



Shenzhen Belling Efficiency Testing Lab Co., Ltd



Report No.:BL201013003-9

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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-70-EX39-840-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-70-EX39-840-BYP-ADJ
<b>Rated Inputs</b>	AC 100-277V 50/60Hz
<b>Rated Power</b>	70 W
<b>Nominal CCT</b>	4000K
<b>Date of Receipt Samples</b>	2020-07-06
<b>Date of test</b>	2020-07-07 to 2020-07-10
<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-70-EX39-840-BYP-ADJ are the same to the product in the report BL200710005-9 and is authorized by original applicant to use their test data.
- Note: All the data in previous report BL200710005-9 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-70-EX39-840-BYP-ADJ	120.10	60	0.574	68.23	0.989
	277.14	60	0.273	69.26	0.915

#### 3.1.2 Photometric data

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
HID-70-EX39-840-BYP-ADJ	10418.72	152.7	4042	85.2	20
	10631.41	153.5	4072	85.2	20

#### 3.1.3 Chromaticity Coordinate

Model Number	Duv	x	y	u'	v'
HID-70-EX39-840-BYP-ADJ	-0.00251	0.3770	0.3693	0.2258	0.4977
	-0.00303	0.3754	0.3672	0.2256	0.4965



### 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-70-EX39-840-BYP-ADJ	120.02	60	0.5640	66.88	0.9889
	277.11	60	0.2700	68.50	0.9142

#### 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	10203.99	152.57	80.25	99.05
277	10504.66	153.35	80.60	99.08



## 4 Test Data

### HID-70-EX39-840-BYP-ADJ Tested at 120V

#### Test Condition

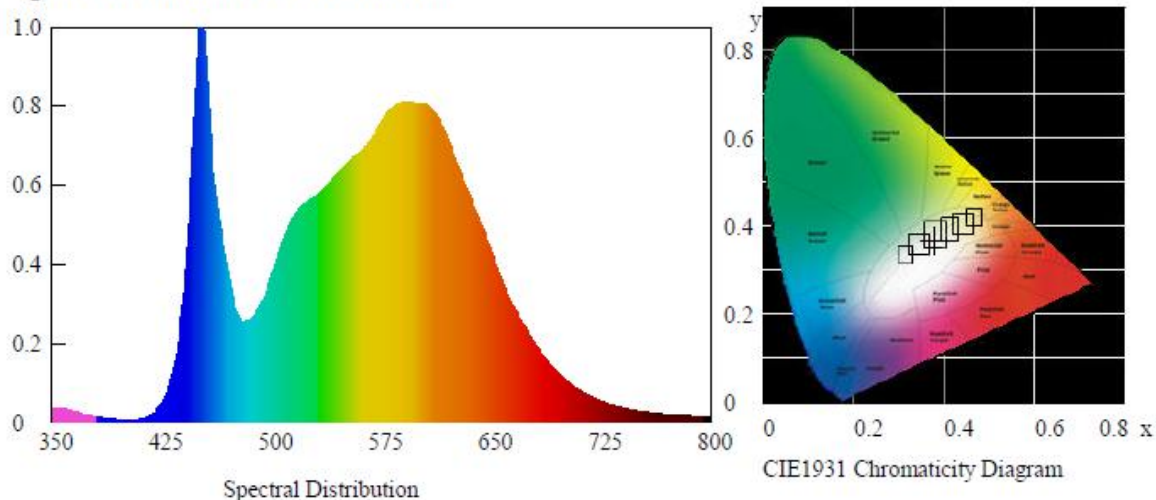
Temperature: 25°C

RH: 58%

Spectrum Range: 350-800 nm

Scan Step: 5 nm

#### Spectroradiometric Parameters

Chromaticity Coordinates:  $x=0.3770$   $y=0.3693$   $u'=0.2258$   $v'=0.4977$ 

Correlated Color Temperature: 4042 K

Dominant Wavelength: 579.0 nm(E)

Colour Fidelity Index:  $R_f=82$ Gamut Index:  $R_g=96$ 

Luminous Flux: 10418.72 lm

Purity: 0.2401

Chromaticity Difference: -0.00251Duv

Peak Wavelength: 450.0 nm

Color Ratio:  $K_r=38.5\%$   $K_g=51.8\%$   $K_b=9.7\%$ 

Bandwidth: 26.5nm

Radiant Flux: 33.854 W

Rendering Index:  $R_a=85.2$  $R_1=85$   $R_2=92$   $R_3=95$   $R_4=84$   $R_5=84$   $R_6=87$   $R_7=86$   $R_8=68$  $R_9=20$   $R_{10}=80$   $R_{11}=83$   $R_{12}=63$   $R_{13}=87$   $R_{14}=98$   $R_{15}=80$   $R_e=79$ 

