BYP-ADJ	+0.0013	0.3463	0.3551	0.2108	0.4866
	+0.00078	0.3446	0.3528	0.2106	0.4852



### 3.2 Goniophotometer System (Total operating time for luminous intensity distribution: 1.0 hour)

#### 3.2.1 Electrical data

Model Number	Input Voltage(V)	Frequency (Hz)	Input Current (A)	Power (W)	Power Factor
HID-50-EX39-850-BYP-ADJ	120.17	60	0.4140	49.19	0.9888
	277.07	60	0.1980	49.74	0.9092

#### 3.2.2 Photometric data

Input Voltage(V)	Luminous Flux (lm)	Efficacy (lm/W)	Zonal Lumen in 0-60°(%lm)	Zonal Lumen in 0-90°(%lm)
120	7781.76	158.21	81.58	98.77
277	7683.62	154.48	81.66	98.79



## 4 Test Data

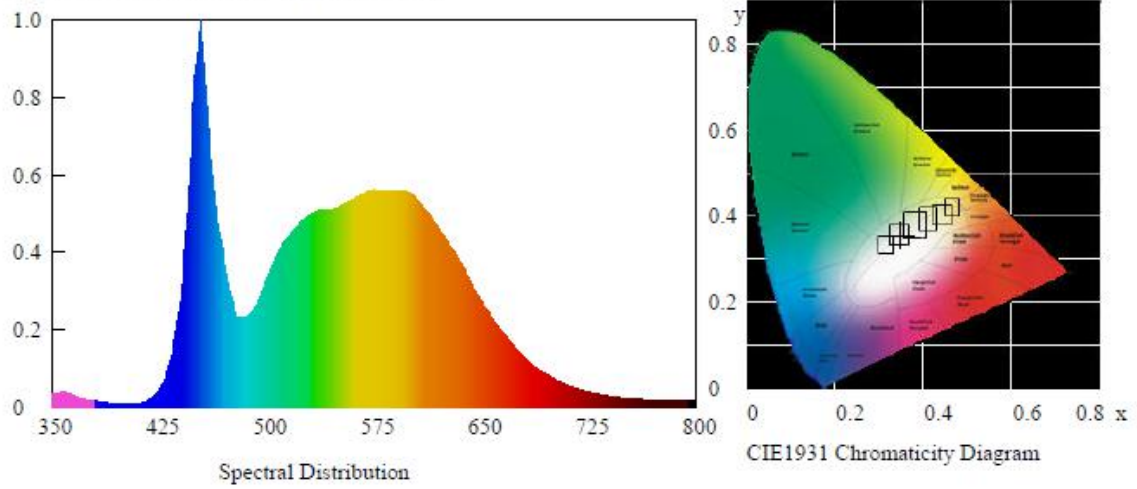
### HID-50-EX39-850-BYP-ADJ Tested at 120V

#### Test Condition

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

RH: 58%  
Scan Step: 5 nm

#### Spectroradiometric Parameters



Chromaticity Coordinates:  $x=0.3463$   $y=0.3551$   $u'=0.2108$   $v'=0.4866$

Correlated Color Temperature: 4969 K

Dominant Wavelength: 570.0 nm(E)

