



### IENNA LM-79 TEST REPORT

**Applicant's name** .....: Blackjack Lighting

**Address** .....: 1553 Barclay Blvd. Buffalo Grove, IL 60089

**Brand Name**.....: Blackjack Lighting

**Report No.**.....: BTR66.181.16.0035.41

**Product Name**.....: Seraph 24" 25-light pendant

**Model Number** .....: SER-24P-BL or PC

**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** .....: June 15, 2017

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

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

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

**Test specification**

**Standard** .....: IESNA LM-79

**Test procedure** .....: 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

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<b>description:</b>	
Test date .....	June 14, 2017 to June 15, 2017
Sample Quantity .....	1 unit
SKU.....	N/A
Rating(s) (V; Hz) .....	AC 120V/ 60Hz
Nominal Power.....	37W
Nominal Power Factor .....	N/A
Nominal Lumen Output.....	2300 lm
Nominal CCT .....	2700K
Nominal CRI(Ra) .....	90
Number of hours operated prior to measurement	0H
Total operating time of the product for measurements including stabilization	3.5H
Ambient temperature	24.7°C
Orientation (burning position) of SSL product during test	Lighting Surface Down or Base Up
Stabilization time	1.5 H
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	1.12%
Deviation from standard operating procedures,	None

### Photometric and Electrical Measurement

Total light output (luminous flux) for the 25°C ±1°C ambient temperature conditions is measured using a EVERFINE 2.0 m 4 II geometry integrating sphere. Temperature is measured at a position inside the sphere. Spectral radiant flux measurements are made using Integral Sphere to the detector port of the integrating sphere. Each lamp is operated at rated voltage in its designated orientation by a CHROMA 61602 AC SOURCE. Each lamp should be stable before measurements are made as below:

Step 1 Take 3 measurements of the lamp light output at 15 minute interval (total time=30mintues.)This time period is in addition to the recommended pre-burning time.

Step 2 Calculate the percent difference between the maximum measured value and the minimum measured value for 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 are calculated from the spectral radiant flux measurements taken at 2 nm intervals over the range 380 to 780 nm by EVERFINE HASS-2000. The calibration of the sphere photometer-spectrometer system is traceable to the NIM China by a calibrated halogen incandescent lamp. Lamp efficacy (lumens per watts) for each lamp model is computed based on the revised luminous flux result. Electrical measurements including voltage, current, power and power factor are measured using the YOKOGAWA WT310 digital power Meter.

The total uncertainty of the light output measurements is estimated, at the 95% confidence level, not to exceed ±1.12% over the wavelength range 380-780 nm.

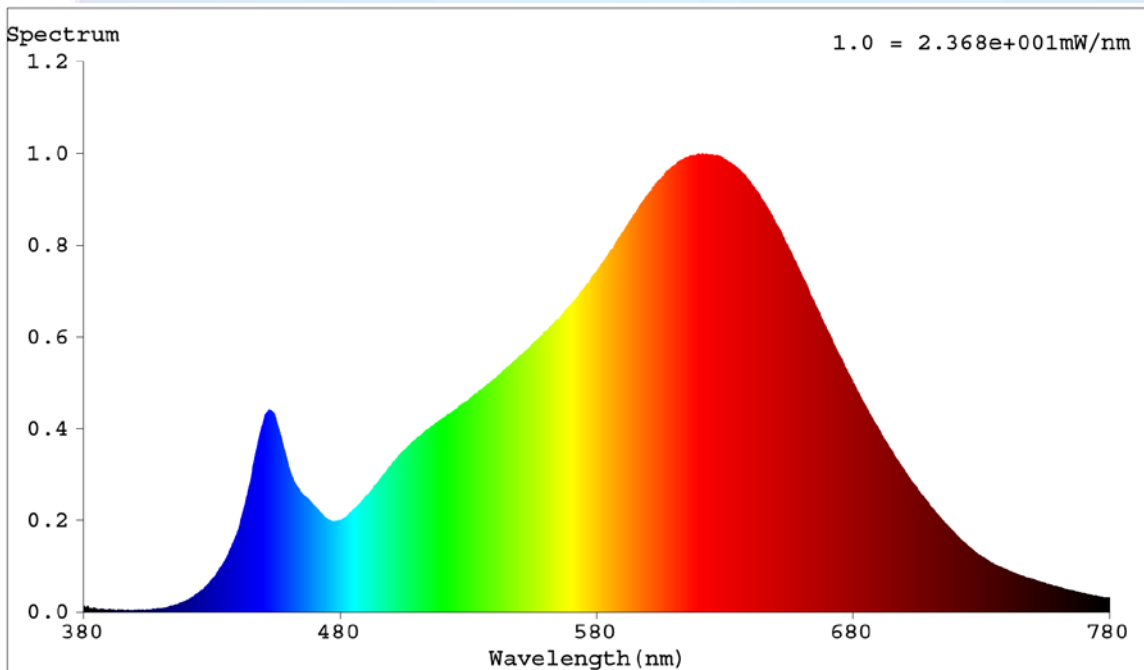
### Luminous Intensity

A Everfine GOR-5000 Goniophotometer was used to measure the intensity at each angle of distribution, Luminous intensity (cd) is measured within each vertical plane at a 5° vertical angle increment (maximum) from 0° to 180° Luminous intensity (cd), measurements repeated in vertical planes about the lamp (polar) axis in maximum increments of 22.5° from 0° to 180°, and export the intensity (cd) with excel format. The test distance is 25meters from the Goniophotometer to the detector

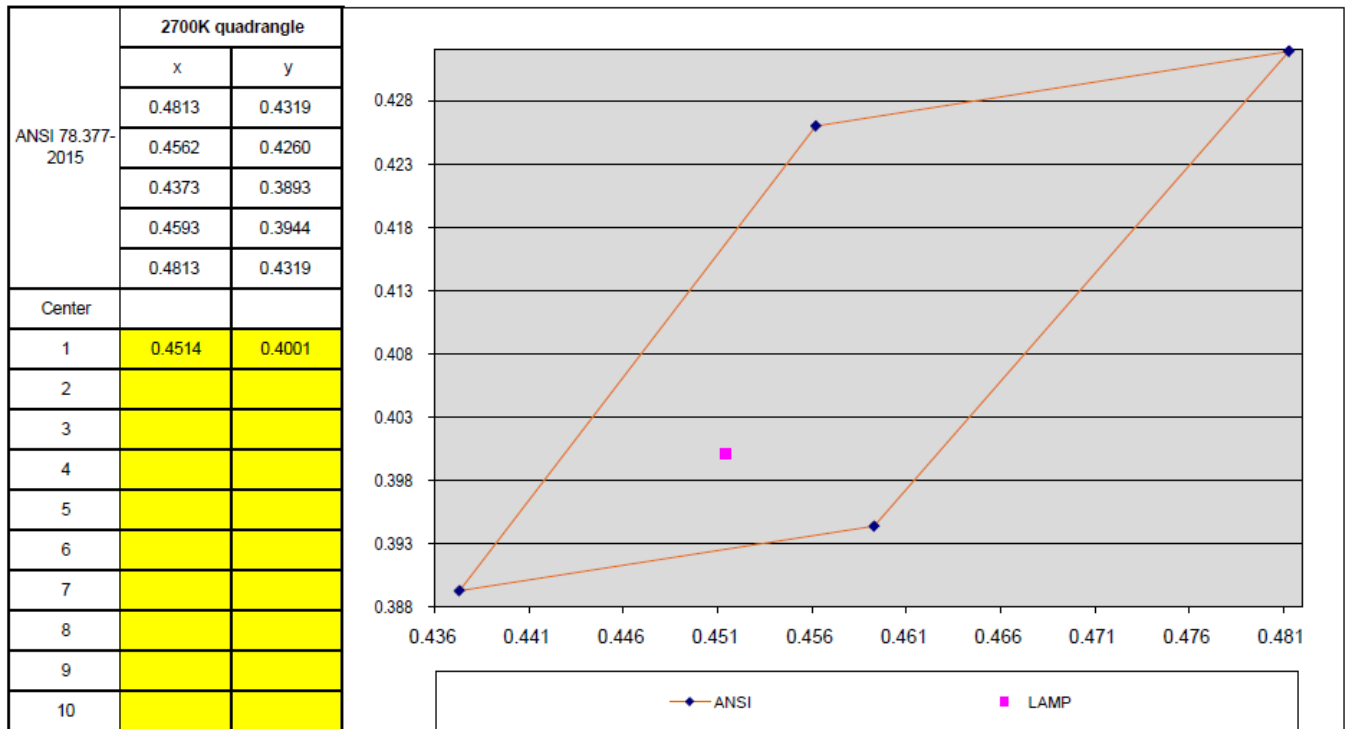
### Photometric and Electrical Test Data

Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.2994	/	35.75	0.995	2379.69	66.56
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
2738	92.8	59	0.4514	0.4001	0.2617	0.5220	-0.0032

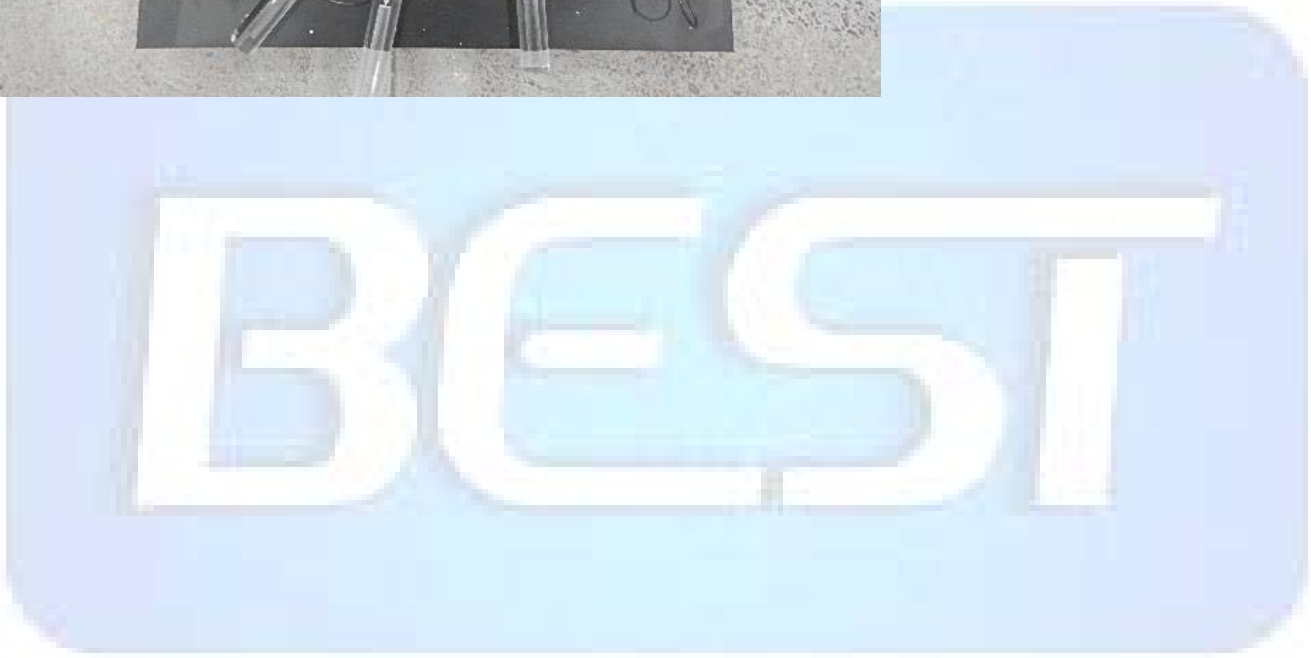
### Spectrul Plots



### 7 Step Quadrangle



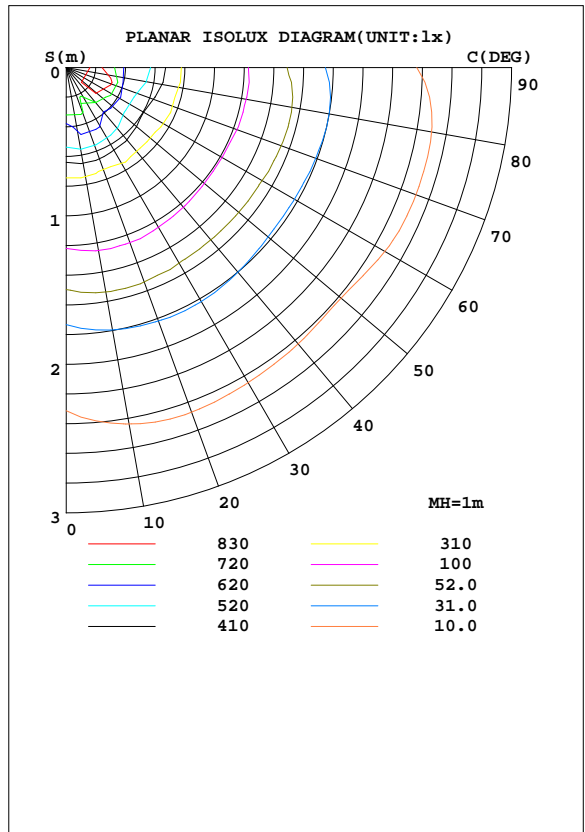
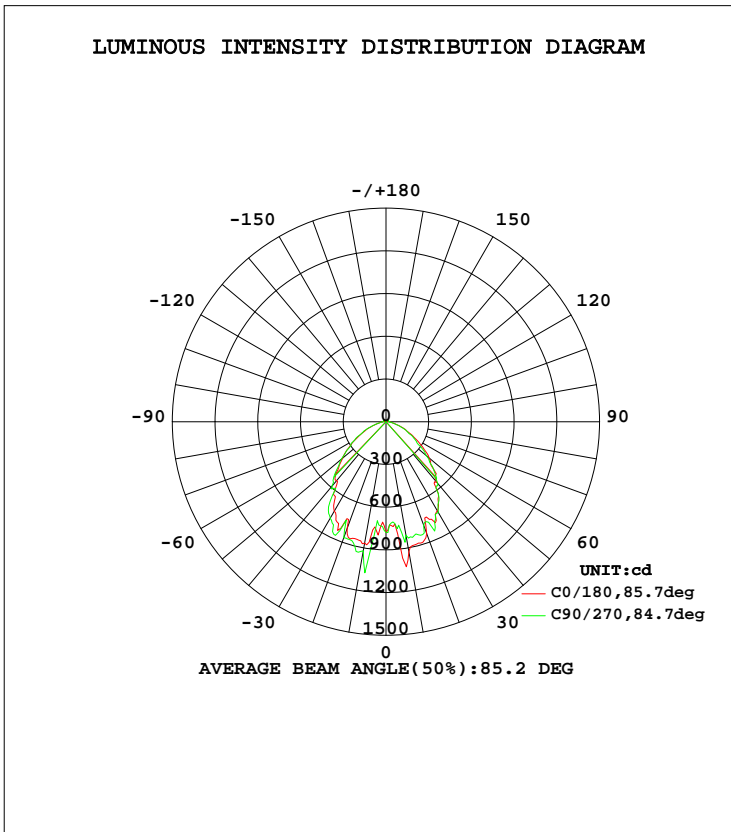
**EUT Photo**



LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 66.56 lm/W			
MODEL	SER-24P-BL or PC	I <sub>max</sub> (cd)	1287	S/MH(C0/180)	1.32
NOMINAL POWER(W)	36	LOR(%)	100.0	S/MH(C90/270)	1.33
RATED VOLTAGE(V)	120.0	TOTAL FLUX(lm)	2379.7	η UP, DN(C0-180)	4.0, 46.6
NOMINAL FLUX(lm)	2379.69	CIE CLASS	DIRECT	η UP, DN(C180-360)	4.1, 45.3
LAMPS INSIDE	1	η up(%)	8.1	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	120.0	η down(%)	91.9	CIBSE SHR MAX	1.25



