



Shenzhen Belling Efficiency Testing Lab Co., Ltd



Report No.:BL201013004-9

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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-EX39-850-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-70-EX39-850-BYP-ADJ
<b>Rated Inputs</b>	AC 100-277V 50/60Hz
<b>Rated Power</b>	70 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 Mesurer	XUYAO	HS-1	N/A	2021-04-08
Environment Mesurer	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-EX39-850-BYP-ADJ are the same to the product in the report BL200717011-9 and is authorized by original applicant to use their test data.
- Note:All the data in previous report BL200717011-9 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-EX39-850-BYP-ADJ	120.01	60	0.557	66.04	0.989
	277.09	60	0.269	68.15	0.915

#### 3.1.2 Photometric data

Model Number	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	CRI	R9
HID-70-EX39-850-BYP-ADJ	9787.13	148.2	5136	84.5	14
	10351.99	151.9	5114	84.4	13

#### 3.1.3 Chromaticity Coordinate

Model Number	Duv	x	y	u'	v'
HID-70-EX39-850-BYP-ADJ	+0.003	0.3418	0.3550	0.2079	0.4858
	+0.0032	0.3425	0.3559	0.208	0.4864



### 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-EX39-850-BYP-ADJ	120.07	60	0.5500	65.26	0.9884
	277.10	60	0.2660	67.35	0.9141

#### 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	9709.76	148.79	82.68	99.14
277	10227.74	151.86	82.55	99.13



## 4 Test Data

### HID-70-EX39-850-BYP-ADJ Tested at 120V

#### Test Condition

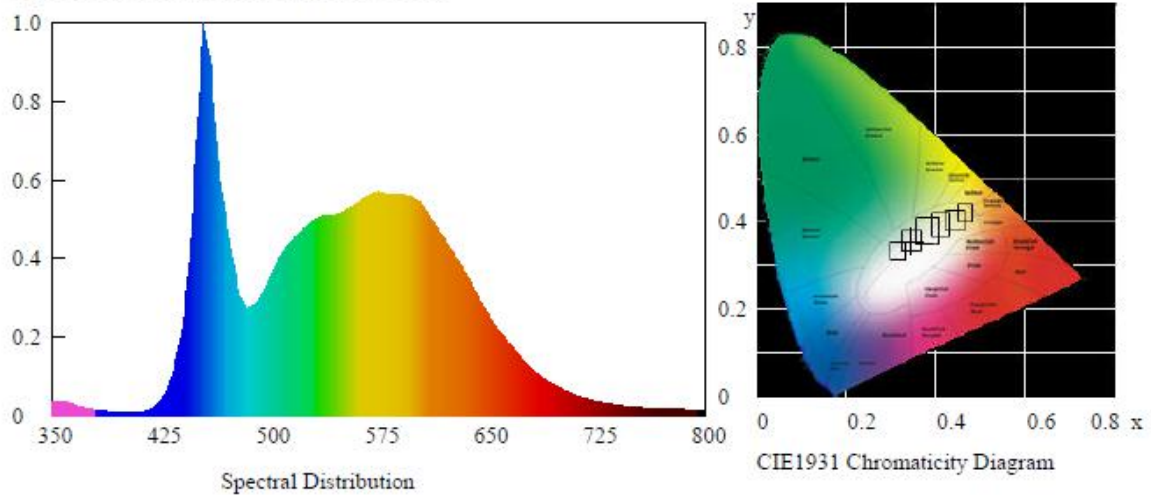
Temperature: 25°C

RH: 58%

Spectrum Range: 350-800 nm

Scan Step: 5 nm

#### Spectroradiometric Parameters

Chromaticity Coordinates:  $x=0.3418$   $y=0.3550$   $u'=0.2079$   $v'=0.4858$ 

Correlated Color Temperature: 5136 K

Dominant Wavelength: 566.0 nm(E)

Colour Fidelity Index:  $R_f=80$ Gamut Index:  $R_g=92$ 

Luminous Flux: 9787.13 lm

Purity: 0.0902

Chromaticity Difference: +0.003Duv

Peak Wavelength: 455.0 nm

Color Ratio:  $K_r=33.7\%$   $K_g=54.4\%$   $K_b=11.9\%$ 

Bandwidth: 27.4nm

Radiant Flux: 28.953 W

Rendering Index:  $R_a=84.5$  $R_1=84$   $R_2=93$   $R_3=95$   $R_4=81$   $R_5=83$   $R_6=88$   $R_7=86$   $R_8=67$  $R_9=14$   $R_{10}=81$   $R_{11}=80$   $R_{12}=61$   $R_{13}=87$   $R_{14}=98$   $R_{15}=78$   $R_e=78$ 

