



### IENNA LM-79 TEST REPORT

Applicant's name .....	Blackjack Lighting
Address .....	1553 Barclay Blvd. Buffalo Grove, IL 60089
Brand Name.....	Blackjack Lighting
Report No.....	BTR66.181.16.0025.45
Product Name .....	Quadra Double Pendant
Model Number .....	QDR-11P-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 .....	Mar 21, 2017	

Testing Laboratory Name .....	BEST Test Service Shenzhen Co., Ltd.
Address .....	1 <sup>st</sup> Floor, 1 <sup>st</sup> Building, Weitai Industrial Park, Yingrenshi, Shiyan, Baoan, Shenzhen, China
Accrediation .....	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
<b>Test Report Form No.</b>	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 .....	Mar 15, 2017 to Mar 21, 2017
Sample Quantity .....	1 unit
SKU.....	N/A
Rating(s) (V; Hz) .....	AC 120V/ 60Hz
Nominal Power.....	17.5W
Nominal Power Factor .....	N/A
Nominal Lumen Output.....	800 lm
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.

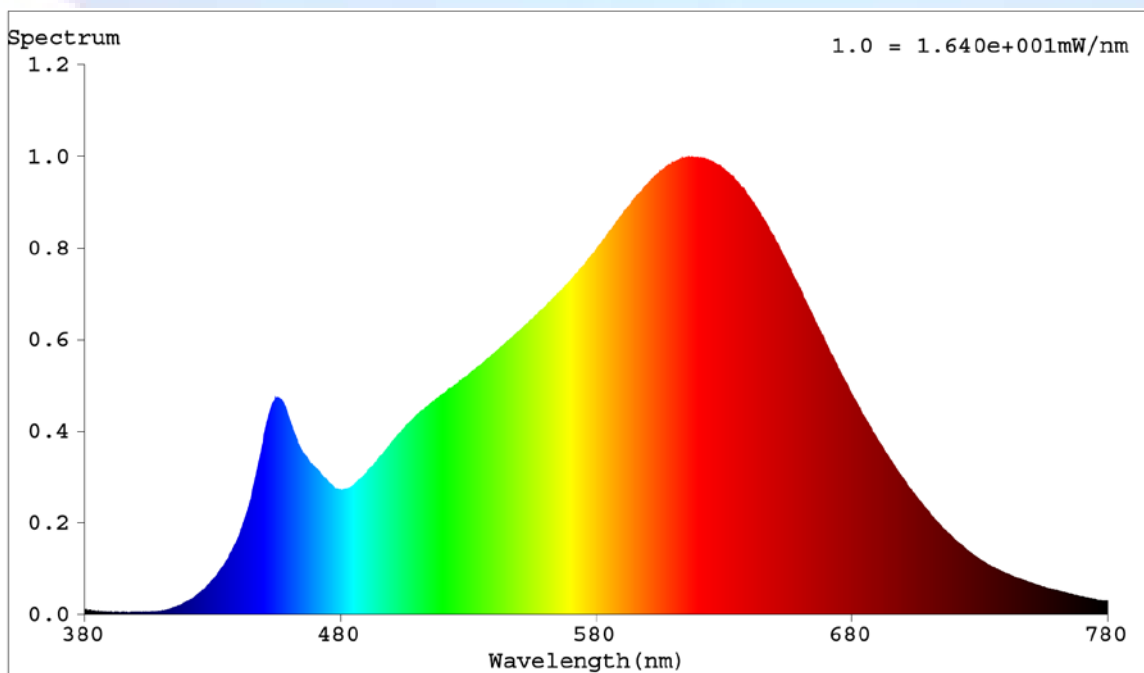
### Luminous Intensity

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

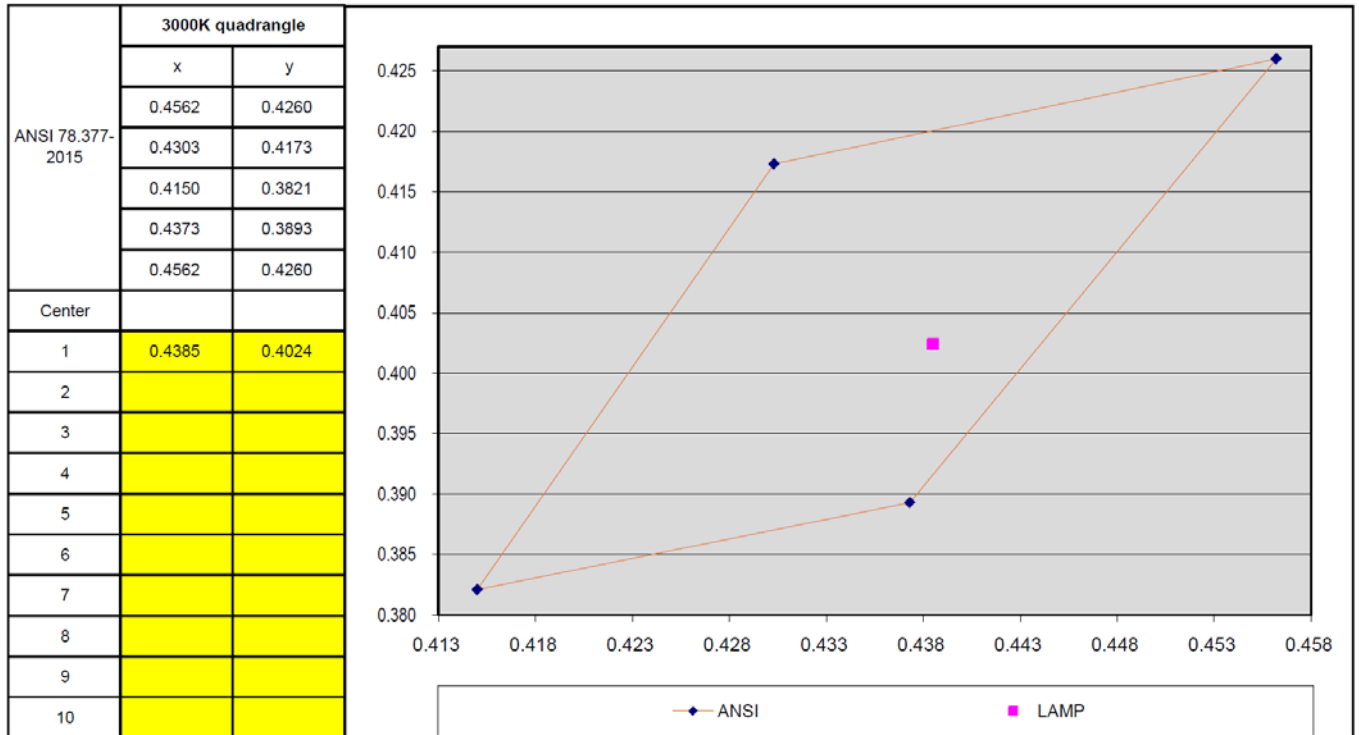
### Photometric and Electrical Test Data

Input Voltage (V)	Frequency (Hz)	Input Current (A)	ITHD	Input Power (W)	Power Factor	Lumen Output (Lumens)	Efficiency Lumen/w
120.0	60.0	0.145	/	17.38	0.996	865.22	49.80
CCT (K)	CRI (Ra)	R9	x CIE1931	y CIE1931	u' CIE1976	v' CIE1976	Duv CIE1976
2959	92.3	56	0.4385	0.4024	0.2523	0.5210	-0.0009