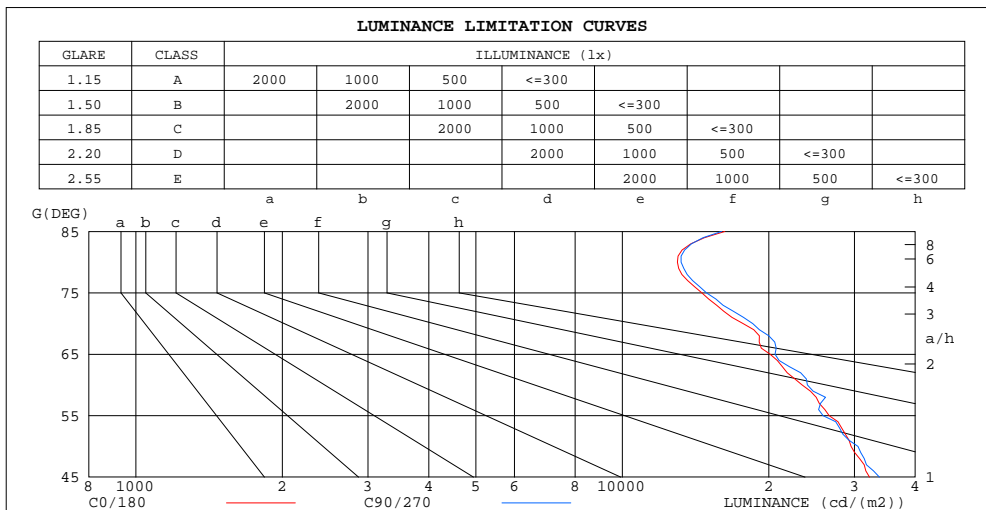
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

**ZONAL FLUX DIAGRAM  
AND LUMINANCE LIMITATION CURVES**

**ZONAL FLUX DIAGRAM:**

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	$\#lum$
10	865.3	882.0	920.7	918.9	927.4	1035	808.4	910.7	0- 10	82.21	82.21	3.45
20	800.2	789.7	867.4	836.4	835.2	873.5	775.1	815.1	10- 20	250.3	332.5	14
30	725.9	702.4	782.9	731.1	721.7	723.8	735.2	715.4	20- 30	357.3	689.8	29
40	539.3	544.9	592.3	590.1	558.3	568.4	563.3	573.6	30- 40	401.1	1091	45.8
50	398.6	399.0	412.0	430.2	393.5	410.8	368.3	400.3	40- 50	380.2	1471	61.8
60	246.0	278.5	252.2	282.2	240.5	278.9	223.0	255.7	50- 60	302.7	1774	74.5
70	127.3	155.7	133.2	162.7	124.5	163.6	118.1	149.0	60- 70	209.6	1983	83.4
80	47.34	80.82	48.15	86.01	48.32	83.61	45.06	79.20	70- 80	124.9	2108	88.6
90	23.07	60.43	21.57	60.36	22.16	60.38	22.34	60.64	80- 90	77.40	2186	91.9
100	21.08	56.35	19.99	53.86	19.74	54.10	20.71	57.75	90-100	70.04	2256	94.8
110	9.678	37.95	17.95	36.65	9.346	37.30	19.39	39.65	100-110	49.55	2305	96.9
120	18.00	28.63	17.24	28.74	18.09	30.33	18.83	30.40	110-120	33.47	2339	98.3
130	17.98	23.08	16.85	24.38	18.10	25.96	18.80	25.78	120-130	21.47	2360	99.2
140	14.04	8.825	15.14	10.62	12.89	10.85	17.39	10.93	130-140	12.86	2373	99.7
150	5.661	1.739	5.686	1.857	5.955	1.643	6.854	1.383	140-150	5.182	2378	99.9
160	1.079	1.021	1.725	1.025	0.8925	0.5568	1.410	0.5219	150-160	0.9359	2379	100
170	1.060	0.9656	1.169	0.9687	0.9849	0.7899	1.225	0.8207	160-170	0.2796	2380	100
180	1.041	0.8357	1.169	0.8283	1.078	0.9380	1.150	1.026	170-180	0.0973	2380	100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	16240	15996
80	12982	13205
75	14571	14899
70	17724	18539
65	20126	20603
60	23425	24016
55	26612	25872
50	29531	30519
45	32212	33775

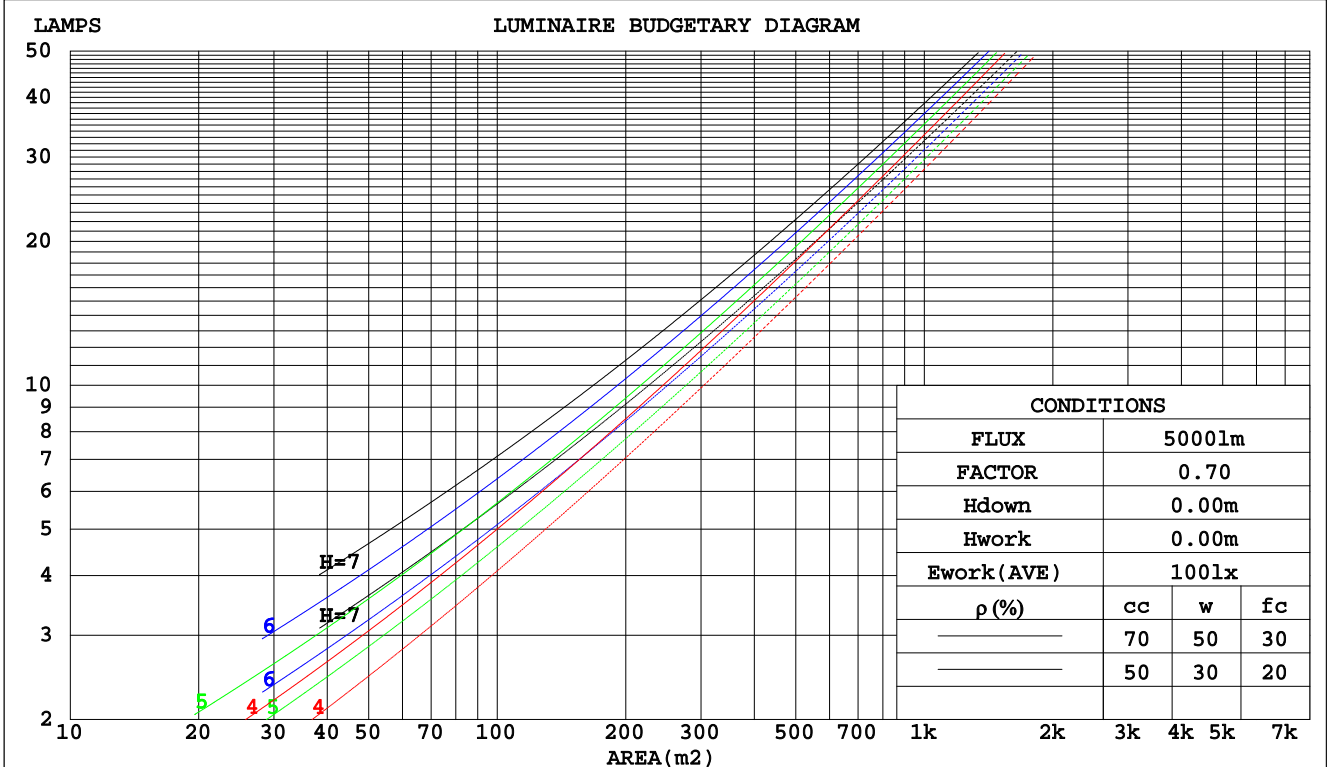
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION 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	1.17	1.17	1.17	1.13	1.13	1.13	1.07	1.07	1.07	1.00	1.00	1.00	.95	.95	.95	.92
1.0	1.02	.98	.94	.99	.95	.92	.93	.90	.87	.88	.86	.83	.83	.81	.79	.77
2.0	.90	.83	.78	.87	.81	.76	.82	.77	.73	.78	.74	.70	.74	.70	.68	.65
3.0	.79	.72	.65	.77	.70	.64	.73	.67	.62	.69	.64	.60	.66	.62	.58	.56
4.0	.71	.62	.56	.69	.61	.55	.66	.59	.54	.62	.57	.52	.59	.54	.50	.48
5.0	.64	.55	.49	.62	.54	.48	.59	.52	.47	.56	.50	.46	.54	.49	.44	.42
6.0	.58	.49	.43	.56	.48	.42	.54	.47	.41	.51	.45	.40	.49	.44	.39	.37
7.0	.52	.44	.38	.51	.43	.38	.49	.42	.37	.47	.41	.36	.45	.39	.35	.33
8.0	.48	.40	.34	.47	.39	.34	.45	.38	.33	.43	.37	.32	.41	.36	.32	.30
9.0	.44	.36	.31	.43	.36	.31	.41	.35	.30	.40	.34	.29	.38	.33	.29	.27
10.0	.41	.33	.28	.40	.33	.28	.38	.32	.27	.37	.31	.27	.36	.30	.26	.25