Colour Fidelity Index:  $R_f=81$

Gamut Index:  $R_g=94$

Luminous Flux: 7905.06 lm

Purity: 0.1037

Chromaticity Difference:  $+0.0013Duv$

Peak Wavelength: 455.0 nm

Color Ratio:  $K_r=34.2\%$   $K_g=54.5\%$   $K_b=11.3\%$

Bandwidth: 24.2nm

Radiant Flux: 25.702 W

Rendering Index:  $R_a=84.7$

$R_1=84$   $R_2=91$   $R_3=94$   $R_4=82$   $R_5=83$   $R_6=85$   $R_7=88$   $R_8=70$

$R_9=19$   $R_{10}=77$   $R_{11}=82$   $R_{12}=55$   $R_{13}=87$   $R_{14}=97$   $R_{15}=79$   $R_e=78$

#### Electric Parameters

Voltage: 120.08 V

Current: 0.419 A

Power Factor: 0.989

Power: 49.78 W

Luminous Efficacy: 158.8 lm/W

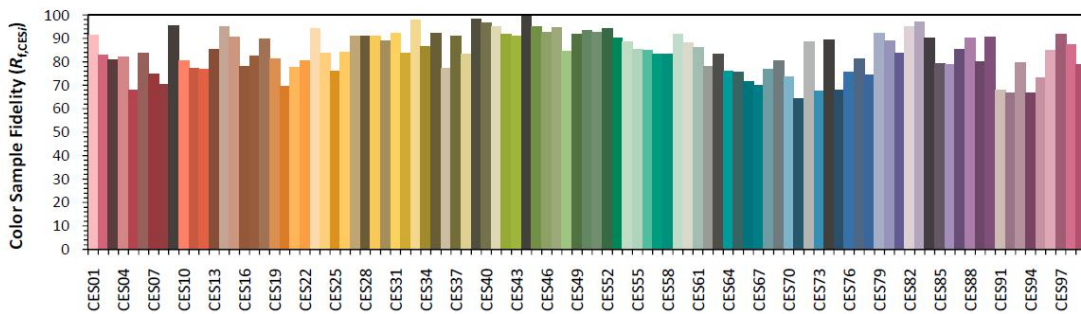
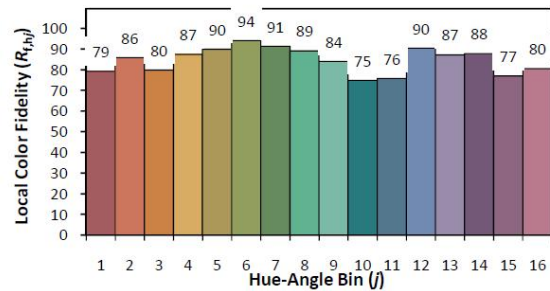
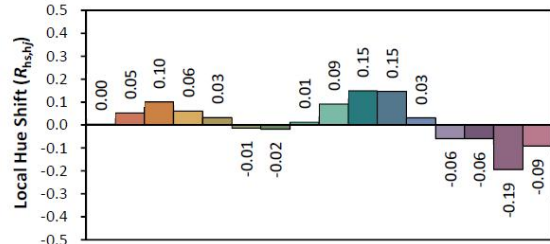
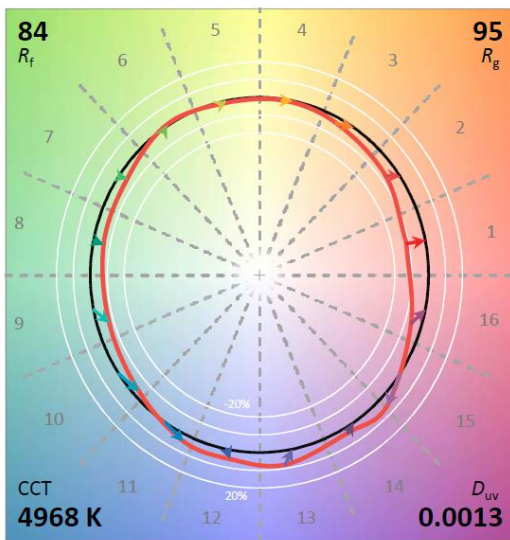
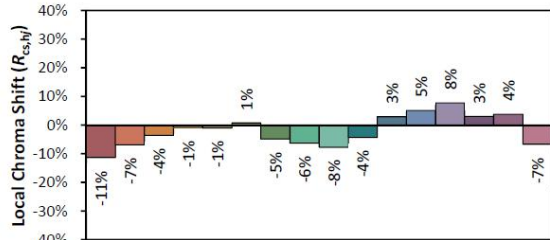
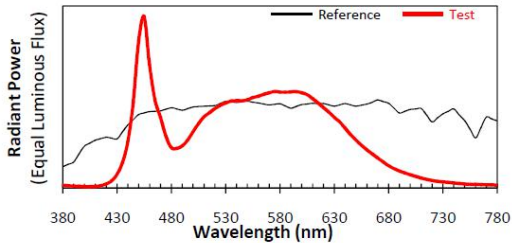




### ANSI/IES TM-30-18 Color Rendition Report

Source: BL201013002-9  
 Date: 2020/10/13

Manufacturer: RAB Lighting Inc  
 Model: HID-50-EX39-850-BYP-ADJ



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3463  
 $y$  0.3551  
 $u'$  0.2108  
 $v'$  0.4866

CIE 13.3-1995 (CRI)	
$R_a$	85
$R_g$	19

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.



## Zonal Flux Diagram

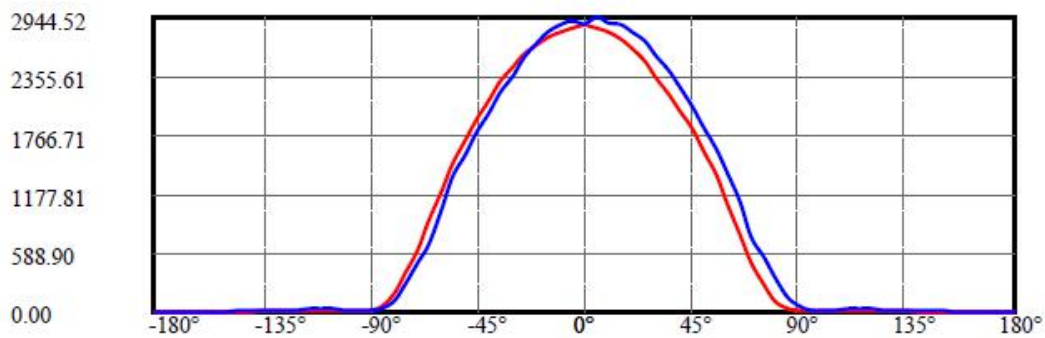
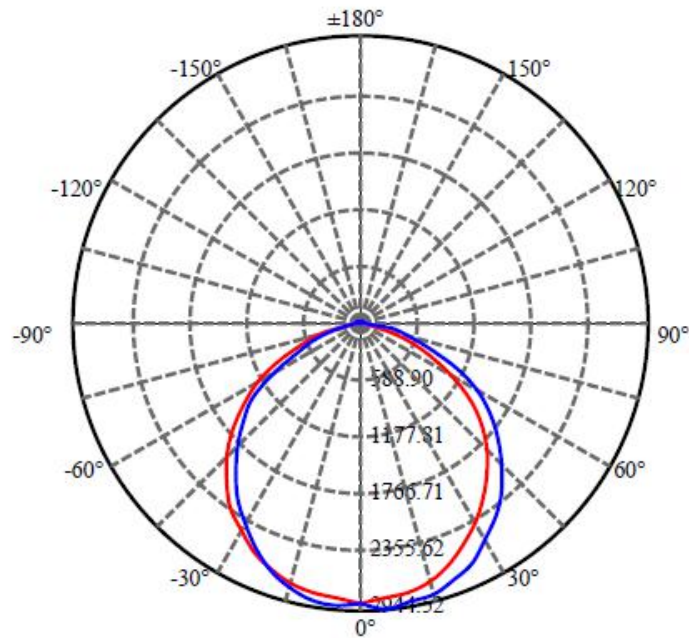
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2862.649	0.000	0	0.00%	0.00%
5.0	2846.973	68.257	68.257	0.00%	0.88%