### Spectrul Plots



**7 Step Quadrangle**



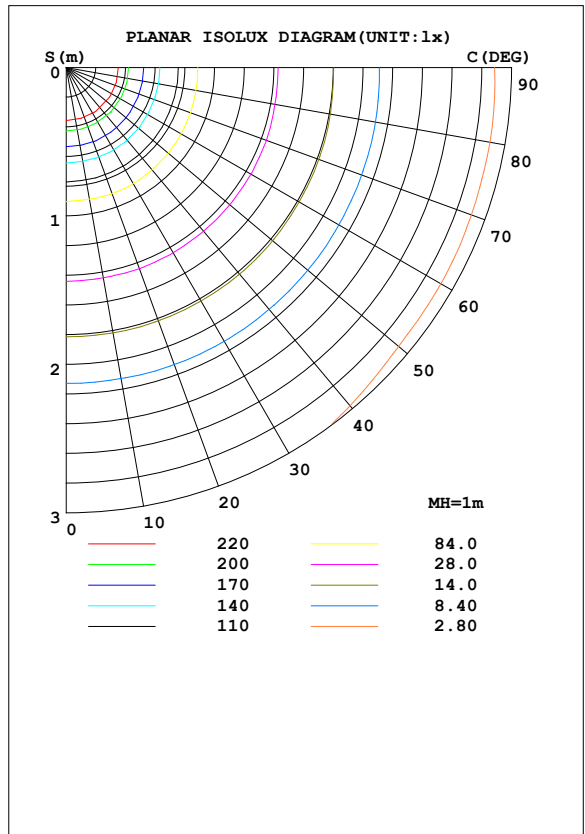
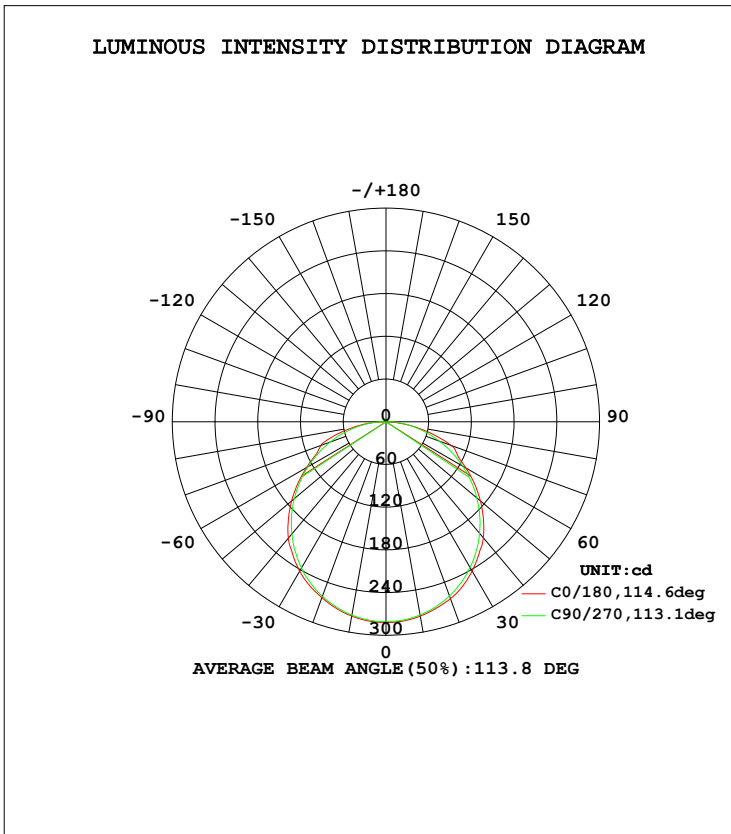
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LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 49.80 lm/W			
MODEL	QDR-11P-PC	I <sub>max</sub> (cd)	282.1	S/MH (C0/180)	1.27
NOMINAL POWER (W)	17.5	LOR (%)	100.0	S/MH (C90/270)	1.25
RATED VOLTAGE (V)	120.0	TOTAL FLUX (lm)	865.21	η UP, DN (C0-180)	0.8, 49.4
NOMINAL FLUX (lm)	865.215	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.7, 49.1
LAMPS INSIDE	1	η up (%)	1.5	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	120.0	η down (%)	98.5	CIBSE SHR MAX	1.35



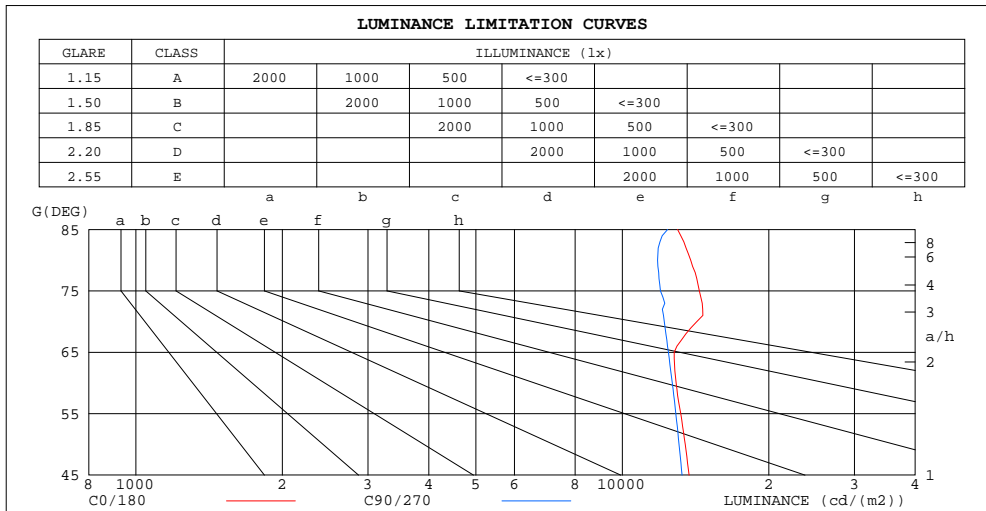
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.6DEG  
 Operators: David  
 Test Date: 2017-03-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity: 67.1%  
 Test Distance: 2.564m [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	277.2	276.6	275.9	275.3	277.2	276.2	275.6	275.4	0- 10	26.58	26.58	3.07
20	263.0	262.2	261.0	260.6	264.7	261.8	260.4	260.7	10- 20	76.17	102.8	11.9
30	242.4	240.8	237.2	238.4	242.0	240.6	236.3	237.4	20- 30	115.9	218.7	25.3
40	213.4	210.5	205.8	208.0	212.8	209.2	204.5	207.5	30- 40	140.6	359.3	41.5