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:



WEC AND CCEC

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION 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	.305	.173	.055	.295	.168	.053	.277	.159	.051	.261	.150	.048	.246	.142	.046	
2.0	.279	.153	.047	.271	.149	.046	.255	.142	.044	.240	.135	.042	.227	.128	.040	
3.0	.257	.137	.041	.249	.133	.040	.235	.127	.039	.222	.122	.037	.210	.116	.036	
4.0	.237	.123	.036	.230	.120	.036	.217	.115	.034	.205	.110	.033	.194	.106	.032	
5.0	.219	.112	.032	.213	.109	.032	.202	.105	.031	.191	.101	.030	.181	.097	.029	
6.0	.204	.102	.029	.198	.100	.029	.188	.096	.028	.178	.093	.027	.169	.089	.026	
7.0	.190	.094	.027	.185	.092	.026	.176	.089	.026	.167	.086	.025	.159	.082	.024	
8.0	.178	.087	.024	.173	.085	.024	.165	.082	.024	.157	.079	.023	.149	.077	.022	
9.0	.167	.081	.023	.163	.079	.022	.155	.077	.022	.148	.074	.021	.141	.071	.021	
10.0	.157	.075	.021	.154	.074	.021	.146	.072	.020	.140	.069	.020	.133	.067	.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	.253	.253	.253	.216	.216	.216	.147	.147	.147	.085	.085	.085	.027	.027	.027	
1.0	.243	.219	.197	.208	.188	.170	.142	.129	.117	.082	.075	.068	.026	.024	.022	
2.0	.234	.195	.163	.200	.168	.140	.137	.116	.098	.079	.068	.057	.025	.022	.019	
3.0	.225	.178	.140	.193	.153	.121	.133	.106	.085	.077	.062	.050	.025	.020	.016	
4.0	.217	.164	.124	.187	.142	.108	.128	.099	.076	.074	.058	.045	.024	.019	.015	
5.0	.210	.154	.113	.180	.133	.098	.124	.093	.069	.072	.055	.041	.023	.018	.014	
6.0	.203	.146	.105	.174	.126	.091	.120	.088	.064	.070	.052	.038	.023	.017	.013	
7.0	.196	.139	.099	.169	.120	.086	.117	.084	.061	.068	.050	.036	.022	.016	.012	
8.0	.190	.133	.094	.164	.115	.082	.113	.081	.058	.066	.048	.035	.021	.016	.011	
9.0	.184	.128	.090	.159	.111	.079	.110	.078	.056	.064	.046	.033	.021	.015	.011	
10.0	.179	.124	.088	.154	.108	.076	.107	.076	.054	.062	.045	.032	.020	.015	.011	

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
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γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm										
NAME:					TYPE:SER-24P-BL or PC			WEIGHT:		
SPEC.:					DIM.:			SERIAL No.:		
MFR.: Blackjack Lighting					SUR.:			PROTECTION 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	23.6	25.0	24.0	25.3	25.7	23.6	24.9	24.0	25.3	25.6
3H	24.8	26.0	25.2	26.4	26.8	24.9	26.1	25.3	26.5	26.9
4H	25.2	26.4	25.6	26.8	27.2	25.4	26.5	25.8	26.9	27.3
6H	25.6	26.7	26.0	27.1	27.5	25.8	26.9	26.2	27.3	27.7
8H	25.7	26.8	26.2	27.2	27.7	25.9	27.0	26.4	27.4	27.9
12H	25.9	26.9	26.3	27.3	27.8	26.1	27.1	26.5	27.5	28.0
4H 2H	24.1	25.2	24.5	25.6	26.0	24.0	25.2	24.4	25.6	26.0
3H	25.4	26.4	25.9	26.9	27.3	25.5	26.6	26.0	27.0	27.5
4H	26.1	27.0	26.6	27.5	28.0	26.2	27.1	26.7	27.6	28.1
6H	26.7	27.5	27.2	28.0	28.5	26.9	27.7	27.4	28.2	28.7
8H	27.0	27.8	27.5	28.3	28.8	27.2	28.0	27.7	28.5	29.0
12H	27.3	28.0	27.9	28.6	29.1	27.6	28.3	28.1	28.8	29.4
8H 4H	26.3	27.1	26.8	27.6	28.1	26.4	27.2	27.0	27.7	28.3
6H	27.1	27.8	27.7	28.3	28.9	27.3	28.0	27.9	28.5	29.1
8H	27.6	28.2	28.2	28.8	29.4	27.9	28.4	28.5	29.0	29.6
12H	28.3	28.8	28.9	29.4	30.0	28.5	29.0	29.1	29.6	30.3
12H 4H	26.3	27.0	26.9	27.5	28.1	26.4	27.2	27.0	27.7	28.3
6H	27.2	27.8	27.8	28.4	29.0	27.4	28.0	28.0	28.5	29.2
8H	27.8	28.3	28.4	28.9	29.6	28.1	28.5	28.6	29.1	29.8
Variations with the observer position at spacings:										
S = 1.0H	+ 0.3 / - 0.3					+ 0.3 / - 0.4				
1.5H	+ 0.3 / - 0.6					+ 0.3 / - 0.6				
2.0H	+ 0.3 / - 0.8					+ 0.2 / - 0.6				

CIE Pub.117 Corrected 2380 lm Total Lamp Luminous Flux.(8log(F/F0) = 3.0)

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
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γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION 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) x RCR = 5									
k = 0.60	58	47	40	57	46	40	56	46	40	34
0.80	67	56	49	66	56	49	64	55	48	42
1.00	75	65	57	74	64	57	71	65	56	49
1.25	82	72	65	80	71	64	77	69	63	55
1.50	87	77	70	85	76	69	81	74	68	60
2.00	93	85	78	91	83	77	87	80	75	66
2.50	97	89	83	94	87	82	90	84	79	69
3.00	100	93	87	97	91	86	92	87	83	73
4.00	104	98	93	101	96	91	96	91	88	77
5.00	106	101	97	103	99	95	97	94	91	79
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:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

