



### IESNA LM-79 TEST REPORT

Applicant's name .....	Blackjack Lighting
Address .....	1553 Barclay Blvd. Buffalo Grove, IL 60089
Brand Name .....	Blackjack Lighting
Report No.....	BTR66.181.17.0020.14
Product Name .....	24" Decorative vanity with glass tube
Model Number .....	LIN-24V-SN

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 .....	Jan 26, 2018	

Testing Laboratory Name .....	BEST Test Service Shenzhen Co., Ltd.
Address .....	1 <sup>st</sup> Floor, 1 <sup>st</sup> Building, Weitai Industrial Park, Yingrenshi, Shiyao, Baoan, Shenzhen, China
Accreditation .....	DLC/Lighting Facts/UL/ETL/ELI/CEC/EPA/DOE NVLAP Testing Lab Code: 200770-0
	<a href="tel:+86-755-28236006">Tel:+86-755-28236006</a> , Email: <a href="mailto:certification@bestcert.cn">certification@bestcert.cn</a>

<b>Test specification</b>	
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 .....	Jan 22, 2018
Sample Quantity .....	1 unit
SKU.....	N/A
Rating(s) (V; Hz) .....	AC 120V/60Hz
Nominal Power.....	21W
Nominal Power Factor .....	N/A
Nominal Lumen Output.....	1600lm
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	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.

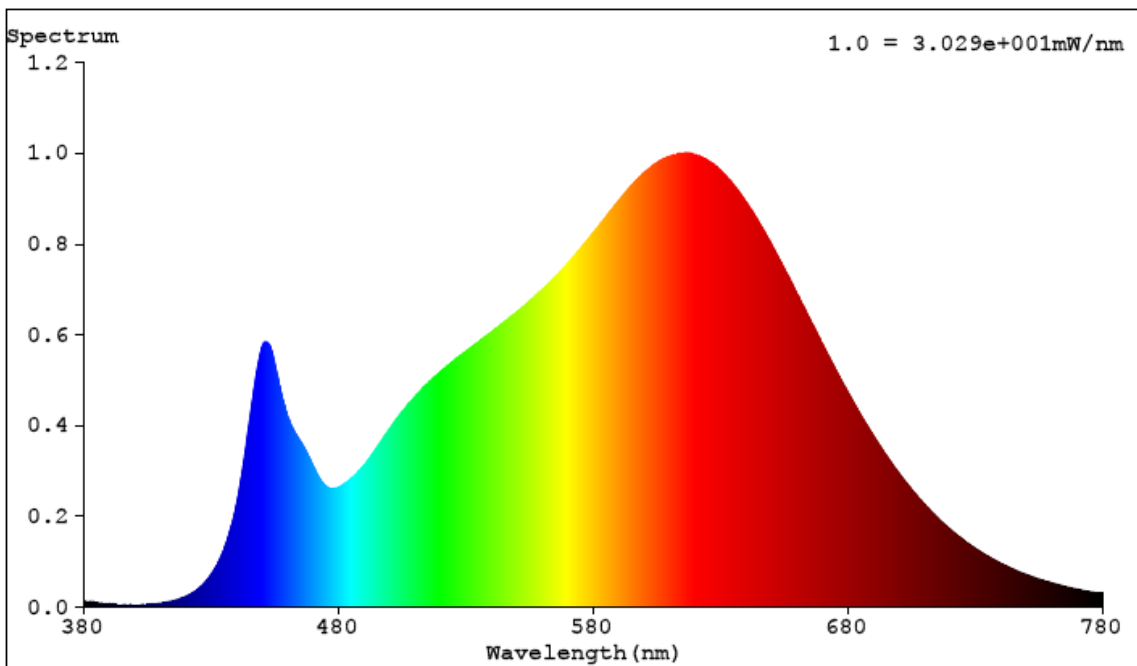
### Luminous Intensity

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

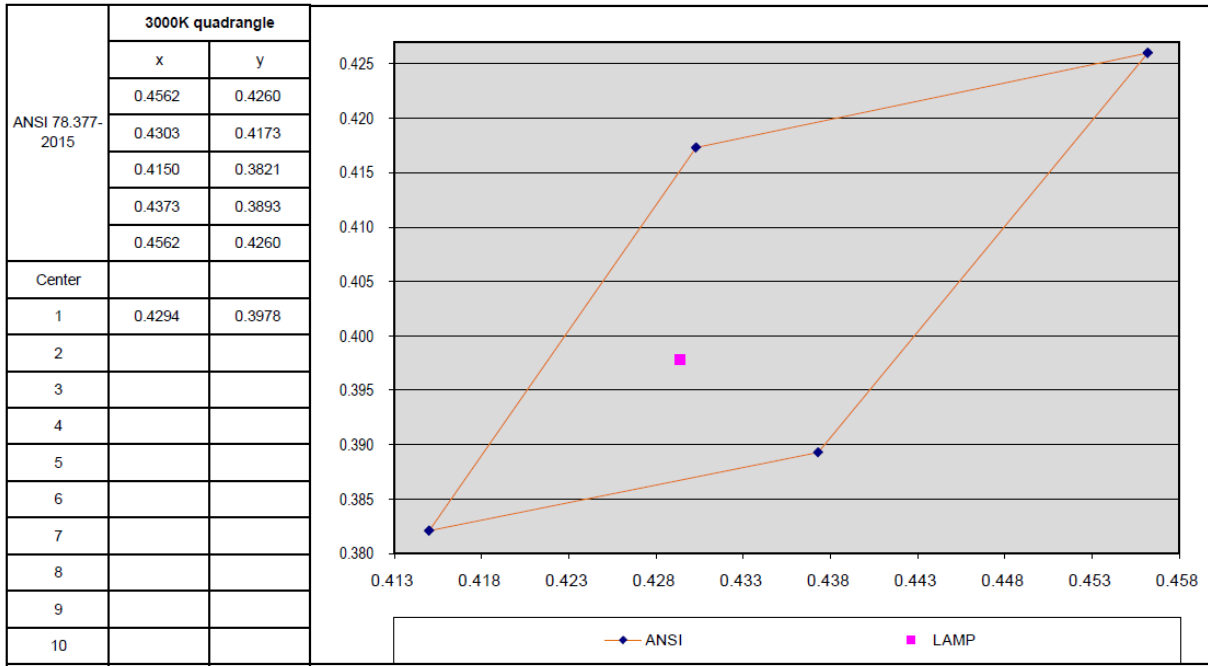
### Photometric and Electrical Test Data

Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.1728	/	20.65	0.9956	1609.06	77.91
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
3080	91.9	54	0.4294	0.3978	0.2484	0.5178	-0.0014

