



IESNA LM-79 TEST REPORT

Applicant's name	Blackjack lighting
Address	1553 Barclay Blvd. Buffalo Grove, IL 60089
Brand Name	Blackjack lighting
Report No.	BTR66.181.16.0005.34
Product Name	38" Seraph 18 Light Pendant
Model Number	SER-38P-PC-CA(120V 2700K)
Tested by (printed name and signature)	David Zhang 
Title	Test Engineer
Approved by (printed name and signature)	Steven Su 
Title	Approved Signatory
Date of issue	Sep 26, 2016
Testing Laboratory Name	BEST Test Service Shenzhen Co., Ltd.
Address	1 st Floor, 1 st Building, Weitai Industrial Park, Yingrenshi, Shiyuan, Baoan, Shenzhen, China
Accreditation	DLC/Lighting Facts/UL/ETL/ELI/NVLAP/EPA/DOE
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

Note:
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Product description:	
Test date	Sep 21, 2016 to Sep 26, 2016
Sample Quantity	1 unit
SKU.....	N/A
Rating(s) (V; Hz)	AC 120V/ 60Hz
Nominal Power.....	31W
Nominal Power Factor	0.9
Nominal Lumen Output.....	1948lm
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	25°C
Orientation (burning position) of SSL product during test	Lighting Surface Down
Stabilization time	1.5 H
Photometric method	Sphere-spectroradiometer+Goniophotometer
reference standard used	DC 24V 100W Omni-Directional Halogen Calibrated by NIM China
Correction factors applied	Self absorbing applied
Photometric measurement conditions	See test method description below
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 Π 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.

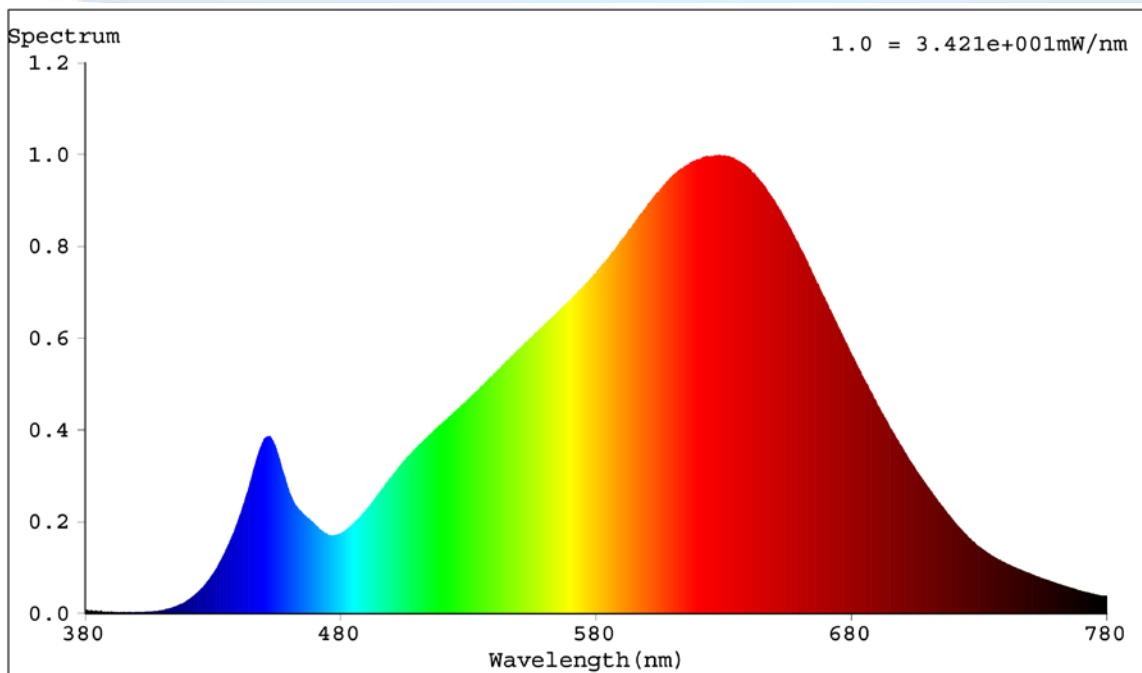
Luminous Intensity

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

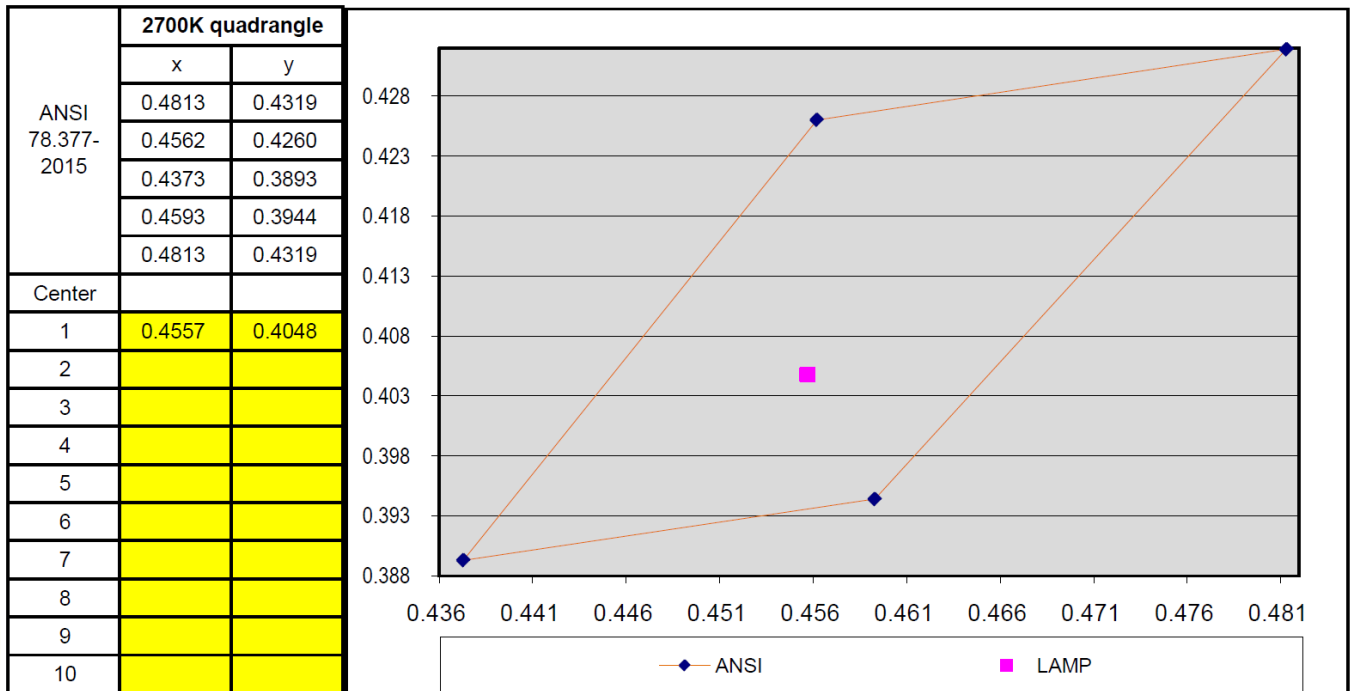
Photometric and Electrical Test Data

Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.244	/	29.17	0.995	1948.40	66.80
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
2713	92.6	62	0.4557	0.4048	0.2624	0.5245	-0.0018