50	173.1	172.8	168.2	169.7	173.1	170.6	166.6	170.0	40- 50	146.8	506.1	58.5
60	129.0	129.6	126.6	127.0	129.4	127.6	124.4	127.5	50- 60	133.5	639.6	73.9
70	97.27	88.22	83.40	83.97	97.44	88.21	80.01	84.43	60- 70	105.9	745.4	86.2
80	47.99	60.63	41.04	54.11	39.71	57.36	38.04	53.61	70- 80	72.40	817.8	94.5
90	2.155	30.66	8.115	27.40	1.190	27.60	7.096	27.95	80- 90	34.56	852.4	98.5
100	0.2638	10.27	0	7.416	0.0651	8.556	0	8.084	90-100	10.90	863.3	99.8
110	0	0.6605	0	0	0	0.2470	0	0.0031	100-110	1.794	865.1	100
120	0	0	0	0.0001	0	0.0000	0.0005	0	110-120	0.0373	865.1	100
130	0.0024	0.0026	0.0059	0.0029	0.0002	0.0029	0.0010	0.0015	120-130	0.0077	865.1	100
140	0.0056	0.0111	0.0149	0.0076	0.0005	0.0016	0.0010	0.0022	130-140	0.0038	865.1	100
150	0.0125	0.0122	0.2758	0.0131	0.0042	0.0077	0.0034	0.0049	140-150	0.0072	865.1	100
160	0.0149	0.0157	0.0850	0.0168	0.0127	0.0113	0.0078	0.0119	150-160	0.0337	865.2	100
170	0.0186	0.0196	0.0223	0.0307	0.0091	0.0125	0.0073	0.0333	160-170	0.0343	865.2	100
180	0.0078	0.0076	0.0088	0.0088	0.0083	0.0078	0.0083	0.0124	170-180	0.0039	865.2	100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	12986	12393
80	13818	11817
75	14394	11975
70	14220	12193
65	12781	12435
60	12902	12664
55	13186	12884
50	13465	13080
45	13713	13262