### Spectrul Plots



**7 Step Quadrangle**



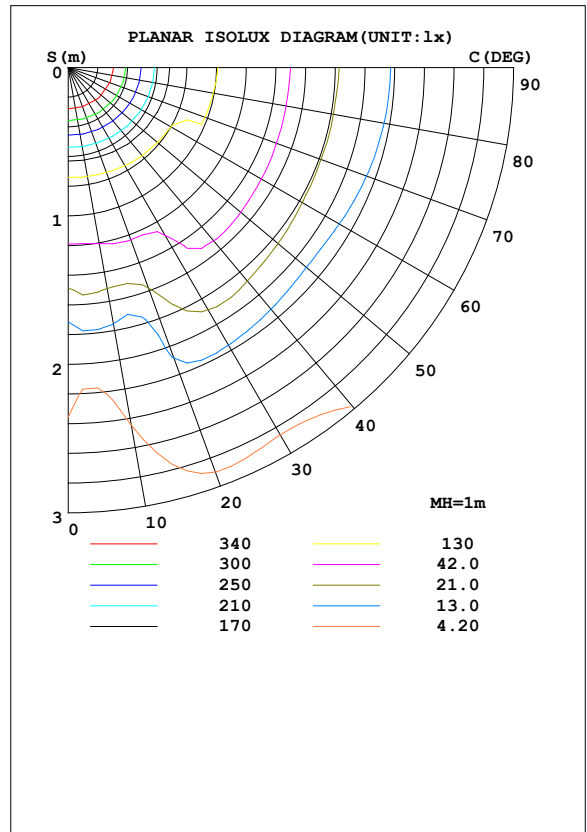
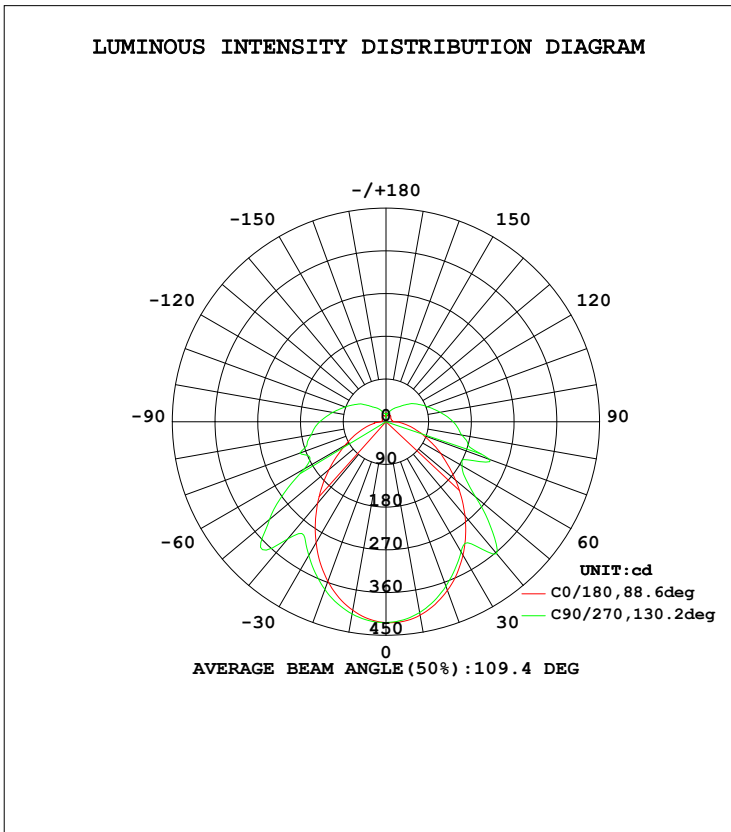
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LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.0V I:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 77.91 lm/W			
MODEL	LIN-24V-SN	I <sub>max</sub> (cd)	426.5	S/MH (C0/180)	1.15
NOMINAL POWER (W)	21	LOR (%)	100.0	S/MH (C90/270)	1.13
RATED VOLTAGE (V)	120.0	TOTAL FLUX (lm)	1609.1	η UP, DN (C0-180)	9.6, 40.6
NOMINAL FLUX (lm)	1609.06	CIE CLASS	SEMI-D.	η UP, DN (C180-360)	9.9, 40.0
LAMPS INSIDE	1	η up (%)	19.5	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	120.0	η down (%)	80.5	CIBSE SHR MAX	1.30



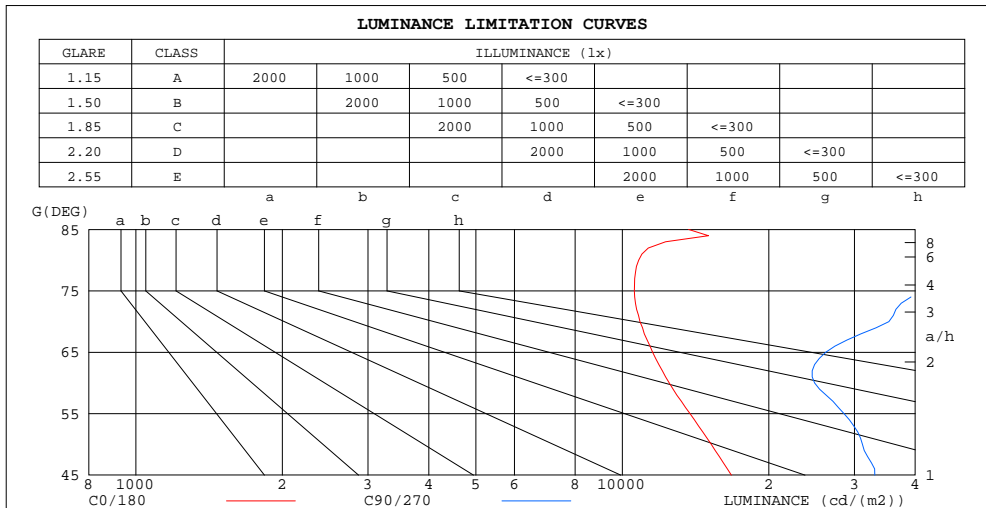
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.6DEG  
 Operators: David  
 Test Date: 2018-01-25

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	403.4	406.9	411.4	413.5	413.8	411.8	408.1	404.8	0- 10	39.75	39.75	2.47
20	357.8	366.3	376.3	378.5	378.2	374.7	368.7	361.5	10- 20	110.4	150.2	9.33
30	294.5	311.3	325.4	328.9	324.3	322.2	316.7	303.8	20- 30	158.5	308.7	19.2
40	223.9	253.9	322.3	270.5	259.1	270.3	362.7	246.1	30- 40	182.5	491.2	30.5
50	156.7	285.0	320.4	236.3	191.5	292.3	246.8	246.2	40- 50	205.3	696.5	43.3
60	99.86	217.3	198.8	250.0	132.7	193.4	185.1	171.8	50- 60	188.3	884.7	55
70	59.50	141.2	193.2	147.8	84.58	149.9	232.6	129.4	60- 70	156.5	1041	64.7
80	30.01	129.6	160.3	125.4	48.84	145.0	162.1	119.8	70- 80	140.0	1181	73.4
90	10.44	108.0	139.6	102.9	16.90	116.9	141.6	96.72	80- 90	114.6	1296	80.5
100	8.764	85.61	114.0	81.24	14.24	93.90	115.9	77.82	90-100	92.14	1388	86.3
110	8.207	68.70	91.69	65.30	12.28	75.37	93.07	63.19	100-110	71.38	1459	90.7
120	8.778	52.63	73.44	48.59	12.34	58.98	74.90	46.39	110-120	53.14	1513	94
130	10.76	38.48	55.07	36.19	13.53	41.67	56.67	35.96	120-130	37.71	1550	96.3
140	12.80	31.13	40.17	30.05	15.59	33.00	41.12	29.71	130-140	25.33	1576	97.9
150	14.30	24.75	31.71	23.53	16.43	26.28	31.96	24.33	140-150	16.81	1592	99
160	15.05	19.15	22.74	19.28	16.62	18.56	23.83	19.95	150-160	10.16	1603	99.6
170	11.40	17.44	18.15	14.46	11.92	14.38	16.27	17.86	160-170	5.066	1608	99.9
180	18.97	16.83	8.657	17.35	19.01	17.33	7.795	15.92	170-180	1.420	1609	100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	13689	108313
80	10802	57711
75	10587	41502
70	10873	35310
65	11544	26197
60	12482	24847
55	13776	28558
50	15236	31156
45	16753	33045

