



IESNA LM-79 TEST REPORT

Applicant's name: BlackJack Lighting LLC

Address: 1547 Barclay Blvd. Buffalo Grove, IL 60089

Brand Name.....: Blackjack Lighting

Report No......: BTR66.181.19.0007.22

Product Name.....: 4" Small Bullet Pendant (BL or PC)

Model Number: MBSB-04P-BL-12P-30K; MBSW-04P-PC-12P-30K

Tested by
(printed name and signature): David Zhang 

Title: **Test Engineer**

Approved by
(printed name and signature): Steven Huo 

Title: **Approved Signatory**

Date of issue: Aug 26, 2019

Testing Laboratory Name: BEST Test Service Shenzhen Co., Ltd.
1st Floor, 1st Building, Weitai Industrial Park, Yingrenshi, Shiyan, Baoan,

Address: Shenzhen, China
[Tel:+86-755-28236006](tel:+86-755-28236006), Email: admin@bestcert.cn

Accreditation: DLC/Lighting Facts/UL/ETL/ELI/CEC/EPA/DOE
NVLAP Testing Lab Code: 200770-0

Test specification

Standard: IESNA LM-79

Test procedure/method: IESNA LM-79 Test Procedure

Non-standard test method: No

Test Report Form No.: BEST_ LM-79

TRF originator.....: BEST Test Service Shenzhen Co., Ltd. Mr Tseng

Master TRF: BEST_LM-79.doc

Note:
The laboratory has not been responsible for the sampling stage (e.g. the sample has been provided by the customer), the results relate only to the items tested.
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Description:	
The date of sampling	Aug 13, 2019
The date of receipt of the test sample / requirement /item(s).....	Aug 13, 2019
Test date.....	Aug 13, 2019 to Aug 22, 2019
Description	4" Small Bullet Pendant (BL or PC)
The condition of the item	N/A
Sampling method.....	Provided by the customer
Sample Quantity	1 unit
SKU.....	N/A
Rating(s) (V; Hz)	AC 120V, 60Hz
Nominal Power.....	4.7W
Nominal Power Factor	N/A
Nominal Lumen Output.....	64lm
Nominal CCT	3000K
Nominal CRI(Ra)	90
Number of hours operated prior to measurement.....	0H
Total operating time of the product for measurements including stabilization:	2.5H
Ambient temperature	24.7°C
Orientation (burning position) of SSL product during test	Lighting Surface Down or Base Up
Stabilization time	1.0H
Photometric method	Sphere-spectroradiometer+Goniophotometer
Calibration standard lamp used	DC 24V 100W Omni-Directional Halogen Calibrated by NIM China(Sphere) DC 120V 500W Omni-Directional Halogen Calibrated by NIM China(Goniophotometer)
Correction factors applied.....	Self absorbing applied
Photometric measurement conditions:	See test method description below

Equipments used	EVERFINE HASS-2000 Sphere System CHROMA 61602 AC Source YOKOGAWA WT 310 Power Meter FLUKE 52II EVERFINE GOR-5000 Goniophotometer CALIFORNIA INSTRUMENT 1501I AC Source YOKOGAWA WT 210 Power Meter FLUKE 233 Temperature Meter
Bandwidth of spectroradiometer	2nm
Statement of uncertainties	3.1%
Deviation	None

Note: These models are all the same except for color. Here we choose MBSB-04P-BL-12P-30K to be tested and the other to share the test data.

Photometric and Electrical Measurement

Total light output (luminous flux) for the 25°C ±1°C ambient temperature conditions was measured using a ø2.0m 4π geometry integrating sphere. Temperature was measured at a position inside the sphere. Spectral radiant flux were measured using the photo detector built in the integrating sphere. Each lamp was operated at rated voltage in its designated orientation. Each lamp was in a stable state before measurements are done as below:

- Step 1 Take 3 measurements of the lamp light output at 15 minute interval (total time=30mintues.), the pre-burning time is not included in the formal testing time period.
- Step 2 Calculate the difference in percentage between the maximum measured value and the minimum measured value with the three consecutive measurements.
- Step 3 If the value calculated in Step 2 does not exceed 0.5 percent, the lamp is considered stable.

Luminous flux, chromaticity coordinates, correlated color temperature and color rendering index for each lamp were calculated from the spectral radiant flux measurements taken at 2 nm increment over the range of 380 to 780 nm. The calibration of the sphere photometer-spectrometer system can be traced back to the NIST USA. Lamp efficacy (lumens per watt) for each lamp model was computed based on the luminous flux result revised taking the self-absorbing correction factor into consideration. Electrical measurements including voltage, current, power and power factor were measured using the digital power meter.

The total uncertainty of the light output measurements is estimated, at the 95% confidence level, not to exceed ±3.1% over the wavelength range of 380-780 nm.

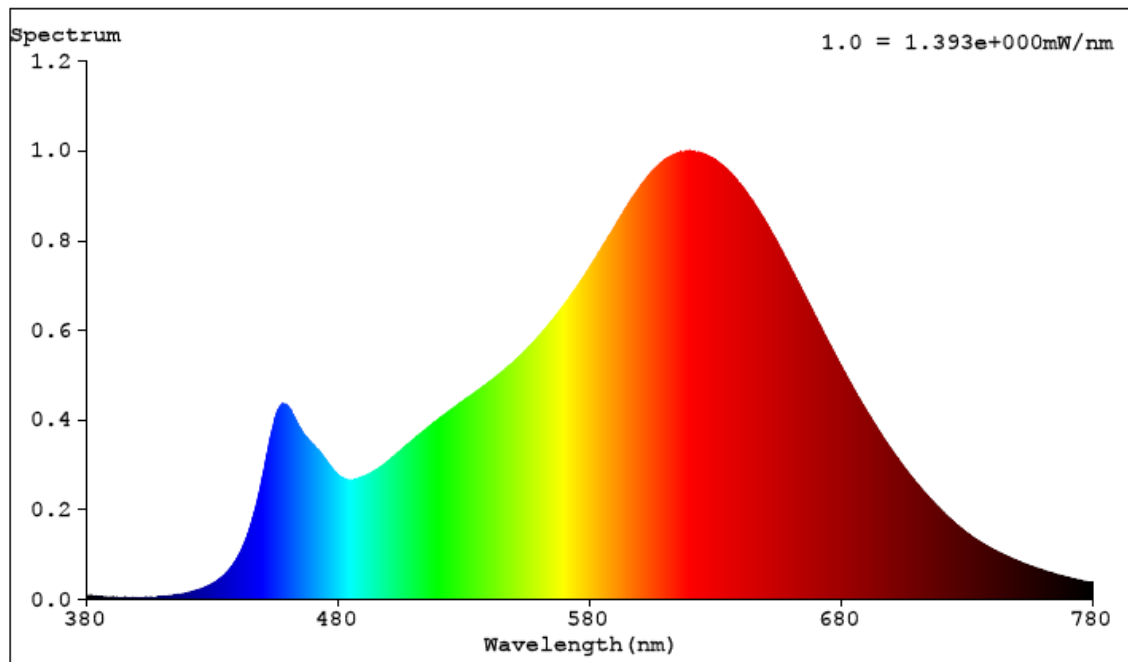
Luminous Intensity

An Everfine GOR-5000 Goniophotometer was used to measure the intensity distribution at each angle, Luminous intensity (cd) was measured within each vertical plane at a 5° vertical angle increment (maximum) from 0° to 360°, measurements were repeated in vertical planes about the lamp (polar) axis in an increments of 22.5° from 0° to 180°, and the intensity data were exported to a file in excel format.