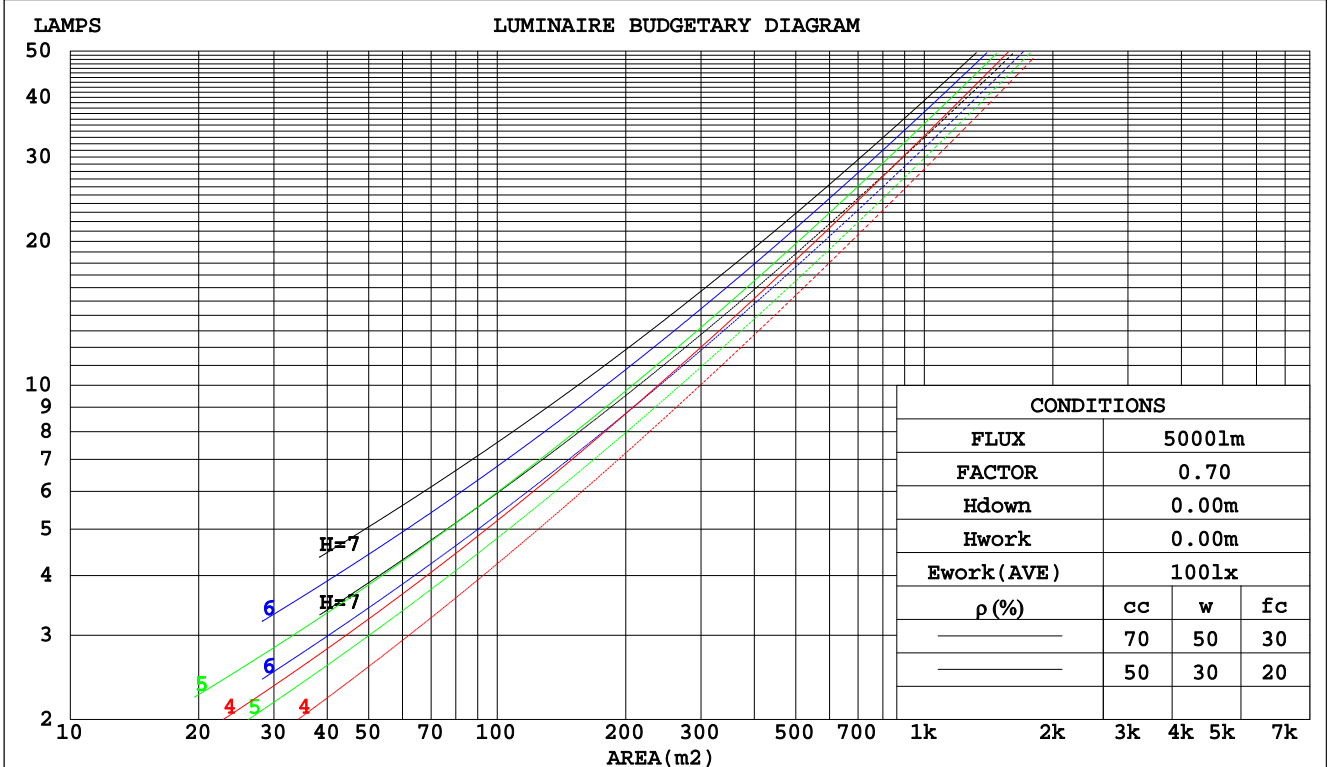
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.6DEG  
Operators:David  
Test Date:2017-03-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
Humidity:67.1%  
Test Distance:2.564m [K=1.0000]  
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	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																
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	1.10	1.10	1.10	1.05	1.05	1.05	1.01	1.01	1.01	.99
1.0	1.02	.97	.93	.90	.95	.91	.95	.91	.88	.91	.88	.85	.87	.85	.82	.80
2.0	.88	.81	.75	.86	.80	.74	.82	.77	.72	.79	.74	.70	.76	.72	.68	.66
3.0	.77	.69	.62	.76	.68	.61	.72	.65	.60	.69	.63	.59	.67	.62	.57	.55
4.0	.68	.59	.52	.67	.58	.52	.64	.57	.51	.62	.55	.50	.59	.54	.49	.47
5.0	.61	.52	.45	.60	.51	.44	.57	.50	.44	.55	.48	.43	.53	.47	.43	.40
6.0	.55	.46	.39	.54	.45	.39	.52	.44	.38	.50	.43	.38	.48	.42	.37	.35
7.0	.50	.41	.34	.49	.40	.34	.47	.39	.34	.45	.39	.33	.44	.38	.33	.31
8.0	.45	.37	.31	.44	.36	.30	.43	.35	.30	.42	.35	.30	.40	.34	.30	.28
9.0	.41	.33	.27	.41	.33	.27	.40	.32	.27	.38	.32	.27	.37	.31	.27	.25
10.0	.38	.30	.25	.38	.30	.25	.37	.29	.25	.36	.29	.24	.35	.29	.24	.22