Spectrul Plots



7 Step Quadrangle



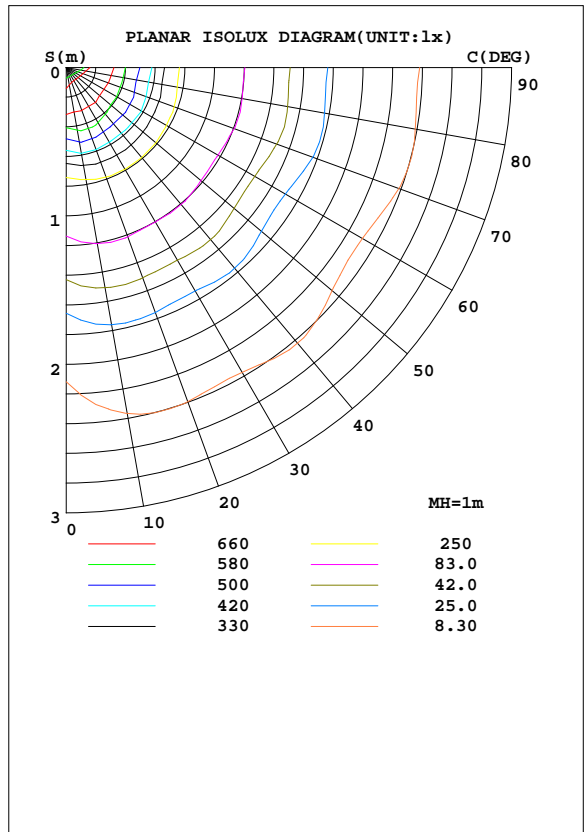
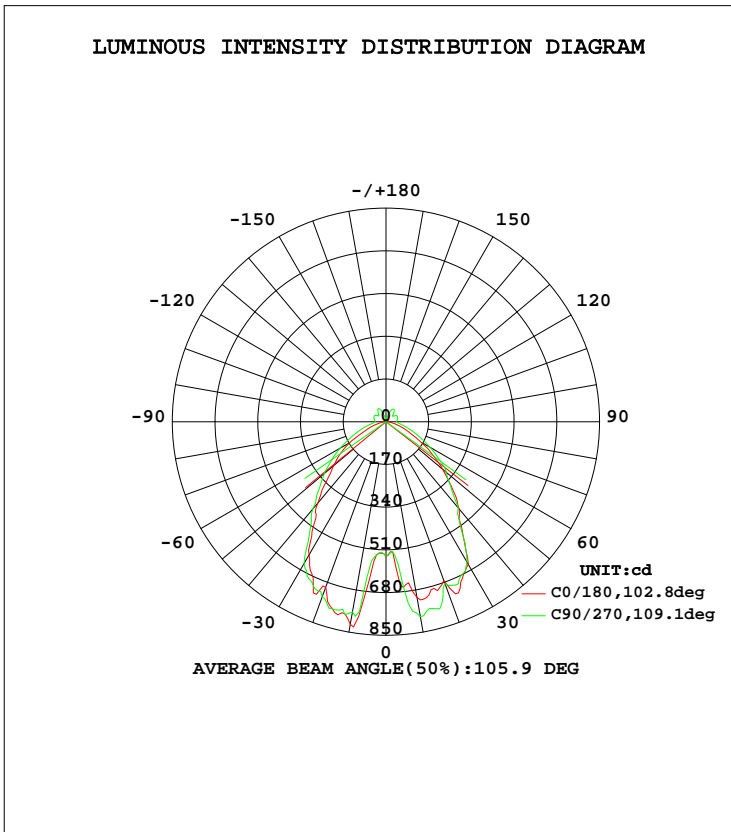
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LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.0V I:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 66.80 lm/W			
MODEL	38P-PC-CA(120V 2700K)	Imax(cd)	920.5	S/MH(C0/180)	1.40
NOMINAL POWER(W)	31	LOR(%)	100.0	S/MH(C90/270)	1.39
RATED VOLTAGE(V)	120.0	TOTAL FLUX(lm)	1948.4	η UP, DN(C0-180)	5.6, 45.4
NOMINAL FLUX(lm)	1948.4	CIE CLASS	SEMI-D.	η UP, DN(C180-360)	5.5, 43.5
LAMPS INSIDE	1	η up(%)	11.1	CIBSE SHR NOM	1.00
TEST VOLTAGE(V)	120.00	η down(%)	88.9	CIBSE SHR MAX	1.15



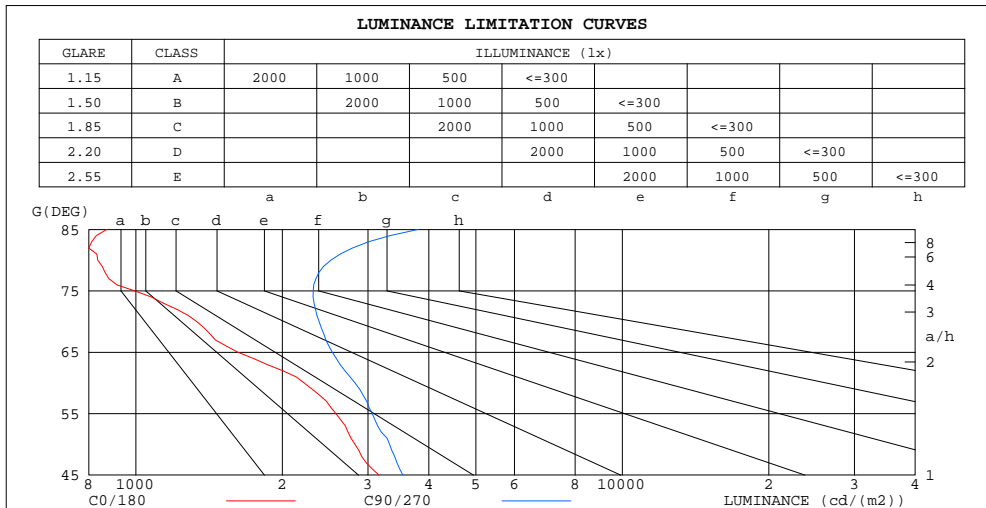
C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.6DEG
 Operators:David
 Test Date:2016-09-26

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:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	$\#lum$
10	819.1	769.8	768.6	797.6	709.7	808.2	788.1	866.3	0- 10	66.84	66.84	3.43
20	701.4	711.5	742.5	719.8	672.4	745.8	685.8	739.3	10- 20	218.5	285.4	14.6
30	612.3	649.6	652.8	594.6	655.1	567.7	645.0	589.6	20- 30	314.6	600.0	30.8
40	421.7	481.1	451.9	458.4	451.8	417.7	448.0	426.6	30- 40	331.7	931.6	47.8
50	272.0	315.1	320.4	300.7	294.5	293.8	312.9	297.2	40- 50	290.6	1222	62.7
60	166.3	204.0	211.7	192.9	159.4	187.0	200.6	191.5	50- 60	224.9	1447	74.3
70	68.45	120.4	122.2	112.5	71.23	109.1	114.6	110.6	60- 70	150.1	1597	82
80	21.75	61.33	65.53	58.64	24.02	57.51	60.46	56.54	70- 80	86.16	1683	86.4
90	7.632	40.16	43.26	38.30	8.978	39.09	41.44	37.49	80- 90	48.11	1732	88.9
100	7.270	42.44	47.23	40.20	8.869	41.84	45.90	39.59	90-100	41.35	1773	91
110	7.400	43.62	51.32	41.80	8.490	43.92	49.93	39.95	100-110	41.64	1815	93.1
120	7.737	33.72	50.99	30.72	8.795	30.33	49.45	29.26	110-120	37.12	1852	95
130	8.349	35.71	37.08	36.89	5.467	37.57	35.12	34.75	120-130	29.36	1881	96.5
140	6.471	48.88	48.89	43.23	6.638	44.34	49.86	43.99	130-140	26.28	1907	97.9
150	8.411	41.49	60.35	39.19	5.814	40.98	58.41	36.15	140-150	23.69	1931	99.1
160	3.792	24.88	37.77	24.33	2.033	22.48	37.79	22.31	150-160	13.65	1945	99.8
170	1.432	8.659	2.390	7.329	1.730	5.341	1.765	6.853	160-170	3.433	1948	100
180	1.824	2.198	1.514	2.436	1.766	2.441	1.551	2.120	170-180	0.3277	1948	100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	871	3799
80	835	2516
75	995	2316
70	1334	2381
65	1620	2534
60	2218	2823
55	2578	3062
50	2821	3323
45	3160	3538