Photometric and Electrical Test Data

Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency (Lumen/W)
120	60.0	0.0523	/	4.68	0.7454	64.45	13.77
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
2696	91.5	58	0.4540	0.3996	0.2637	0.5222	-0.0037

Spectral Plots



EUT Photo



Annex

Please see the next page for the luminous intensity test data

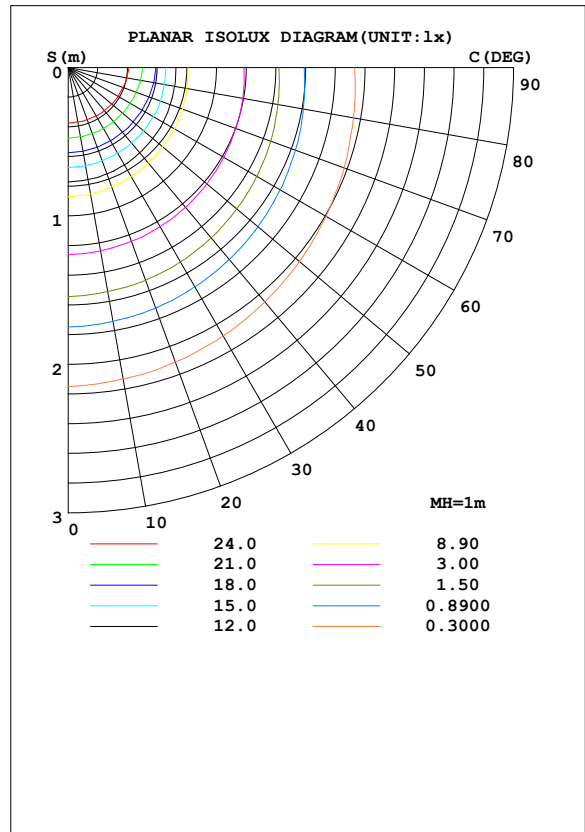
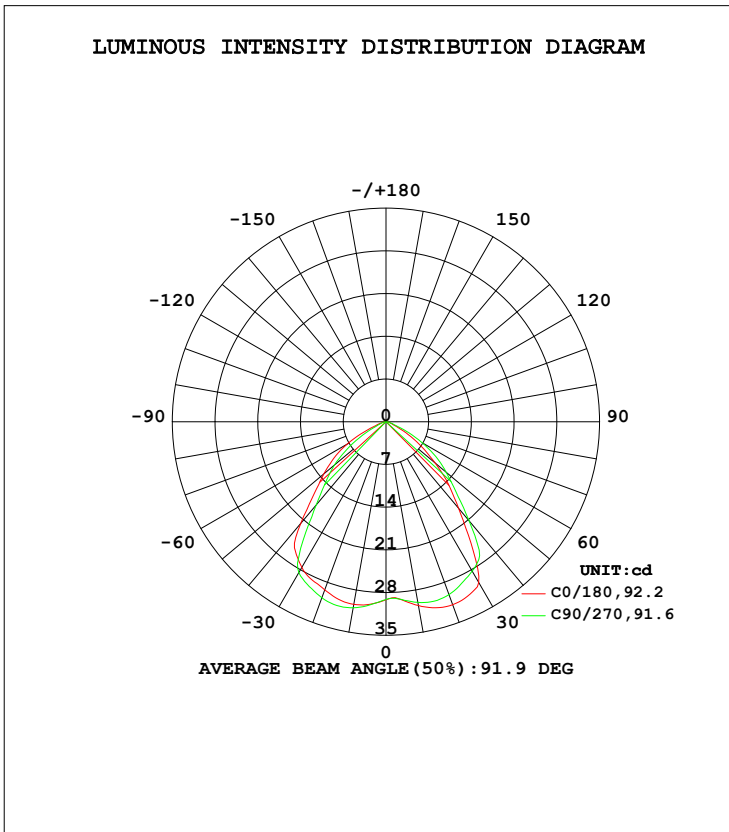
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LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 13.77 lm/W			
MODEL	MBSB-04P-BL-12P-30K	I _{max} (cd)	31.90	S/MH (C0/180)	1.25
NOMINAL POWER (W)	4.7	LOR (%)	100.0	S/MH (C90/270)	1.30
RATED VOLTAGE (V)	120	TOTAL FLUX (lm)	64.454	η UP, DN (C0-180)	0.0, 48.1
NOMINAL FLUX (lm)	64	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 51.9
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	120	η down (%)	100.0	CIBSE SHR MAX	1.30



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.1DEG
 Operators: Mark
 Test Date: 20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity: 59.2%
 Test Distance: 2.463m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	30.39	30.67	30.94	30.94	30.57	30.28	30.05	30.03	0- 10	2.859	2.859	4.43,4.43
20	29.33	29.67	30.70	31.65	31.90	31.13	30.15	29.52	10- 20	8.702	11.56	17.9,17.9
30	27.56	27.44	28.55	29.40	30.41	29.28	28.26	27.89	20- 30	13.72	25.28	39.2,39.2
40	21.66	19.45	17.75	17.27	18.55	19.04	21.18	23.24	30- 40	15.38	40.66	63.1,63.1
50	13.29	12.26	11.02	9.763	10.51	11.49	12.89	13.93	40- 50	11.90	52.56	81.5,81.5
60	7.364	6.092	4.496	3.587	4.264	5.166	6.733	8.063	50- 60	7.834	60.39	93.7,93.7
70	1.698	1.378	1.038	0.9056	1.055	1.194	1.476	1.939	60- 70	3.091	63.48	98.5,98.5
80	0.4683	0.3613	0.2554	0.2145	0.2810	0.3435	0.4435	0.5464	70- 80	0.8133	64.30	99.8,99.8
90	0.0001	0	0	0	0	0	0.0055	0.0259	80- 90	0.1564	64.45	100,100
100	0	0	0	0	0	0	0	0	90-100	0.0003	64.45	100,100
110	0	0	0	0	0	0	0	0	100-110	0	64.45	100,100
120	0	0	0	0	0	0	0	0	110-120	0	64.45	100,100
130	0	0	0	0	0	0	0	0	120-130	0	64.45	100,100
140	0	0	0	0	0	0	0	0	130-140	0	64.45	100,100
150	0	0	0	0	0	0	0	0	140-150	0	64.45	100,100
160	0	0	0	0	0	0	0	0	150-160	0	64.45	100,100
170	0	0	0	0	0	0	0	0	160-170	0	64.45	100,100
180	0	0	0	0	0	0	0	0	170-180	0	64.45	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 47.097 lm