#### Electric Parameters

Voltage: 120.10 V

Current: 0.574 A

Power Factor: 0.989

Power: 68.23 W

Luminous Efficacy: 152.7 lm/W



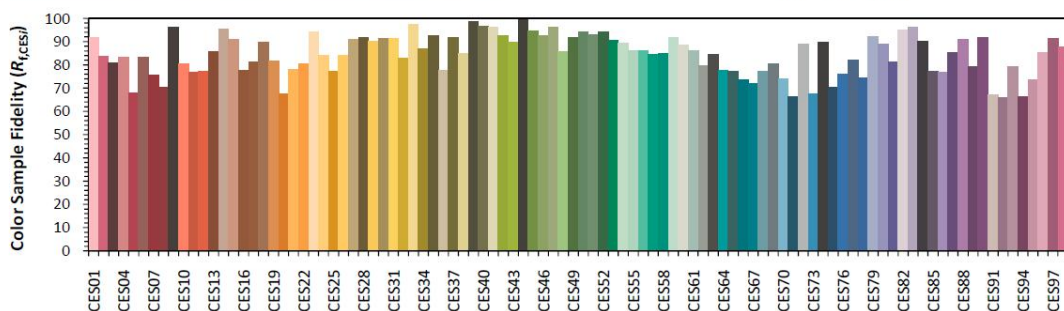
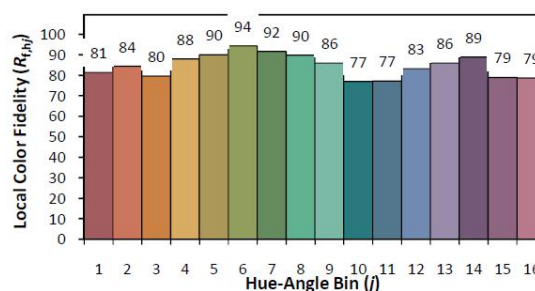
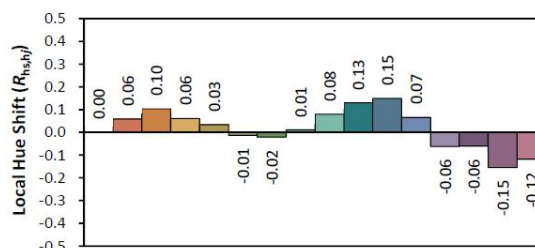
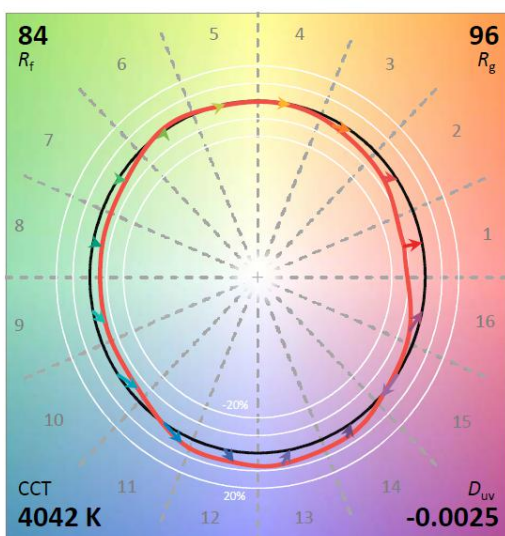
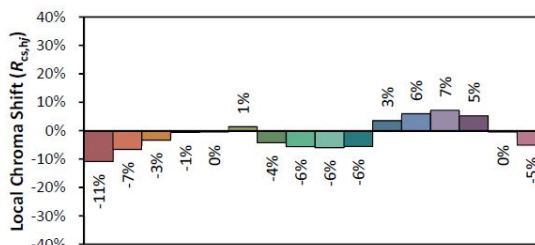
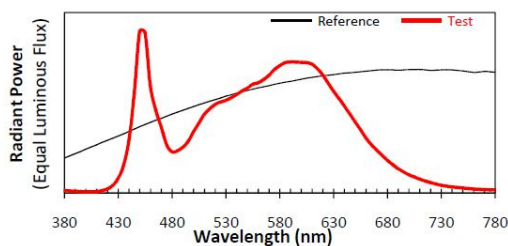
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL201013003-9

Manufacturer: RAB Lighting Inc

Date: 2020/10/13

Model: HID-70-EX39-840-BYP-ADJ



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

 $x$  0.3770 $y$  0.3693 $u'$  0.2258 $v'$  0.4977CIE 13.3-1995  
(CRI) $R_a$  85 $R_9$  19

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

**Zonal Flux Diagram**

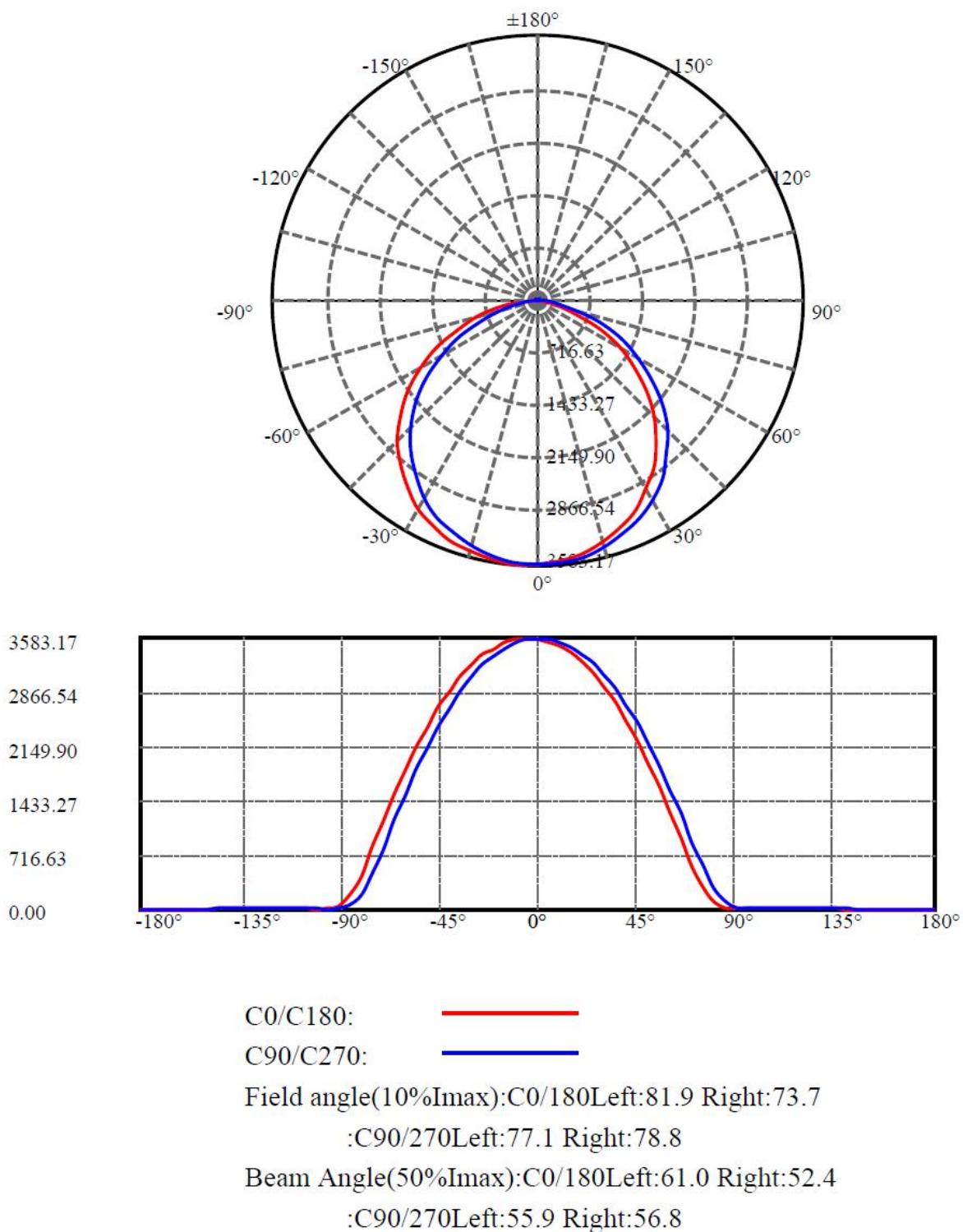
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3565.440	0.000	0	0.00%	0.00%
5.0	3552.955	85.098	85.098	0.00%	0.83%
10.0	3513.738	252.798	337.896	0.00%	3.31%
15.0	3445.951	412.844	750.74	0.00%	7.36%
20.0	3353.184	560.344	1311.084	0.00%	12.85%
25.0	3229.550	690.407	2001.492	0.00%	19.61%
30.0	3081.106	798.619	2800.111	0.00%	27.44%
35.0	2900.021	880.763	3680.873	0.00%	36.07%
40.0	2691.815	932.956	4613.829	0.00%	45.22%
45.0	2454.053	952.799	5566.628	0.00%	54.55%
50.0	2186.523	937.696	6504.325	0.00%	63.74%
55.0	1886.677	885.649	7389.974	0.00%	72.42%
60.0	1566.667	798.231	8188.205	0.00%	80.25%
65.0	1219.423	677.304	8865.508	0.00%	86.88%
70.0	865.828	527.999	9393.507	0.00%	92.06%
75.0	538.355	367.031	9760.538	0.00%	95.65%
80.0	263.362	214.517	9975.055	0.00%	97.76%
85.0	96.935	97.901	10072.956	0.00%	98.72%
90.0	28.177	34.257	10107.213	0.00%	99.05%
95.0	14.687	11.736	10118.949	0.00%	99.17%
100.0	13.025	7.530	10126.479	0.00%	99.24%
105.0	16.714	7.957	10134.437	0.00%	99.32%
110.0	18.953	9.323	10143.76	0.00%	99.41%
115.0	19.672	9.780	10153.54	0.00%	99.51%
120.0	19.855	9.609	10163.149	0.00%	99.60%
125.0	19.235	9.035	10172.184	0.00%	99.69%
130.0	17.250	7.933	10180.117	0.00%	99.77%
135.0	14.279	6.371	10186.488	0.00%	99.83%
140.0	11.927	4.852	10191.34	0.00%	99.88%
145.0	10.448	3.733	10195.073	0.00%	99.91%
150.0	9.280	2.905	10197.978	0.00%	99.94%
155.0	8.097	2.199	10200.177	0.00%	99.96%
160.0	6.970	1.580	10201.758	0.00%	99.98%
165.0	6.013	1.070	10202.828	0.00%	99.99%
170.0	5.351	0.674	10203.502	0.00%	100.00%
175.0	4.999	0.370	10203.872	0.00%	100.00%
180.0	4.917	0.119	10203.99	0.00%	100.00%