10.0	2811.590	202.425	270.682	0.00%	3.48%
15.0	2753.909	330.142	600.823	0.00%	7.72%
20.0	2666.992	446.758	1047.582	0.00%	13.46%
25.0	2549.438	547.107	1594.689	0.00%	20.49%
30.0	2406.255	627.147	2221.836	0.00%	28.55%
35.0	2252.888	686.091	2907.927	0.00%	37.37%
40.0	2078.097	722.592	3630.519	0.00%	46.65%
45.0	1875.707	732.079	4362.598	0.00%	56.06%
50.0	1662.244	714.895	5077.493	0.00%	65.25%
55.0	1431.118	672.600	5750.093	0.00%	73.89%
60.0	1156.866	598.205	6348.298	0.00%	81.58%
65.0	848.564	487.524	6835.822	0.00%	87.84%
70.0	592.656	364.926	7200.748	0.00%	92.53%
75.0	372.380	252.245	7452.993	0.00%	95.78%
80.0	173.848	146.155	7599.149	0.00%	97.65%
85.0	62.496	64.220	7663.369	0.00%	98.48%
90.0	21.549	23.012	7686.381	0.00%	98.77%
95.0	15.541	10.156	7696.536	0.00%	98.90%
100.0	17.581	9.000	7705.536	0.00%	99.02%
105.0	21.133	10.359	7715.895	0.00%	99.15%
110.0	22.839	11.494	7727.388	0.00%	99.30%
115.0	20.938	11.085	7738.473	0.00%	99.44%
120.0	18.261	9.529	7748.002	0.00%	99.57%
125.0	13.501	7.342	7755.344	0.00%	99.66%
130.0	14.445	6.076	7761.421	0.00%	99.74%
135.0	14.445	5.838	7767.258	0.00%	99.81%
140.0	10.726	4.661	7771.919	0.00%	99.87%
145.0	8.741	3.248	7775.167	0.00%	99.92%
150.0	6.549	2.252	7777.418	0.00%	99.94%
155.0	5.675	1.547	7778.965	0.00%	99.96%
160.0	5.092	1.129	7780.094	0.00%	99.98%
165.0	4.385	0.781	7780.875	0.00%	99.99%
170.0	4.079	0.502	7781.377	0.00%	100.00%
175.0	3.941	0.287	7781.664	0.00%	100.00%
180.0	4.218	0.098	7781.762	0.00%	100.00%



### Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]



C0/C180: —

C90/C270: —

Field angle(10%Imax):C0/180Left:77.5 Right:74.8

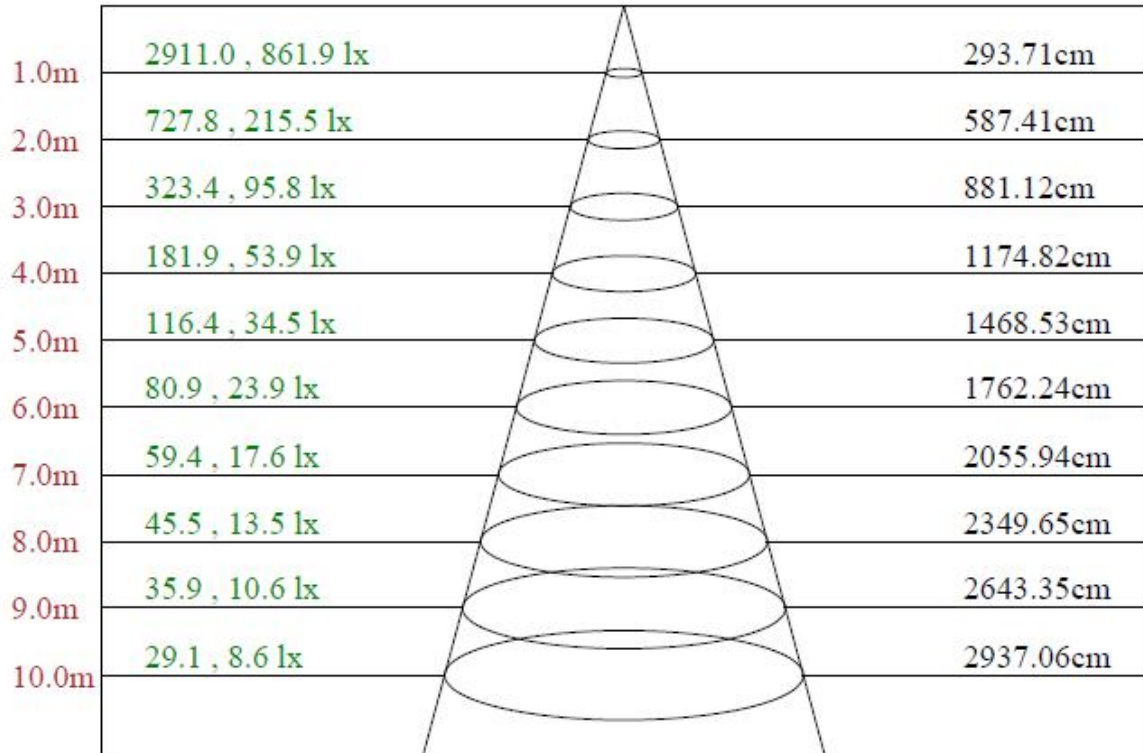
:C90/270Left:74.7 Right:81.2

Beam Angle(50%Imax):C0/180Left:55.8 Right:53.7

:C90/270Left:52.3 Right:58.3



Lux distance Curve



Max , Ave      Beam angle of C90 plane 111.49

**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	2862.65	2826.63	2803.54	2730.28	2627.04	2496.72	2347.31	2175.25	2013.19
22.5	2862.65	2825.08	2788.67	2718.51	2619.94	2506.94	2359.97	2204.78	2031.84
45.0	2862.65	2811.31	2780.23	2728.28	2636.81	2512.04	2373.95	2229.20	2057.15
67.5	2862.65	2815.31	2795.11	2733.61	2653.02	2516.04	2376.62	2243.63	2067.14
90.0	2862.65	2944.52	2895.23	2866.82	2794.44	2702.75	2561.55	2409.25	2244.97
112.5	2862.65	2897.23	2851.94	2812.87	2750.93	2663.90	2517.82	2377.28	2211.44
135.0	2862.65	2856.60	2835.07	2780.01	2714.07	2631.04	2501.61	2342.65	2186.80
157.5	2862.65	2840.17	2808.20	2761.58	2691.43	2598.18	2469.42	2322.45	2154.39
180.0	2862.65	2830.41	2798.88	2748.71	2670.11	2577.54	2452.77	2305.35	2123.53
202.5	2862.65	2821.53	2792.22	2733.39	2639.03	2542.68	2417.02	2273.16	2102.88
225.0	2862.65	2816.20	2767.80	2701.86	2629.71	2512.04	2386.16	2249.63	2068.25
247.5	2862.65	2824.41	2754.03	2703.42	2623.71	2506.49	2382.61	2212.11	2031.61
270.0	2862.65	2907.44	2869.92	2805.10	2695.65	2542.90	2359.08	2193.02	1996.98
292.5	2862.65	2862.15	2831.07	2772.91	2665.23	2511.38	2332.66	2170.59	1975.45
315.0	2862.65	2834.85	2810.43	2744.04	2642.14	2487.84	2329.77	2168.15	1981.22
337.5	2862.65	2837.73	2803.10	2721.18	2618.61	2482.52	2331.77	2169.70	2002.75
360.0	2862.65	2826.63	2803.54	2730.28	2627.04	2496.72	2347.31	2175.25	2013.19
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	1823.15	1609.57	1370.02	1086.07	768.60	501.30	277.29	103.24	30.42
22.5	1849.34	1646.20	1400.44	1110.94	812.78	539.48	307.93	125.66	40.18
45.0	1857.11	1667.74	1427.75	1154.01	843.19	620.96	374.31	166.29	54.61
67.5	1867.55	1687.28	1477.92	1217.06	898.92	640.28	430.92	198.03	73.71
90.0	2044.27	1840.91	1625.11	1396.22	1089.63	756.83	546.81	345.45	138.76
112.5	2004.97	1796.73	1588.70	1348.49	1052.33	744.62	533.71	322.14	123.66
135.0	1989.43	1764.54	1548.74	1291.21	994.83	704.22	515.95	267.74	109.01
157.5	1954.80	1741.67	1519.44	1247.03	950.87	660.70	445.35	214.68	77.26
180.0	1927.49	1715.92	1475.26	1215.51	922.01	624.96	393.18	175.17	58.61
202.5	1902.63	1669.29	1420.20	1161.78	860.51	581.89	357.88	159.18	52.39
225.0	1849.57	1612.24	1383.79	1111.60	810.11	594.32	360.10	155.63	50.84
247.5	1822.70	1603.13	1382.23	1125.81	807.89	563.91	379.19	154.30	57.06
270.0	1789.85	1575.83	1353.82	1028.13	680.91	491.31	282.18	105.01	37.74
292.5	1769.86	1549.63	1319.85	1002.82	682.90	490.64	258.64	99.46	35.52
315.0	1756.77	1540.08	1288.99	990.61	688.45	487.53	246.65	97.46	31.08
337.5	1801.83	1575.16	1315.63	1022.58	713.10	479.54	247.99	92.13	29.08
360.0	1823.15	1609.57	1370.02	1086.07	768.60	501.30	277.29	103.24	30.42
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	11.55	19.76	20.65	21.31	19.09	17.10	15.76	15.10	12.66
22.5	13.54	19.54	24.87	25.09	20.65	17.10	15.76	13.77	13.32
45.0	17.32	14.65	16.87	19.54	20.43	21.09	17.54	14.43	13.77
67.5	23.53	11.32	12.88	15.10	24.42	23.31	18.87	3.55	17.32
90.0	51.73	25.75	10.88	14.21	28.20	31.08	27.53	19.76	9.55
112.5	47.95	18.87	9.99	12.88	19.32	22.87	20.43	11.32	17.10
135.0	35.52	12.66	13.32	17.98	21.09	21.09	18.43	16.65	13.77
157.5	25.09	13.77	22.87	24.87	25.31	20.87	16.21	12.88	11.77
180.0	14.65	11.32	21.98	23.09	20.20	17.54	15.10	14.43	13.77
202.5	13.77	15.32	21.98	23.76	19.54	17.10	15.76	13.99	13.77
225.0	15.10	12.43	15.76	19.32	19.76	18.87	16.43	13.77	14.21
247.5	17.98	9.77	12.66	16.87	22.65	20.87	18.43	14.21	10.88
270.0	16.43	13.54	15.32	33.97	35.97	29.08	26.86	20.43	21.98
292.5	15.10	11.77	15.54	23.76	24.64	21.54	17.98	3.11	19.76
315.0	12.66	15.32	19.32	21.31	23.09	18.65	16.21	15.32	15.54
337.5	12.88	22.87	26.42	25.09	21.09	16.87	14.88	13.32	11.99
360.0	11.55	19.76	20.65	21.31	19.09	17.10	15.76	15.10	12.66