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-03-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:2.564m [K=1.0000]  
 Remarks:



WEC AND CCEC

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm														
NAME:					TYPE:QDR-11P-PC					WEIGHT:				
SPEC.:					DIM.:					SERIAL No.:				
MFR.: Blackjack Lighting					SUR.:0					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	.339	.193	.061	.331	.189	.060	.317	.182	.058	.304	.175	.056	.292	.169	.055	
2.0	.309	.169	.052	.302	.166	.051	.289	.161	.050	.278	.156	.049	.267	.151	.048	
3.0	.281	.150	.045	.275	.147	.044	.264	.143	.043	.254	.139	.043	.244	.135	.042	
4.0	.257	.134	.039	.252	.132	.039	.242	.128	.038	.233	.125	.038	.224	.122	.037	
5.0	.236	.120	.035	.231	.119	.035	.223	.116	.034	.214	.113	.034	.207	.110	.033	
6.0	.218	.109	.031	.214	.108	.031	.206	.106	.031	.198	.103	.030	.192	.101	.030	
7.0	.202	.100	.028	.198	.099	.028	.191	.097	.028	.185	.095	.028	.178	.093	.027	
8.0	.188	.092	.026	.185	.091	.026	.179	.089	.025	.173	.087	.025	.167	.086	.025	
9.0	.176	.085	.024	.173	.084	.024	.167	.083	.023	.162	.081	.023	.157	.080	.023	
10.0	.165	.079	.022	.163	.079	.022	.157	.077	.022	.153	.076	.022	.148	.074	.021	

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	.202	.202	.202	.172	.172	.172	.118	.118	.118	.068	.068	.068	.022	.022	.022	
1.0	.194	.167	.143	.166	.144	.123	.113	.099	.085	.065	.057	.050	.021	.018	.016	
2.0	.186	.143	.107	.159	.123	.093	.109	.085	.065	.063	.050	.038	.020	.016	.012	
3.0	.178	.126	.084	.153	.109	.073	.105	.075	.051	.061	.044	.030	.019	.014	.010	
4.0	.170	.113	.069	.146	.097	.060	.101	.068	.042	.058	.040	.025	.019	.013	.008	
5.0	.163	.102	.058	.140	.089	.050	.096	.062	.036	.056	.036	.021	.018	.012	.007	
6.0	.155	.094	.050	.134	.082	.044	.092	.057	.031	.053	.034	.018	.017	.011	.006	
7.0	.148	.087	.044	.128	.076	.039	.088	.053	.027	.051	.031	.016	.017	.010	.005	
8.0	.142	.081	.040	.122	.071	.035	.084	.050	.025	.049	.029	.015	.016	.010	.005	
9.0	.136	.077	.037	.117	.066	.032	.081	.047	.023	.047	.028	.014	.015	.009	.004	
10.0	.130	.072	.034	.112	.063	.030	.078	.044	.021	.045	.026	.013	.015	.009	.004	