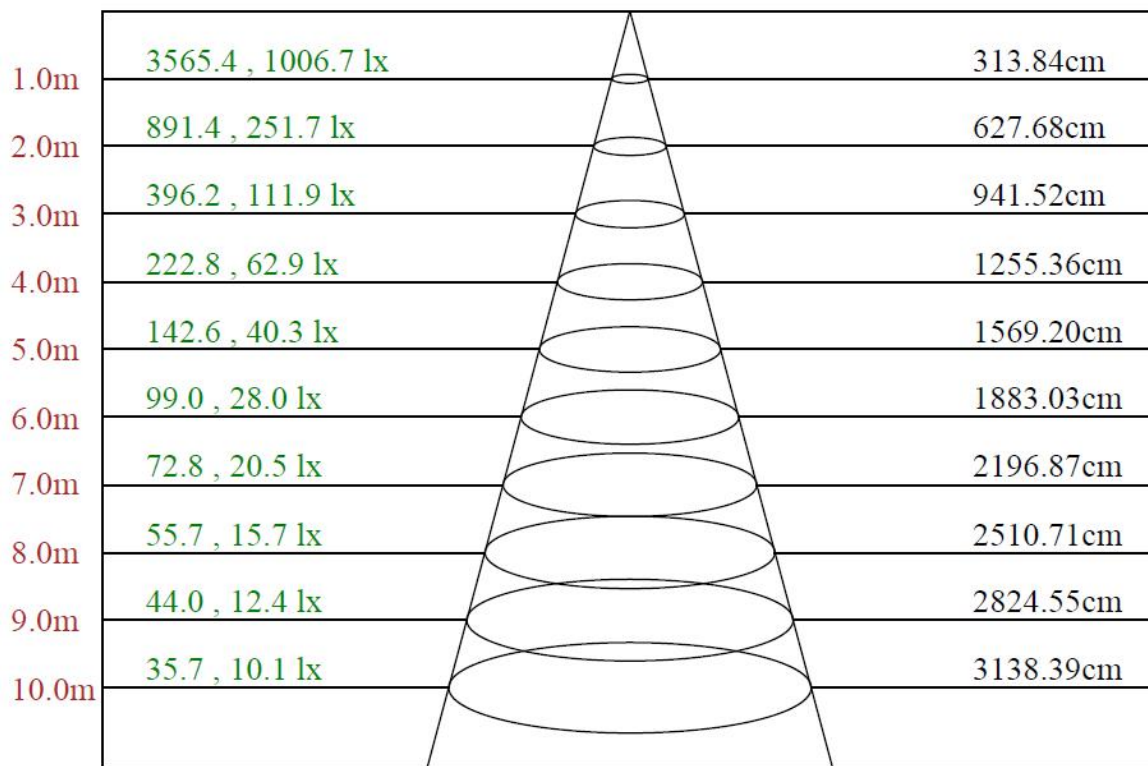
## Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]