#### Electric Parameters

Voltage: 120.01 V

Current: 0.557 A

Power Factor: 0.989

Power: 66.04 W

Luminous Efficacy: 148.2 lm/W





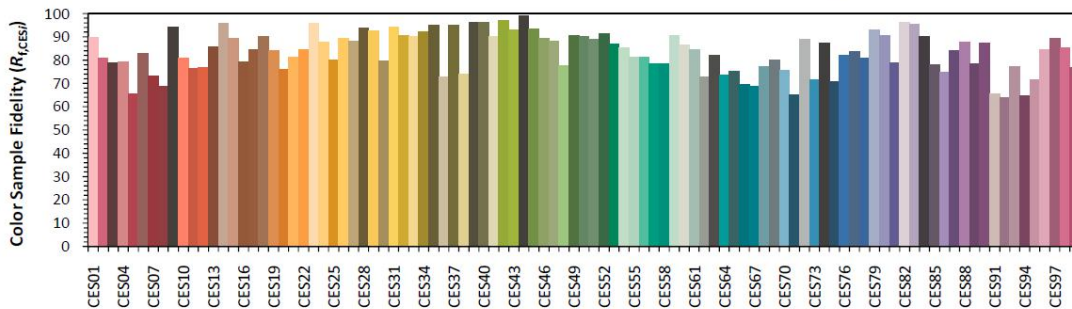
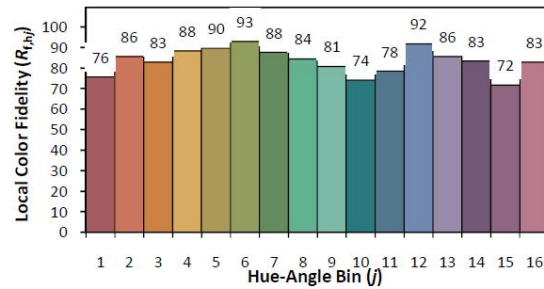
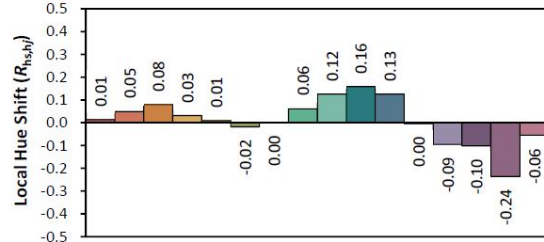
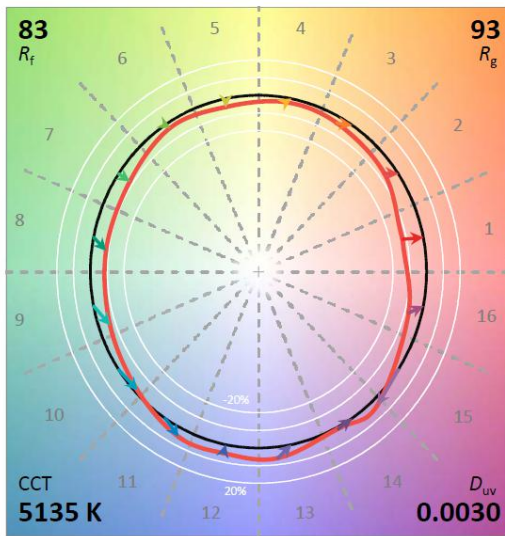
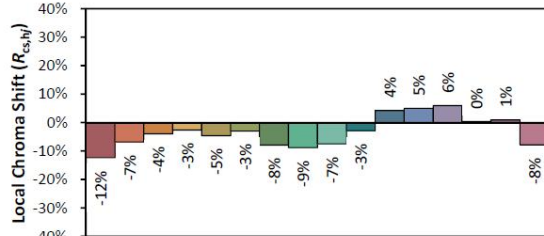
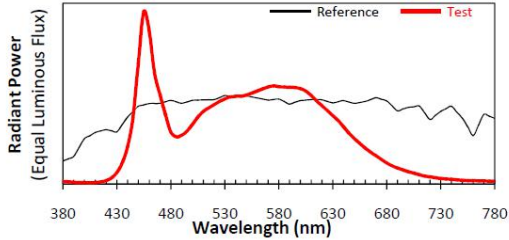
### ANSI/IES TM-30-18 Color Rendition Report

Source: BL201013004-9

Manufacturer: RAB Lighting Inc

Date: 2020/10/13

Model: HID-70-EX39-850-BYP-ADJ



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

$x$  0.3418  
 $y$  0.3550  
 $u'$  0.2079  
 $v'$  0.4858

CIE 13.3-1995 (CRI)	
$R_a$	85
$R_g$	13

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



## Zonal Flux Diagram

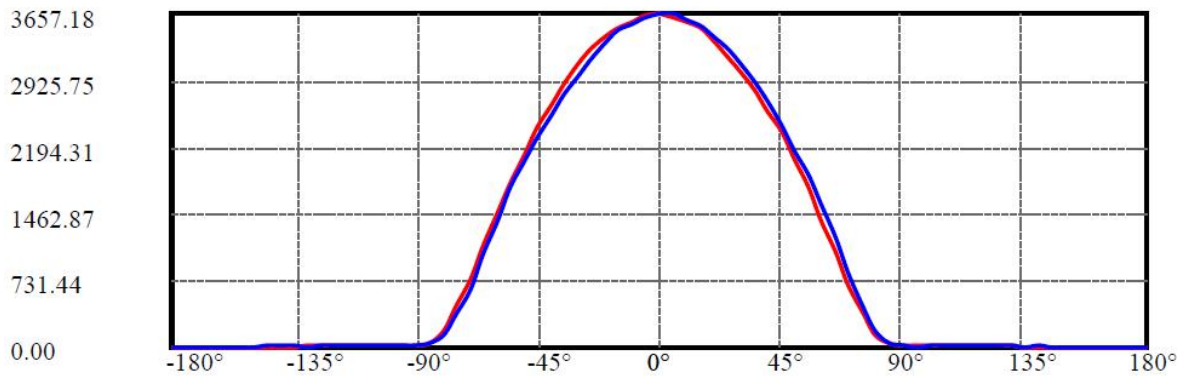
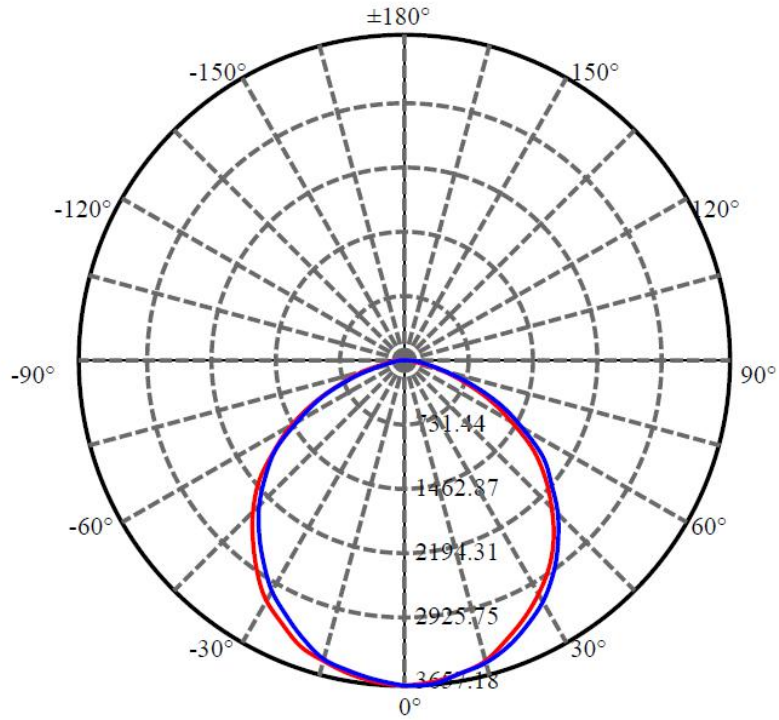
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3652.387	0.000	0	0.00%	0.00%
5.0	3633.438	87.100	87.1	0.00%	0.90%
10.0	3573.566	257.817	344.917	0.00%	3.55%
15.0	3494.634	419.281	764.198	0.00%	7.87%
20.0	3380.218	566.584	1330.782	0.00%	13.71%
25.0	3226.458	692.918	2023.701	0.00%	20.84%
30.0	3055.491	794.986	2818.687	0.00%	29.03%
35.0	2851.358	869.825	3688.512	0.00%	37.99%
40.0	2626.207	913.890	4602.402	0.00%	47.40%
45.0	2372.150	925.486	5527.888	0.00%	56.93%
50.0	2095.210	902.696	6430.584	0.00%	66.23%
55.0	1795.850	846.046	7276.63	0.00%	74.94%
60.0	1454.070	751.210	8027.84	0.00%	82.68%
65.0	1093.320	619.275	8647.115	0.00%	89.06%
70.0	725.980	460.658	9107.774	0.00%	93.80%
75.0	401.137	294.610	9402.384	0.00%	96.83%
80.0	162.537	150.824	9553.207	0.00%	98.39%
85.0	43.771	56.059	9609.266	0.00%	98.97%
90.0	17.066	16.658	9625.924	0.00%	99.14%
95.0	11.455	7.809	9633.733	0.00%	99.22%
100.0	13.540	6.792	9640.525	0.00%	99.29%
105.0	17.812	8.389	9648.913	0.00%	99.37%
110.0	18.237	9.423	9658.336	0.00%	99.47%
115.0	17.555	9.063	9667.399	0.00%	99.56%
120.0	18.379	8.736	9676.134	0.00%	99.65%
125.0	16.139	7.979	9684.113	0.00%	99.74%
130.0	11.944	6.106	9690.219	0.00%	99.80%
135.0	11.081	4.652	9694.872	0.00%	99.85%
140.0	9.048	3.727	9698.599	0.00%	99.89%
145.0	8.623	2.948	9701.547	0.00%	99.92%
150.0	8.096	2.462	9704.009	0.00%	99.94%
155.0	7.400	1.961	9705.97	0.00%	99.96%
160.0	6.860	1.496	9707.466	0.00%	99.98%
165.0	6.101	1.068	9708.534	0.00%	99.99%
170.0	5.650	0.697	9709.231	0.00%	99.99%
175.0	5.470	0.398	9709.628	0.00%	100.00%
180.0	5.487	0.131	9709.759	0.00%	100.00%