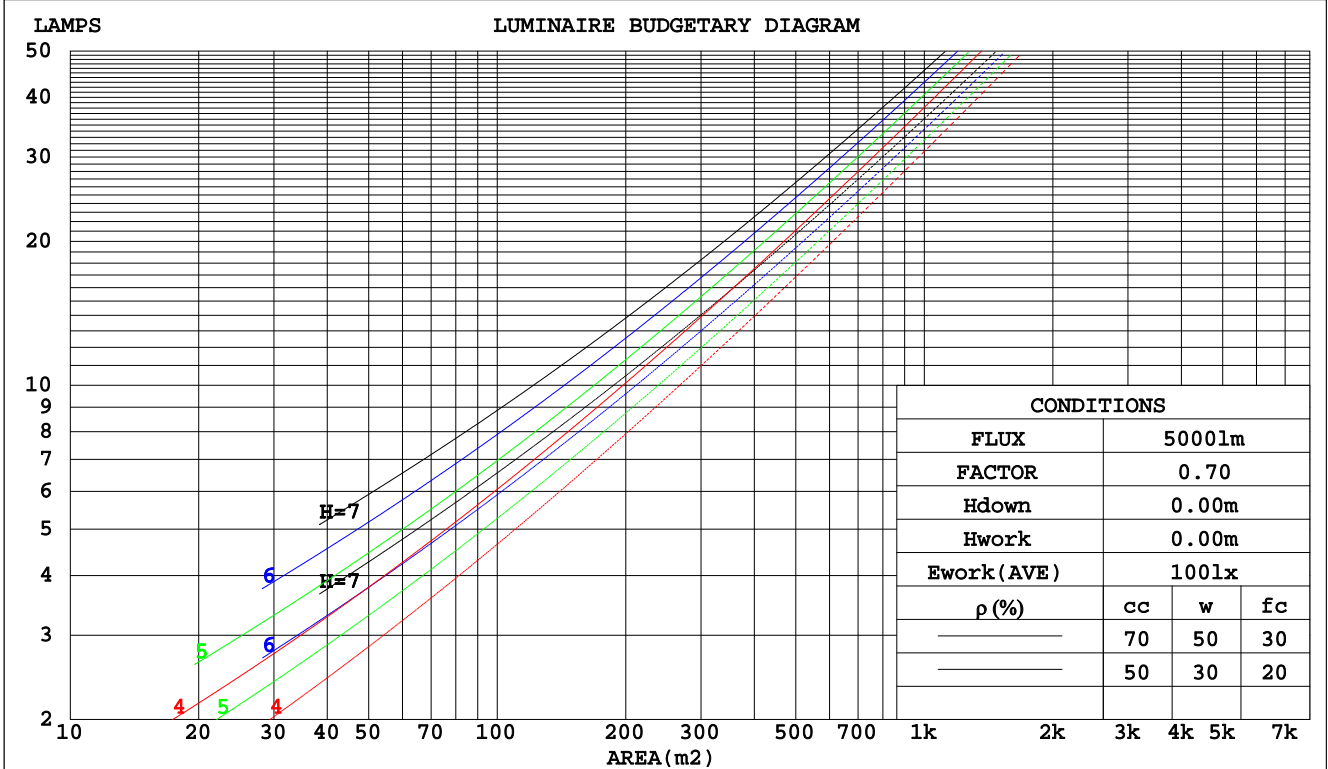
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

$\gamma$  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:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	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	1.14	1.14	1.14	1.09	1.09	1.09	1.00	1.00	1.00	.92	.92	.92	.84	.84	.84	.81
1.0	.96	.91	.86	.92	.87	.83	.84	.80	.77	.77	.74	.71	.70	.68	.65	.62
2.0	.83	.75	.69	.79	.72	.66	.72	.67	.62	.66	.61	.57	.60	.57	.53	.50
3.0	.72	.63	.56	.69	.61	.54	.63	.56	.51	.58	.52	.48	.53	.48	.45	.41
4.0	.63	.54	.47	.61	.52	.46	.56	.49	.43	.51	.45	.41	.47	.42	.38	.35
5.0	.57	.47	.40	.54	.46	.39	.50	.43	.37	.46	.40	.35	.42	.37	.33	.30
6.0	.51	.42	.35	.49	.40	.34	.45	.38	.32	.41	.35	.31	.38	.33	.29	.26
7.0	.46	.37	.31	.44	.36	.30	.41	.34	.29	.38	.32	.27	.35	.30	.26	.23
8.0	.42	.33	.27	.40	.32	.27	.37	.30	.25	.35	.29	.24	.32	.27	.23	.21
9.0	.38	.30	.25	.37	.29	.24	.34	.28	.23	.32	.26	.22	.30	.24	.21	.19
10.0	.35	.27	.22	.34	.27	.22	.32	.25	.21	.30	.24	.20	.28	.22	.19	.17



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

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:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	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	.372	.212	.067	.359	.205	.065	.334	.192	.061	.312	.180	.058	.291	.169	.054	
2.0	.322	.177	.054	.311	.171	.053	.288	.160	.050	.268	.150	.047	.249	.141	.044	
3.0	.287	.153	.046	.276	.148	.045	.256	.139	.042	.238	.130	.040	.220	.122	.038	
4.0	.259	.135	.040	.249	.130	.039	.231	.123	.037	.214	.115	.035	.198	.108	.033	
5.0	.236	.120	.035	.227	.117	.034	.211	.110	.032	.195	.103	.031	.181	.097	.029	
6.0	.217	.109	.031	.209	.105	.030	.193	.099	.029	.179	.093	.027	.166	.087	.026	
7.0	.200	.099	.028	.193	.096	.027	.179	.090	.026	.166	.085	.025	.154	.080	.023	
8.0	.186	.091	.026	.179	.088	.025	.166	.083	.024	.155	.078	.023	.143	.074	.021	
9.0	.173	.084	.023	.167	.082	.023	.156	.077	.022	.145	.072	.021	.134	.068	.020	
10.0	.162	.078	.022	.157	.076	.021	.146	.072	.020	.136	.067	.019	.126	.063	.018	

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	.339	.339	.339	.290	.290	.290	.198	.198	.198	.114	.114	.114	.036	.036	.036	
1.0	.334	.305	.279	.286	.262	.240	.196	.180	.166	.113	.104	.097	.036	.034	.031	
2.0	.327	.282	.245	.280	.243	.212	.192	.168	.148	.111	.098	.087	.035	.032	.028	
3.0	.319	.266	.223	.274	.229	.194	.188	.159	.136	.108	.093	.080	.035	.030	.026	
4.0	.311	.253	.209	.267	.219	.181	.184	.152	.128	.106	.089	.076	.034	.029	.025	
5.0	.304	.243	.199	.261	.211	.173	.180	.147	.122	.104	.086	.072	.034	.028	.024	
6.0	.296	.235	.192	.255	.204	.167	.176	.143	.118	.102	.084	.070	.033	.027	.023	
7.0	.289	.229	.186	.249	.198	.162	.172	.139	.115	.100	.082	.069	.032	.027	.023	
8.0	.283	.223	.182	.243	.194	.159	.168	.136	.113	.098	.080	.067	.032	.026	.022	
9.0	.277	.218	.179	.238	.190	.156	.165	.133	.111	.096	.079	.066	.031	.026	.022	
10.0	.271	.214	.177	.233	.186	.154	.162	.131	.110	.094	.077	.065	.031	.025	.022	