%lum = 73.1%
 %lamp = 73.1%

Conical surface Flux(120deg): 60.394 lm

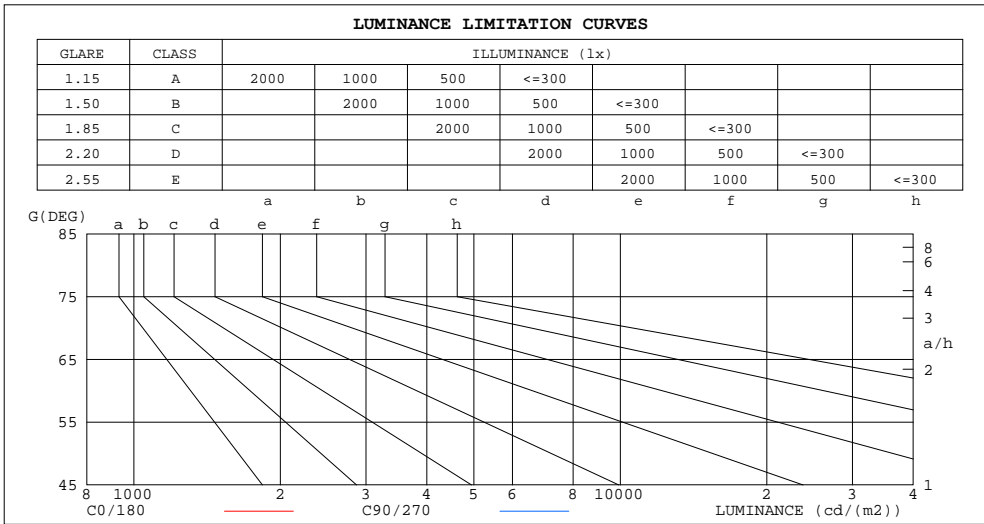
%lum = 93.7%
 %lamp = 93.7%

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	2	1
80	3	1
75	4	2
70	5	3
65	9	5
60	15	9
55	18	13
50	21	17
45	24	20

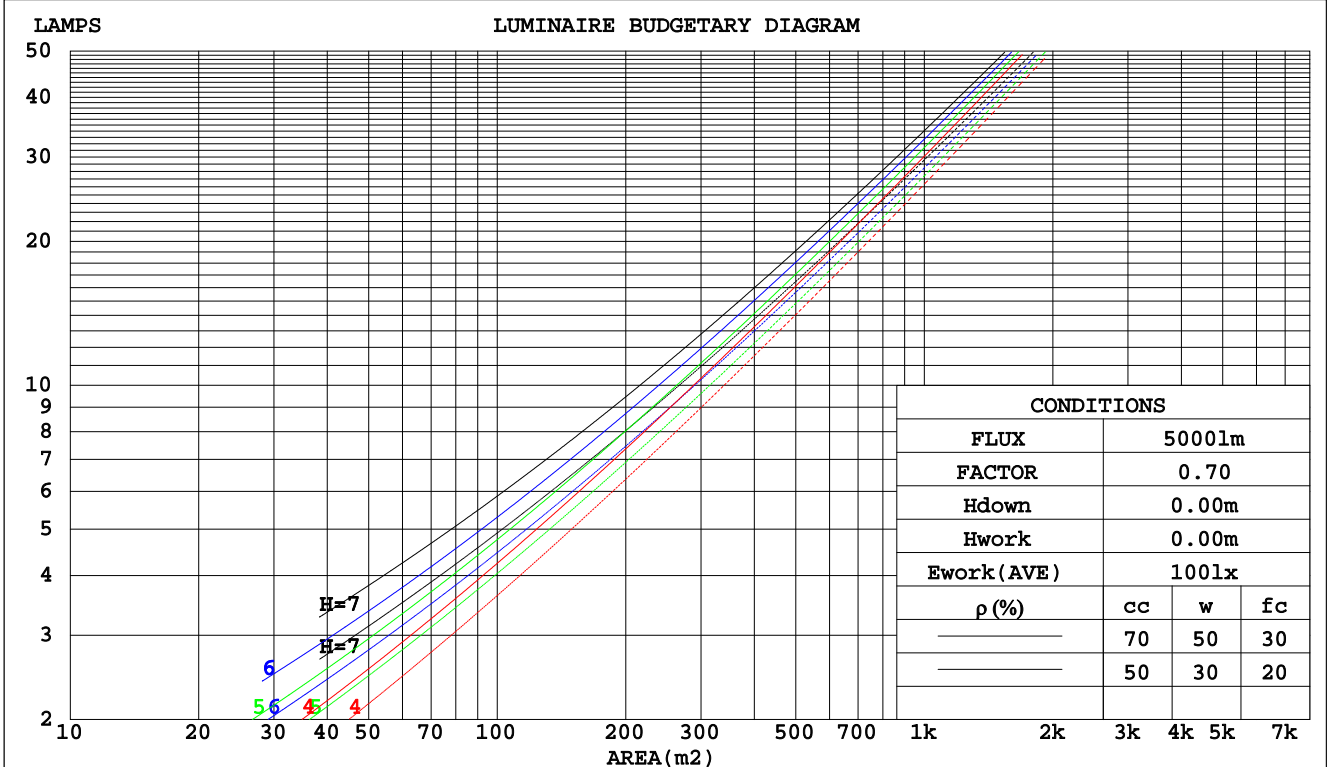
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 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	.00
1.0	1.08	1.04	1.02	1.06	1.03	.00	1.01	.99	.97	.98	.96	.94	.94	.93	.91	.89
2.0	.97	.91	.87	.95	.90	.86	.92	.88	.84	.89	.85	.82	.86	.83	.80	.78
3.0	.87	.81	.75	.86	.80	.75	.83	.78	.73	.80	.76	.72	.78	.74	.71	.69
4.0	.79	.71	.66	.78	.71	.65	.75	.69	.64	.73	.68	.64	.71	.66	.63	.61
5.0	.71	.64	.58	.70	.63	.58	.68	.62	.57	.67	.61	.57	.65	.60	.56	.54
6.0	.65	.57	.52	.64	.57	.51	.62	.56	.51	.61	.55	.51	.59	.54	.50	.48
7.0	.60	.52	.46	.59	.51	.46	.57	.51	.46	.56	.50	.46	.55	.49	.45	.44
8.0	.55	.47	.42	.54	.47	.42	.53	.46	.42	.52	.46	.41	.51	.45	.41	.39
9.0	.51	.43	.38	.50	.43	.38	.49	.42	.38	.48	.42	.38	.47	.41	.37	.36
10.0	.47	.40	.35	.46	.39	.35	.45	.39	.35	.44	.39	.34	.44	.38	.34	.33



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.236	.134	.042	.229	.130	.041	.216	.124	.040	.204	.118	.038	.193	.112	.036	
2.0	.230	.126	.039	.224	.123	.038	.213	.118	.037	.203	.114	.036	.193	.109	.034	
3.0	.220	.117	.035	.215	.115	.035	.205	.111	.034	.196	.107	.033	.187	.104	.032	
4.0	.208	.108	.032	.204	.107	.032	.195	.103	.031	.187	.100	.030	.180	.098	.030	
5.0	.197	.100	.029	.193	.099	.029	.185	.096	.028	.178	.094	.028	.171	.092	.028	
6.0	.186	.093	.027	.182	.092	.027	.176	.090	.026	.169	.088	.026	.163	.086	.026	
7.0	.176	.087	.025	.172	.086	.024	.166	.084	.024	.161	.082	.024	.155	.081	.024	
8.0	.166	.081	.023	.163	.080	.023	.158	.079	.023	.153	.077	.022	.148	.076	.022	
9.0	.157	.076	.021	.155	.075	.021	.150	.074	.021	.145	.073	.021	.141	.072	.021	
10.0	.149	.072	.020	.147	.071	.020	.143	.070	.020	.139	.069	.020	.135	.068	.019	