### Luminous Intensity Distribution Diagram

Light Distribution Curve [Unit:cd]



C0/C180: —

C90/C270: —

Field angle(10%Imax):C0/180Left:76.6 Right:75.2

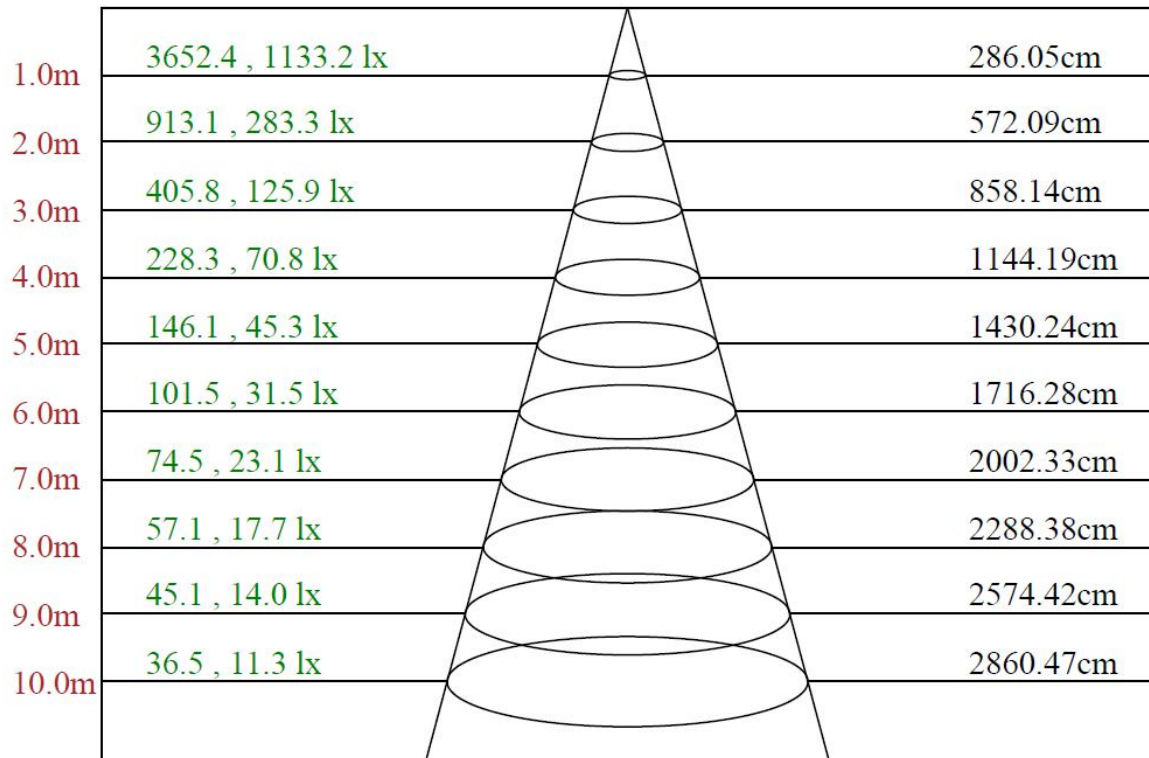
:C90/270Left:74.9 Right:76.6

Beam Angle(50%Imax):C0/180Left:54.6 Right:53.9

:C90/270Left:53.6 Right:56.0



## Lux distance Curve



Max , Ave      Beam angle of C112.5 plane 110.08

**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	3652.39	3621.77	3570.90	3487.30	3350.77	3187.68	3021.50	2823.82	2597.92
22.5	3652.39	3639.48	3569.05	3486.89	3362.92	3193.65	3023.77	2826.90	2611.30
45.0	3652.39	3631.03	3567.20	3480.50	3356.95	3196.54	3018.62	2828.35	2610.27
67.5	3652.39	3638.03	3566.37	3487.09	3359.63	3186.03	3014.09	2811.67	2593.18
90.0	3652.39	3654.30	3579.96	3516.54	3416.26	3279.11	3115.40	2914.22	2693.47
112.5	3652.39	3657.18	3573.79	3520.45	3416.26	3279.52	3096.25	2896.09	2684.82
135.0	3652.39	3639.68	3585.94	3505.01	3410.49	3278.90	3100.78	2887.03	2665.26
157.5	3652.39	3637.42	3572.14	3492.03	3413.99	3275.61	3106.55	2891.98	2659.49
180.0	3652.39	3626.50	3575.02	3496.56	3409.67	3274.79	3106.55	2895.07	2660.73
202.5	3652.39	3633.92	3581.82	3508.92	3413.37	3270.67	3106.34	2901.24	2670.20
225.0	3652.39	3634.74	3579.35	3491.00	3392.78	3274.17	3110.05	2893.83	2655.99
247.5	3652.39	3636.18	3576.46	3489.15	3397.72	3261.81	3095.22	2889.09	2652.08
270.0	3652.39	3611.26	3553.81	3470.00	3332.86	3155.76	2975.99	2764.92	2551.17
292.5	3652.39	3628.56	3571.93	3481.94	3350.57	3158.23	2989.17	2789.43	2566.82
315.0	3652.39	3618.88	3577.29	3500.68	3343.36	3167.09	2995.97	2802.40	2572.38
337.5	3652.39	3626.09	3576.05	3500.07	3355.92	3183.77	3011.62	2805.69	2574.24
360.0	3652.39	3621.77	3570.90	3487.30	3350.77	3187.68	3021.50	2823.82	2597.92
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	2352.05	2067.67	1754.25	1393.48	1042.38	683.05	375.81	144.15	42.01
22.5	2360.90	2095.26	1771.76	1413.86	1049.59	698.28	381.78	145.18	34.80
45.0	2363.79	2085.38	1765.99	1411.19	1040.94	682.63	360.57	145.79	34.80
67.5	2334.54	2078.17	1763.93	1414.89	1049.59	696.22	341.83	114.29	30.48
90.0	2438.53	2158.27	1894.28	1563.16	1213.71	821.22	451.38	186.57	44.27
112.5	2436.06	2156.22	1891.40	1535.36	1198.68	794.45	416.99	172.15	44.69
135.0	2416.30	2129.24	1857.63	1525.27	1159.96	773.24	423.79	166.59	43.45
157.5	2396.32	2118.12	1819.12	1488.41	1133.19	773.86	426.47	168.45	46.54
180.0	2407.85	2115.03	1803.68	1479.35	1116.31	746.47	451.59	177.30	52.30
202.5	2411.35	2109.88	1807.18	1468.23	1107.04	748.94	436.97	176.06	49.63
225.0	2404.56	2110.29	1797.70	1461.02	1101.27	746.06	422.55	193.98	53.54
247.5	2394.88	2103.50	1806.97	1481.20	1133.60	773.24	457.97	211.28	61.16
270.0	2293.36	2034.10	1749.31	1389.36	1016.43	639.18	362.63	140.65	35.21
292.5	2306.74	2060.46	1752.40	1417.78	1038.47	663.89	370.04	148.68	38.92
315.0	2311.69	2044.61	1764.55	1419.22	1038.88	672.75	371.07	161.24	44.07
337.5	2325.48	2057.17	1733.46	1403.36	1053.09	702.20	366.75	148.26	44.48
360.0	2352.05	2067.67	1754.25	1393.48	1042.38	683.05	375.81	144.15	42.01
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	24.09	12.36	14.42	15.03	16.27	17.09	18.12	15.44	11.53
22.5	20.59	10.30	12.56	16.89	15.65	14.21	13.39	11.12	9.27
45.0	12.77	11.53	14.00	18.33	19.97	19.36	18.53	14.21	9.88
67.5	10.91	10.71	14.21	18.53	17.30	14.83	17.09	13.59	9.68
90.0	14.62	9.06	11.94	17.50	18.12	18.33	18.33	18.12	13.39
112.5	15.03	11.12	14.83	25.53	28.21	27.80	26.98	19.36	11.74
135.0	14.83	9.06	11.74	16.68	18.33	17.30	18.12	19.77	17.50
157.5	14.42	9.27	13.39	15.24	16.47	14.42	15.24	17.30	15.65
180.0	15.65	11.53	13.18	16.47	15.65	17.92	18.12	15.86	11.94
202.5	16.68	11.74	12.15	16.89	16.47	14.83	15.03	12.36	9.88
225.0	15.44	11.94	14.83	18.95	17.30	17.09	18.12	17.30	12.36
247.5	17.30	11.74	13.80	17.30	17.92	14.00	15.44	17.30	3.71
270.0	18.74	12.77	13.59	19.15	18.74	17.09	18.95	16.06	6.38
292.5	23.48	14.42	14.42	18.74	19.77	24.30	25.12	15.86	17.71
315.0	20.80	12.97	14.42	18.53	18.95	16.89	19.97	17.92	15.24
337.5	17.71	12.77	13.18	15.24	16.68	15.44	17.50	16.68	15.24
360.0	24.09	12.36	14.42	15.03	16.27	17.09	18.12	15.44	11.53