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

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:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm										
NAME:					TYPE:LIN-24V-SN			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	21.0	22.3	21.5	22.8	23.4	23.4	24.7	23.9	25.2	25.8
3H	22.4	23.6	22.9	24.1	24.8	25.6	26.8	26.2	27.4	28.0
4H	23.1	24.3	23.7	24.8	25.5	27.0	28.2	27.6	28.7	29.4
6H	23.5	24.6	24.1	25.2	25.9	28.6	29.7	29.2	30.3	31.0
8H	23.7	24.7	24.3	25.3	26.0	29.5	30.6	30.1	31.2	31.9
12H	23.9	24.9	24.5	25.5	26.2	30.6	31.6	31.2	32.2	32.9
4H 2H	22.3	23.4	22.8	24.0	24.6	23.8	25.0	24.4	25.6	26.2
3H	23.9	24.9	24.5	25.5	26.3	26.4	27.4	27.0	28.1	28.8
4H	24.8	25.7	25.4	26.3	27.1	28.0	29.0	28.7	29.6	30.3
6H	25.4	26.3	26.1	26.9	27.7	29.9	30.7	30.5	31.4	32.1
8H	25.7	26.5	26.4	27.1	27.9	30.9	31.7	31.6	32.4	33.1
12H	26.0	26.7	26.7	27.4	28.2	32.1	32.8	32.8	33.5	34.3
8H 4H	25.9	26.7	26.6	27.4	28.2	28.4	29.2	29.1	29.9	30.7
6H	27.1	27.7	27.8	28.4	29.3	30.6	31.2	31.3	31.9	32.8
8H	27.6	28.2	28.3	28.9	29.8	31.9	32.4	32.6	33.2	34.0
12H	28.1	28.7	28.9	29.4	30.3	33.3	33.8	34.1	34.6	35.5
12H 4H	26.3	27.0	27.0	27.7	28.5	28.5	29.2	29.2	29.9	30.7
6H	27.7	28.3	28.4	29.0	29.9	30.7	31.3	31.5	32.1	32.9
8H	28.5	29.0	29.2	29.7	30.6	32.1	32.6	32.9	33.4	34.3
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.1 / - 0.1				
1.5H	+ 0.4 / - 0.5					+ 0.2 / - 0.4				
2.0H	+ 0.6 / - 0.6					+ 0.1 / - 0.2				

CIE Pub.117 Corrected 1609 lm Total Lamp Luminous Flux.(8log(F/F0) = 1.7)

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

$\gamma$  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:

UTILIZATION FACTORS TABLE

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SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:

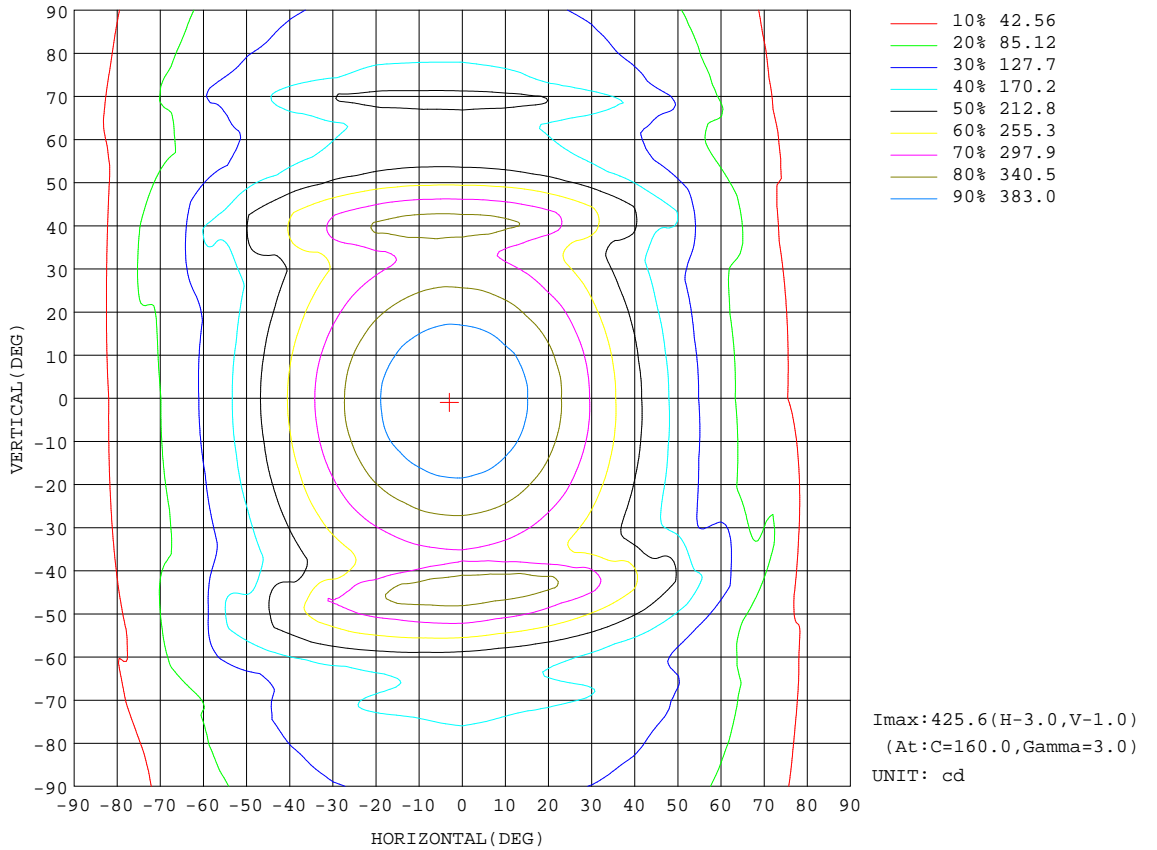
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	49	37	29	48	36	29	46	35	29	22
0.80	58	45	37	56	44	37	53	43	36	28
1.00	66	53	45	64	52	44	60	52	43	34
1.25	72	60	52	70	59	51	66	56	49	40
1.50	77	66	57	75	64	56	70	61	54	43
2.00	85	74	66	81	72	64	76	68	61	49
2.50	89	79	71	85	76	69	79	72	66	53
3.00	92	83	76	89	81	74	82	75	70	56
4.00	97	89	83	93	86	80	86	80	75	61
5.00	100	93	87	96	90	84	88	83	79	63
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:2018-01-25

$\gamma$  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:

ISOCANDELA DIAGRAM

Test:U:120.0V I:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:

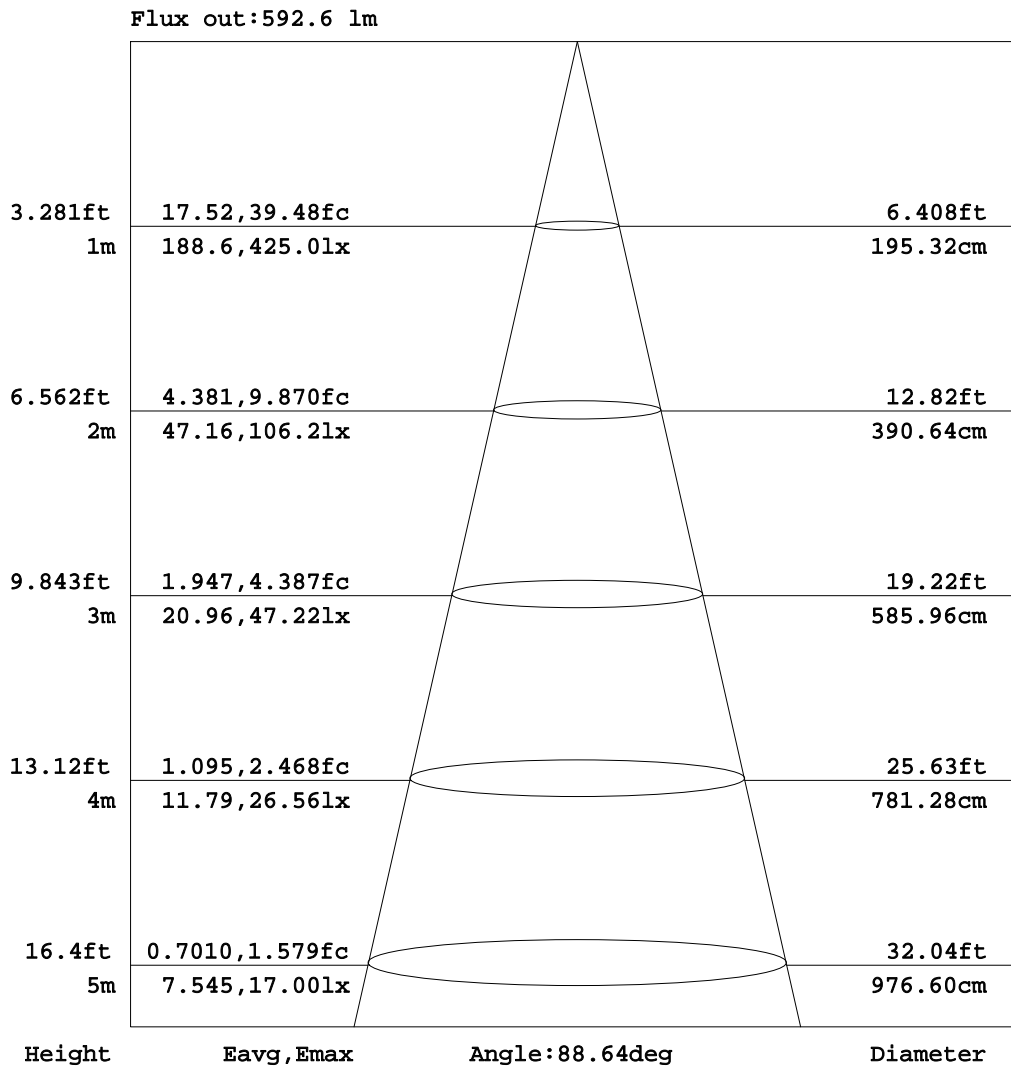


C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.6DEG  
 Operators: David  
 Test Date: 2018-01-25

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:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:



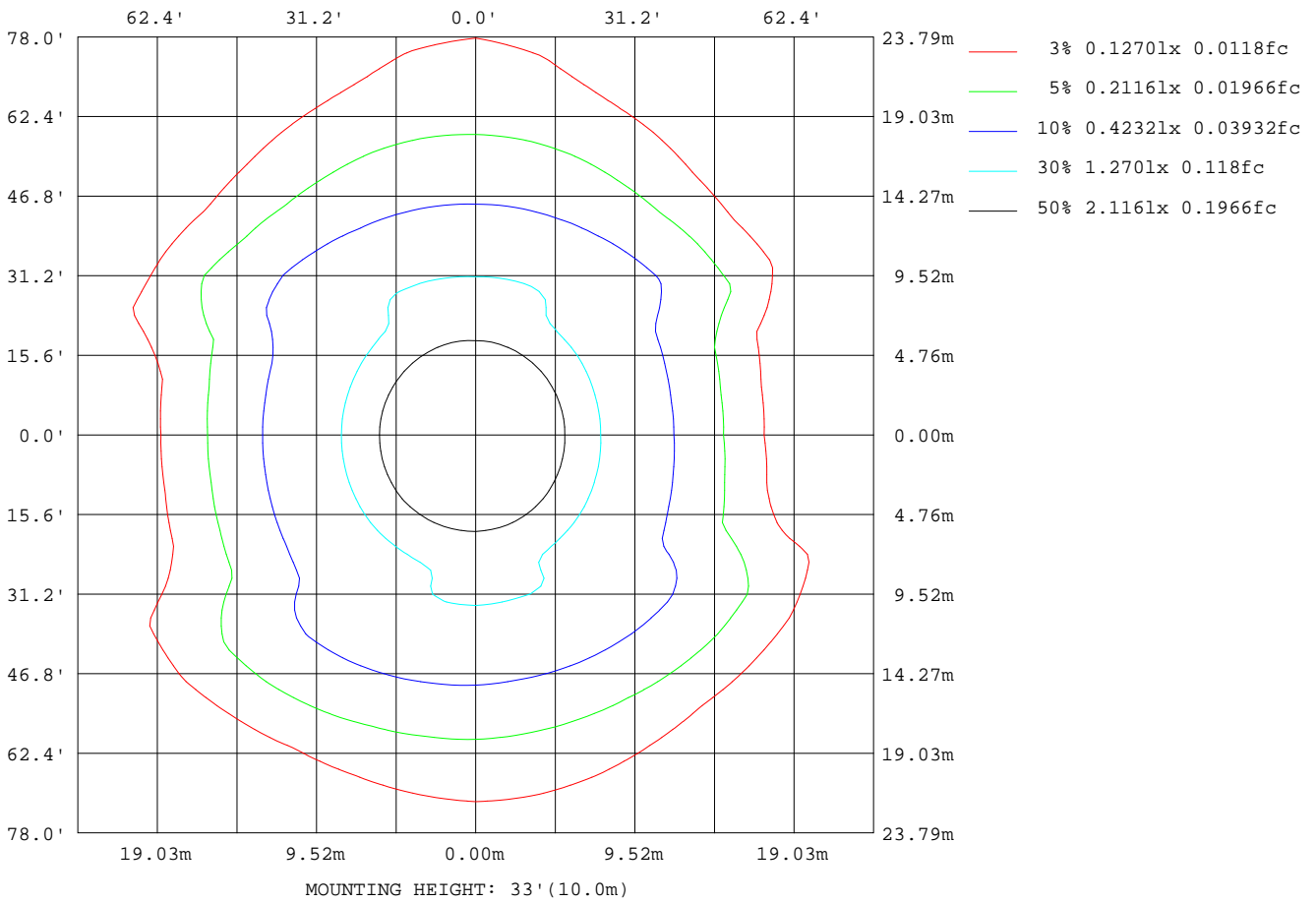
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