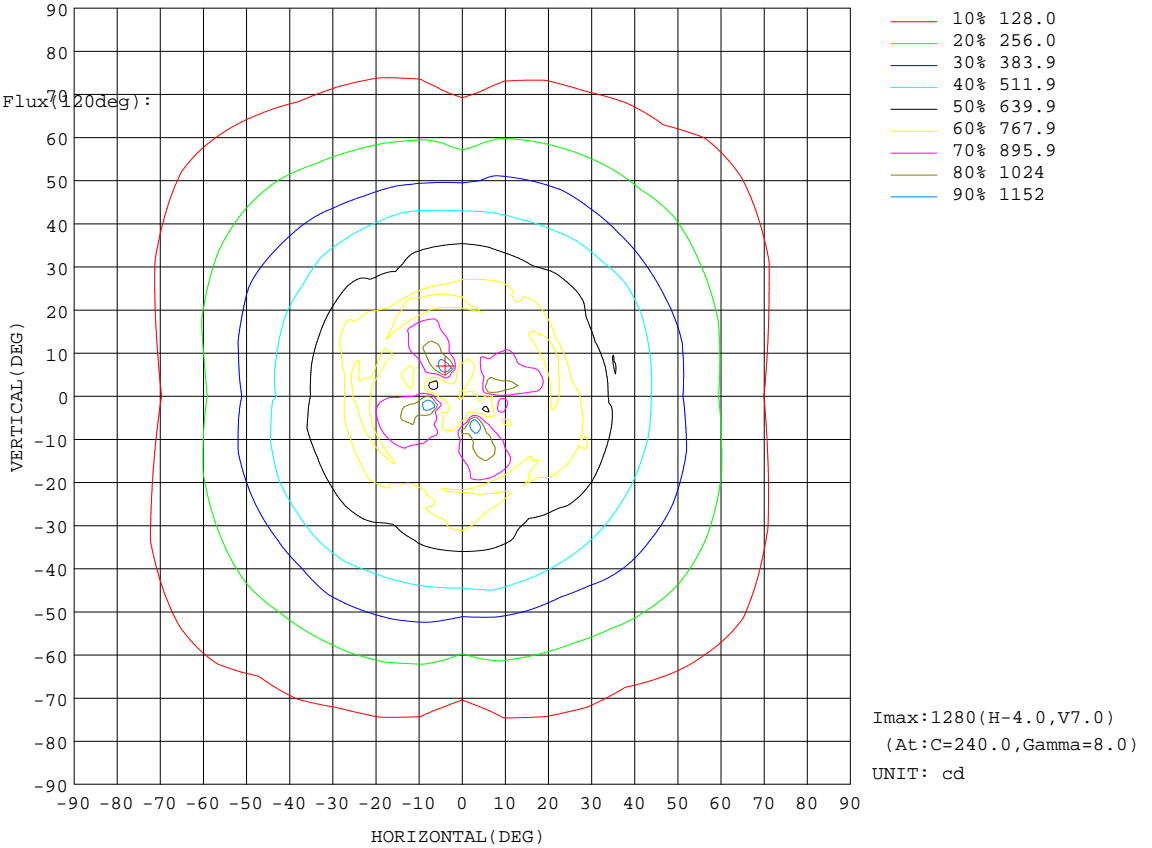
Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:

Conical surface Flux(90deg):

1289.1 lm  
 %lum = 54.2%  
 %lamp = 54.2%

Conical surface Flux(70deg):

1773.9 lm  
 %lum = 74.5%  
 %lamp = 74.5%

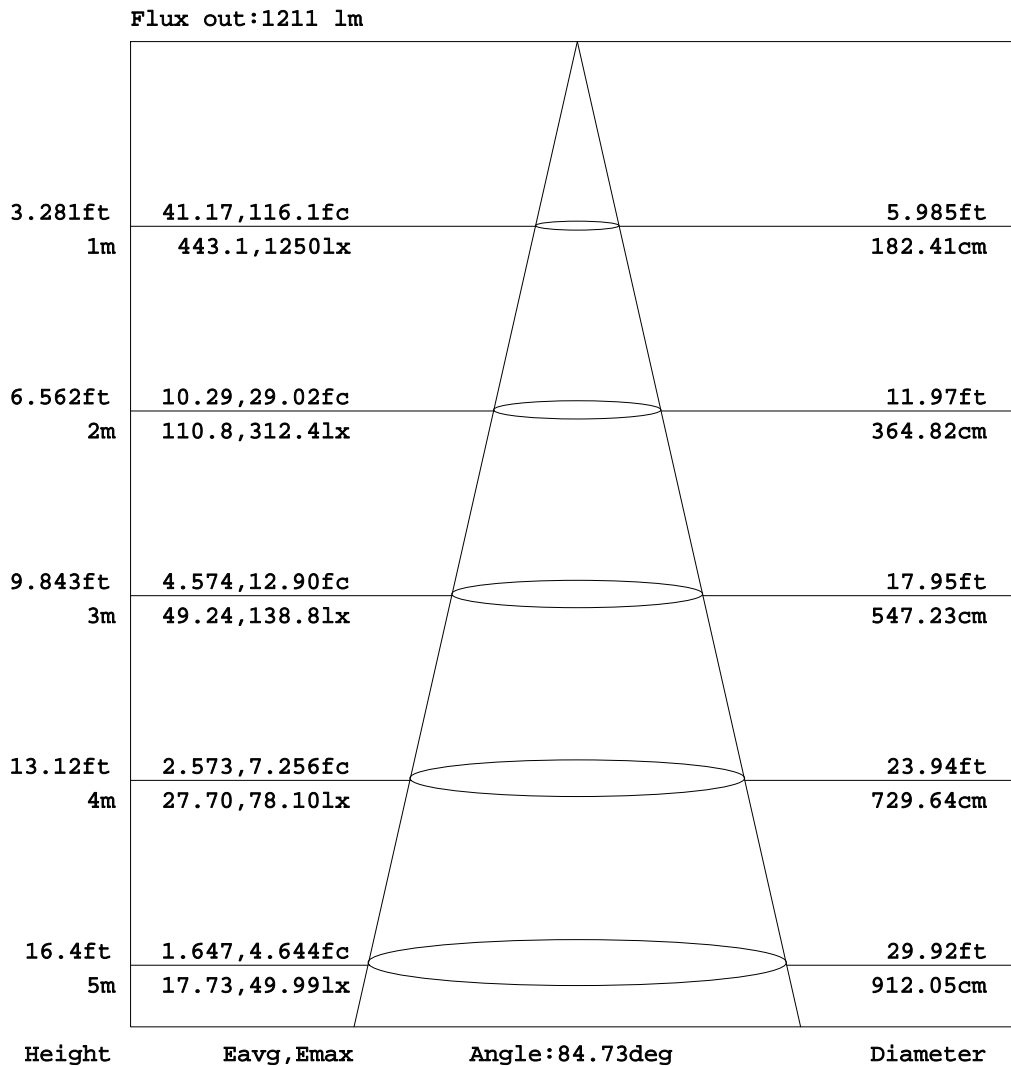


C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

AAI Figure

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:



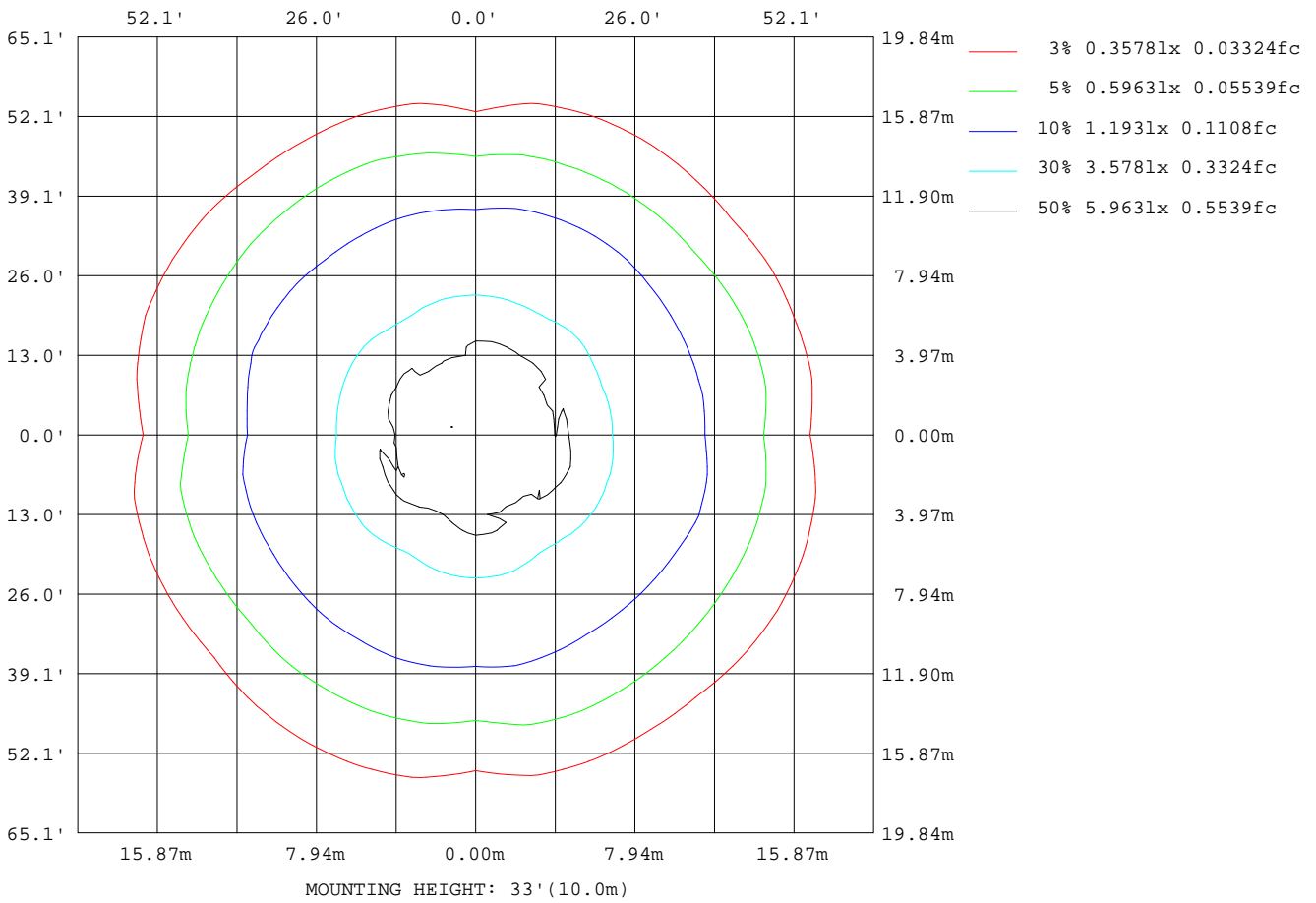
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