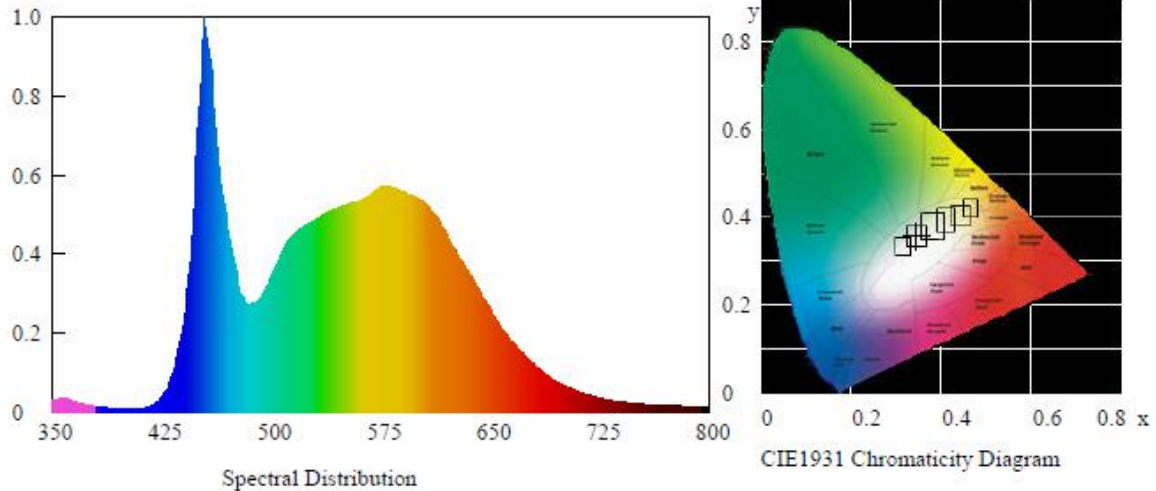


<b>C/γ(°)</b>	<b>135.0</b>	<b>140.0</b>	<b>145.0</b>	<b>150.0</b>	<b>155.0</b>	<b>160.0</b>	<b>165.0</b>	<b>170.0</b>	<b>175.0</b>
0.0	9.27	7.41	6.80	6.38	5.77	6.38	5.97	5.56	5.56
22.5	7.41	6.80	6.18	5.97	5.77	6.59	5.77	5.56	5.35
45.0	7.00	5.56	5.77	6.18	6.38	5.97	5.56	5.56	5.35
67.5	11.94	7.00	6.18	5.56	6.18	5.97	5.77	5.56	5.35
90.0	8.44	11.53	11.12	9.27	8.24	6.38	6.18	5.35	5.35
112.5	13.80	11.74	10.91	11.12	9.88	7.83	6.18	5.56	5.15
135.0	12.77	11.12	9.88	10.71	9.06	7.83	6.38	5.77	5.35
157.5	14.00	10.71	9.47	7.00	6.59	7.00	6.18	5.56	5.15
180.0	9.27	7.41	7.00	6.18	5.97	5.97	5.77	5.56	5.35
202.5	7.83	6.80	6.38	5.77	5.77	6.59	6.18	5.56	5.35
225.0	9.27	6.18	5.77	6.59	7.21	7.00	6.18	5.77	5.56
247.5	13.18	10.91	9.47	8.65	7.83	6.80	6.59	5.77	5.56
270.0	13.39	11.94	12.15	11.33	9.06	7.83	6.59	6.18	6.18
292.5	14.62	10.09	11.53	11.33	9.47	7.62	6.18	5.56	5.77
315.0	12.15	9.27	11.12	10.30	8.44	7.21	6.18	5.77	5.56
337.5	12.97	10.30	8.24	7.21	6.80	6.80	5.97	5.77	5.56
360.0	9.27	7.41	6.80	6.38	5.77	6.38	5.97	5.56	5.56
<b>C/γ(°)</b>	<b>180.0</b>								
0.0	5.49								
22.5	5.49								
45.0	5.49								
67.5	5.49								
90.0	5.49								
112.5	5.49								
135.0	5.49								
157.5	5.49								
180.0	5.49								
202.5	5.49								
225.0	5.49								
247.5	5.49								
270.0	5.49								
292.5	5.49								
315.0	5.49								
337.5	5.49								
360.0	5.49								

**HID-70-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:  $x=0.3425$   $y=0.3559$   $u'=0.208$   $v'=0.4864$

Correlated Color Temperature: 5114 K

Dominant Wavelength: 566.0 nm(E)