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

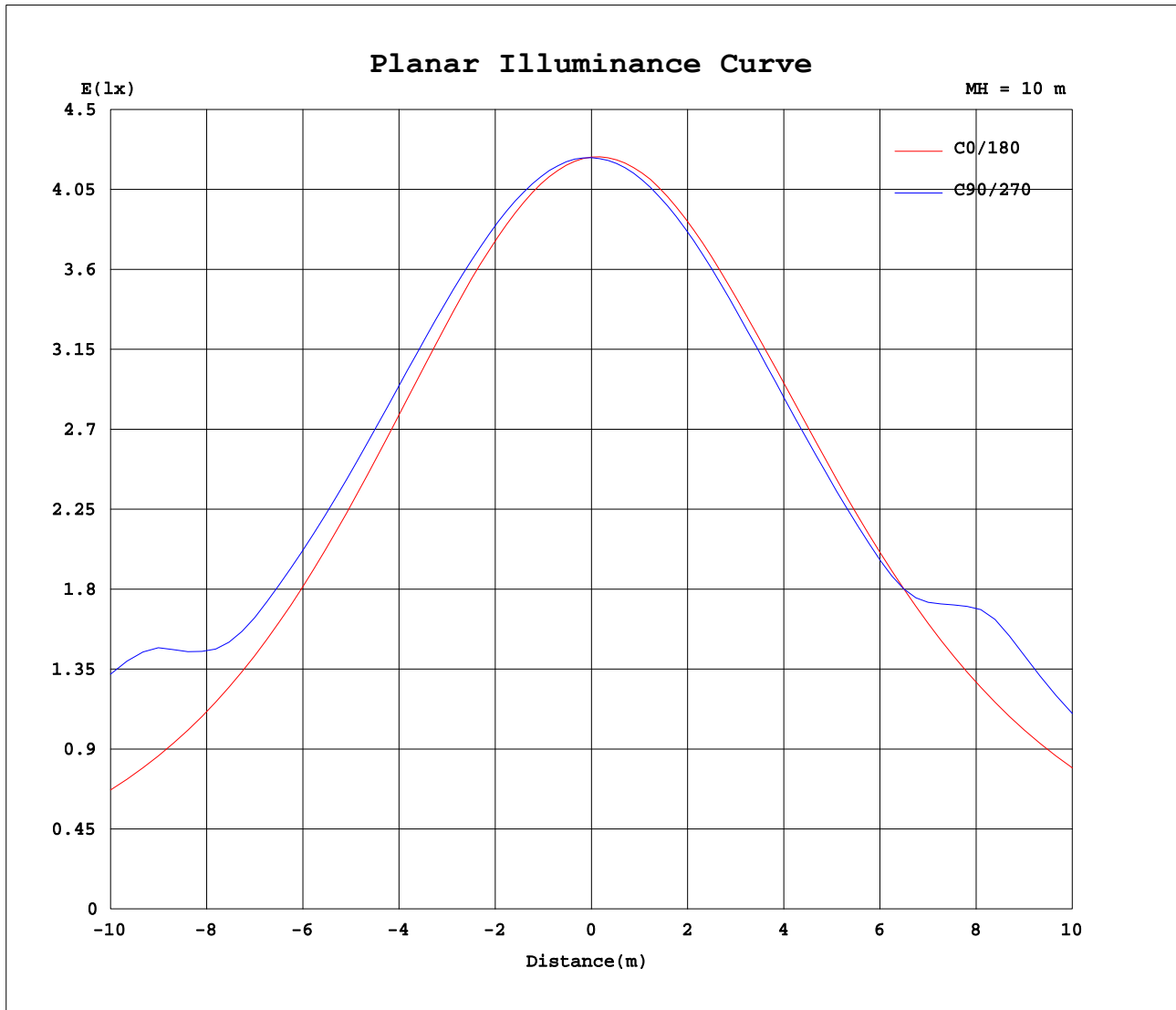
Test:U:120.0V I:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

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:2018-01-25

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:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	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	423	423	423	423	424	423	423	423	424	423	424	423	423	425	423	424	422	425	423
5	417	417	417	418	419	419	419	420	421	420	421	421	421	423	422	423	423	422	422
10	403	404	405	406	407	407	408	410	410	411	412	412	413	414	413	415	414	414	414
15	384	384	385	387	389	390	392	394	395	396	397	397	399	400	399	399	399	400	399
20	358	359	360	363	365	367	370	373	374	376	377	377	379	379	378	379	379	378	378
25	328	330	332	335	338	341	345	348	350	352	353	354	354	355	355	356	355	354	354
30	295	297	300	304	310	313	317	321	323	325	326	327	328	328	330	327	326	325	324
35	259	263	267	273	280	284	289	293	296	298	299	300	299	300	299	297	295	293	293
40	224	228	234	242	251	257	273	302	319	322	305	282	273	271	270	266	263	260	259
45	190	194	203	213	225	271	338	362	367	374	369	343	280	243	241	235	229	225	225
50	157	162	173	187	251	319	316	313	313	320	321	332	334	260	213	204	197	193	191
55	126	133	147	197	276	266	263	258	256	262	268	278	287	296	212	177	166	161	160
60	99.9	108	129	228	222	212	202	196	195	199	204	217	233	247	253	153	140	133	133
65	78.1	86.8	166	176	167	158	164	171	175	177	174	171	173	190	207	183	118	109	107
70	59.5	71.1	129	123	130	152	174	187	190	193	187	173	155	143	153	166	98.0	85.9	84.6
75	43.8	88.7	83.2	105	137	147	158	166	169	172	170	165	162	143	117	117	118	67.4	65.3
80	30.0	48.1	76.6	102	122	137	148	155	158	160	160	155	148	134	117	86.3	83.0	50.7	48.8
85	19.1	40.2	66.1	90.7	111	127	138	145	150	151	150	146	137	123	105	83.1	54.4	43.8	33.6
90	10.4	32.0	56.6	80.1	100	116	127	134	138	140	138	134	125	112	94.1	72.3	47.7	23.3	16.9
95	10.4	27.7	49.1	70.2	88.6	103	114	122	125	127	125	120	112	99.5	83.4	62.9	39.7	17.7	14.2
100	8.76	22.0	43.7	62.2	78.9	92.4	102	109	113	114	112	108	100	88.7	73.8	55.6	35.4	17.7	14.2
105	8.01	17.2	37.3	55.9	70.5	82.4	91.6	97.3	101	102	100	96.8	89.7	79.2	66.0	49.7	29.3	16.0	12.7
110	8.21	15.3	29.2	49.9	63.5	73.9	81.8	87.2	90.3	91.7	89.9	86.5	80.2	71.5	59.1	43.5	23.3	15.2	12.3
115	8.19	15.1	25.2	40.0	57.0	66.6	73.5	78.2	80.6	82.0	80.4	77.2	72.1	63.9	52.2	33.7	21.5	15.2	12.5
120	8.78	14.9	23.7	33.6	46.8	58.5	66.0	70.1	72.4	73.4	72.1	69.7	65.1	55.1	42.1	29.5	20.7	14.5	12.3
125	9.97	14.9	22.7	31.2	39.7	49.0	56.0	61.7	64.9	65.8	64.6	60.6	54.4	46.0	36.0	27.1	20.1	14.2	12.6
130	10.8	14.3	21.8	29.0	35.5	41.5	47.6	51.8	54.1	55.1	53.8	51.3	46.2	39.4	33.0	26.3	19.3	13.9	13.5
135	11.8	13.8	20.6	26.7	32.3	36.8	40.3	43.7	45.9	46.6	45.4	43.3	40.0	36.0	30.4	24.4	18.1	14.1	14.6
140	12.8	14.2	19.2	24.5	29.2	33.1	36.2	38.3	39.7	40.2	39.6	38.2	36.0	32.1	28.0	22.1	17.8	14.7	15.6
145	13.6	15.1	17.8	22.2	26.4	29.5	32.2	34.1	35.3	36.0	35.3	34.2	31.9	28.9	24.8	20.2	17.7	15.0	16.2
150	14.3	15.7	17.3	20.0	23.3	26.2	28.4	30.1	31.1	31.7	31.2	29.9	28.0	25.3	21.8	19.5	17.5	15.2	16.4
155	14.7	16.0	17.2	18.3	20.6	22.6	24.5	26.0	26.8	27.2	26.8	25.7	23.7	21.8	20.2	18.9	17.5	15.5	16.6
160	15.0	16.5	17.2	17.7	18.6	19.7	20.9	21.8	22.4	22.7	22.4	21.8	20.9	19.7	18.9	18.0	17.2	15.2	16.6
165	13.2	14.4	17.2	17.6	17.9	18.0	18.4	19.0	19.3	19.5	19.5	19.2	19.0	18.5	18.0	16.3	15.3	13.2	14.4
170	11.4	11.5	13.9	16.6	17.0	17.8	17.9	18.0	18.0	18.1	18.3	18.3	17.5	15.3	13.7	12.8	12.7	12.0	11.9
175	14.6	14.2	13.7	14.7	14.8	15.4	15.9	17.4	17.6	17.8	14.5	11.0	11.4	12.9	13.5	14.1	14.4	14.6	14.7
180	19.0	18.8	18.6	18.2	17.3	16.4	15.7	13.5	1.97	8.66	11.9	14.2	15.7	17.0	17.7	18.2	18.4	18.7	19.0