## Lux distance Curve



Max , Ave

Beam angle of C202.5 plane 114.98

**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	3565.44	3520.54	3469.62	3375.67	3260.99	3112.30	2930.48	2730.19	2494.75
22.5	3565.44	3532.71	3477.28	3384.68	3257.39	3102.16	2933.18	2722.98	2489.57
45.0	3565.44	3541.49	3478.86	3381.53	3258.74	3100.13	2916.06	2721.40	2499.03
67.5	3565.44	3531.13	3466.92	3387.61	3271.13	3111.17	2939.94	2736.72	2513.22
90.0	3565.44	3552.98	3517.84	3456.10	3363.51	3241.62	3099.45	2925.97	2704.05
112.5	3565.44	3560.64	3532.48	3473.45	3392.12	3283.75	3136.40	2974.19	2775.92
135.0	3565.44	3569.43	3539.01	3489.00	3409.69	3299.07	3178.76	3008.66	2828.42
157.5	3565.44	3570.78	3545.10	3492.38	3426.59	3323.18	3206.47	3044.26	2859.73
180.0	3565.44	3565.83	3552.76	3507.47	3438.08	3351.57	3232.16	3063.18	2879.79
202.5	3565.44	3583.17	3572.58	3526.85	3464.89	3362.60	3227.42	3069.71	2893.30
225.0	3565.44	3574.16	3555.91	3515.36	3438.76	3346.16	3217.96	3064.98	2882.26
247.5	3565.44	3572.81	3552.98	3505.44	3436.50	3335.34	3209.85	3040.65	2850.72
270.0	3565.44	3556.81	3507.92	3431.77	3337.60	3216.61	3071.29	2876.18	2649.53
292.5	3565.44	3545.10	3490.35	3416.45	3318.00	3195.88	3035.92	2848.47	2627.68
315.0	3565.44	3537.89	3484.94	3404.51	3302.00	3161.64	3001.45	2808.14	2585.32
337.5	3565.44	3531.80	3475.25	3386.94	3274.96	3129.64	2960.89	2764.66	2535.75
360.0	3565.44	3520.54	3469.62	3375.67	3260.99	3112.30	2930.48	2730.19	2494.75
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	2225.97	1936.68	1617.43	1281.73	930.94	575.19	282.98	107.02	27.26
22.5	2223.71	1965.07	1639.28	1290.29	913.37	572.04	287.03	102.96	26.36
45.0	2243.31	1982.19	1653.70	1317.33	937.70	581.73	292.21	116.03	30.87
67.5	2248.04	1977.46	1655.06	1321.39	959.55	624.98	314.29	127.52	34.70
90.0	2470.87	2205.24	1900.86	1580.48	1261.91	899.62	581.95	287.03	105.22
112.5	2544.77	2271.93	1970.48	1654.15	1304.94	953.02	628.36	317.22	118.96
135.0	2598.61	2342.00	2050.23	1729.18	1391.45	1039.54	697.30	385.49	145.32
157.5	2645.93	2382.32	2107.68	1788.66	1445.75	1089.78	748.67	421.99	177.54
180.0	2665.75	2413.64	2135.39	1849.26	1518.75	1171.34	822.12	455.78	195.79
202.5	2680.62	2444.73	2173.92	1898.38	1557.05	1215.95	829.56	449.47	184.07
225.0	2684.45	2433.24	2177.53	1897.70	1549.16	1180.80	807.70	436.18	183.85
247.5	2647.73	2395.17	2116.70	1836.42	1498.47	1142.95	770.75	412.07	157.94
270.0	2414.54	2137.20	1840.03	1506.13	1175.39	806.35	473.58	192.86	57.00
292.5	2382.77	2092.36	1790.24	1446.65	1093.83	729.75	421.54	159.74	43.93
315.0	2319.24	2037.39	1715.44	1367.12	1026.02	673.42	357.78	132.25	31.77
337.5	2268.55	1967.77	1642.89	1301.78	946.49	596.82	297.85	110.17	30.42
360.0	2225.97	1936.68	1617.43	1281.73	930.94	575.19	282.98	107.02	27.26
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	13.07	13.97	15.77	18.25	16.67	16.90	18.02	16.45	13.74
22.5	14.19	12.84	13.29	19.83	19.60	20.28	20.73	18.70	15.32
45.0	16.22	14.19	13.74	19.83	20.73	26.14	27.49	22.98	18.48
67.5	19.38	14.19	14.65	19.60	18.93	17.12	19.83	18.02	16.00
90.0	27.26	16.22	14.87	15.77	17.80	17.12	16.67	18.70	18.25
112.5	31.32	18.25	13.74	16.67	18.93	18.25	18.25	18.48	14.65
135.0	31.77	21.63	11.94	13.74	18.02	17.57	15.77	14.87	11.94
157.5	42.13	13.74	11.04	16.45	16.67	17.35	20.05	20.50	17.80
180.0	45.51	13.74	9.46	14.65	16.45	17.35	16.67	16.90	20.50
202.5	48.44	16.00	9.46	11.49	17.57	20.28	20.95	22.76	22.98
225.0	48.44	16.45	11.49	16.00	28.61	32.44	31.99	31.32	29.06
247.5	41.01	15.55	10.36	11.49	16.22	19.60	18.25	20.50	22.76
270.0	16.45	10.81	13.07	18.25	20.05	17.80	18.02	21.85	20.05
292.5	16.67	11.72	15.55	18.70	20.28	20.05	20.50	17.57	13.29
315.0	23.21	11.94	13.07	18.48	17.80	16.45	14.87	12.84	10.14
337.5	15.77	13.74	16.90	18.25	18.93	20.05	19.60	15.32	11.04
360.0	13.07	13.97	15.77	18.25	16.67	16.90	18.02	16.45	13.74



C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	12.62	11.04	9.24	7.89	7.21	6.53	5.86	4.96	4.96
22.5	12.84	12.84	12.17	10.14	7.89	6.53	5.86	5.18	4.73
45.0	14.19	13.29	12.62	10.59	8.56	6.53	5.63	5.18	4.96
67.5	13.52	12.62	12.17	9.91	7.89	6.53	5.63	5.18	4.96
90.0	16.45	12.84	10.14	8.56	7.44	6.53	6.08	5.41	4.73
112.5	11.04	8.34	7.21	7.44	6.76	6.31	5.63	5.41	5.18
135.0	9.91	7.66	6.53	6.31	6.53	6.08	5.63	5.18	4.96
157.5	13.29	9.46	7.66	7.21	6.76	6.31	6.08	5.41	4.96
180.0	18.48	15.77	12.84	10.59	8.34	7.21	6.31	5.63	4.73
202.5	19.60	16.45	14.87	13.29	11.94	9.01	6.76	5.86	4.96
225.0	23.88	18.02	14.65	13.52	11.49	9.69	6.76	5.41	5.18
247.5	19.60	16.00	14.42	12.62	10.59	8.11	6.31	5.63	5.18
270.0	17.35	13.52	11.27	9.46	8.34	7.44	6.76	6.08	5.63
292.5	9.69	8.34	7.66	7.21	6.98	6.53	5.86	5.18	4.96
315.0	7.89	6.98	6.76	6.53	6.31	6.08	5.41	4.96	4.96
337.5	8.11	7.66	6.98	7.21	6.53	6.08	5.63	4.96	4.96
360.0	12.62	11.04	9.24	7.89	7.21	6.53	5.86	4.96	4.96
C/γ(°)	180.0								
0.0	4.92								
22.5	4.92								
45.0	4.92								
67.5	4.92								
90.0	4.92								
112.5	4.92								
135.0	4.92								
157.5	4.92								
180.0	4.92								
202.5	4.92								
225.0	4.92								
247.5	4.92								
270.0	4.92								
292.5	4.92								
315.0	4.92								
337.5	4.92								
360.0	4.92								