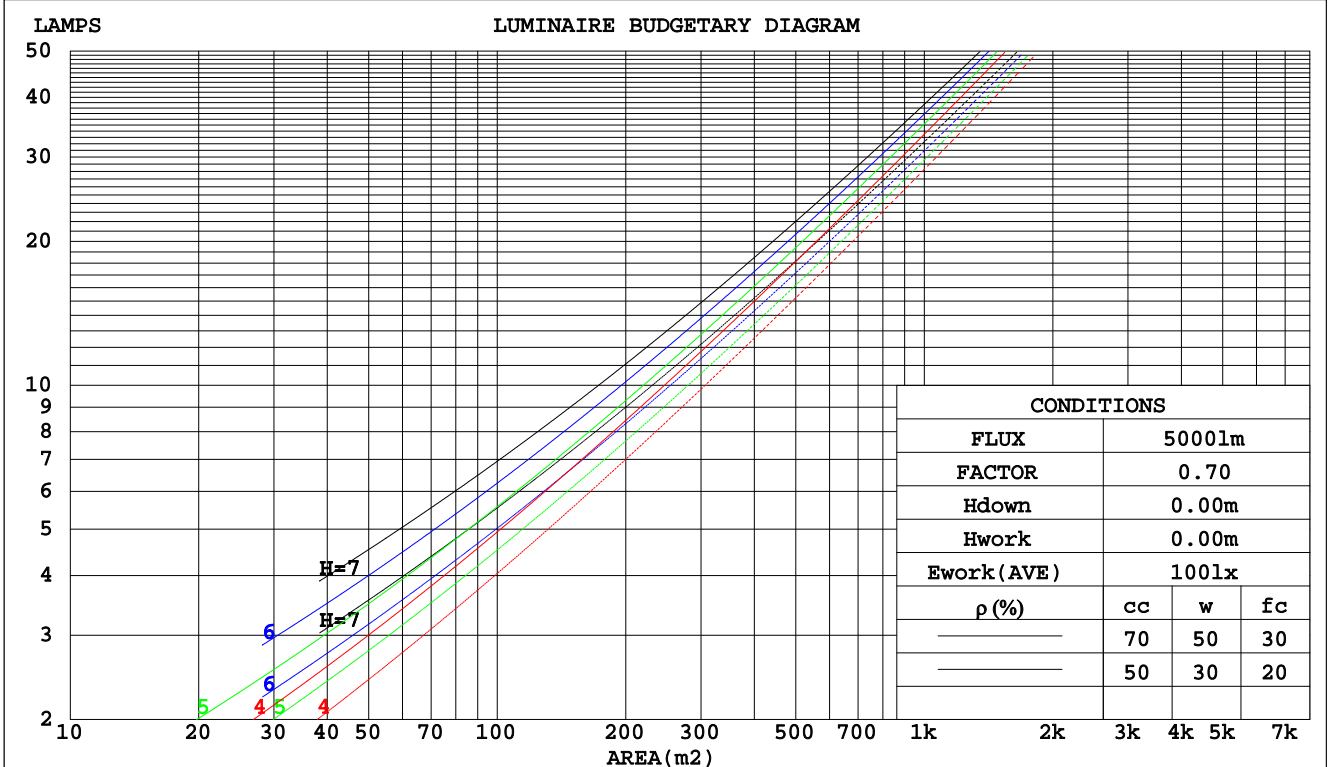
C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: HIGH
Temperature:25.6DEG
Operators:David
Test Date:2016-09-26

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:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:120.0V I:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.16	1.16	1.16	1.12	1.12	1.12	1.05	1.05	1.05	.98	.98	.98	.92	.92	.92	.89
1.0	1.02	.98	.95	.99	.95	.92	.93	.90	.87	.87	.85	.83	.82	.80	.78	.75
2.0	.90	.84	.79	.88	.82	.77	.82	.78	.74	.77	.74	.70	.73	.70	.67	.64
3.0	.80	.73	.67	.78	.71	.65	.73	.68	.63	.69	.64	.60	.65	.61	.58	.56
4.0	.72	.64	.58	.70	.62	.57	.66	.60	.55	.62	.57	.53	.59	.55	.51	.48
5.0	.65	.56	.50	.63	.55	.49	.60	.53	.48	.57	.51	.46	.54	.49	.45	.43
6.0	.59	.50	.44	.57	.49	.44	.54	.48	.43	.52	.46	.41	.49	.44	.40	.38
7.0	.53	.45	.40	.52	.44	.39	.50	.43	.38	.47	.41	.37	.45	.40	.36	.34
8.0	.49	.41	.36	.48	.40	.35	.46	.39	.34	.44	.38	.33	.42	.36	.33	.31
9.0	.45	.37	.32	.44	.37	.32	.42	.36	.31	.40	.35	.30	.39	.33	.30	.28
10.0	.42	.34	.29	.41	.34	.29	.39	.33	.28	.38	.32	.28	.36	.31	.27	.25



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.6DEG
 Operators:David
 Test Date:2016-09-26

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:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	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	.288	.164	.052	.278	.159	.050	.259	.148	.047	.241	.139	.045	.224	.130	.042	
2.0	.267	.146	.045	.258	.142	.044	.240	.134	.042	.224	.126	.039	.210	.119	.037	
3.0	.247	.131	.039	.239	.128	.038	.223	.121	.037	.209	.114	.035	.195	.108	.033	
4.0	.229	.119	.035	.221	.116	.034	.207	.110	.033	.194	.104	.031	.182	.099	.030	
5.0	.212	.108	.031	.206	.106	.031	.193	.100	.030	.181	.096	.028	.170	.091	.027	
6.0	.198	.099	.028	.192	.097	.028	.180	.092	.027	.170	.088	.026	.160	.084	.025	
7.0	.185	.091	.026	.179	.089	.025	.169	.085	.025	.159	.082	.024	.150	.078	.023	
8.0	.173	.085	.024	.168	.083	.023	.159	.079	.023	.150	.076	.022	.142	.073	.021	
9.0	.163	.079	.022	.159	.077	.022	.150	.074	.021	.142	.071	.020	.134	.068	.020	
10.0	.154	.074	.020	.150	.072	.020	.142	.069	.020	.134	.067	.019	.127	.064	.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	.275	.275	.275	.235	.235	.235	.161	.161	.161	.092	.092	.092	.029	.029	.029	
1.0	.264	.242	.222	.226	.208	.191	.155	.143	.132	.089	.083	.077	.029	.027	.025	
2.0	.255	.218	.187	.218	.188	.162	.150	.130	.113	.086	.076	.066	.028	.024	.022	
3.0	.247	.201	.164	.211	.173	.142	.145	.120	.100	.084	.070	.059	.027	.023	.019	
4.0	.239	.187	.148	.205	.162	.129	.141	.113	.091	.081	.066	.054	.026	.022	.018	
5.0	.231	.177	.137	.199	.153	.119	.137	.107	.084	.079	.063	.050	.026	.021	.016	
6.0	.224	.169	.129	.193	.146	.112	.133	.102	.079	.077	.060	.047	.025	.020	.016	
7.0	.218	.162	.123	.187	.140	.107	.129	.098	.076	.075	.058	.045	.024	.019	.015	
8.0	.212	.156	.118	.182	.136	.103	.126	.095	.073	.073	.056	.044	.024	.018	.014	
9.0	.206	.151	.114	.178	.131	.100	.123	.092	.071	.072	.055	.042	.023	.018	.014	
10.0	.201	.147	.112	.173	.128	.097	.120	.090	.069	.070	.053	.041	.023	.017	.014	