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.175	.157	.140	.150	.135	.121	.103	.093	.083	.059	.054	.049	.019	.017	.016	
2.0	.164	.132	.105	.140	.114	.091	.096	.079	.064	.056	.046	.037	.018	.015	.012	
3.0	.155	.114	.081	.133	.098	.071	.091	.068	.050	.053	.040	.029	.017	.013	.010	
4.0	.147	.100	.064	.126	.086	.056	.087	.060	.039	.050	.035	.023	.016	.011	.008	
5.0	.140	.089	.052	.120	.077	.045	.083	.054	.032	.048	.032	.019	.015	.010	.006	
6.0	.133	.081	.043	.114	.070	.038	.079	.049	.027	.046	.029	.016	.015	.009	.005	
7.0	.127	.074	.036	.109	.064	.032	.075	.045	.022	.044	.026	.013	.014	.009	.004	
8.0	.121	.068	.031	.104	.059	.027	.072	.041	.019	.042	.024	.011	.014	.008	.004	
9.0	.116	.063	.027	.100	.054	.024	.069	.038	.017	.040	.023	.010	.013	.007	.003	
10.0	.111	.059	.024	.095	.051	.021	.066	.036	.015	.039	.021	.009	.012	.007	.003	

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
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γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm										
NAME: 4"Small Bullet Pendant					TYPE:MBSB-04P-BL-12P-30K			WEIGHT:0.8KG		
SPEC.:					DIM.:			SERIAL No.:		
MFR.: BlackJack Lighting LLC					SUR.:			Shielding Angle:		
ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
x = 2H y = 2H	-1.7	-0.4	-1.4	-0.2	0.0	-2.8	-1.5	-2.5	-1.3	-1.1
3H	-1.5	-0.3	-1.2	-0.1	0.1	-2.8	-1.6	-2.5	-1.4	-1.2
4H	-1.5	-0.4	-1.2	-0.2	0.1	-2.9	-1.8	-2.6	-1.5	-1.3
6H	-1.6	-0.5	-1.3	-0.3	-0.0	-3.0	-1.9	-2.6	-1.6	-1.4
8H	-1.6	-0.6	-1.3	-0.3	-0.1	-3.0	-2.0	-2.7	-1.7	-1.4
12H	-1.7	-0.7	-1.3	-0.4	-0.1	-3.0	-2.1	-2.7	-1.8	-1.5
4H 2H	-1.6	-0.5	-1.3	-0.3	-0.0	-2.6	-1.5	-2.3	-1.3	-1.0
3H	-1.4	-0.5	-1.1	-0.2	0.1	-2.6	-1.7	-2.3	-1.4	-1.1
4H	-1.4	-0.6	-1.1	-0.3	0.1	-2.6	-1.8	-2.3	-1.5	-1.1
6H	-1.5	-0.7	-1.1	-0.3	0.0	-2.7	-1.9	-2.3	-1.6	-1.2
8H	-1.5	-0.8	-1.1	-0.4	-0.0	-2.7	-2.0	-2.3	-1.7	-1.3
12H	-1.5	-0.9	-1.1	-0.5	-0.1	-2.8	-2.1	-2.4	-1.7	-1.4
8H 4H	-1.5	-0.8	-1.1	-0.5	-0.1	-2.7	-2.0	-2.3	-1.7	-1.3
6H	-1.5	-0.9	-1.1	-0.6	-0.1	-2.8	-2.2	-2.3	-1.8	-1.4
8H	-1.5	-1.0	-1.1	-0.6	-0.2	-2.8	-2.3	-2.3	-1.8	-1.4
12H	-1.6	-1.1	-1.1	-0.7	-0.2	-2.8	-2.4	-2.3	-1.9	-1.5
12H 4H	-1.6	-0.9	-1.2	-0.5	-0.2	-2.8	-2.1	-2.3	-1.7	-1.3
6H	-1.6	-1.1	-1.1	-0.6	-0.2	-2.8	-2.3	-2.3	-1.9	-1.4
8H	-1.6	-1.1	-1.1	-0.7	-0.2	-2.8	-2.4	-2.3	-1.9	-1.5
Variations with the observer position at spacings:										
S = 1.0H	+ 0.7 / - 1.0					+ 0.9 / - 1.4				
1.5H	+ 0.5 / - 1.1					+ 0.3 / - 0.7				
2.0H	+ 1.3 / - 2.4					+ 1.6 / - 2.9				

CIE Pub.117, 64.45 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = -9.5)

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

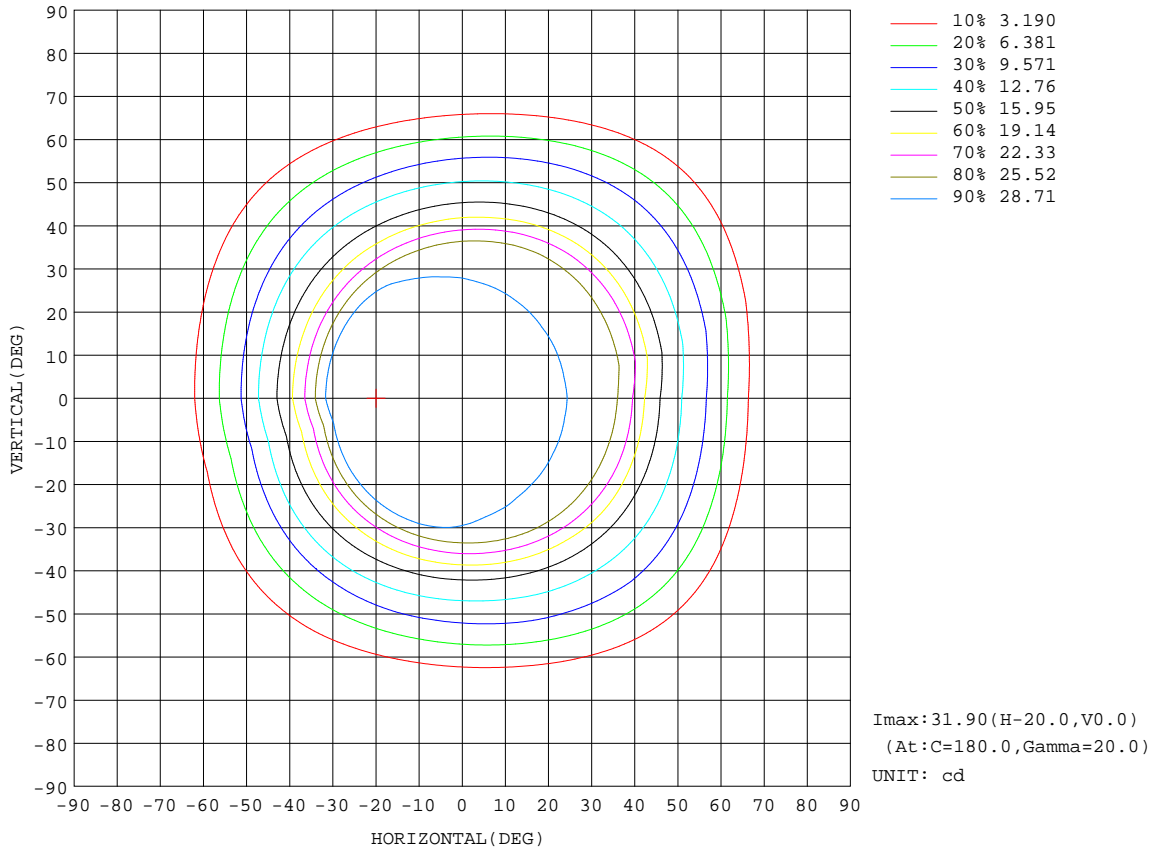
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	68	58	52	67	58	52	66	57	52	47
0.80	78	69	63	77	68	62	76	67	62	56
1.00	86	77	71	85	77	71	83	77	71	65
1.25	92	84	79	91	84	78	89	82	78	72
1.50	97	89	84	95	88	83	92	87	82	76
2.00	102	96	91	100	94	90	97	92	89	82
2.50	105	99	94	103	98	94	99	95	92	85
3.00	107	102	98	105	101	97	102	98	95	87
4.00	110	106	102	108	104	101	104	101	98	90
5.00	112	108	105	109	106	104	105	103	101	92
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