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

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:0.1728A P:20.65W PF:0.9956 Lamp Flux:1609.06x1 lm		
NAME:	TYPE:LIN-24V-SN	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:	PROTECTION ANGLE:

Table--2

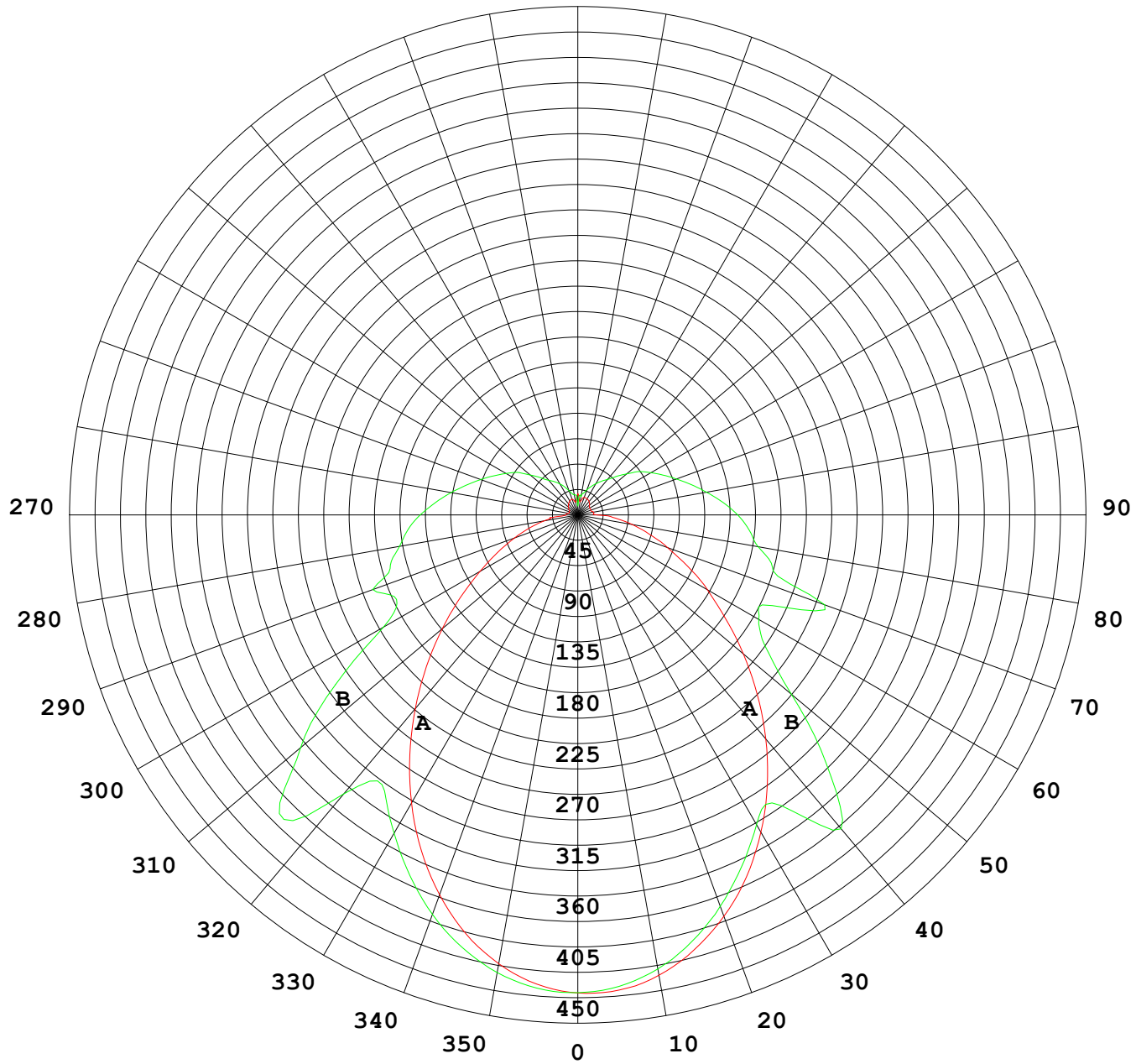
UNIT: cd

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	423	423	423	424	423	423	423	424	423	424	423	423	425	423	424	422	425		
5	422	422	422	422	421	421	420	420	419	419	418	418	418	418	417	420	416		
10	413	413	412	412	411	411	410	410	408	408	406	406	405	404	406	404	404		
15	398	398	397	397	395	394	394	393	391	390	389	387	387	386	385	384	384		
20	378	377	376	375	374	373	372	371	369	368	366	364	362	361	360	358	358		
25	353	352	351	350	349	348	348	347	343	343	340	338	335	332	332	329	328		
30	324	323	322	322	322	322	321	320	317	316	313	310	305	303	299	297	295		
35	292	292	292	293	294	295	304	315	314	305	291	282	277	272	267	263	261		
40	259	259	262	265	276	316	352	366	363	355	327	282	249	243	235	228	225		
45	225	227	232	249	315	339	328	317	311	313	318	317	262	215	203	196	191		
50	192	197	208	286	299	281	265	252	247	249	257	266	274	218	176	164	157		
55	162	171	228	261	238	218	211	206	203	203	203	206	218	231	156	136	128		
60	137	153	228	201	186	184	186	186	185	183	178	171	167	176	177	111	102		
65	112	176	171	157	162	171	178	186	190	183	171	159	144	133	139	93.5	80.1		
70	93.6	143	128	140	159	199	227	234	233	228	216	188	144	115	98.0	106	62.3		
75	98.1	95.9	113	156	193	181	177	178	178	174	168	158	155	134	83.5	65.6	47.3		
80	69.6	80.3	132	138	152	159	162	163	162	158	152	143	129	111	86.9	51.2	39.6		
85	47.0	80.6	104	121	135	144	150	152	152	149	142	132	117	97.5	73.3	46.9	22.1		
90	41.2	66.7	90.3	110	124	134	140	142	142	139	132	122	106	87.0	63.7	39.5	15.9		
95	34.6	58.3	80.1	97.8	111	120	127	129	129	126	120	110	95.4	77.7	56.5	34.4	14.9		