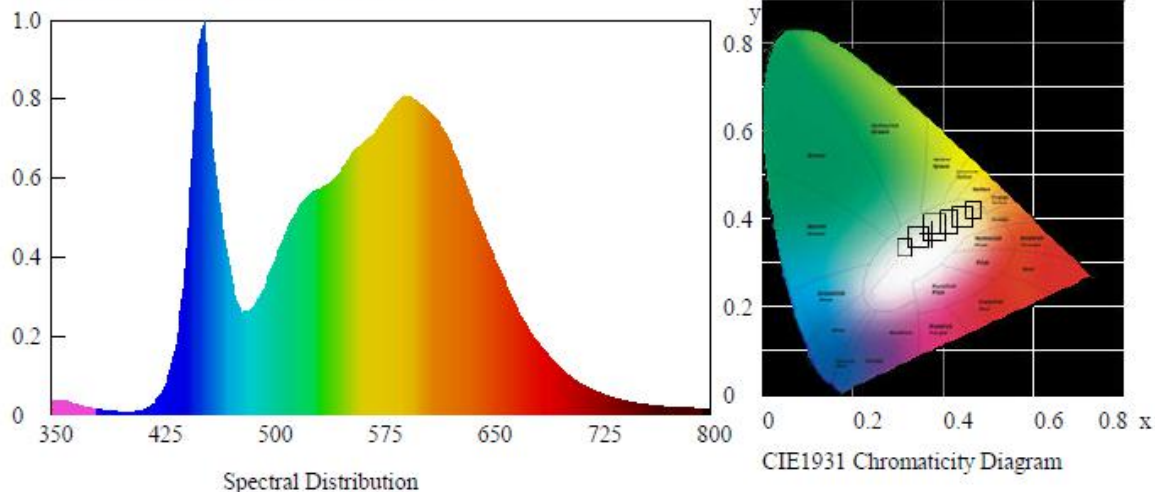
**HID-70-EX39-840-BYP-ADJ Tested at 277V****Test Condition**

Temperature: 25°C

Spectrum Range: 350-800 nm

RH: 58%

Scan Step: 5 nm

**Spectroradiometric Parameters**Chromaticity Coordinates:  $x=0.3754$   $y=0.3672$   $u'=0.2256$   $v'=0.4965$ 

Correlated Color Temperature: 4072 K

Dominant Wavelength: 579.0 nm(E)

Colour Fidelity Index:  $R_f=82$ Gamut Index:  $R_g=95$ 

Luminous Flux: 10631.41 lm

Purity: 0.2292

Chromaticity Difference: -0.00303Duv

Peak Wavelength: 455.0 nm

Color Ratio:  $K_r=38.5\%$   $K_g=51.8\%$   $K_b=9.8\%$ 

Bandwidth: 24.9nm

Radiant Flux: 34.315 W

Rendering Index:  $R_a=85.2$  $R_1=85$   $R_2=92$   $R_3=95$   $R_4=83$   $R_5=84$   $R_6=88$   $R_7=86$   $R_8=68$  $R_9=20$   $R_{10}=80$   $R_{11}=83$   $R_{12}=63$   $R_{13}=87$   $R_{14}=98$   $R_{15}=80$   $R_e=80$ **Electric Parameters**

Voltage: 277.14 V

Current: 0.273 A

Power Factor: 0.915

Power: 69.26 W

Luminous Efficacy: 153.5 lm/W



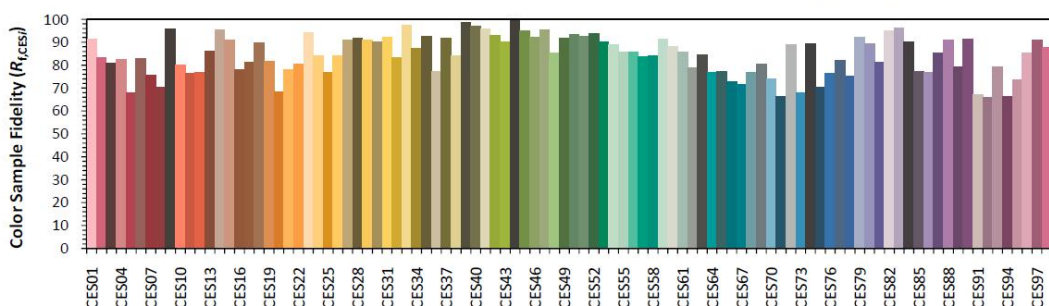
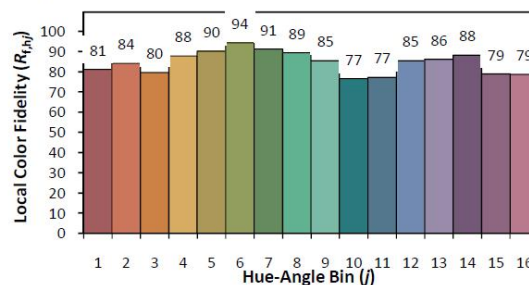
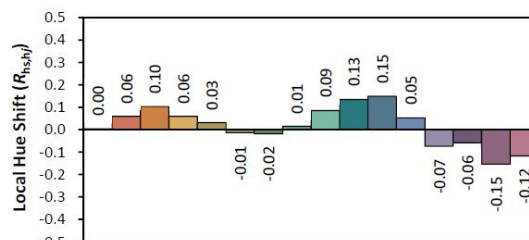
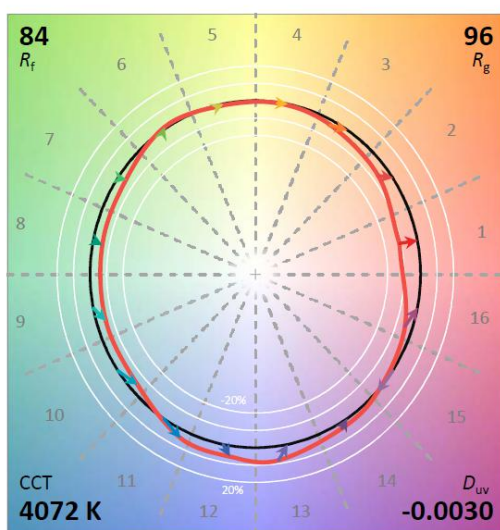
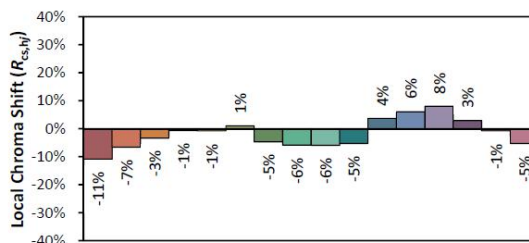
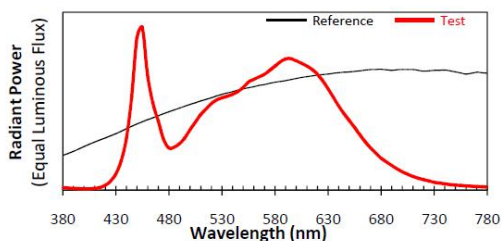
## ANSI/IES TM-30-18 Color Rendition Report