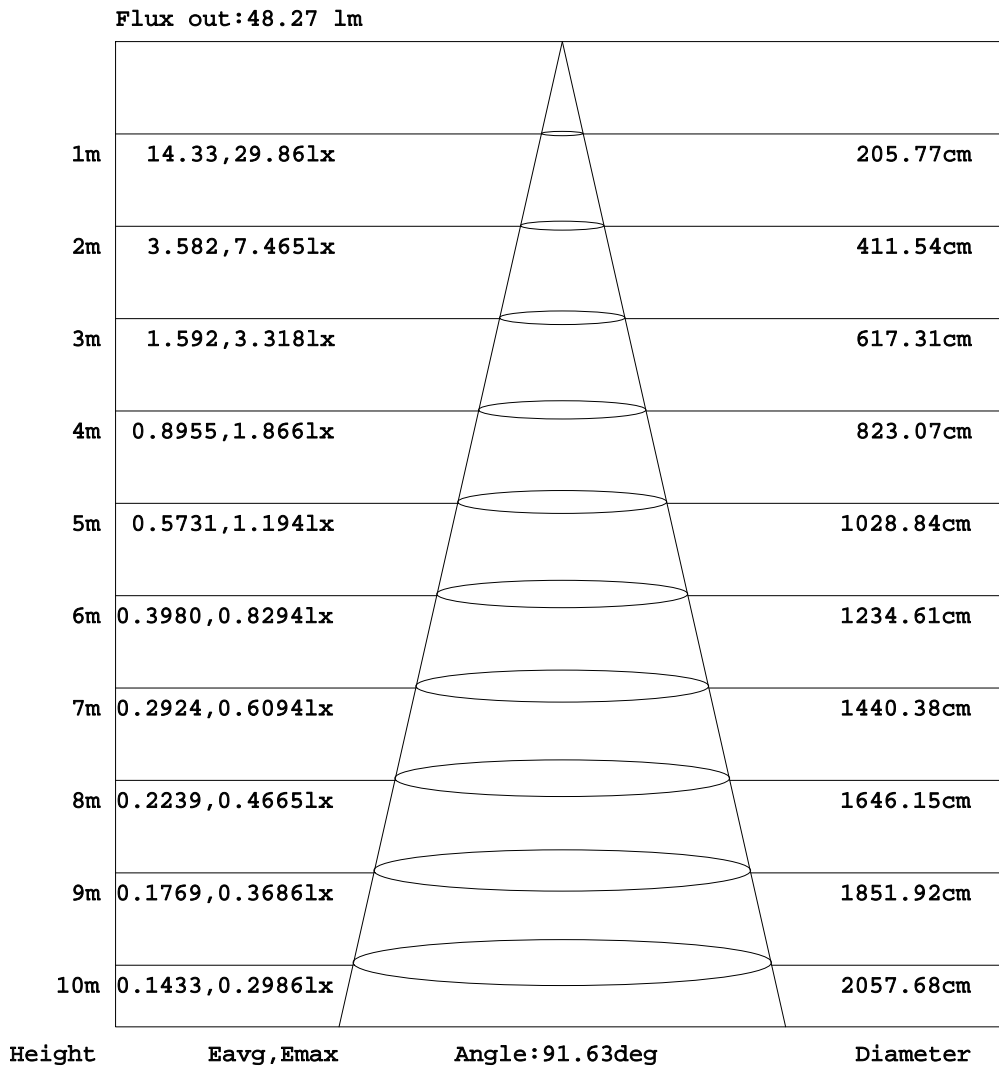


C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.1DEG
 Operators: Mark
 Test Date: 20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity: 59.2%
 Test Distance: 2.463m [K=1.0000]
 Remarks:

AAI Figure

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:



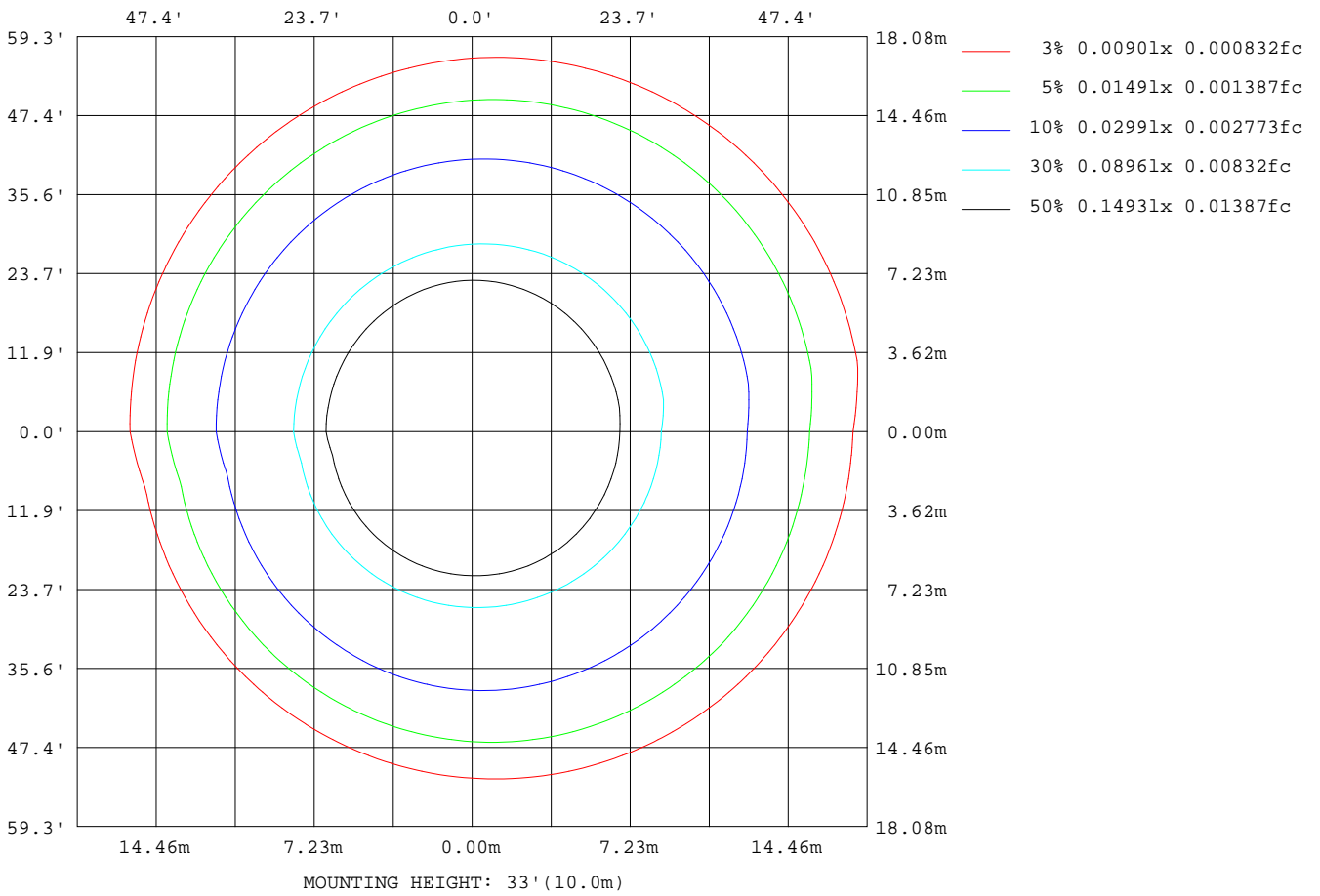
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

ISOLUX DIAGRAM

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

LED Avg.L Report

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

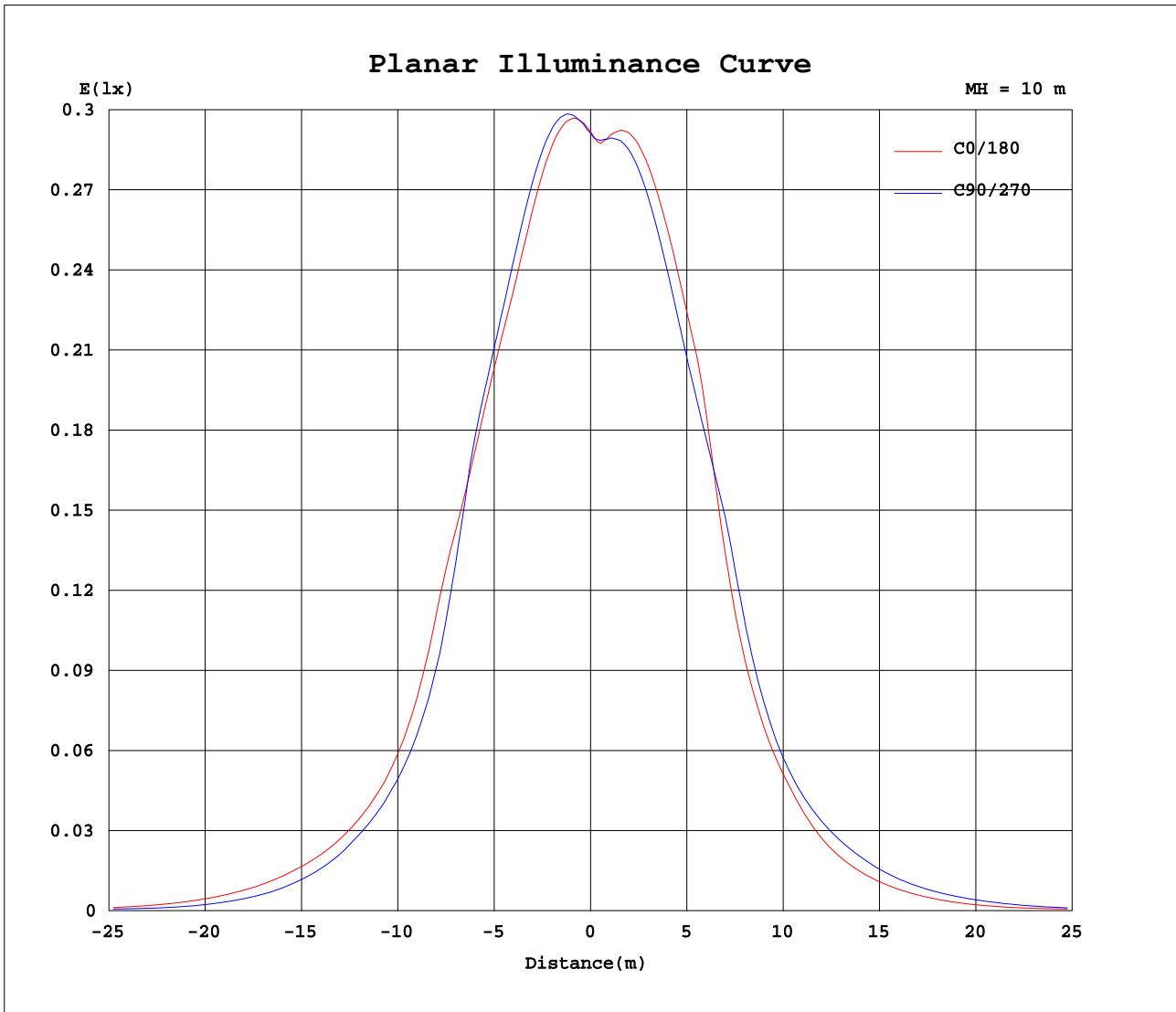
AvgL	cd/m2
L_0~180 (65) av	7
L_0~180 (75) av	3
L_0~180 (85) av	1
L_90~270 (65) av	7
L_90~270 (75) av	3
L_90~270 (85) av	1
L_45 (65) av	7
L_45 (75) av	3
L_45 (85) av	1