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.6DEG
 Operators:David
 Test Date:2016-09-26

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:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm										
NAME:					TYPE:SER-38P-PC-CA(120V 2700K)			WEIGHT:		
SPEC.:					DIM.:			SERIAL No.:		
MFR.: Blackjack lighting					SUR.:0.15*1			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	15.6	16.9	16.0	17.2	17.6	15.6	16.9	16.0	17.3	17.7
3H	16.6	17.7	17.0	18.1	18.6	16.8	17.9	17.2	18.4	18.8
4H	16.9	18.0	17.4	18.4	18.9	17.3	18.4	17.8	18.8	19.3
6H	17.1	18.2	17.6	18.6	19.1	17.8	18.8	18.3	19.3	19.8
8H	17.2	18.2	17.7	18.6	19.1	18.1	19.1	18.6	19.5	20.0
12H	17.2	18.2	17.7	18.6	19.2	18.4	19.3	18.9	19.8	20.3
4H 2H	16.0	17.1	16.5	17.5	18.0	16.0	17.1	16.5	17.5	18.0
3H	17.2	18.2	17.7	18.7	19.2	17.3	18.2	17.8	18.7	19.2
4H	17.8	18.6	18.3	19.1	19.7	17.9	18.8	18.5	19.3	19.9
6H	18.2	19.0	18.8	19.5	20.1	18.6	19.4	19.2	19.9	20.5
8H	18.4	19.1	19.0	19.7	20.3	19.0	19.7	19.6	20.2	20.9
12H	18.6	19.3	19.2	19.8	20.5	19.4	20.1	20.0	20.6	21.3
8H 4H	18.0	18.7	18.6	19.3	19.9	18.1	18.8	18.7	19.4	20.0
6H	18.7	19.3	19.3	19.9	20.5	18.9	19.5	19.5	20.1	20.7
8H	19.1	19.6	19.7	20.2	20.9	19.4	19.9	20.0	20.5	21.2
12H	19.5	20.0	20.2	20.6	21.3	20.1	20.5	20.7	21.1	21.8
12H 4H	18.0	18.6	18.6	19.2	19.8	18.1	18.8	18.7	19.3	20.0
6H	18.8	19.3	19.4	19.9	20.6	19.0	19.5	19.6	20.1	20.8
8H	19.3	19.7	19.9	20.4	21.1	19.5	20.0	20.2	20.6	21.3
Variations with the observer position at spacings:										
S = 1.0H	+ 0.4 / - 0.5					+ 0.3 / - 0.3				
1.5H	+ 0.3 / - 0.7					+ 0.1 / - 0.3				
2.0H	+ 0.3 / - 1.1					+ 0.3 / - 0.3				

CIE Pub.117 Corrected 1948 lm Total Lamp Luminous Flux.(8log(F/F0) = 2.3)

C Range: 0 - 360DEG
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 Remarks:

UTILIZATION FACTORS TABLE

Test:U:120.0V I:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	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	59	48	42	58	48	42	56	47	41	35
0.80	69	58	51	67	57	51	65	56	50	43
1.00	76	66	59	75	65	59	72	65	58	50
1.25	83	73	66	81	72	66	77	70	64	56
1.50	88	78	72	85	77	71	81	74	69	60
2.00	94	85	79	91	84	78	86	80	75	66
2.50	97	90	84	94	88	82	89	84	79	69
3.00	100	94	88	97	91	86	92	87	83	72
4.00	104	98	94	101	96	92	95	91	87	76
5.00	106	101	97	103	99	95	97	93	90	78
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:2016-09-26

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:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	PROTECTION ANGLE:

Conical surface Flux(90deg):

1084.7 lm

%lum = 55.7%

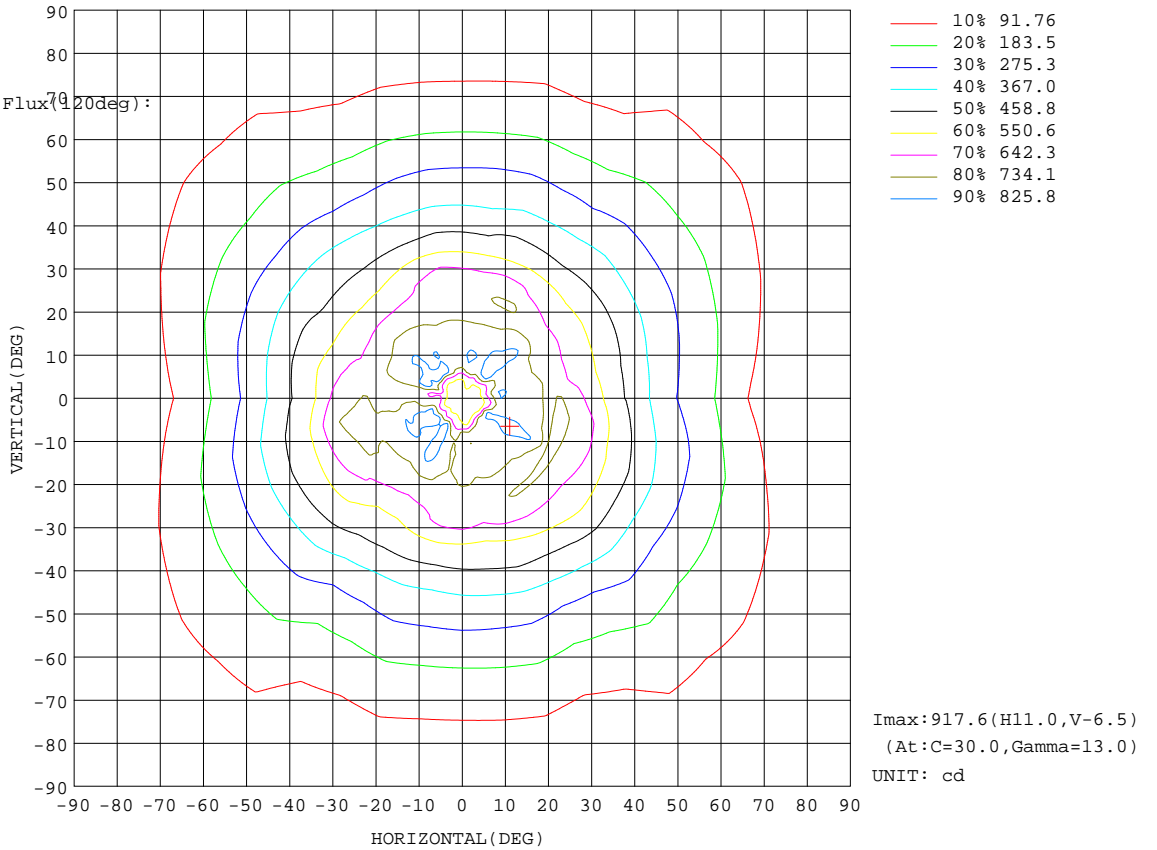
%lamp = 55.7%

Conical surface Flux(70deg):