Source: BL201013003-9

Manufacturer: RAB Lighting Inc

Date: 2020/10/13

Model: HID-70-EX39-840-BYP-ADJ



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

$x$  0.3754  
 $y$  0.3672  
 $u'$  0.2256  
 $v'$  0.4965

CIE 13.3-1995  
(CRI)

$R_a$  85  
 $R_g$  20

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

**Zonal Flux Diagram**

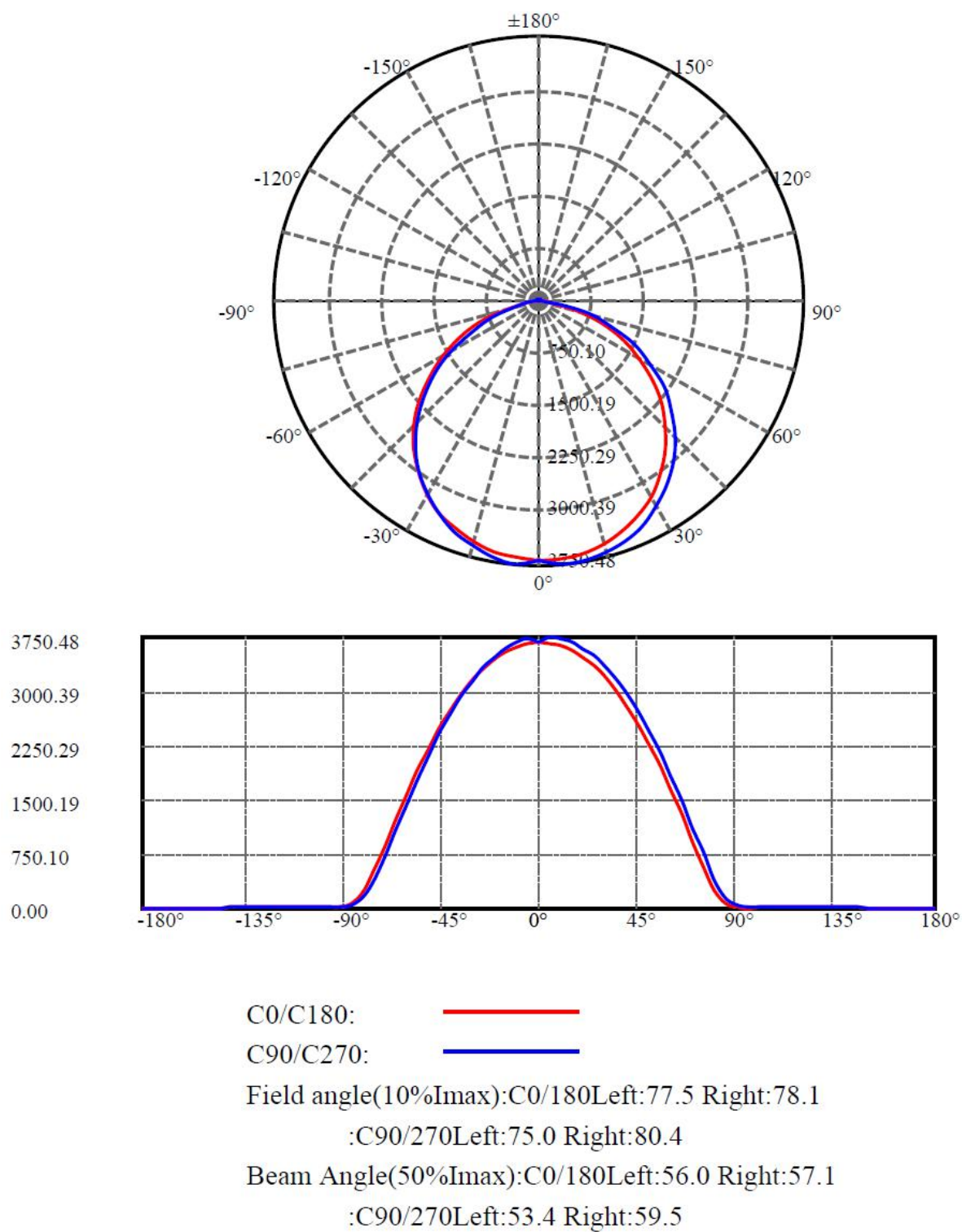
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3685.103	0.000	0	0.00%	0.00%
5.0	3671.553	87.947	87.947	0.00%	0.84%
10.0	3631.991	261.271	349.217	0.00%	3.32%
15.0	3564.479	426.890	776.107	0.00%	7.39%
20.0	3467.189	579.508	1355.615	0.00%	12.90%
25.0	3341.590	714.115	2069.731	0.00%	19.70%
30.0	3185.033	825.950	2895.68	0.00%	27.57%
35.0	2997.479	910.418	3806.098	0.00%	36.23%
40.0	2785.785	964.894	4770.992	0.00%	45.42%
45.0	2536.858	985.530	5756.523	0.00%	54.80%
50.0	2254.895	968.244	6724.766	0.00%	64.02%
55.0	1956.997	915.806	7640.572	0.00%	72.74%
60.0	1618.083	826.370	8466.942	0.00%	80.60%
65.0	1257.246	698.998	9165.94	0.00%	87.26%
70.0	889.897	543.670	9709.61	0.00%	92.43%
75.0	536.086	372.729	10082.339	0.00%	95.98%
80.0	246.655	209.440	10291.779	0.00%	97.97%
85.0	77.946	88.202	10379.981	0.00%	98.81%
90.0	22.878	27.606	10407.587	0.00%	99.08%
95.0	13.511	9.963	10417.55	0.00%	99.17%
100.0	13.566	7.357	10424.908	0.00%	99.24%
105.0	17.210	8.235	10433.143	0.00%	99.32%
110.0	20.106	9.754	10442.897	0.00%	99.41%
115.0	19.982	10.151	10453.047	0.00%	99.51%
120.0	20.287	9.789	10462.837	0.00%	99.60%
125.0	20.467	9.420	10472.257	0.00%	99.69%
130.0	17.682	8.295	10480.551	0.00%	99.77%
135.0	14.342	6.471	10487.022	0.00%	99.83%
140.0	11.834	4.847	10491.869	0.00%	99.88%
145.0	10.545	3.734	10495.603	0.00%	99.91%
150.0	9.506	2.953	10498.555	0.00%	99.94%
155.0	8.259	2.248	10500.803	0.00%	99.96%
160.0	6.984	1.599	10502.402	0.00%	99.98%
165.0	6.083	1.077	10503.479	0.00%	99.99%
170.0	5.460	0.685	10504.164	0.00%	100.00%
175.0	5.141	0.379	10504.543	0.00%	100.00%
180.0	4.930	0.120	10504.663	0.00%	100.00%