ISOLUX DIAGRAM

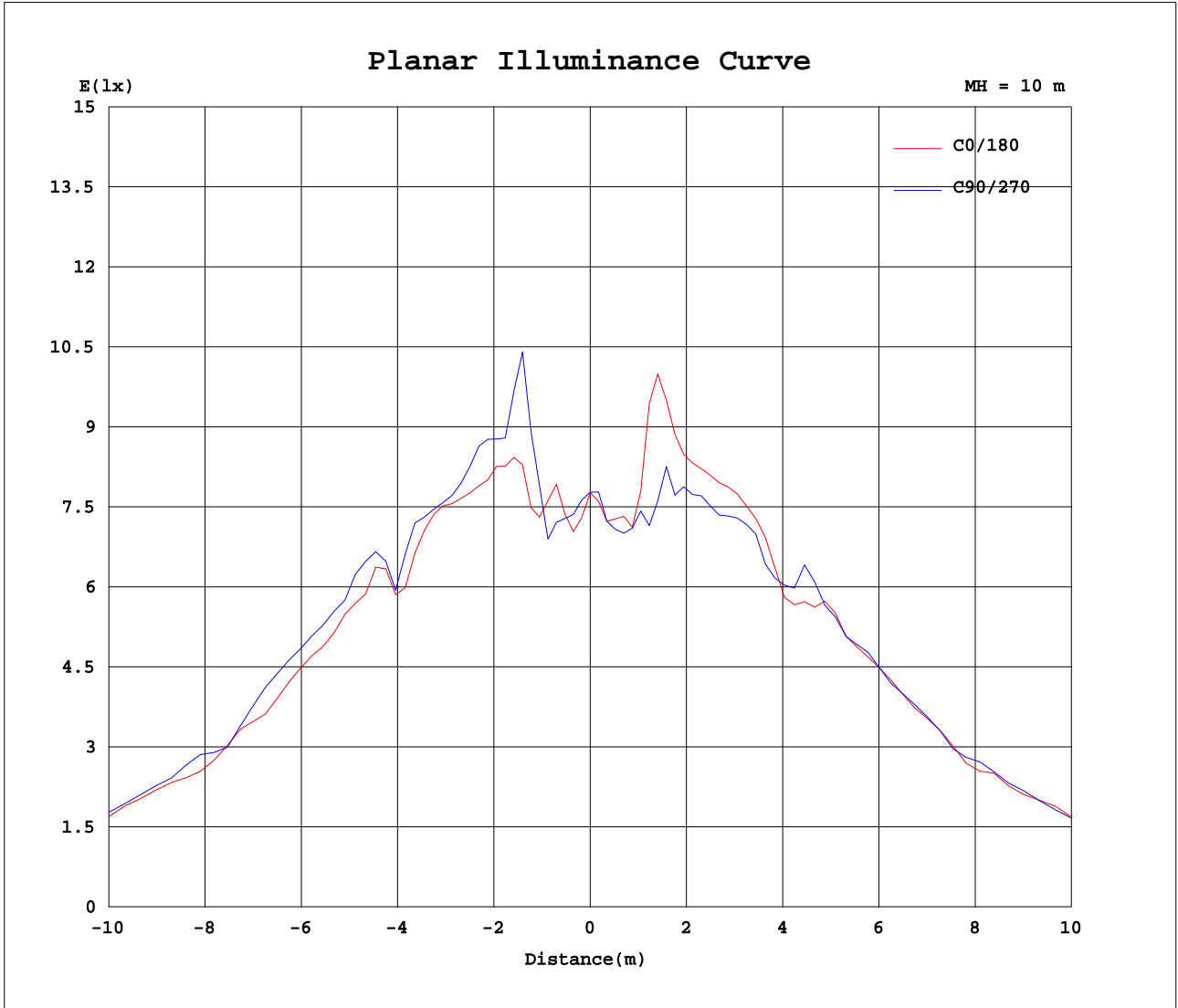
Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.6DEG  
Operators: David  
Test Date: 2017-06-14