1447.2 lm

%lum = 74.3%

%lamp = 74.3%

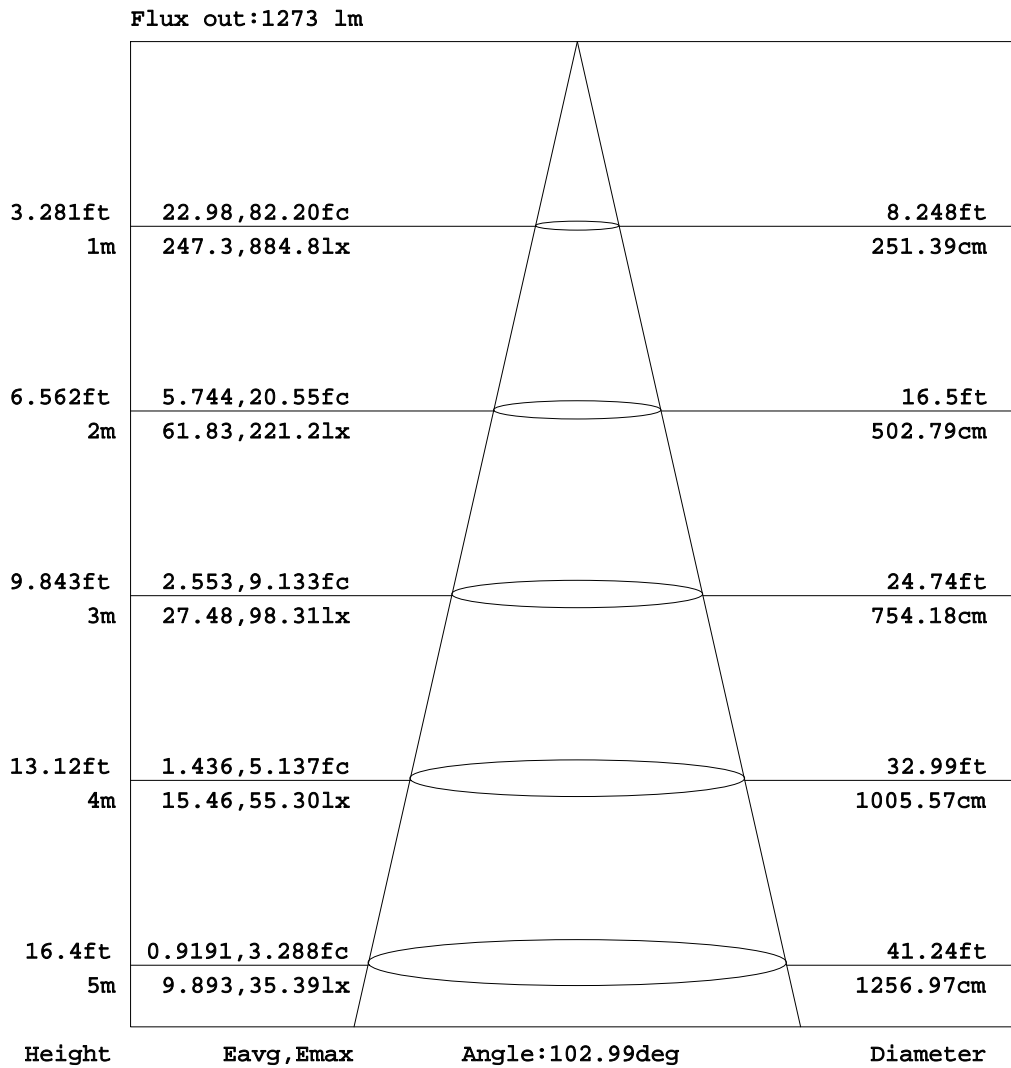


C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature: 25.6DEG
 Operators: David
 Test Date: 2016-09-26

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:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	PROTECTION ANGLE:



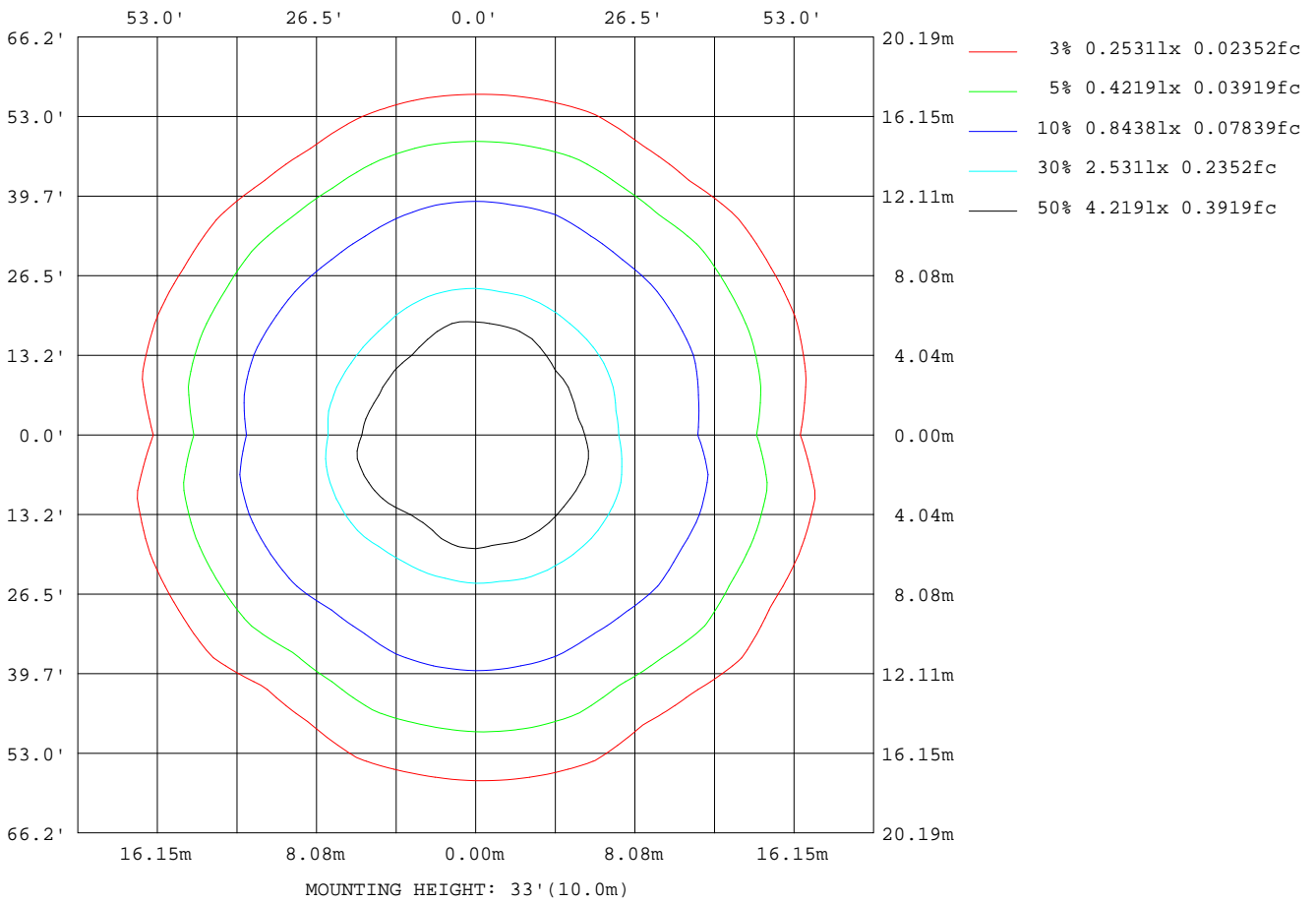
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.6DEG
 Operators:David
 Test Date:2016-09-26