100	30.9	51.6	71.3	87.7	100	109	113	116	116	113	108	98.6	86.1	69.6	50.6	31.0	12.5		
105	25.3	46.3	63.6	78.4	89.6	97.5	102	104	104	102	96.9	88.9	77.2	62.7	45.8	23.0	11.6		
110	20.3	38.4	57.2	70.3	80.5	87.4	91.4	92.9	93.1	91.6	87.3	79.8	69.6	56.8	36.7	20.5	11.9		
115	18.6	30.0	48.1	63.2	72.1	78.5	82.1	83.6	83.5	82.3	78.2	71.9	62.5	47.1	30.1	19.7	12.3		
120	18.1	26.6	39.3	53.2	64.7	70.4	73.6	74.9	74.9	73.9	70.2	64.6	52.7	40.1	28.2	19.7	12.3		
125	18.1	25.2	33.3	44.7	54.1	61.8	66.0	67.1	67.0	66.0	60.9	54.1	45.1	35.5	27.2	19.6	12.6		
130	17.9	24.0	31.1	37.6	45.7	51.7	55.2	56.7	56.7	55.4	51.7	45.9	39.2	32.7	25.8	19.4	13.0		
135	17.6	22.8	28.8	34.4	39.0	43.4	46.7	48.2	48.3	46.9	43.7	40.0	35.6	30.2	24.4	18.9	13.8		
140	17.1	21.7	26.5	31.0	35.0	38.0	39.9	40.9	41.1	40.4	38.7	35.9	31.9	27.5	22.9	18.5	14.5		
145	17.1	20.0	24.3	28.0	31.1	33.7	35.5	36.2	36.4	35.8	34.3	32.0	28.6	25.0	21.5	18.0	15.1		
150	17.5	18.8	20.4	25.1	27.4	29.6	31.1	31.7	32.0	31.4	30.1	28.2	25.7	23.0	20.2	17.8	15.2		
155	17.8	18.2	19.3	21.0	24.1	25.7	26.8	27.4	27.6	27.2	26.3	24.9	22.9	21.0	19.3	17.8	14.9		
160	18.1	18.1	18.2	18.5	18.6	22.2	23.1	23.5	23.8	23.5	22.9	21.9	20.6	19.3	18.7	18.1	15.3		
165	15.5	16.1	16.9	17.8	17.3	17.1	19.2	20.0	20.2	20.2	19.9	19.4	18.7	18.4	18.3	17.5	13.8		
170	12.0	12.5	12.8	13.2	15.6	16.8	17.8	17.2	16.3	18.5	18.5	18.3	18.2	17.6	17.0	14.7	11.8		
175	14.6	14.1	14.0	12.9	12.7	10.7	10.6	15.1	17.6	17.7	17.3	15.5	14.9	14.7	14.8	14.2	14.3		
180	18.9	18.7	18.4	17.8	16.9	15.8	14.5	13.1	7.79	7.28	13.1	14.6	15.4	16.4	17.3	18.1	18.4		

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2018-01-25

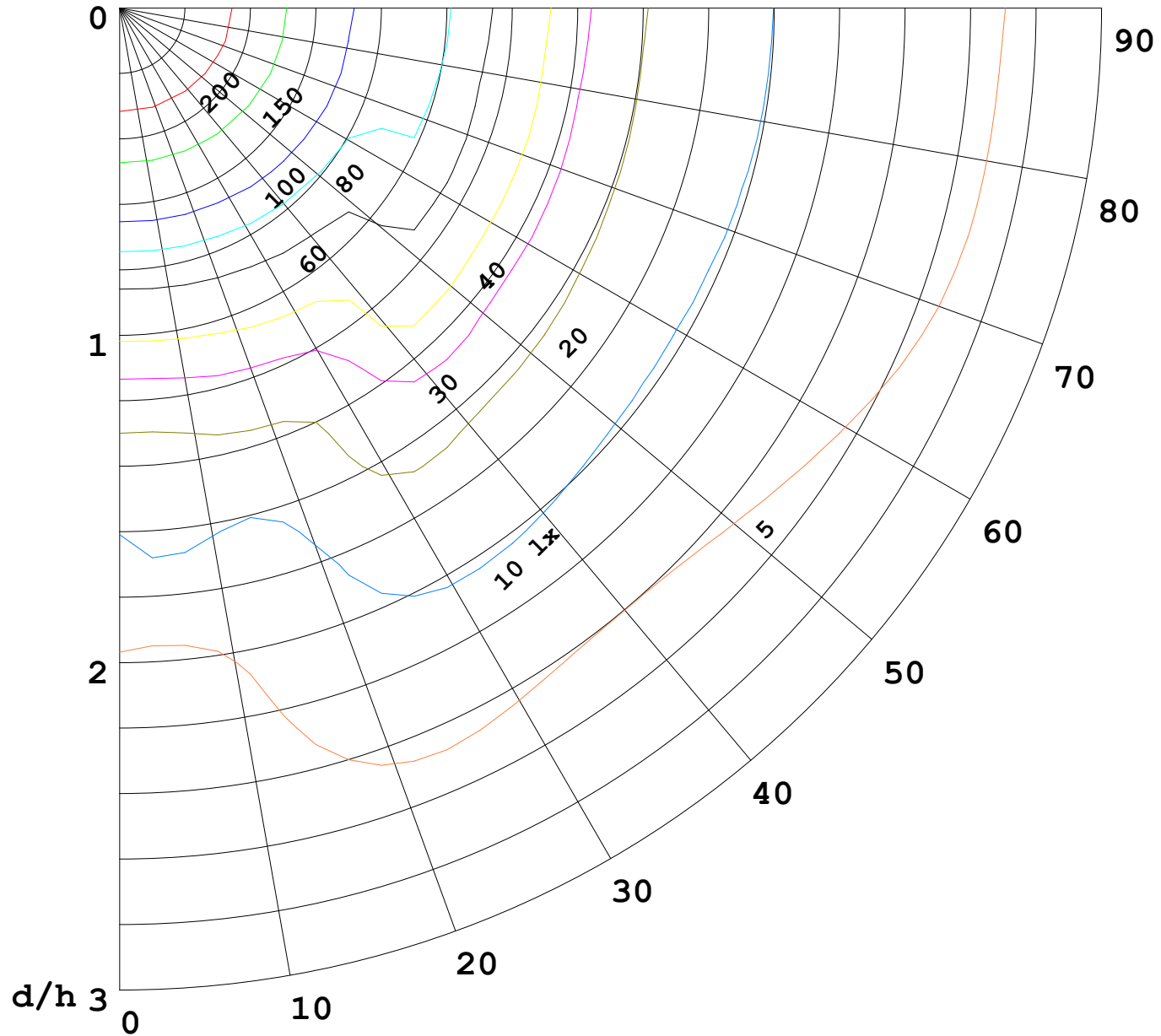
γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:26.000m [K=1.0000]  
 Remarks:

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