Colour Fidelity Index:  $R_f=80$

Gamut Index:  $R_g=92$

Luminous Flux: 10351.99 lm

Purity: 0.0944

Chromaticity Difference:  $+0.0032D_{uv}$

Peak Wavelength: 455.0 nm

Color Ratio:  $K_r=33.8\%$   $K_g=54.3\%$   $K_b=11.9\%$

Bandwidth: 28.1nm

Radiant Flux: 30.03 W

Rendering Index:  $R_a=84.4$

$R_1=83$   $R_2=92$   $R_3=95$   $R_4=81$   $R_5=83$   $R_6=88$   $R_7=86$   $R_8=67$

$R_9=13$   $R_{10}=81$   $R_{11}=80$   $R_{12}=60$   $R_{13}=87$   $R_{14}=98$   $R_{15}=78$   $R_e=78$

**Electric Parameters**

Voltage: 277.09 V

Current: 0.269 A

Power Factor: 0.915

Power: 68.15 W

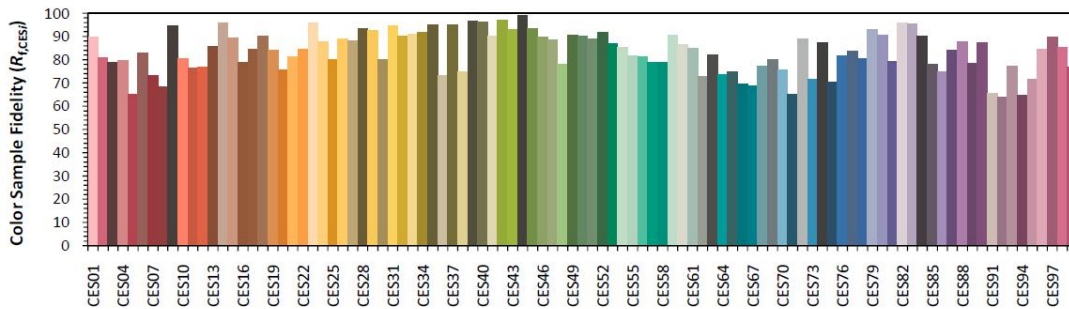
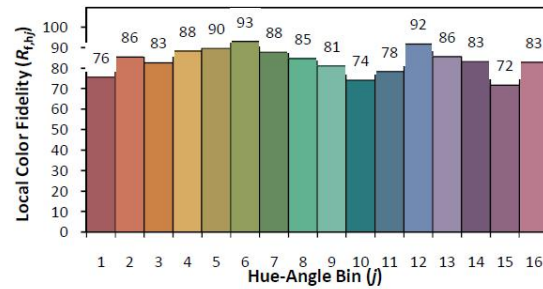
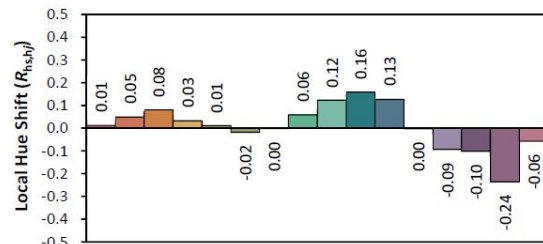
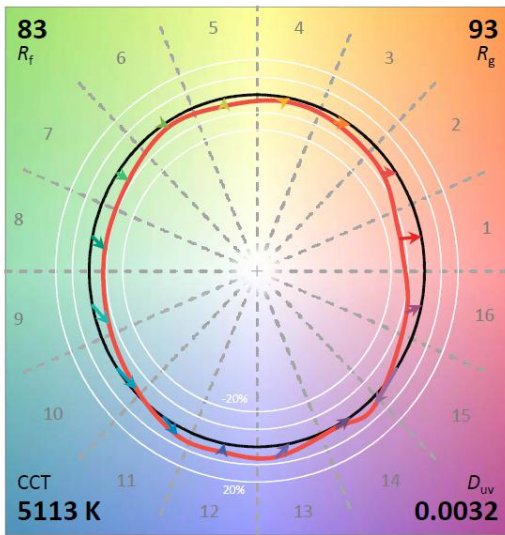
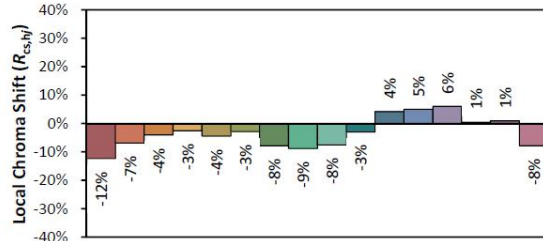
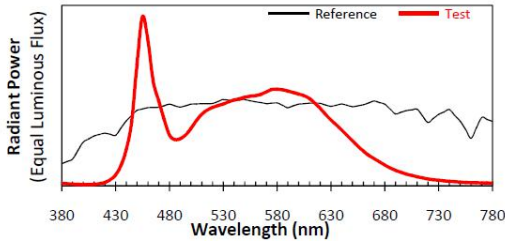
Luminous Efficacy: 151.9 lm/W



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

Source: BL201013004-9  
 Date: 2020/10/13

Manufacturer: RAB Lighting Inc  
 Model: HID-70-EX39-850-BYP-ADJ



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

$x$  0.3425  
 $y$  0.3559  
 $u'$  0.2080  
 $v'$  0.4864

CIE 13.3-1995 (CRI)	
$R_a$	84
$R_g$	12

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





## Zonal Flux Diagram

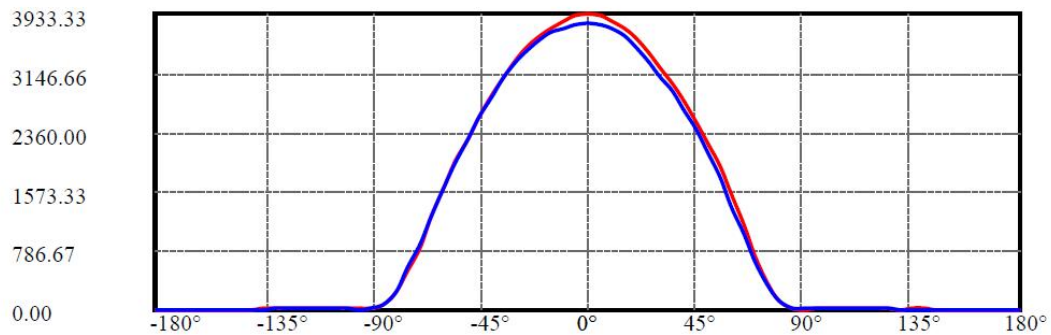
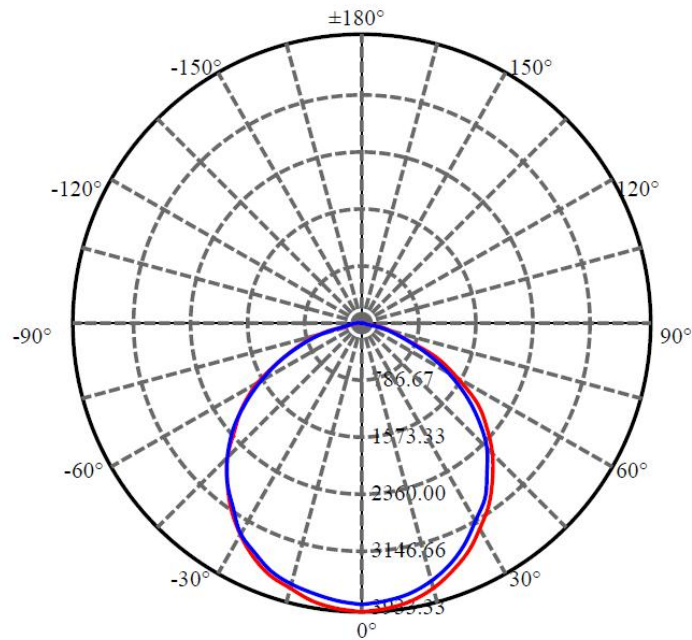
Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3842.926	0.000	0	0.00%	0.00%
5.0	3815.898	91.560	91.56	0.00%	0.90%
10.0	3757.725	270.940	362.5	0.00%	3.54%