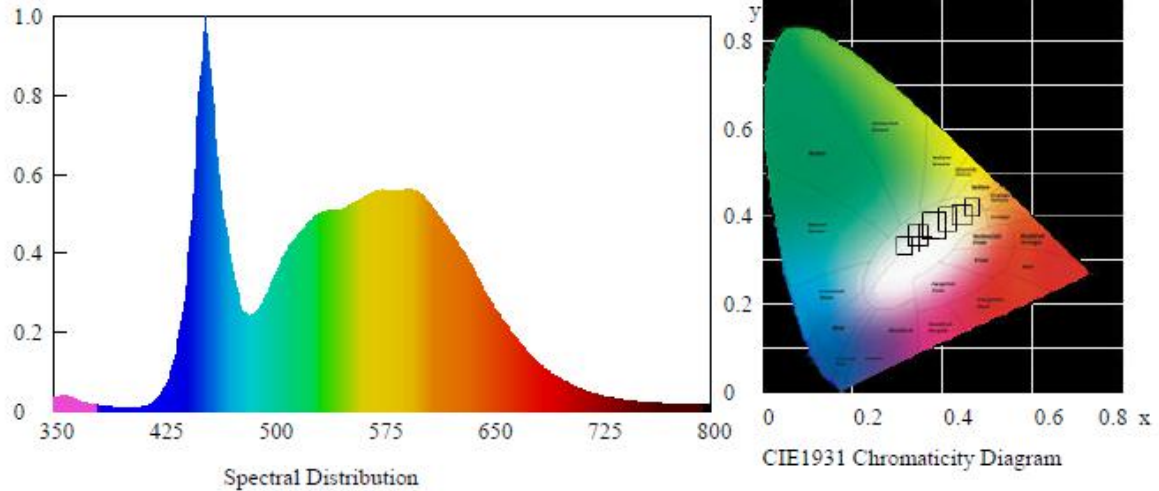


C/ $\gamma$ (°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	10.21	7.55	5.55	4.00	4.88	4.88	4.22	3.77	4.00
22.5	11.99	9.32	5.55	4.88	5.33	5.11	4.44	4.00	4.00
45.0	11.32	7.33	9.77	7.55	6.22	5.33	4.22	4.22	4.00
67.5	17.98	14.65	12.21	8.44	5.99	5.33	4.44	4.44	4.00
90.0	22.20	19.98	16.65	12.43	8.88	6.66	4.88	4.44	4.00
112.5	17.32	15.32	13.77	10.43	7.10	5.55	4.66	4.22	3.77
135.0	12.88	7.77	10.21	9.10	7.10	5.55	4.44	4.44	3.77
157.5	11.99	10.88	8.44	4.44	5.77	5.11	4.44	4.00	3.55
180.0	11.99	8.88	6.88	4.66	4.22	4.66	4.22	3.77	3.77
202.5	11.32	9.10	6.22	4.00	4.88	4.66	4.22	3.77	3.77
225.0	12.66	6.66	5.33	5.77	4.66	4.66	4.22	3.77	3.55
247.5	17.54	12.21	7.55	4.66	4.22	4.44	4.00	4.00	3.55
270.0	19.54	15.10	9.99	7.33	5.77	5.11	5.11	4.66	4.88
292.5	18.21	12.88	8.88	6.44	5.55	4.88	4.22	4.00	4.22
315.0	12.66	5.55	7.10	6.22	5.55	4.66	4.22	3.77	4.00
337.5	11.32	8.44	5.77	4.44	4.66	4.88	4.22	4.00	4.22
360.0	10.21	7.55	5.55	4.00	4.88	4.88	4.22	3.77	4.00
C/ $\gamma$ (°)	180.0								
0.0	4.22								
22.5	4.22								
45.0	4.22								
67.5	4.22								
90.0	4.22								
112.5	4.22								
135.0	4.22								
157.5	4.22								
180.0	4.22								
202.5	4.22								
225.0	4.22								
247.5	4.22								
270.0	4.22								
292.5	4.22								
315.0	4.22								
337.5	4.22								
360.0	4.22								

**HID-50-EX39-850-BYP-ADJ Tested at 277V****Test Condition**

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

RH: 58%  
Scan Step: 5 nm

**Spectroradiometric Parameters**

Chromaticity Coordinates:  $x=0.3446$   $y=0.3528$   $u'=0.2106$   $v'=0.4852$

Correlated Color Temperature: 5024 K

Dominant Wavelength: 570.0 nm(E)

Colour Fidelity Index:  $R_f=81$

Gamut Index:  $R_g=94$

Luminous Flux: 7784.50 lm

Purity: 0.0921

Chromaticity Difference: +0.00078Duv

Peak Wavelength: 455.0 nm

Color Ratio:  $K_r=34.2\%$   $K_g=54.4\%$   $K_b=11.4\%$

Bandwidth: 22.3nm

Radiant Flux: 25.676 W

Rendering Index:  $R_a=85.1$

$R_1=84$   $R_2=92$   $R_3=94$   $R_4=84$   $R_5=84$   $R_6=86$   $R_7=87$   $R_8=70$

$R_9=19$   $R_{10}=78$   $R_{11}=83$   $R_{12}=61$   $R_{13}=87$   $R_{14}=97$   $R_{15}=80$   $R_e=79$

**Electric Parameters**

Voltage: 277.06 V

Current: 0.200 A

Power Factor: 0.908

Power: 50.32 W

Luminous Efficacy: 154.7 lm/W



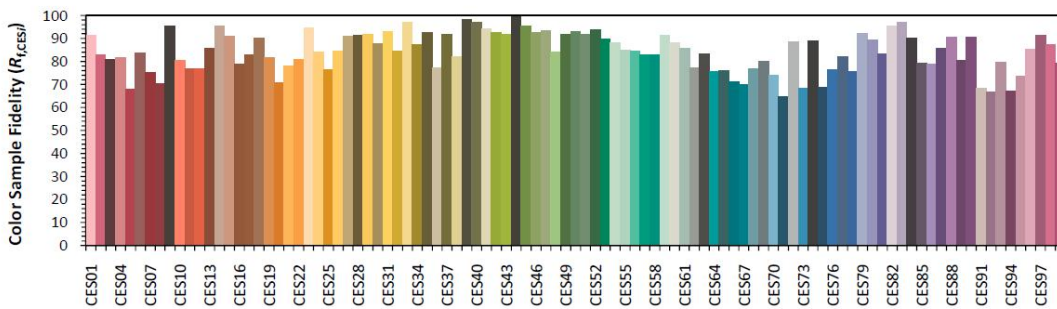
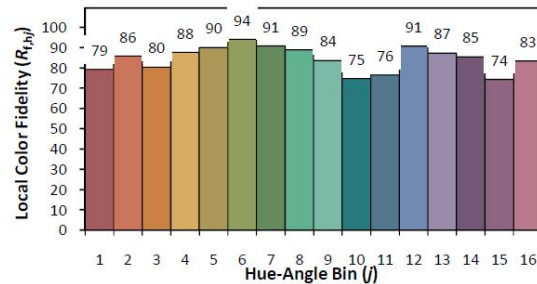
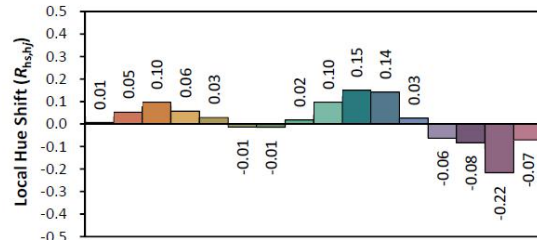
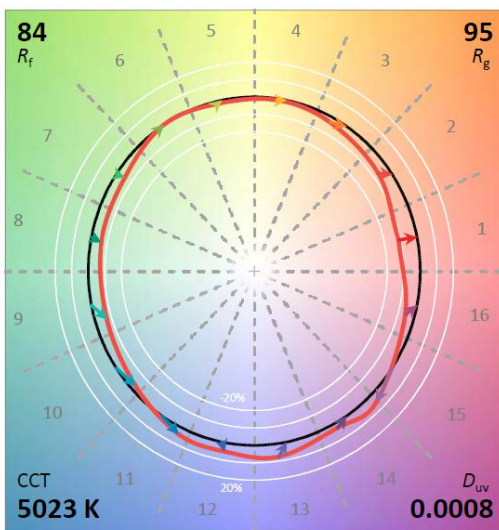
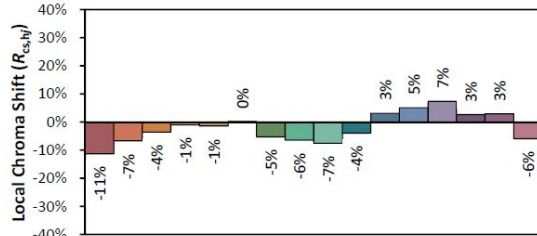
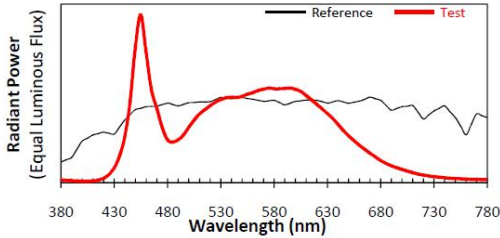
### ANSI/IES TM-30-18 Color Rendition Report