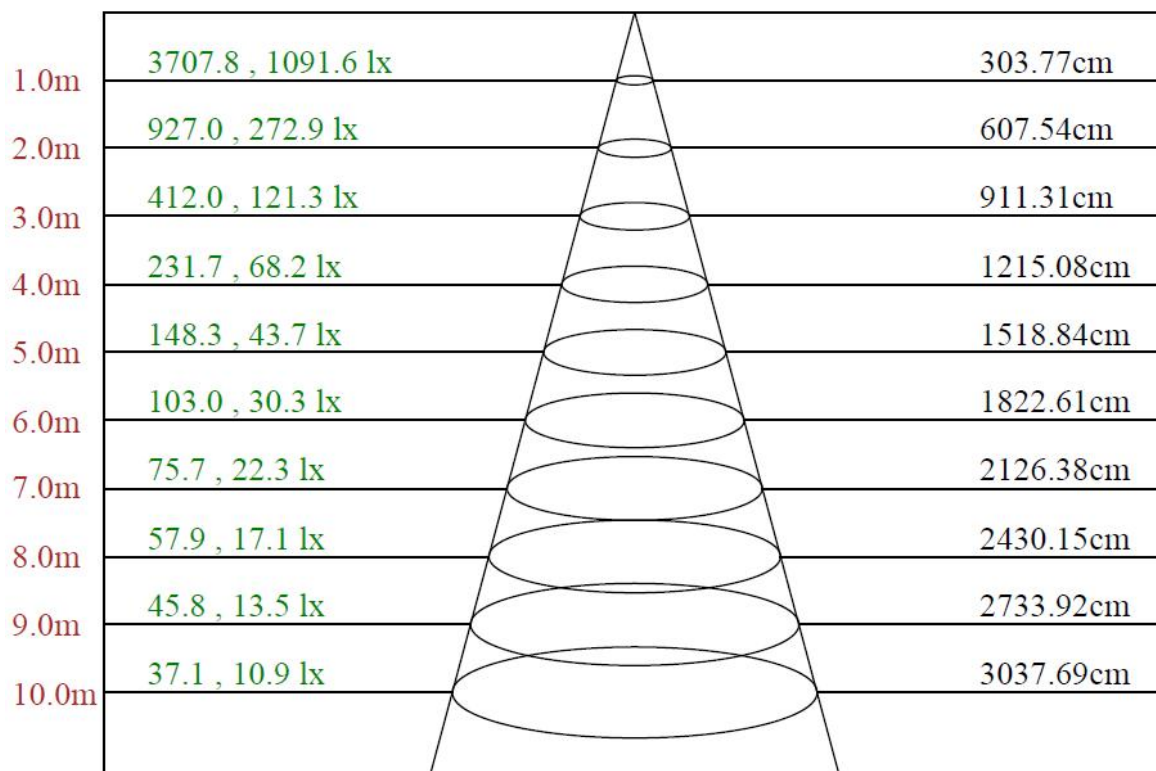
## Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]