15.0	3674.584	440.890	803.39	0.00%	7.86%
20.0	3555.574	595.977	1399.367	0.00%	13.68%
25.0	3394.285	729.291	2128.657	0.00%	20.81%
30.0	3210.718	836.501	2965.159	0.00%	28.99%
35.0	2996.314	914.770	3879.929	0.00%	37.94%
40.0	2761.434	961.364	4841.292	0.00%	47.33%
45.0	2493.606	973.806	5815.098	0.00%	56.86%
50.0	2201.582	949.423	6764.521	0.00%	66.14%
55.0	1884.371	889.193	7653.714	0.00%	74.83%
60.0	1524.830	789.299	8443.014	0.00%	82.55%
65.0	1145.521	650.868	9093.882	0.00%	88.91%
70.0	761.038	484.829	9578.71	0.00%	93.65%
75.0	422.308	311.928	9890.639	0.00%	96.70%
80.0	179.745	163.681	10054.319	0.00%	98.30%
85.0	53.231	64.723	10119.043	0.00%	98.94%
90.0	18.031	19.940	10138.983	0.00%	99.13%
95.0	13.115	8.614	10147.597	0.00%	99.22%
100.0	14.788	7.563	10155.16	0.00%	99.29%
105.0	18.314	8.824	10163.984	0.00%	99.38%
110.0	18.816	9.692	10173.676	0.00%	99.47%
115.0	18.276	9.372	10183.048	0.00%	99.56%
120.0	19.254	9.086	10192.134	0.00%	99.65%
125.0	16.873	8.362	10200.497	0.00%	99.73%
130.0	12.587	6.470	10206.967	0.00%	99.80%
135.0	12.072	5.013	10211.979	0.00%	99.85%
140.0	9.653	4.013	10215.992	0.00%	99.89%
145.0	8.945	3.095	10219.088	0.00%	99.92%
150.0	8.469	2.578	10221.665	0.00%	99.94%
155.0	7.722	2.069	10223.734	0.00%	99.96%
160.0	7.220	1.577	10225.312	0.00%	99.98%
165.0	6.474	1.131	10226.443	0.00%	99.99%
170.0	5.985	0.740	10227.183	0.00%	99.99%
175.0	5.766	0.420	10227.603	0.00%	100.00%
180.0	5.869	0.139	10227.741	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:74.2