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
Humidity: 67.1%  
Test Distance: 26.000m [K=1.0000]  
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION 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	777	779	780	778	782	780	782	781	779	777	778	780	779	776	776	774	782	783	777
5	771	767	732	665	701	750	860	827	725	698	707	736	738	761	825	820	888	802	720
10	865	946	915	811	852	912	1085	1136	974	921	819	857	866	938	900	959	1123	1100	927
15	850	820	801	780	826	900	1030	1055	959	882	794	806	804	881	930	966	1029	999	883
20	800	794	784	774	787	792	844	896	884	867	835	826	788	830	843	875	925	924	835
25	789	809	840	819	798	775	764	794	857	870	789	744	718	782	859	854	861	811	755
30	726	761	772	747	718	687	663	702	751	783	761	721	684	713	749	740	727	728	722
35	633	649	650	659	639	628	608	642	676	687	677	637	615	652	693	696	677	672	643
40	539	570	580	565	552	538	552	569	573	592	586	586	580	582	598	585	607	595	558
45	478	480	479	473	476	489	492	504	519	502	508	509	514	532	527	523	530	520	477
50	399	432	444	421	404	394	393	400	418	412	433	440	436	434	426	427	432	432	393
55	321	346	346	341	338	338	343	348	338	312	340	351	348	351	342	348	356	360	319
60	246	279	290	290	284	273	272	280	281	252	287	296	295	289	275	282	288	285	240
65	179	210	216	210	203	201	215	220	217	183	221	232	231	221	205	214	217	214	170
70	127	161	170	165	158	154	173	179	176	133	172	180	173	168	157	174	181	176	124
75	79.2	118	126	118	113	106	123	130	127	81.0	124	131	123	124	112	129	133	130	78.8
80	47.3	90.0	92.1	87.6	84.7	76.9	94.5	96.4	97.1	48.2	95.4	94.4	90.3	91.9	80.1	98.6	101	102	48.3
85	29.7	76.0	73.1	72.4	69.9	61.3	78.1	77.9	82.2	29.3	79.3	73.6	71.4	74.2	61.6	81.1	83.7	86.0	29.7
90	23.1	72.2	67.0	67.5	64.8	56.1	73.0	71.5	77.0	21.6	73.8	66.1	64.0	67.0	53.7	73.9	76.3	79.7	22.2
95	23.1	75.5	69.8	70.7	67.6	58.9	76.4	74.3	80.5	21.7	77.1	68.1	65.9	68.6	54.8	75.7	78.1	82.2	21.7
100	21.1	62.4	62.6	61.7	59.4	53.3	70.7	69.8	74.0	20.0	74.6	65.1	60.9	59.7	48.0	59.9	61.4	62.7	19.7
105	16.6	42.1	45.1	44.8	44.5	42.3	56.5	58.8	62.2	18.9	61.7	58.6	50.0	47.2	37.6	43.9	45.3	41.9	15.8
110	9.68	29.7	43.1	38.4	38.8	37.1	47.3	48.4	47.7	17.9	45.3	50.1	43.8	40.2	33.1	37.7	41.1	31.1	9.35
115	15.4	28.5	35.1	38.1	32.8	32.6	39.9	39.8	36.2	17.5	33.8	40.0	39.8	34.9	29.1	36.0	34.4	30.6	15.0
120	18.0	26.1	25.1	33.0	28.7	28.6	32.1	30.2	29.0	17.2	26.9	30.2	33.5	30.6	26.9	31.4	25.5	29.2	18.1
125	18.1	19.9	16.7	22.9	26.1	27.8	25.8	22.6	22.2	17.0	21.2	22.4	26.8	29.5	25.6	23.4	17.1	24.6	18.1
130	18.0	16.7	14.4	15.6	21.1	25.1	20.7	19.2	19.1	16.8	18.7	18.9	21.3	26.7	22.1	16.9	14.7	21.4	18.1
135	17.7	14.8	13.0	11.1	15.6	17.5	16.8	16.5	16.7	16.3	16.6	16.2	17.1	19.4	18.2	11.4	13.6	18.8	18.0
140	14.0	10.9	9.66	8.27	8.64	9.01	11.0	14.2	15.1	15.1	15.2	14.1	11.5	10.4	10.9	9.77	10.9	12.1	12.9
145	9.65	8.88	9.48	6.35	3.43	3.97	5.88	8.35	9.79	10.2	9.96	8.75	6.64	4.78	4.24	7.08	10.9	11.3	10.2
150	5.66	5.14	4.37	3.10	2.00	1.48	2.69	4.30	5.26	5.69	5.39	4.60	3.15	1.63	2.09	3.31	5.25	5.47	5.95
155	2.45	2.24	1.92	1.32	1.10	1.33	1.46	1.74	2.11	2.35	2.11	1.74	1.60	1.36	1.12	1.31	1.83	2.48	2.44
160	1.08	1.02	1.14	1.13	1.01	1.03	1.06	1.29	1.69	1.73	1.61	1.44	1.23	1.03	1.02	1.01	1.07	1.16	0.89
165	1.06	1.00	1.14	1.11	0.99	0.96	1.00	1.14	1.21	1.17	1.21	1.16	1.17	1.01	0.91	0.97	0.99	1.05	1.02
170	1.06	1.00	1.06	1.04	0.97	0.96	1.04	1.14	1.15	1.17	1.21	1.16	1.17	1.01	0.93	0.97	0.97	1.03	0.98
175	1.04	1.00	1.01	1.02	0.95	0.91	1.13	1.14	1.15	1.17	1.21	1.16	1.17	1.01	0.82	0.93	0.97	1.03	1.13
180	1.04	1.13	1.01	0.96	0.91	0.76	1.07	1.14	1.15	1.17	1.21	1.16	1.17	0.93	0.72	0.82	0.90	0.99	1.08

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:



LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.0V I:0.2995A P:35.75W PF:0.9949 Lamp Flux:2379.69x1 lm		
NAME:	TYPE:SER-24P-BL or PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:

Table--2

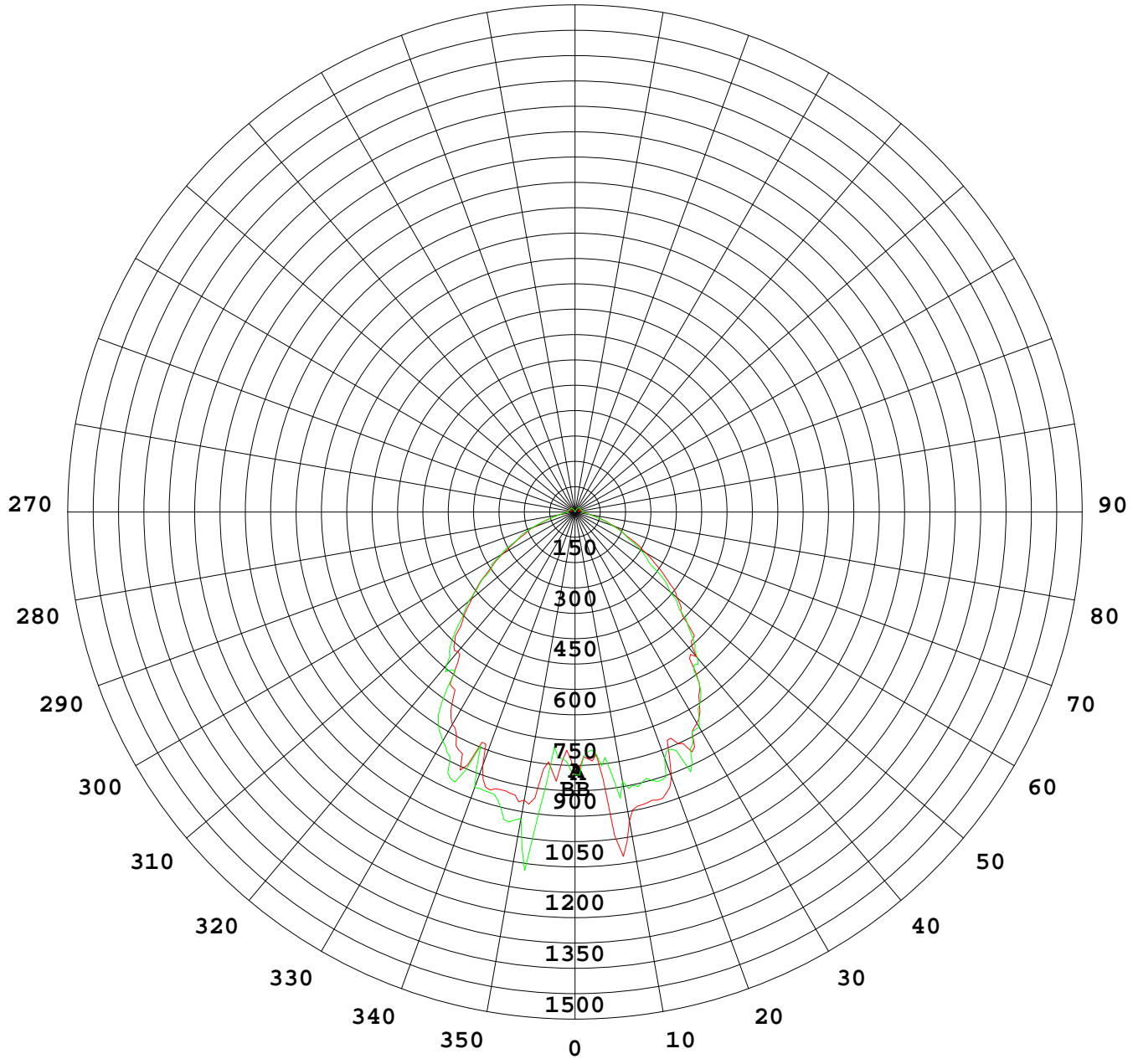
UNIT: cd

C( DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	779	780	778	782	780	782	781	779	777	778	780	779	776	776	774	782	783		
5	704	736	732	756	839	868	806	730	718	707	726	787	854	811	807	875	874		
10	819	854	873	957	1114	1147	976	807	808	814	871	924	913	909	951	1027	1061		
15	785	766	785	892	1016	1017	937	823	816	781	785	829	887	908	894	943	996		
20	774	755	761	849	898	889	867	796	775	762	776	803	822	808	803	830	832		
25	746	772	782	808	793	753	789	825	819	796	799	767	783	773	772	797	784		
30	735	769	773	750	698	673	684	706	735	750	753	733	729	702	674	666	698		
35	647	663	679	666	632	619	639	648	649	643	614	607	653	657	628	617	627		
40	555	563	571	579	557	542	541	549	563	571	565	576	585	562	554	554	547		
45	480	498	496	506	494	493	496	484	471	471	460	465	479	489	510	511	496		
50	423	448	440	421	401	391	391	381	368	399	414	417	407	394	392	392	411		
55	347	354	347	344	341	337	333	312	277	302	306	309	310	311	324	341	347		
60	277	296	295	287	271	264	260	253	223	258	263	261	257	254	265	264	269		
65	202	218	211	209	204	209	209	200	166	203	212	210	206	195	208	208	207		
70	162	171	167	165	162	170	171	159	118	155	164	159	154	144	162	165	162		
75	120	128	121	115	111	121	126	118	74.4	116	122	114	112	101	119	123	121		
80	91.8	93.3	90.1	85.4	81.8	91.4	91.5	92.7	45.1	89.4	88.5	84.7	85.7	72.7	92.4	95.3	94.9		
85	76.2	74.3	73.1	69.2	64.1	75.5	74.0	79.5	28.6	76.3	71.0	69.6	71.8	57.7	78.2	80.0	82.6		
90	70.5	66.9	66.2	63.4	57.4	70.6	69.1	76.2	22.3	73.2	65.9	65.3	68.0	53.2	74.8	75.9	80.0		
95	73.5	68.8	67.6	65.3	58.7	73.8	72.6	80.2	22.4	77.1	68.2	67.7	71.1	55.2	78.6	79.5	83.9		
100	53.9	57.1	54.5	55.6	52.6	68.7	69.7	77.2	20.7	74.8	65.3	63.9	65.4	50.1	67.2	66.6	68.3		
105	39.8	44.8	42.2	44.1	42.6	56.1	60.3	65.6	20.0	62.9	58.9	52.8	51.8	38.2	49.4	47.4	45.9		
110	28.4	40.4	37.8	36.8	37.8	47.9	51.3	50.0	19.4	46.3	51.8	46.7	45.7	33.6	41.9	43.9	32.7		
115	27.8	31.3	38.8	31.7	34.1	42.1	42.3	39.0	19.0	35.2	42.4	42.5	39.1	29.4	39.0	37.4	31.6		
120	27.7	22.9	34.0	29.6	31.1	34.9	32.3	32.5	18.8	29.0	32.6	35.6	32.9	27.9	33.7	27.1	30.8		
125	22.2	15.4	24.6	27.9	30.5	28.8	24.5	24.9	18.8	23.1	25.1	28.8	31.3	27.1	25.4	17.1	24.0		
130	19.6	13.8	17.6	23.4	28.5	23.2	21.3	21.5	18.8	20.8	21.7	23.1	27.7	23.9	17.7	13.9	19.9		
135	17.9	12.5	11.6	18.3	20.7	18.9	18.3	18.6	18.5	18.9	18.5	19.0	20.7	18.5	12.7	13.0	17.2		
140	11.9	10.3	11.0	10.7	11.0	13.2	16.2	17.0	17.4	17.3	16.6	13.6	11.2	10.6	9.24	10.0	11.6		
145	10.7	9.92	6.71	4.34	5.13	7.18	9.91	11.6	12.3	11.9	10.3	7.77	5.11	4.30	6.11	9.12	8.46		
150	4.68	5.12	3.19	2.03	1.26	3.11	5.02	6.12	6.85	6.40	5.07	3.47	1.62	1.14	2.72	4.63	3.94		
155	1.85	1.93	1.09	0.61	0.77	1.11	1.58	2.15	2.69	2.37	1.92	1.17	0.80	0.48	0.86	1.07	1.25		
160	0.89	0.88	0.82	0.60	0.52	0.57	1.10	1.41	1.41	1.37	1.21	0.89	0.56	0.48	0.60	0.75	0.84		
165	1.07	1.08	0.95	0.78	0.55	0.63	0.89	1.02	1.17	1.06	1.11	1.08	0.80	0.62	0.65	0.79	0.88		
170	1.00	1.02	0.95	0.88	0.70	0.70	0.91	1.13	1.22	1.28	1.21	1.13	0.91	0.73	0.67	0.81	0.90		
175	1.13	1.14	1.00	0.93	0.79	0.76	1.00	1.11	1.19	1.21	1.21	1.15	1.08	0.88	0.75	0.82	0.92		
180	1.04	1.10	1.00	1.01	0.87	0.78	1.03	1.13	1.15	1.17	1.21	1.15	1.16	0.90	0.75	0.84	0.94		

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-06-14

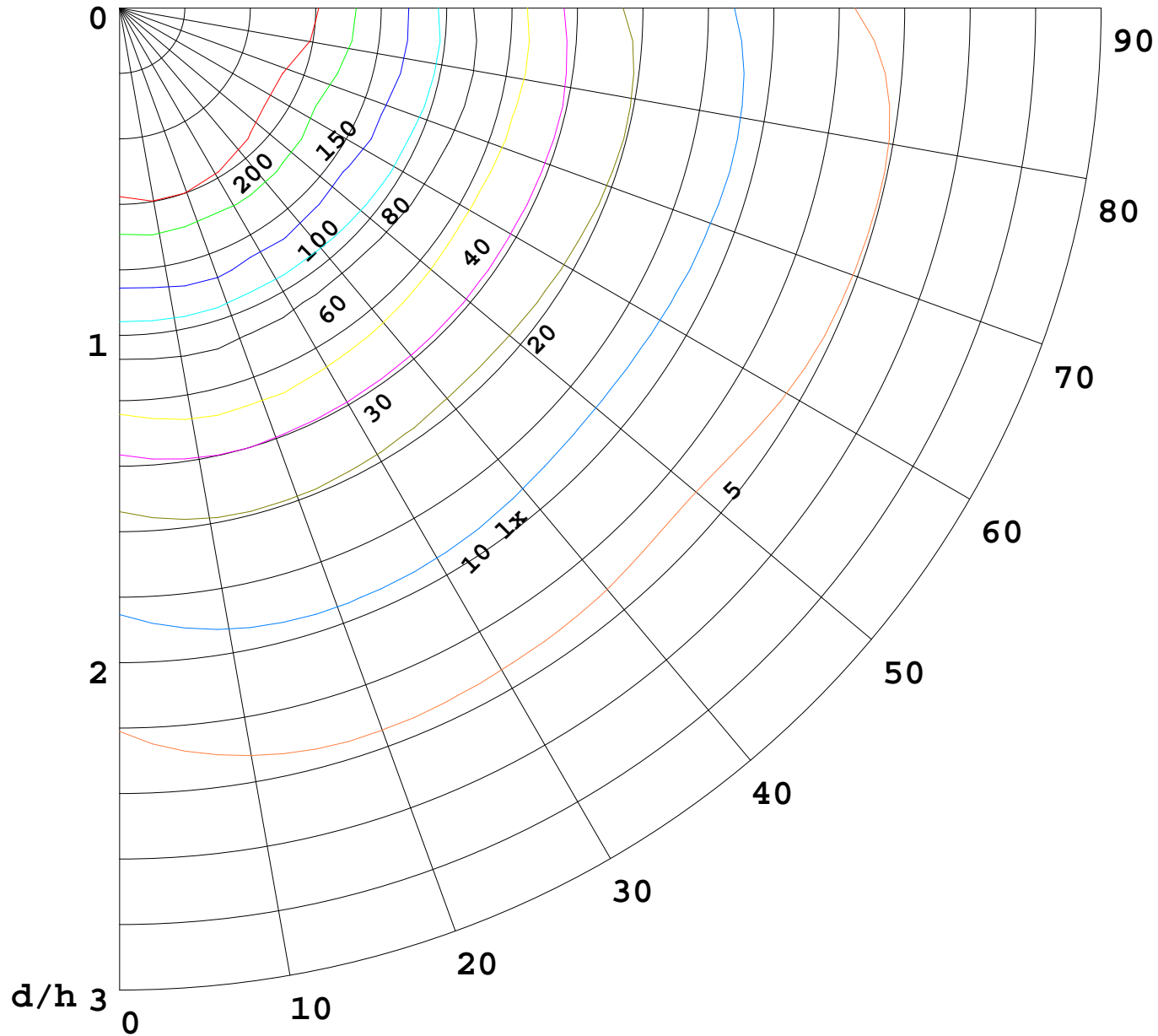
γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

I (cd)



1000 lm

$\kappa = 1$



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

	<b>Pcc</b>	<b>Pw</b>	<b>Pfc</b>
—————	70	50	30
—————	50	30	20