## Lux distance Curve



Max , Ave

Beam angle of C90 plane 113.28

**Luminous Intensity Distribution Data**

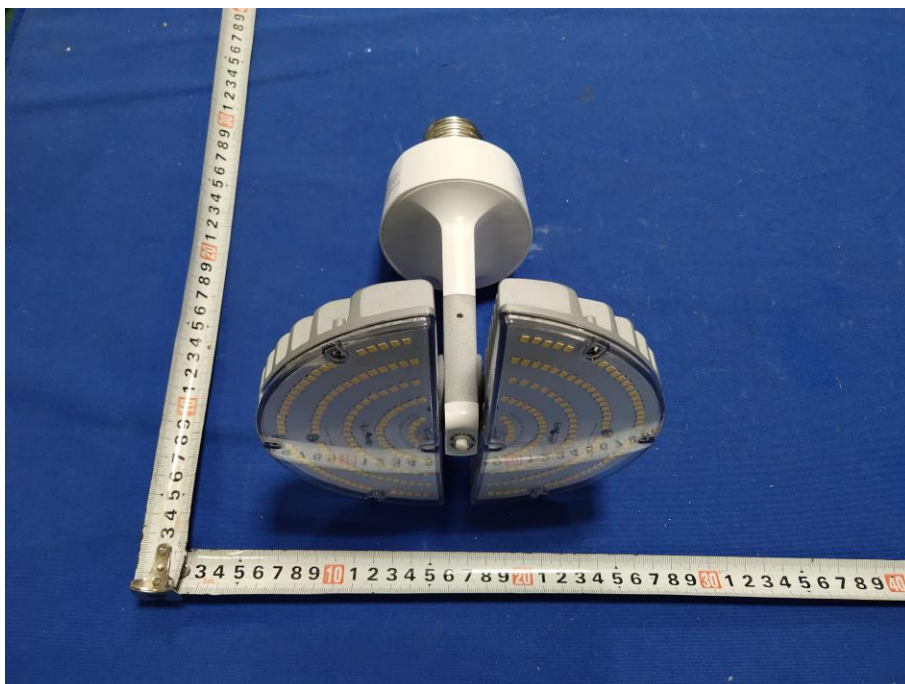
C/ $\gamma$ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	3685.10	3667.34	3634.31	3562.91	3462.26	3349.18	3203.08	3010.85	2790.03
22.5	3685.10	3660.91	3614.57	3555.38	3465.58	3345.41	3185.34	3006.86	2798.01
45.0	3685.10	3637.41	3603.04	3542.52	3455.38	3329.89	3166.05	2993.34	2798.67
67.5	3685.10	3629.65	3599.50	3530.32	3427.23	3299.52	3144.32	2958.53	2751.89
90.0	3685.10	3750.48	3730.97	3679.53	3597.72	3495.29	3349.63	3165.61	2975.82
112.5	3685.10	3723.43	3682.64	3624.99	3547.62	3434.10	3278.68	3109.51	2909.97
135.0	3685.10	3688.18	3652.04	3590.85	3494.18	3376.23	3233.45	3056.08	2849.89
157.5	3685.10	3671.33	3627.21	3555.82	3462.26	3345.19	3194.65	3007.75	2786.48
180.0	3685.10	3650.05	3614.79	3540.96	3439.64	3309.50	3161.84	2967.84	2743.91
202.5	3685.10	3643.17	3603.93	3529.88	3431.44	3294.20	3126.58	2933.70	2725.73
225.0	3685.10	3634.31	3588.41	3521.68	3415.92	3284.22	3124.81	2915.96	2727.06
247.5	3685.10	3624.55	3581.98	3507.93	3414.37	3283.11	3125.92	2939.02	2720.85
270.0	3685.10	3728.98	3675.32	3596.17	3475.56	3322.58	3148.98	2938.35	2697.79
292.5	3685.10	3689.51	3642.51	3571.12	3465.80	3321.91	3156.74	2962.74	2734.82
315.0	3685.10	3680.42	3630.76	3557.81	3462.04	3333.22	3173.81	2989.34	2760.32
337.5	3685.10	3665.12	3629.87	3563.80	3458.04	3341.87	3186.67	3004.20	2801.33
360.0	3685.10	3667.34	3634.31	3562.91	3462.26	3349.18	3203.08	3010.85	2790.03
C/ $\gamma$ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	2539.93	2276.32	1979.67	1651.31	1306.33	936.29	561.15	251.42	77.16
22.5	2565.21	2290.73	2028.00	1700.53	1341.58	948.71	568.25	247.21	78.04
45.0	2570.97	2291.17	2015.36	1667.28	1326.50	928.09	536.54	230.14	82.26
67.5	2521.09	2236.85	1961.71	1624.49	1265.31	878.20	518.59	208.41	68.29
90.0	2732.38	2471.87	2177.66	1845.31	1489.91	1121.42	763.36	392.65	145.44
112.5	2660.99	2387.84	2094.51	1749.97	1384.59	1030.96	664.25	332.13	123.05
135.0	2597.58	2321.77	2010.04	1677.47	1310.98	947.15	596.18	280.69	90.02
157.5	2535.94	2246.39	1940.42	1589.01	1222.30	869.33	522.13	236.12	75.16
180.0	2497.14	2214.02	1906.72	1573.93	1210.55	852.71	508.16	233.69	69.84
202.5	2469.21	2187.63	1912.49	1569.94	1202.79	836.30	495.31	231.69	68.29
225.0	2474.97	2199.38	1909.83	1587.02	1212.99	853.59	499.96	250.54	69.84
247.5	2489.38	2201.60	1926.24	1596.77	1244.03	878.87	532.77	262.73	87.36
270.0	2416.22	2110.92	1765.49	1438.03	1064.66	717.46	374.03	158.75	43.46
292.5	2465.22	2157.92	1828.68	1475.05	1111.89	742.29	419.26	171.83	46.56
315.0	2503.13	2220.45	1907.17	1550.66	1183.50	820.34	488.65	214.40	53.88
337.5	2550.35	2263.46	1947.96	1592.56	1238.04	876.65	528.78	244.11	68.51
360.0	2539.93	2276.32	1979.67	1651.31	1306.33	936.29	561.15	251.42	77.16
C/ $\gamma$ (°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	20.84	9.53	12.42	15.96	19.95	18.62	17.74	21.28	18.85
22.5	21.51	9.53	12.19	16.63	21.51	21.51	21.95	23.95	21.28
45.0	22.17	10.64	15.96	25.72	33.70	35.47	31.93	30.82	26.16
67.5	20.40	10.42	12.42	16.63	19.73	19.95	19.51	22.84	21.95
90.0	37.91	13.97	11.75	13.75	19.29	19.29	15.52	19.95	21.28
112.5	30.60	17.74	14.19	15.52	18.18	19.95	20.18	20.62	16.41
135.0	23.72	13.75	10.42	14.86	18.18	16.63	16.19	14.63	11.75
157.5	20.62	13.30	13.08	19.29	17.52	18.62	19.95	17.96	13.75
180.0	19.51	13.75	16.63	16.19	17.74	15.74	17.07	17.52	15.96
202.5	21.73	13.30	13.75	14.41	19.51	19.07	20.40	20.84	17.96
225.0	23.95	13.08	13.97	15.96	18.40	22.62	27.49	27.05	21.95
247.5	23.72	17.07	14.19	15.52	19.07	17.74	18.62	19.29	17.96
270.0	21.51	16.63	16.19	19.07	20.18	17.29	20.62	20.18	18.62
292.5	21.06	14.19	15.96	19.51	20.62	19.07	19.29	16.85	12.64
315.0	17.96	10.64	11.97	18.62	19.51	17.29	15.96	13.75	10.86
337.5	18.85	18.62	11.97	17.74	18.62	20.84	22.17	19.95	15.52
360.0	20.84	9.53	12.42	15.96	19.95	18.62	17.74	21.28	18.85



C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	17.52	14.19	11.97	9.76	8.20	7.10	6.21	5.32	5.32
22.5	17.74	15.52	14.19	12.64	10.42	7.98	5.99	5.54	5.32
45.0	19.95	16.41	14.19	12.64	10.86	7.54	6.21	5.32	5.10
67.5	18.40	15.74	13.75	11.97	9.31	7.32	6.21	5.32	5.32
90.0	19.51	15.74	12.86	10.64	8.43	7.54	6.87	5.99	5.54
112.5	12.19	8.87	7.76	7.32	7.10	6.87	6.21	5.77	5.10
135.0	8.87	7.54	6.65	6.65	6.43	6.21	5.99	5.32	5.10
157.5	9.76	7.76	7.32	7.10	6.87	5.99	5.77	5.10	4.66
180.0	13.30	12.42	9.98	8.43	7.54	6.65	5.99	5.32	4.88
202.5	14.19	13.08	12.64	11.75	9.53	7.32	6.21	5.54	4.88
225.0	17.07	13.30	13.08	11.97	9.98	7.98	6.21	5.54	5.10
247.5	15.96	13.30	12.86	11.53	9.53	7.32	6.21	5.54	4.88
270.0	15.30	11.75	9.53	8.43	7.76	7.10	6.43	5.77	5.77
292.5	9.76	8.20	7.76	7.10	6.87	6.21	5.54	5.32	5.10
315.0	8.65	7.10	6.65	6.87	6.43	6.21	5.54	5.32	5.10
337.5	11.31	8.43	7.54	7.32	6.87	6.43	5.77	5.32	5.10
360.0	17.52	14.19	11.97	9.76	8.20	7.10	6.21	5.32	5.32
C/γ(°)	180.0								
0.0	4.93								
22.5	4.93								
45.0	4.93								
67.5	4.93								
90.0	4.93								
112.5	4.93								
135.0	4.93								
157.5	4.93								
180.0	4.93								
202.5	4.93								
225.0	4.93								
247.5	4.93								
270.0	4.93								
292.5	4.93								
315.0	4.93								
337.5	4.93								
360.0	4.93								



## **Photo Document**



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