Source: BL201013002-9

Manufacturer: RAB Lighting Inc

Date: 2020/10/13

Model: HID-50-EX39-850-BYP-ADJ



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3446  
 $y$  0.3528  
 $u'$  0.2106  
 $v'$  0.4852

CIE 13.3-1995 (CRI)	
$R_a$	85
$R_g$	19

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.





## Zonal Flux Diagram

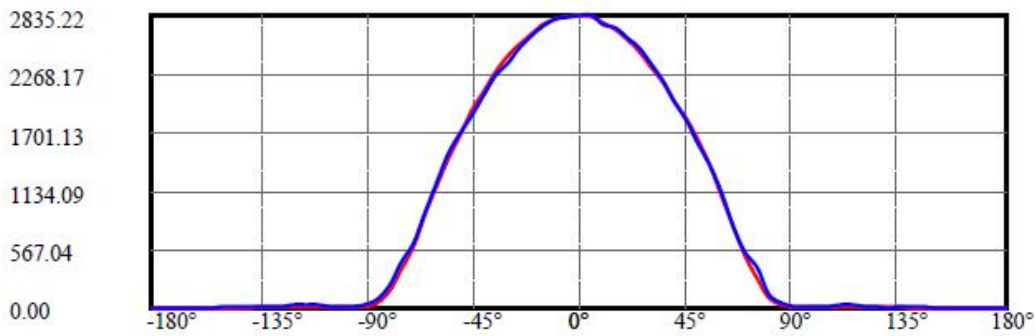
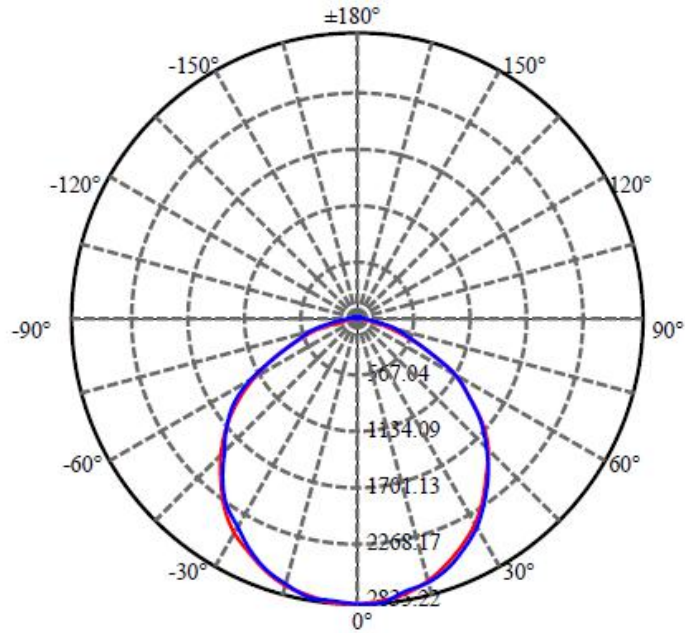
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2835.216	0.000	0	0.00%	0.00%
5.0	2814.965	67.546	67.546	0.00%	0.88%
10.0	2777.537	200.061	267.608	0.00%	3.48%
15.0	2718.656	326.030	593.638	0.00%	7.73%
20.0	2629.808	440.789	1034.427	0.00%	13.46%
25.0	2512.936	539.379	1573.806	0.00%	20.48%
30.0	2381.170	619.353	2193.159	0.00%	28.54%
35.0	2230.005	679.028	2872.187	0.00%	37.38%
40.0	2051.050	714.262	3586.448	0.00%	46.68%
45.0	1855.378	723.307	4309.755	0.00%	56.09%
50.0	1645.511	707.406	5017.161	0.00%	65.30%
55.0	1415.149	665.489	5682.65	0.00%	73.96%
60.0	1143.444	591.411	6274.062	0.00%	81.66%
65.0	838.937	481.920	6755.982	0.00%	87.93%
70.0	580.552	359.424	7115.406	0.00%	92.60%
75.0	371.601	248.878	7364.284	0.00%	95.84%
80.0	165.197	143.632	7507.916	0.00%	97.71%
85.0	59.592	61.081	7568.997	0.00%	98.51%
90.0	19.618	21.688	7590.685	0.00%	98.79%
95.0	14.511	9.345	7600.03	0.00%	98.91%
100.0	17.687	8.749	7608.779	0.00%	99.03%
105.0	20.316	10.169	7618.948	0.00%	99.16%
110.0	22.479	11.186	7630.134	0.00%	99.30%
115.0	21.014	11.013	7641.146	0.00%	99.45%
120.0	18.317	9.562	7650.708	0.00%	99.57%
125.0	12.691	7.167	7657.875	0.00%	99.66%
130.0	13.991	5.802	7663.677	0.00%	99.74%
135.0	13.717	5.599	7669.276	0.00%	99.81%
140.0	10.980	4.573	7673.848	0.00%	99.87%
145.0	8.392	3.232	7677.08	0.00%	99.91%
150.0	6.612	2.209	7679.29	0.00%	99.94%
155.0	5.544	1.538	7680.828	0.00%	99.96%
160.0	5.065	1.113	7681.941	0.00%	99.98%
165.0	4.491	0.788	7682.729	0.00%	99.99%
170.0	4.094	0.509	7683.238	0.00%	100.00%
175.0	3.888	0.286	7683.523	0.00%	100.00%
180.0	4.123	0.096	7683.619	0.00%	100.00%



### Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]



C0/C180: —

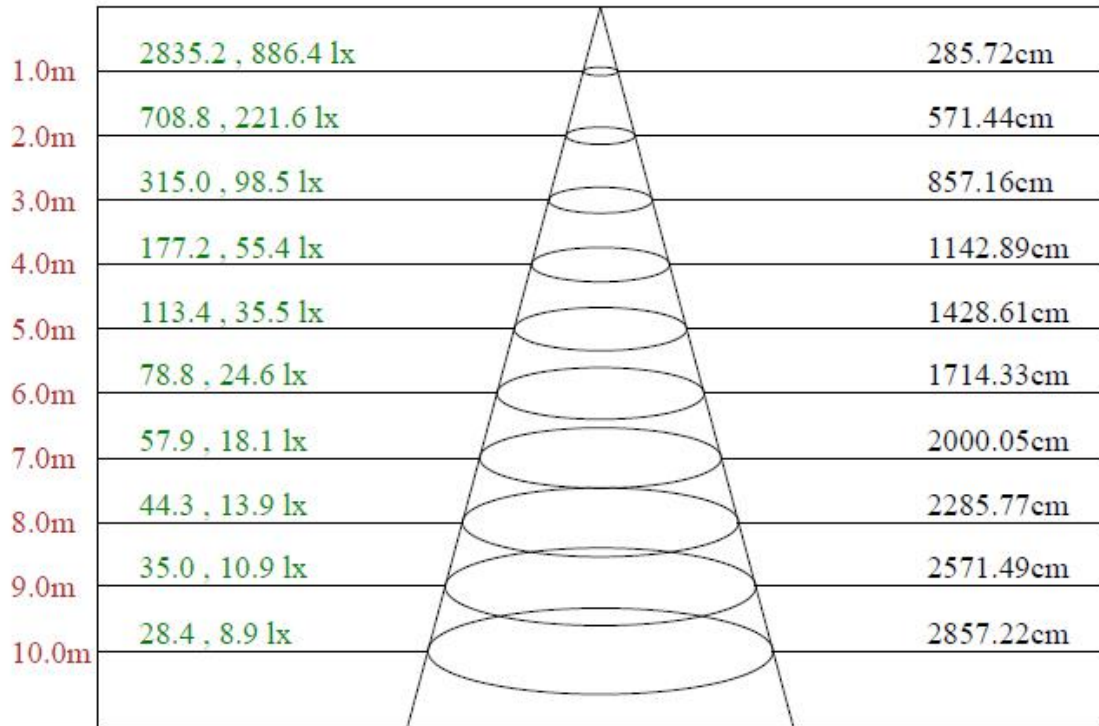
C90/C270: —

Field angle(10%Imax):C0/180Left:77.2 Right:74.9  
:C90/270Left:78.8 Right:77.1

Beam Angle(50%Imax):C0/180Left:55.6 Right:54.2  
:C90/270Left:56.4 Right:54.1



Lux distance Curve



Max , Ave      Beam angle of C0 plane 110.02

**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	2835.22	2810.28	2765.38	2697.48	2599.13	2479.75	2336.72	2177.70	2003.56
22.5	2835.22	2807.66	2768.89	2688.28	2584.02	2453.25	2311.75	2150.54	1972.67
45.0	2835.22	2805.90	2761.44	2690.25	2588.18	2441.42	2288.31	2135.64	1944.20
67.5	2835.22	2796.70	2758.15	2681.05	2582.04	2433.53	2275.83	2115.93	1917.26
90.0	2835.22	2830.22	2748.51	2710.84	2623.22	2512.17	2375.49	2193.91	2014.29
112.5	2835.22	2823.21	2758.15	2701.42	2620.81	2520.49	2388.41	2205.95	2008.60
135.0	2835.22	2810.50	2771.51	2708.21	2631.55	2529.26	2404.62	2235.74	2046.49
157.5	2835.22	2812.47	2771.73	2724.86	2644.03	2542.62	2422.14	2265.53	2090.96
180.0	2835.22	2825.18	2792.76	2743.48	2663.53	2559.92	2446.02	2289.19	2106.95
202.5	2835.22	2827.59	2789.69	2738.22	2665.94	2566.05	2453.47	2307.15	2148.13
225.0	2835.22	2828.46	2785.97	2732.52	2677.76	2570.00	2463.54	2332.78	2157.76
247.5	2835.22	2823.65	2784.22	2744.79	2681.05	2577.88	2458.29	2321.61	2159.52
270.0	2835.22	2813.79	2799.99	2737.34	2647.98	2523.78	2378.99	2251.29	2071.90
292.5	2835.22	2803.06	2798.67	2747.20	2635.49	2506.91	2380.97	2250.64	2065.77
315.0	2835.22	2807.44	2795.39	2729.02	2628.92	2503.41	2363.22	2235.52	2068.61
337.5	2835.22	2813.35	2790.13	2723.54	2603.29	2486.54	2350.96	2210.99	2040.14
360.0	2835.22	2810.28	2765.38	2697.48	2599.13	2479.75	2336.72	2177.70	2003.56
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	1831.39	1630.53	1375.79	1096.73	780.44	510.80	276.65	110.40	33.08
22.5	1793.28	1579.94	1326.29	1030.15	730.50	474.44	246.20	91.12	28.69
45.0	1731.51	1527.15	1275.91	986.12	689.98	488.02	242.04	93.97	29.13
67.5	1719.25	1514.01	1293.43	991.59	675.08	484.08	243.57	95.72	33.51
90.0	1812.56	1598.12	1377.76	1131.56	782.19	538.18	380.03	145.22	57.17
112.5	1806.86	1603.59	1367.25	1111.19	786.57	541.69	379.82	138.00	56.95
135.0	1839.28	1602.06	1372.72	1108.56	791.61	569.07	378.50	147.41	51.47
157.5	1885.72	1651.34	1412.59	1144.92	833.01	564.25	356.82	148.95	51.47
180.0	1914.85	1697.56	1450.05	1196.84	904.42	603.02	373.24	169.98	54.98
202.5	1948.58	1721.65	1502.18	1231.01	943.62	649.89	417.71	198.45	68.78
225.0	1959.31	1734.14	1516.63	1252.25	987.21	697.42	498.54	248.39	100.54
247.5	1973.55	1764.15	1557.81	1319.06	1040.66	732.25	532.05	307.75	123.10
270.0	1873.23	1699.75	1495.17	1225.09	921.28	630.62	443.34	232.18	84.33