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

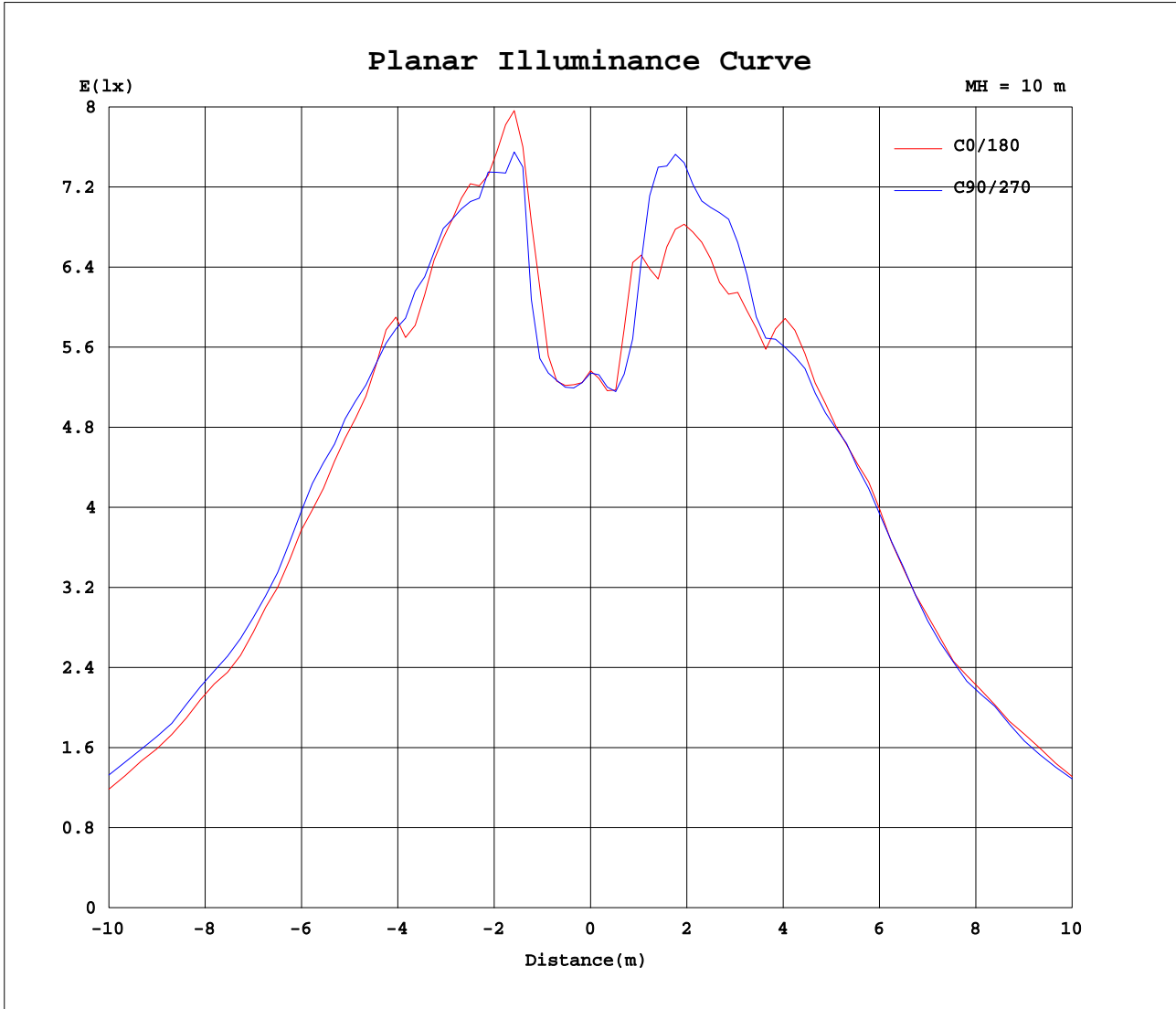
Test:U:120.0V I:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	PROTECTION ANGLE:



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.6DEG
 Operators:David
 Test Date:2016-09-26

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: 2016-09-26

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:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	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	537	535	531	532	535	536	535	537	535	534	534	534	531	532	533	531	533	529	537
5	558	542	540	550	559	576	565	533	513	540	556	586	600	595	665	621	589	643	652
10	819	751	789	860	781	759	778	751	733	769	734	783	892	767	828	834	844	740	710
15	787	765	779	866	789	763	764	781	768	775	726	783	867	789	818	823	815	729	693
20	701	720	727	769	712	711	718	728	728	743	715	734	740	713	726	736	764	734	672
25	687	738	737	733	737	742	744	720	693	702	691	673	651	663	706	736	757	779	705
30	612	660	664	651	646	653	659	656	632	653	643	610	568	571	619	659	690	725	655
35	501	542	561	566	576	563	557	544	521	527	527	519	504	509	549	570	571	571	530
40	422	459	488	489	489	473	469	471	459	452	442	445	437	444	473	482	503	490	452
45	335	381	406	405	414	395	389	393	383	375	365	367	354	361	396	403	411	406	371
50	272	322	328	317	325	305	302	319	319	320	318	312	291	286	316	326	338	335	294
55	222	264	268	262	272	248	243	264	265	263	257	257	234	230	260	265	272	268	224
60	166	210	209	201	215	193	189	214	213	212	208	208	184	177	209	210	213	208	159
65	103	158	165	159	172	151	143	162	163	161	159	160	139	133	165	161	163	155	105
70	68.4	119	126	120	131	110	103	123	124	122	120	123	103	97.7	127	122	123	114	71.2
75	38.6	83.8	92.0	87.1	96.2	75.5	69.2	89.5	90.9	89.9	89.4	90.7	71.0	67.0	95.0	88.8	89.9	79.3	43.2
80	21.7	57.1	66.6	61.8	71.0	51.6	45.9	64.9	65.8	65.5	65.4	66.4	49.6	46.1	71.1	63.7	63.7	54.2	24.0
85	11.4	40.5	50.8	46.8	55.1	37.9	32.8	49.6	50.1	49.7	49.8	50.6	36.2	33.6	55.3	48.4	48.5	37.0	13.3
90	7.63	33.3	43.9	40.0	47.9	32.4	27.5	42.9	43.6	43.3	43.3	44.1	30.4	27.9	48.7	40.8	41.9	29.9	8.98
95	7.33	33.8	44.5	41.2	48.9	33.0	28.2	44.5	45.2	45.0	44.9	45.6	31.4	28.3	49.5	41.8	42.2	29.6	8.87
100	7.27	35.2	45.7	42.3	50.5	34.4	29.3	46.2	47.6	47.2	47.2	47.8	32.9	29.5	50.9	42.9	43.8	31.6	8.87
105	7.49	32.9	40.4	42.9	51.8	35.1	30.2	47.9	49.5	49.3	49.3	49.7	34.5	30.4	52.1	44.1	38.2	29.7	8.83
110	7.40	31.7	34.1	37.6	50.9	36.3	31.5	49.5	51.5	51.3	51.2	51.6	36.1	31.7	51.9	38.0	33.6	25.2	8.49
115	8.18	27.0	40.0	33.6	40.2	35.0	31.7	50.2	52.4	52.4	52.4	52.7	37.3	31.8	41.8	34.8	36.9	23.9	8.20
120	7.74	25.3	37.9	34.7	36.3	31.1	31.1	46.7	50.6	51.0	50.3	48.4	33.7	27.5	34.0	37.1	42.7	27.4	8.79
125	8.45	25.4	41.4	41.1	39.6	25.8	26.4	37.9	42.5	43.8	42.4	37.3	29.2	24.9	39.5	37.2	34.1	18.4	6.76
130	8.35	19.1	37.1	42.8	43.9	27.5	24.9	36.2	35.6	37.1	36.3	35.3	28.8	26.3	47.5	44.6	30.8	13.8	5.47
135	5.96	10.3	30.6	41.9	50.7	36.4	28.7	40.5	40.3	42.1	40.7	40.5	30.4	32.2	50.4	45.7	30.5	18.6	5.60
140	6.47	13.1	29.9	40.1	53.7	44.1	36.8	45.9	47.1	48.9	46.9	47.9	38.4	36.9	49.5	38.4	29.0	18.8	6.64
145	7.97	17.4	30.5	37.4	49.9	45.3	42.6	51.8	55.7	56.9	54.2	54.2	45.2	40.4	47.4	31.1	26.0	14.8	6.82
150	8.41	12.9	14.4	33.8	40.3	42.6	42.0	54.1	59.1	60.3	57.9	54.7	44.7	40.3	38.1	27.5	10.1	10.5	5.81
155	6.03	6.71	8.34	27.0	30.2	33.4	39.3	49.2	53.8	55.0	52.3	47.6	37.9	32.6	31.3	23.7	12.1	5.41	4.05
160	3.79	3.36	13.5	6.39	23.7	26.1	29.6	33.8	36.7	37.8	35.7	31.3	26.5	24.4	24.3	4.58	13.5	2.81	2.03
165	3.13	1.77	5.24	12.4	2.93	13.0	20.3	21.3	21.2	21.5	21.1	19.7	18.4	12.0	2.72	9.99	4.44	2.34	1.71
170	1.43	1.56	2.07	3.34	7.49	9.83	5.72	2.62	2.13	2.39	2.27	2.34	4.46	7.49	7.17	4.11	2.32	1.96	1.73
175	1.47	1.98	2.25	2.27	2.09	2.08	2.05	2.33	2.86	3.07	3.08	2.84	2.43	2.44	2.42	2.37	2.41	2.32	1.78
180	1.82	1.98	2.29	2.59	2.33	2.07	1.88	1.70	1.53	1.51	1.54	1.64	1.97	2.42	2.46	2.58	2.20	2.22	1.77