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-03-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:2.564m [K=1.0000]  
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm										
NAME:					TYPE:QDR-11P-PC			WEIGHT:		
SPEC.:					DIM.:			SERIAL No.:		
MFR.: Blackjack Lighting					SUR.:0			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	21.7	23.3	22.0	23.5	23.7	21.6	23.2	21.9	23.4	23.6
3H	23.6	25.1	24.0	25.3	25.6	23.3	24.7	23.6	25.0	25.2
4H	24.6	25.9	24.9	26.2	26.5	24.0	25.4	24.3	25.6	25.9
6H	25.3	26.5	25.6	26.8	27.2	24.6	25.9	25.0	26.2	26.5
8H	25.5	26.7	25.9	27.0	27.4	24.8	26.1	25.2	26.4	26.7
12H	25.7	26.9	26.0	27.2	27.5	25.0	26.2	25.4	26.5	26.9
4H 2H	22.4	23.7	22.7	24.0	24.3	22.3	23.6	22.6	23.9	24.2
3H	24.5	25.7	24.9	26.0	26.4	24.1	25.3	24.5	25.7	26.0
4H	25.6	26.7	26.0	27.1	27.4	25.0	26.1	25.4	26.5	26.8
6H	26.5	27.5	26.9	27.8	28.2	25.8	26.8	26.2	27.2	27.6
8H	26.8	27.7	27.2	28.1	28.5	26.1	27.0	26.5	27.4	27.8
12H	27.0	27.8	27.5	28.3	28.7	26.4	27.2	26.8	27.6	28.1
8H 4H	26.0	27.0	26.5	27.4	27.8	25.5	26.5	26.0	26.9	27.3
6H	27.2	27.9	27.6	28.4	28.8	26.6	27.4	27.1	27.8	28.3
8H	27.6	28.3	28.1	28.8	29.2	27.1	27.8	27.6	28.3	28.7
12H	27.9	28.5	28.4	29.0	29.5	27.6	28.2	28.1	28.7	29.2
12H 4H	26.1	27.0	26.6	27.4	27.8	25.6	26.5	26.1	26.9	27.3
6H	27.3	28.0	27.8	28.5	29.0	26.8	27.5	27.3	28.0	28.5
8H	27.9	28.5	28.4	29.0	29.5	27.5	28.1	28.0	28.6	29.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.2					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.1 / - 0.2					+ 0.1 / - 0.3				

CIE Pub.117 Corrected 865.2 lm Total Lamp Luminous Flux.(8log(F/F0) = -0.5)

C Range: 0 - 360DEG  
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 Remarks:

UTILIZATION FACTORS TABLE

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	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	56	44	37	55	44	37	54	43	37	30
0.80	66	54	46	64	53	46	63	52	45	38
1.00	74	62	55	73	62	54	70	63	54	46
1.25	81	70	62	79	69	62	76	67	61	53
1.50	86	75	68	84	74	67	81	72	66	58
2.00	93	83	77	91	82	76	87	80	74	66
2.50	97	88	82	95	87	81	91	84	79	70
3.00	100	93	87	98	91	85	94	88	83	74
4.00	104	98	93	102	96	91	97	93	89	79
5.00	107	102	97	104	99	95	100	96	92	82
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:2017-03-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:2.564m [K=1.0000]  
 Remarks:

ISOCANDELA DIAGRAM

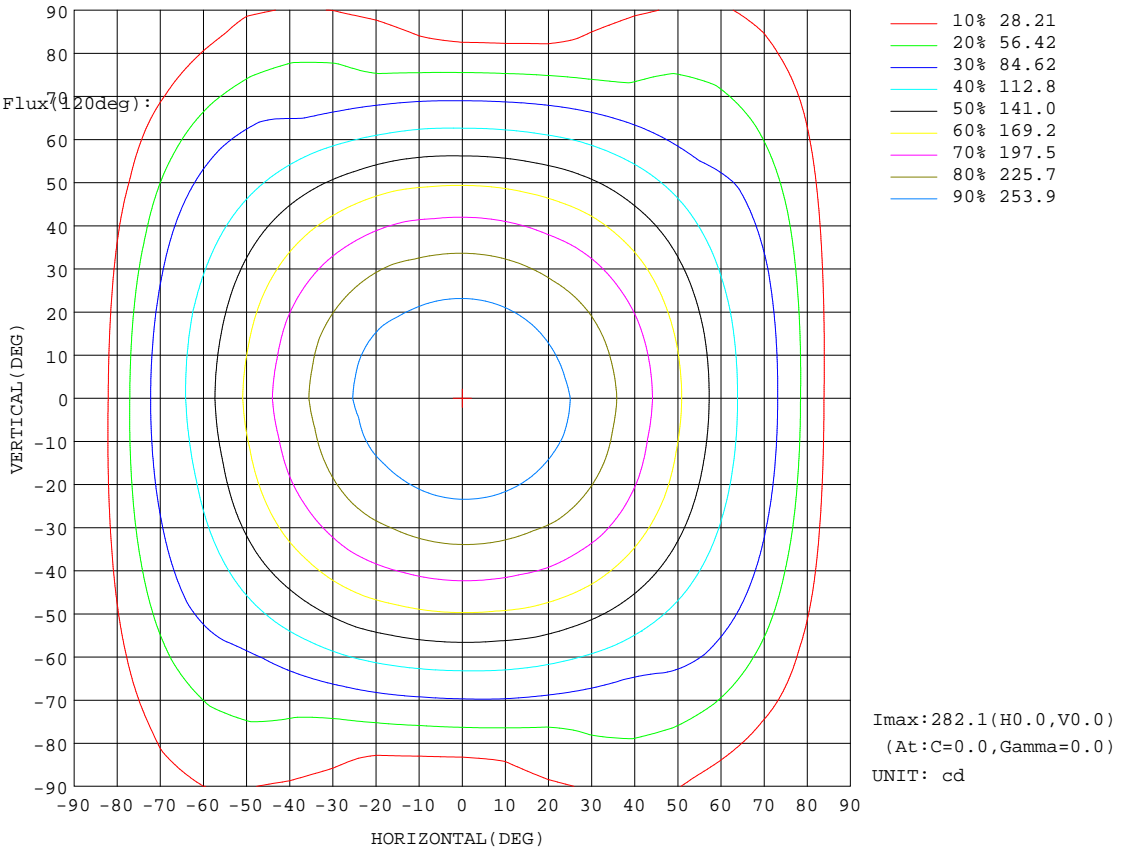
Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	PROTECTION ANGLE:

Conical surface Flux(90deg):

433.19 lm  
%lum = 50.1%  
%lamp = 50.1%

Conical surface Flux(70deg):

639.57 lm  
%lum = 73.9%  
%lamp = 73.9%

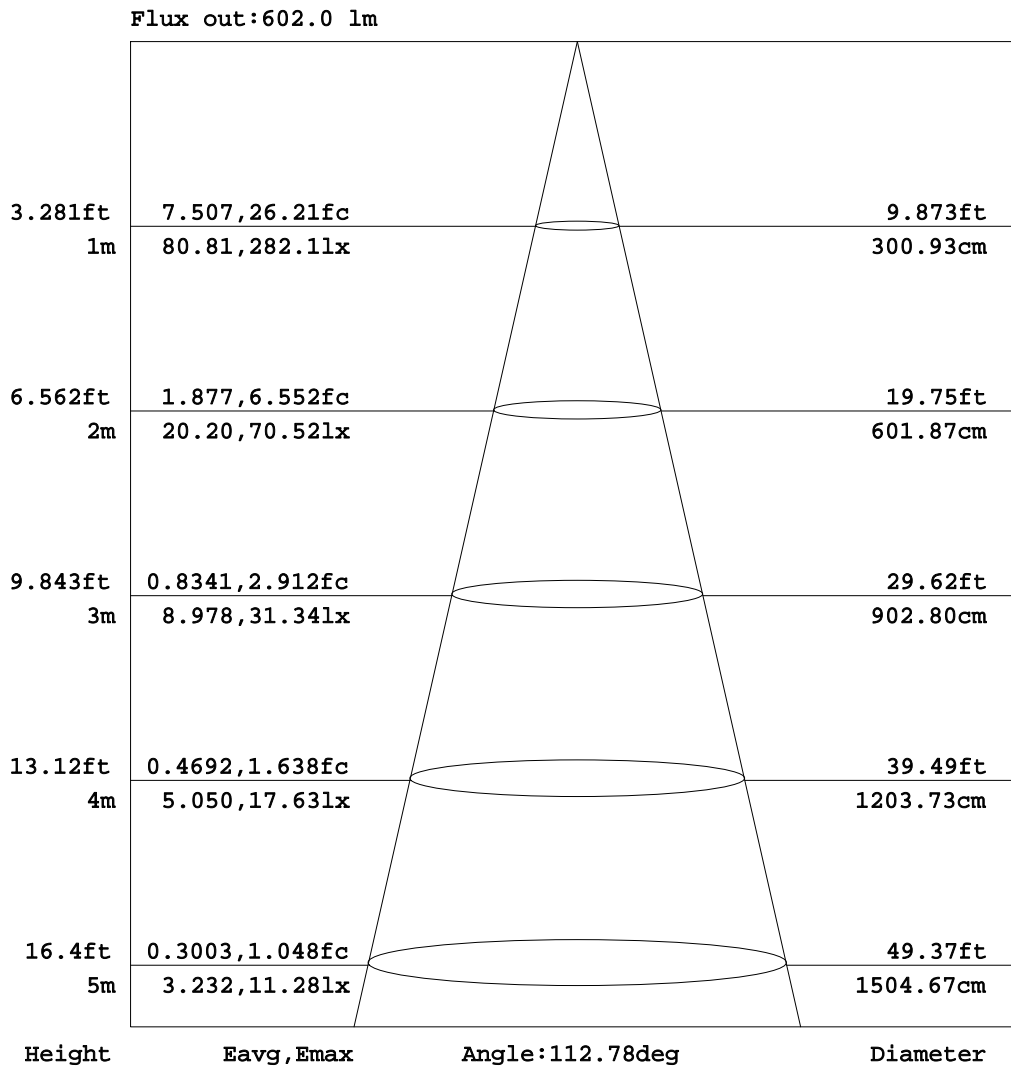


C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.6DEG  
Operators:David  
Test Date:2017-03-20