292.5	1869.51	1691.65	1475.02	1201.43	893.25	625.36	446.62	203.71	75.57
315.0	1864.69	1661.86	1438.66	1152.37	844.84	620.98	409.61	172.82	60.24
337.5	1862.50	1650.69	1405.14	1116.23	818.33	558.77	320.89	139.09	44.47
360.0	1831.39	1630.53	1375.79	1096.73	780.44	510.80	276.65	110.40	33.08
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	12.05	20.81	21.90	21.69	19.71	17.09	15.77	15.33	13.36
22.5	13.36	23.22	24.31	23.22	20.15	17.09	15.33	14.24	12.92
45.0	12.92	14.68	17.74	21.47	22.78	17.74	15.33	14.68	14.46
67.5	14.02	11.83	14.46	23.00	23.44	19.28	16.87	3.72	18.62
90.0	22.12	9.64	14.46	22.78	30.45	29.57	26.29	17.96	6.79
112.5	17.30	9.20	13.14	17.30	23.44	21.90	19.71	14.46	10.08
135.0	14.46	13.58	18.18	20.59	20.59	19.28	17.96	14.02	15.11
157.5	14.02	15.99	24.53	24.53	21.47	17.74	15.33	12.70	12.27
180.0	13.80	15.55	19.28	22.34	19.28	17.09	15.11	14.46	13.36
202.5	19.93	14.02	22.56	23.22	21.69	19.50	15.99	14.24	13.14
225.0	31.54	12.70	13.58	16.87	20.15	21.25	17.74	14.90	13.14
247.5	43.81	16.43	10.73	11.83	20.81	22.78	18.62	9.86	16.43
270.0	28.91	11.83	13.58	15.11	30.45	32.64	28.26	8.98	21.25
292.5	25.19	10.95	11.83	15.33	22.78	22.78	20.15	5.26	17.52
315.0	17.74	13.80	16.21	19.71	21.25	21.69	19.06	15.33	12.70
337.5	12.70	17.96	26.50	26.07	21.25	18.84	15.55	12.92	12.70
360.0	12.05	20.81	21.90	21.69	19.71	17.09	15.77	15.33	13.36



C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	10.95	8.54	5.70	3.94	5.04	4.82	4.38	3.94	3.72
22.5	10.73	8.32	5.04	4.60	5.04	4.60	4.16	3.94	3.72
45.0	9.86	5.48	6.57	5.04	4.60	4.60	4.16	3.94	4.16
67.5	15.55	9.64	6.13	4.16	4.82	4.60	4.16	4.16	4.16
90.0	19.06	16.21	10.30	7.89	5.70	5.26	4.38	3.94	3.72
112.5	18.62	14.68	10.51	7.45	5.26	5.04	4.38	4.16	3.72
135.0	14.02	8.54	5.70	7.23	5.91	5.26	4.60	4.16	3.94
157.5	11.17	9.64	7.23	4.60	4.60	4.60	4.38	3.94	3.72
180.0	11.39	8.76	6.13	4.82	3.94	4.38	4.38	4.16	3.72
202.5	12.05	10.30	7.23	4.38	5.04	5.04	4.60	3.94	3.72
225.0	14.02	8.32	7.67	8.54	6.57	5.48	4.82	4.16	3.72
247.5	18.84	16.21	12.70	10.30	6.79	5.26	4.60	4.38	3.72
270.0	17.52	17.96	14.68	10.73	7.89	6.13	5.04	4.38	4.16
292.5	12.49	14.68	12.49	8.54	5.70	5.26	4.60	4.16	4.16
315.0	11.39	8.10	10.73	8.10	6.35	5.48	4.60	4.16	3.94
337.5	11.83	10.30	5.48	5.48	5.48	5.26	4.60	3.94	4.16
360.0	10.95	8.54	5.70	3.94	5.04	4.82	4.38	3.94	3.72
C/γ(°)	180.0								
0.0	4.12								
22.5	4.12								
45.0	4.12								
67.5	4.12								
90.0	4.12								
112.5	4.12								
135.0	4.12								
157.5	4.12								
180.0	4.12								
202.5	4.12								
225.0	4.12								
247.5	4.12								
270.0	4.12								
292.5	4.12								
315.0	4.12								
337.5	4.12								
360.0	4.12								



## Photo Document



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