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.6DEG
 Operators:David
 Test Date:2016-09-26

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:0.2441A P:29.17W PF:0.9952 Lamp Flux:1948.4x1 lm		
NAME:	TYPE:SER-38P-PC-CA(120V 2700K)	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack lighting	SUR.:0.15*1	PROTECTION ANGLE:

Table--2

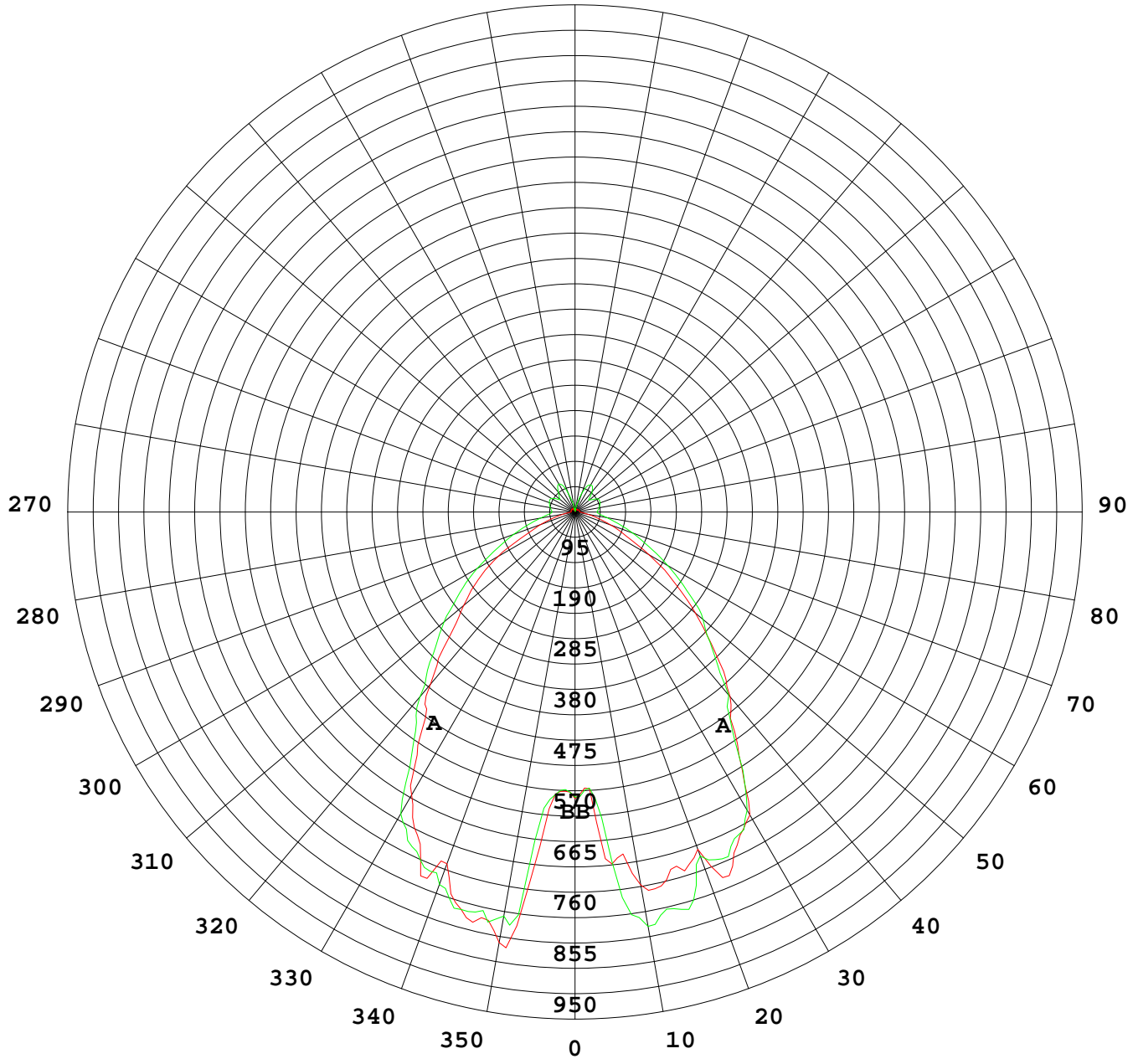
UNIT: cd

C(DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	535	531	532	535	536	535	537	535	534	534	534	531	532	533	531	533	529		
5	635	689	611	573	569	604	581	575	575	604	641	592	646	611	554	567	588		
10	657	844	835	834	783	826	754	771	788	852	824	819	889	844	731	774	835		
15	690	794	814	827	808	816	771	771	771	783	804	780	817	854	765	755	810		
20	678	693	707	749	742	715	694	687	686	688	686	702	735	744	690	688	711		
25	666	643	643	651	652	660	683	704	691	711	732	733	702	654	652	635	637		
30	626	590	579	568	567	587	626	657	645	636	642	633	603	576	584	580	576		
35	535	518	494	479	477	500	524	526	521	513	521	525	508	504	512	506	485		
40	461	456	437	423	412	418	429	449	448	436	444	429	421	432	434	437	422		
45	384	385	376	368	359	352	355	365	364	359	370	363	361	371	366	363	344		
50	318	321	308	301	287	288	301	312	313	310	315	298	291	303	303	307	289		
55	250	250	243	245	233	234	248	256	255	257	258	242	236	254	251	252	245		
60	197	199	192	193	181	180	195	200	201	202	204	187	183	200	198	201	190		
65	149	154	149	153	140	136	148	152	152	153	155	141	137	156	153	155	141		
70	109	117	113	116	102	98.1	111	115	115	116	119	102	100.0	121	115	118	103		
75	78.4	86.3	82.5	86.2	72.2	67.8	81.3	83.2	83.3	83.9	85.2	69.8	68.1	89.4	83.1	85.6	72.0		
80	56.1	63.0	60.0	64.3	50.7	46.5	59.5	60.9	60.5	60.8	62.2	48.5	46.5	66.6	61.1	62.2	50.1		
85	41.6	49.1	45.8	50.8	37.6	34.1	46.1	46.8	46.2	46.5	47.4	35.7	34.1	51.4	45.7	46.7	34.9		
90	35.9	43.0	40.5	45.6	32.6	28.9	41.2	41.9	41.4	41.5	42.5	30.8	28.9	46.0	40.4	40.2	28.5		
95	35.9	43.9	41.0	47.0	33.7	30.3	43.1	43.9	43.5	43.6	44.2	32.0	29.6	47.2	41.0	40.7	28.8		