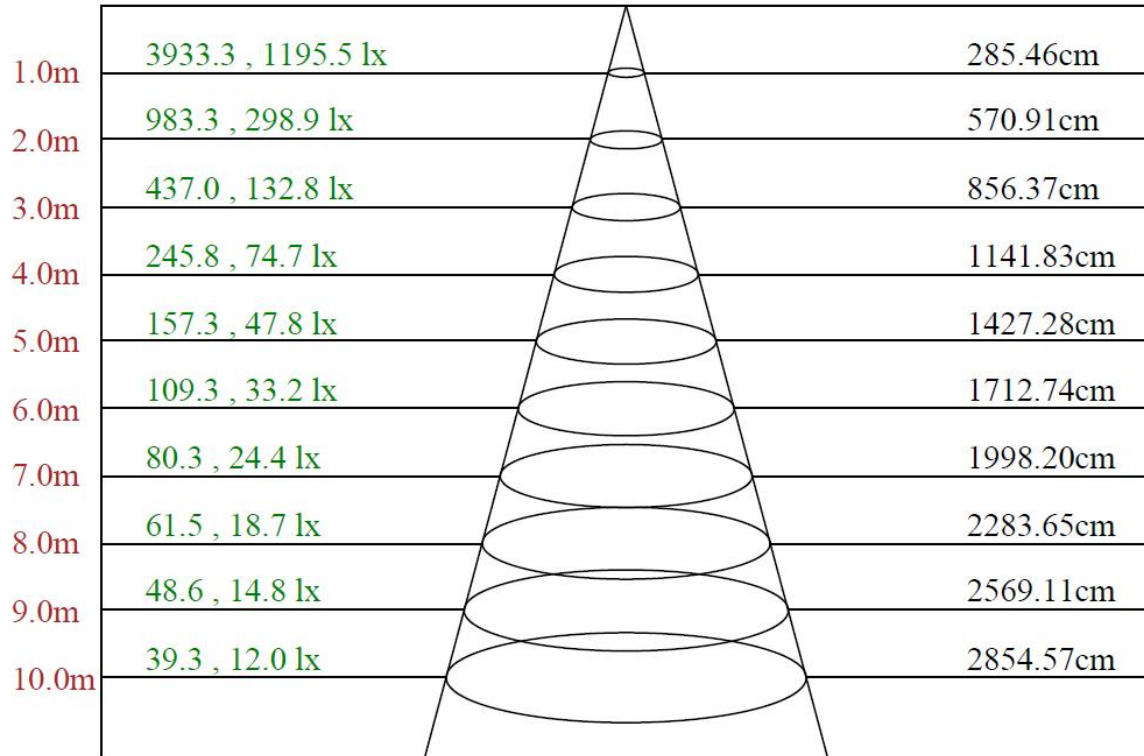
:C90/270Left:77.8 Right:73.8

Beam Angle(50%Imax):C0/180Left:55.3 Right:54.2

:C90/270Left:55.7 Right:52.6



Lux distance Curve



Max , Ave      Beam angle of C0 plane 109.97

**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	3933.33	3899.76	3835.10	3746.14	3606.53	3423.26	3228.45	3012.65	2783.66
22.5	3889.88	3855.49	3788.97	3709.49	3569.46	3376.31	3178.00	2975.58	2746.18
45.0	3854.66	3813.89	3752.73	3676.95	3537.75	3339.03	3152.26	2938.93	2713.65
67.5	3827.28	3798.86	3741.61	3660.27	3506.04	3314.32	3132.90	2913.19	2676.37
90.0	3822.95	3792.89	3729.05	3631.44	3485.03	3307.32	3109.43	2909.89	2666.49
112.5	3820.27	3772.50	3713.61	3607.56	3458.67	3296.41	3111.28	2896.92	2654.14
135.0	3798.65	3756.23	3702.28	3612.29	3459.09	3302.38	3106.55	2876.74	2652.90
157.5	3796.39	3752.73	3697.54	3612.09	3463.20	3287.35	3099.55	2873.85	2642.19
180.0	3933.33	3902.03	3839.43	3747.58	3647.92	3497.39	3314.32	3087.81	2847.91
202.5	3889.88	3867.02	3809.57	3727.20	3624.24	3473.50	3274.99	3059.80	2830.20
225.0	3854.66	3836.13	3778.88	3693.43	3609.82	3466.29	3269.43	3045.80	2824.43
247.5	3827.28	3820.89	3769.82	3683.34	3597.88	3468.15	3278.49	3061.04	2816.61
270.0	3822.95	3794.74	3742.44	3685.81	3597.88	3455.38	3292.29	3070.92	2839.05
292.5	3820.27	3803.39	3748.41	3684.98	3589.23	3454.76	3293.32	3082.25	2844.00
315.0	3798.65	3793.50	3735.85	3659.45	3576.87	3433.96	3275.82	3079.57	2836.17
337.5	3796.39	3794.33	3738.32	3655.33	3559.58	3412.75	3254.40	3056.10	2808.99
360.0	3933.33	3899.76	3835.10	3746.14	3606.53	3423.26	3228.45	3012.65	2783.66
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	2499.49	2229.73	1913.84	1536.18	1133.19	702.81	330.51	111.20	29.45
22.5	2466.95	2199.46	1867.31	1488.00	1070.80	669.45	302.91	105.02	28.42
45.0	2435.65	2143.86	1827.36	1456.90	1052.88	635.68	296.12	100.28	29.86
67.5	2403.12	2109.68	1777.32	1408.92	1017.05	653.80	311.35	106.87	30.68
90.0	2394.26	2091.14	1749.11	1369.38	995.22	634.65	305.79	113.05	31.71
112.5	2394.26	2088.67	1749.72	1374.94	986.16	631.98	314.24	110.79	30.89
135.0	2392.20	2092.17	1742.52	1354.35	983.69	607.06	316.30	121.29	34.39
157.5	2364.61	2101.65	1754.67	1393.48	1015.20	651.13	354.19	134.67	35.42
180.0	2572.18	2266.59	1990.45	1635.64	1257.57	840.78	513.36	237.84	69.81
202.5	2580.21	2268.85	1996.21	1639.14	1278.98	870.23	501.42	264.40	77.63
225.0	2569.50	2265.15	1980.15	1643.47	1273.63	870.85	529.43	260.90	83.40
247.5	2563.32	2265.97	1959.56	1617.52	1268.48	885.47	546.52	252.05	91.43
270.0	2572.18	2278.33	1959.56	1630.91	1244.80	868.17	559.90	245.05	81.55
292.5	2586.39	2292.33	1976.24	1625.55	1251.80	891.64	544.25	250.81	73.72