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.1DEG
Operators:Mark
Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
Humidity:59.2%
Test Distance:2.463m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.1DEG
 Operators: Mark
 Test Date: 20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity: 59.2%
 Test Distance: 2.463m [K=1.0000]
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.0	29.0	29.0	28.9	28.9	28.9	29.2
5	30.0	30.1	30.1	30.1	30.2	30.2	30.2	30.2	30.2	30.1	30.1	30.0	30.0	29.9	29.8	29.7	29.6	29.5	29.3
10	30.4	30.4	30.5	30.6	30.6	30.7	30.8	30.9	30.9	30.9	31.0	31.0	31.0	30.9	30.9	30.9	30.8	30.7	30.6
15	30.1	30.2	30.2	30.3	30.4	30.6	30.7	30.9	31.0	31.2	31.3	31.4	31.5	31.6	31.6	31.6	31.6	31.6	31.5
20	29.3	29.3	29.4	29.5	29.6	29.7	30.0	30.2	30.4	30.7	31.0	31.2	31.4	31.6	31.7	31.8	31.8	31.8	31.9
25	28.6	28.6	28.6	28.6	28.7	28.8	29.0	29.2	29.5	29.8	30.1	30.5	30.8	31.1	31.2	31.4	31.4	31.4	31.6
30	27.6	27.5	27.4	27.4	27.4	27.5	27.6	27.9	28.2	28.6	28.9	29.2	29.4	29.4	29.4	29.3	29.2	29.1	30.4
35	25.9	25.7	25.6	25.5	25.3	25.0	24.7	24.3	23.9	23.6	23.4	23.2	23.0	22.9	22.8	22.6	22.6	22.5	24.3
40	21.7	21.3	20.8	20.3	19.7	19.2	18.7	18.3	18.0	17.8	17.6	17.5	17.4	17.3	17.3	17.2	17.2	17.2	18.6
45	16.6	16.4	16.1	15.7	15.3	15.0	14.7	14.4	14.2	14.0	13.8	13.7	13.6	13.6	13.6	13.5	13.5	13.5	14.5
50	13.3	13.1	12.9	12.7	12.4	12.1	11.8	11.5	11.3	11.0	10.7	10.4	10.1	9.85	9.67	9.53	9.46	9.46	10.5
55	10.4	10.3	10.1	9.89	9.63	9.18	8.81	8.46	8.08	7.70	7.35	7.06	6.79	6.58	6.42	6.33	6.28	6.30	7.17
60	7.36	7.17	6.93	6.62	6.27	5.91	5.54	5.18	4.83	4.50	4.22	3.98	3.79	3.64	3.54	3.46	3.45	3.49	4.26
65	3.98	3.80	3.59	3.34	3.07	2.80	2.54	2.31	2.10	1.93	1.80	1.69	1.61	1.56	1.53	1.51	1.50	1.51	1.91
70	1.70	1.65	1.59	1.51	1.42	1.33	1.24	1.17	1.10	1.04	0.99	0.96	0.93	0.91	0.90	0.90	0.89	0.89	1.06
75	0.92	0.89	0.86	0.81	0.76	0.71	0.66	0.62	0.58	0.55	0.52	0.51	0.49	0.48	0.48	0.47	0.47	0.47	0.57
80	0.47	0.45	0.43	0.40	0.37	0.35	0.32	0.30	0.27	0.26	0.24	0.23	0.22	0.22	0.21	0.21	0.21	0.22	0.28
85	0.17	0.16	0.14	0.13	0.11	0.10	0.09	0.07	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.08
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.03V I:0.0523A P:4.6792W PF:0.7454 Freq:60.00Hz Lamp Flux:64.4545x1 lm		
NAME: 4"Small Bullet Pendant	TYPE:MBSB-04P-BL-12P-30K	WEIGHT:0.8KG
SPEC.:	DIM.:	SERIAL No.:
MFR.: BlackJack Lighting LLC	SUR.:	Shielding Angle:

Table--2

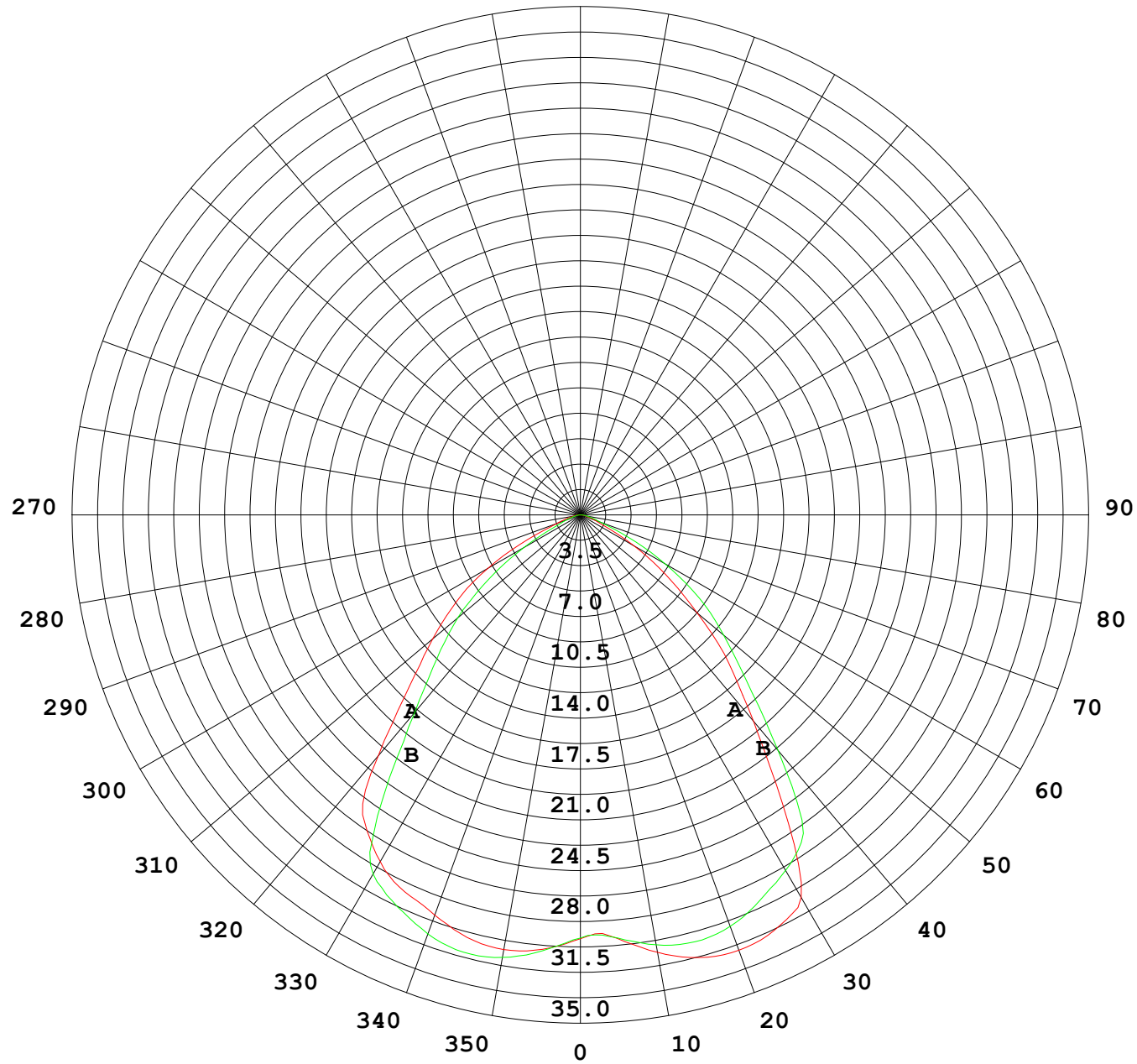
UNIT: cd

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	29.2	29.2	29.2	29.2	29.2	29.2	29.2	29.1	29.1	29.1	29.1	29.0	29.0	29.0	28.9	28.9	28.9		
5	29.2	29.1	29.1	29.1	29.1	29.1	29.2	29.2	29.2	29.3	29.3	29.4	29.5	29.5	29.6	29.6	29.6		
10	30.5	30.4	30.4	30.3	30.3	30.2	30.1	30.1	30.0	30.0	30.0	30.0	30.0	30.0	30.1	30.1	30.1		
15	31.5	31.4	31.3	31.1	31.0	30.9	30.7	30.6	30.4	30.3	30.2	30.1	30.1	30.0	30.0	30.0	30.0		
20	31.8	31.6	31.5	31.2	31.0	30.8	30.6	30.3	30.1	30.0	29.8	29.7	29.6	29.5	29.4	29.4	29.4		
25	31.4	31.2	30.9	30.6	30.3	30.0	29.7	29.5	29.3	29.1	28.9	28.8	28.7	28.6	28.6	28.6	28.6		
30	30.3	30.0	29.8	29.4	29.1	28.8	28.6	28.4	28.3	28.2	28.1	28.0	27.9	27.9	27.8	27.8	27.8		
35	24.3	24.4	24.5	24.8	25.2	25.6	26.1	26.5	26.8	26.8	26.7	26.6	26.5	26.4	26.4	26.3	26.3		
40	18.5	18.6	18.7	18.9	19.2	19.5	20.0	20.5	21.2	21.8	22.4	22.8	23.2	23.3	23.5	23.4	23.3		
45	14.5	14.4	14.5	14.6	14.8	15.1	15.4	15.8	16.2	16.6	17.0	17.4	17.6	17.8	17.9	18.0	17.9		
50	10.6	10.8	11.0	11.3	11.7	12.0	12.3	12.6	12.9	13.2	13.4	13.7	13.9	14.0	14.1	14.1	14.1		
55	7.30	7.48	7.71	7.99	8.33	8.71	9.13	9.57	10.0	10.4	10.7	10.9	11.0	11.1	11.2	11.2	11.2		
60	4.38	4.56	4.77	5.02	5.31	5.64	5.99	6.36	6.73	7.10	7.44	7.74	7.98	8.15	8.25	8.30	8.28		
65	1.99	2.09	2.22	2.39	2.58	2.81	3.07	3.35	3.63	3.93	4.20	4.44	4.63	4.79	4.88	4.92	4.88		
70	1.07	1.10	1.13	1.17	1.22	1.27	1.34	1.40	1.48	1.56	1.68	1.79	1.89	1.99	2.04	2.06	2.05		
75	0.58	0.60	0.62	0.64	0.67	0.71	0.75	0.79	0.84	0.89	0.94	0.99	1.03	1.07	1.10	1.11	1.10		
80	0.29	0.30	0.32	0.33	0.35	0.38	0.40	0.42	0.44	0.47	0.50	0.52	0.54	0.55	0.57	0.57	0.57		
85	0.09	0.10	0.10	0.12	0.13	0.14	0.15	0.17	0.18	0.19	0.21	0.22	0.23	0.24	0.24	0.24	0.24		
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.02		
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.1DEG
 Operators:Mark
 Test Date:20 August 2019

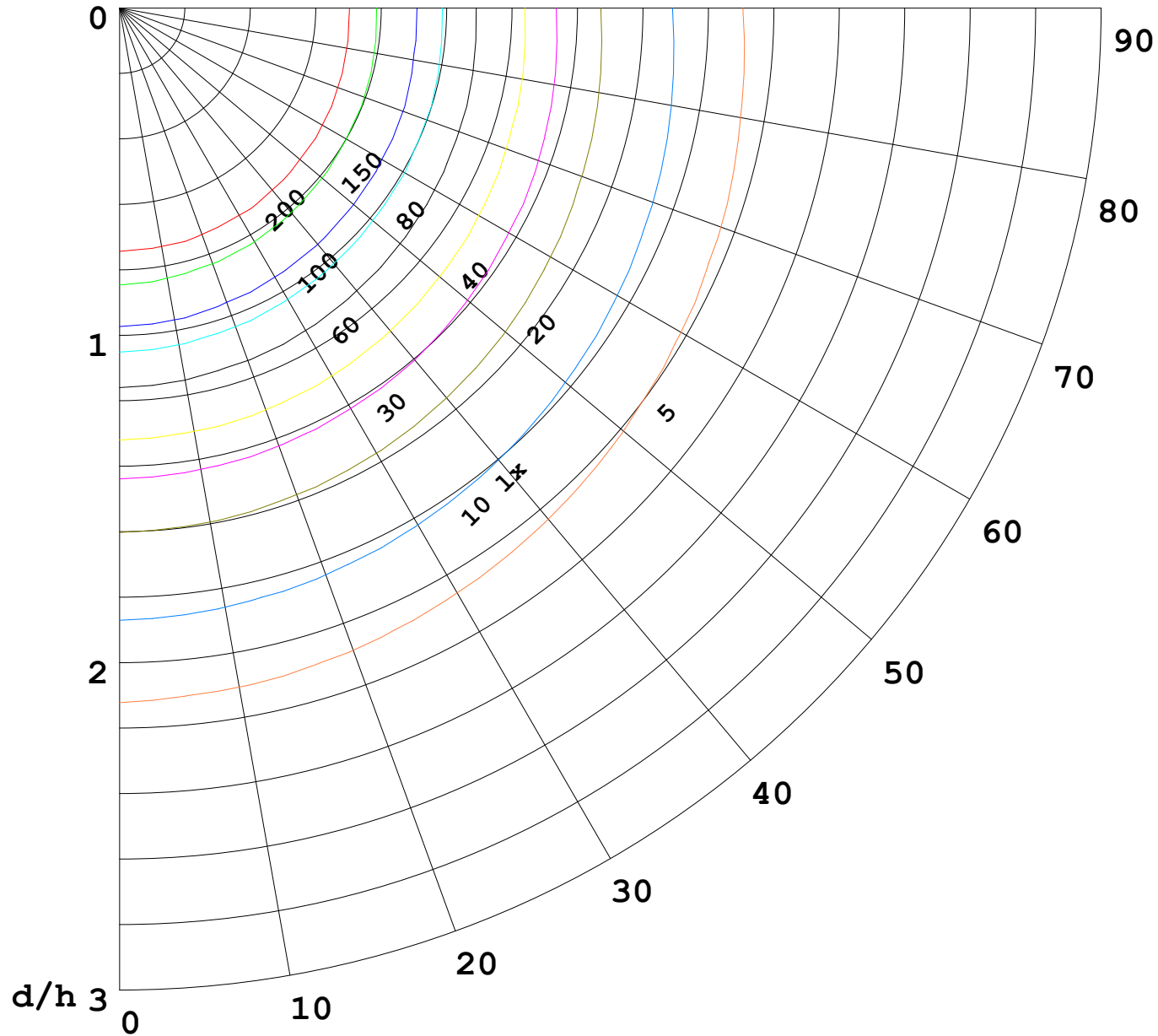
γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:59.2%
 Test Distance:2.463m [K=1.0000]
 Remarks:

I (cd)



1000 lm

$K = 1$



F = 5000 lm
K = 0.7
Hcc = 0.0 m
Hfc = 0.0 m
Eave = 100 lx

—————	Pcc	Pw	Pfc
—————	70	50	30
—————	50	30	20