100	37.2	44.3	42.5	48.8	34.8	31.2	45.2	46.4	45.9	45.9	46.5	33.2	30.4	48.8	42.4	40.4	28.4		
105	33.6	40.7	43.1	50.5	35.9	32.4	47.1	48.4	48.0	48.0	48.3	34.5	31.2	50.1	41.9	36.4	26.9		
110	30.2	32.5	40.6	50.8	37.0	33.7	48.9	50.5	49.9	50.0	50.4	35.6	32.0	47.9	34.2	32.2	23.3		
115	28.6	37.6	32.0	43.6	36.6	33.6	49.3	51.3	50.7	50.7	50.3	35.0	30.5	36.5	32.4	37.3	23.8		
120	30.5	42.9	34.4	30.5	30.1	31.0	46.4	49.7	49.5	48.7	45.7	31.6	25.5	33.0	36.6	36.0	19.6		
125	23.9	34.7	36.4	37.2	22.9	26.1	37.2	40.3	41.1	39.6	37.6	24.9	18.5	40.8	42.0	37.1	18.2		
130	20.0	34.0	42.3	47.3	27.8	20.1	31.2	32.8	35.1	34.0	32.1	24.7	25.7	43.8	42.0	34.3	17.8		
135	14.7	34.3	46.9	49.5	34.1	26.9	37.2	37.4	39.5	39.1	40.4	32.8	32.9	48.8	41.4	26.8	15.4		
140	16.1	31.3	41.8	49.1	39.6	34.2	45.9	48.5	49.9	48.5	48.2	38.7	37.6	50.4	38.4	25.8	14.8		
145	16.2	29.1	36.7	47.7	41.6	40.1	51.1	56.0	57.3	55.1	54.3	43.0	37.3	45.3	33.4	15.7	12.8		
150	9.78	11.8	31.6	41.5	40.4	40.3	50.5	56.9	58.4	56.1	53.7	42.8	36.5	35.8	26.2	9.93	10.4		
155	4.43	9.81	23.5	29.5	33.4	36.9	45.1	51.5	53.4	51.7	47.0	37.4	31.1	28.7	16.0	13.5	5.11		
160	1.26	9.49	4.94	19.9	25.1	26.8	32.0	35.9	37.8	36.4	32.0	26.7	23.5	21.1	3.53	14.4	3.90		
165	1.41	2.01	7.45	7.23	3.59	13.5	18.8	19.4	19.5	18.8	18.8	16.9	9.35	2.85	11.4	7.11	2.78		
170	1.71	2.03	2.22	3.79	6.89	8.88	5.20	2.83	1.76	2.07	3.13	5.32	7.37	6.34	5.57	2.92	1.83		
175	1.71	2.27	2.13	2.55	2.37	1.91	1.71	2.17	2.31	2.33	2.19	1.87	1.79	2.27	2.46	2.62	2.22		
180	1.71	1.99	2.24	2.55	2.33	2.08	1.75	1.64	1.55	1.52	1.51	1.61	1.95	2.29	2.43	2.60	2.19		

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: HIGH
 Temperature:25.6DEG
 Operators:David
 Test Date:2016-09-26

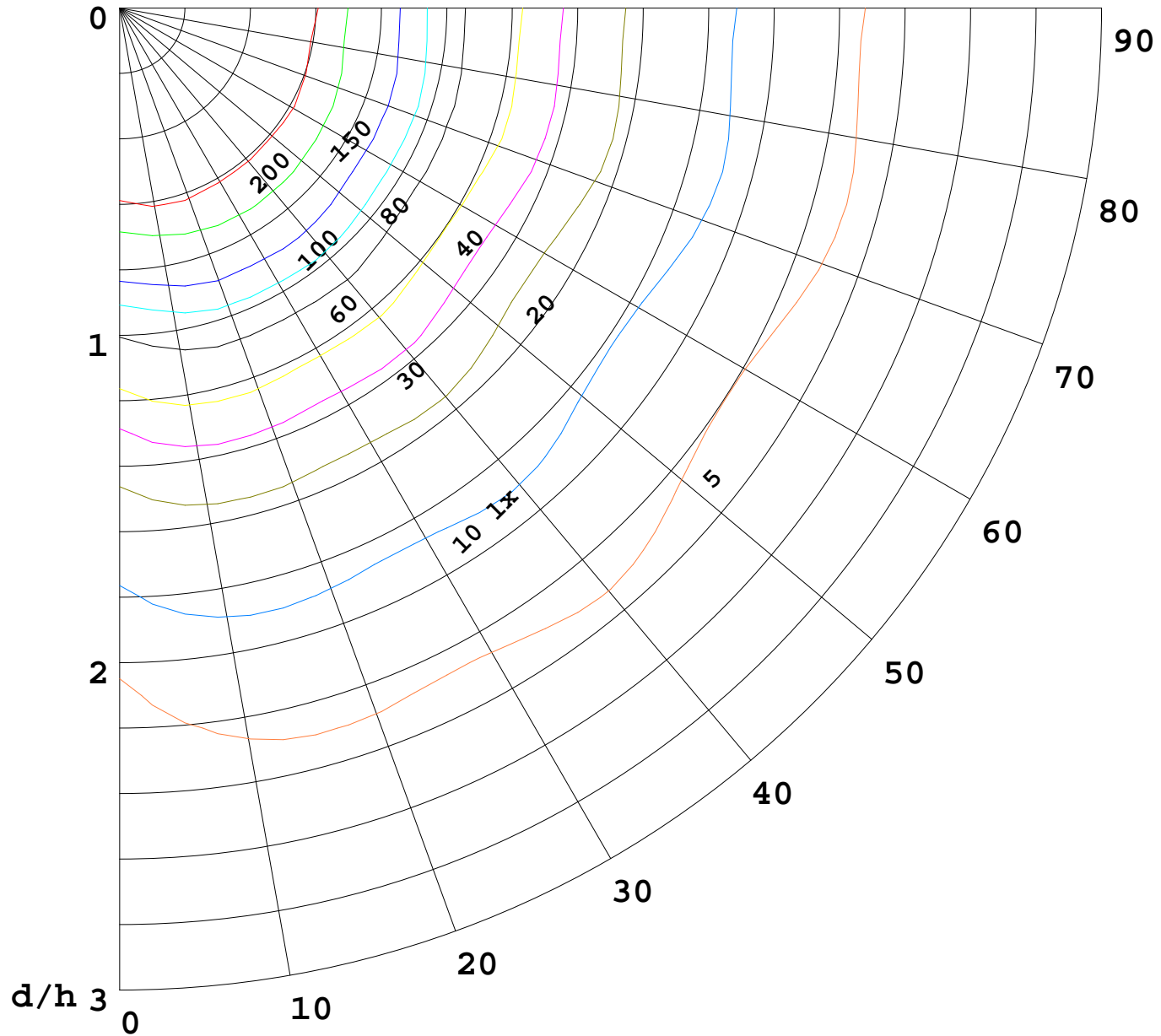
γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.287
 Humidity:67.1%
 Test Distance:26.000m [K=1.0000]
 Remarks:

I (cd)



1000 lm

$K = 1$



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