315.0	2569.71	2281.00	1958.73	1611.34	1247.27	876.82	523.25	243.61	70.43
337.5	2533.67	2250.73	1947.20	1611.55	1251.60	886.08	507.39	218.07	52.92
360.0	2499.49	2229.73	1913.84	1536.18	1133.19	702.81	330.51	111.20	29.45
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	11.53	13.38	16.68	20.18	19.77	19.97	21.00	15.03	8.65
22.5	11.12	16.06	22.65	30.06	33.15	30.68	29.86	19.36	13.59
45.0	11.74	10.91	15.86	19.36	20.59	17.71	19.97	21.00	15.65
67.5	11.33	12.15	15.03	18.53	16.68	15.86	18.12	18.33	16.68
90.0	22.45	13.18	14.41	17.09	17.92	19.56	18.74	15.03	11.33
112.5	19.97	12.77	14.83	18.74	16.27	16.47	15.24	11.94	9.68
135.0	17.71	16.06	17.30	19.15	18.53	18.53	20.18	16.06	11.74
157.5	15.65	12.97	16.47	18.74	17.09	14.83	17.71	12.36	14.83
180.0	21.21	13.80	14.00	18.94	19.36	17.92	18.12	19.56	13.59
202.5	22.24	14.00	13.38	17.09	18.33	22.45	26.36	19.97	10.30
225.0	23.68	15.86	14.83	15.65	18.74	16.47	19.36	20.18	17.09
247.5	22.24	16.47	15.86	15.03	16.27	15.44	16.68	17.92	15.86
270.0	21.83	11.74	12.77	16.68	15.03	16.06	18.33	17.50	13.80
292.5	21.42	10.09	9.68	14.62	16.27	14.83	14.00	12.77	10.30
315.0	18.33	10.91	11.12	17.09	19.77	20.59	18.74	16.06	11.74
337.5	16.06	9.47	11.74	16.06	17.30	15.03	15.65	16.89	6.59
360.0	11.53	13.38	16.68	20.18	19.77	19.97	21.00	15.03	8.65



C/ $\gamma$ (°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	14.00	13.59	11.94	9.27	8.03	7.41	6.80	6.18	6.59
22.5	14.41	11.33	11.53	11.33	9.06	7.62	6.38	5.97	5.56
45.0	13.38	10.30	10.91	10.50	8.65	7.41	6.18	5.77	5.77
67.5	14.00	10.50	8.03	7.62	7.41	7.21	6.18	5.77	5.77
90.0	8.85	7.62	7.41	6.59	6.38	6.59	6.18	5.97	5.77
112.5	7.83	7.21	6.38	6.38	6.59	6.80	6.59	5.97	5.77
135.0	8.24	6.38	6.80	7.41	7.62	7.21	6.80	6.18	5.77
157.5	12.77	10.71	9.88	8.65	7.62	7.21	6.80	6.38	5.97
180.0	13.80	12.15	11.94	12.15	10.30	8.24	7.00	6.38	5.97
202.5	16.89	11.94	11.12	12.15	10.91	8.65	7.00	6.18	5.97
225.0	14.62	10.09	10.50	11.53	9.88	8.24	6.80	5.97	5.97
247.5	13.80	11.12	10.71	7.83	7.00	7.41	6.38	5.77	5.56
270.0	10.50	8.03	7.41	6.59	6.18	6.38	6.38	5.97	5.56
292.5	8.24	7.21	6.38	5.77	5.56	6.38	6.18	5.77	5.35
315.0	8.24	5.97	5.56	5.97	6.59	6.38	5.97	5.77	5.56
337.5	13.59	10.30	6.59	5.77	5.77	6.38	5.97	5.77	5.35
360.0	14.00	13.59	11.94	9.27	8.03	7.41	6.80	6.18	6.59
C/ $\gamma$ (°)	180.0								
0.0	6.59								
22.5	5.77								
45.0	5.77								
67.5	5.77								
90.0	5.77								
112.5	5.77								
135.0	5.77								
157.5	5.77								
180.0	6.59								
202.5	5.77								
225.0	5.77								
247.5	5.77								
270.0	5.77								
292.5	5.77								
315.0	5.77								
337.5	5.77								
360.0	6.59								



## Photo Document



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