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
Humidity:67.1%  
Test Distance:2.564m [K=1.0000]  
Remarks:

AAI Figure

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	PROTECTION ANGLE:



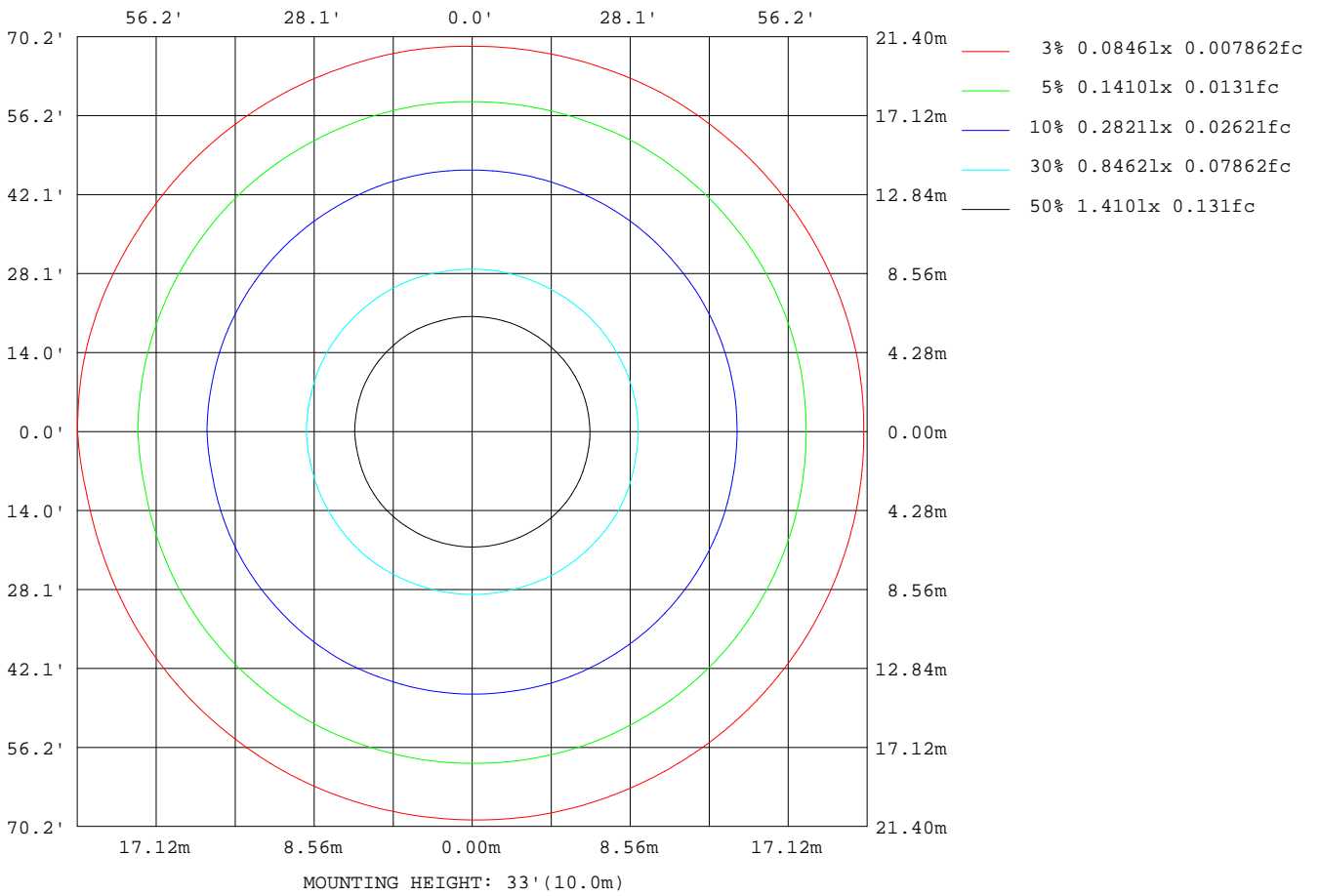
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-03-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:2.564m [K=1.0000]  
 Remarks:

ISOLUX DIAGRAM

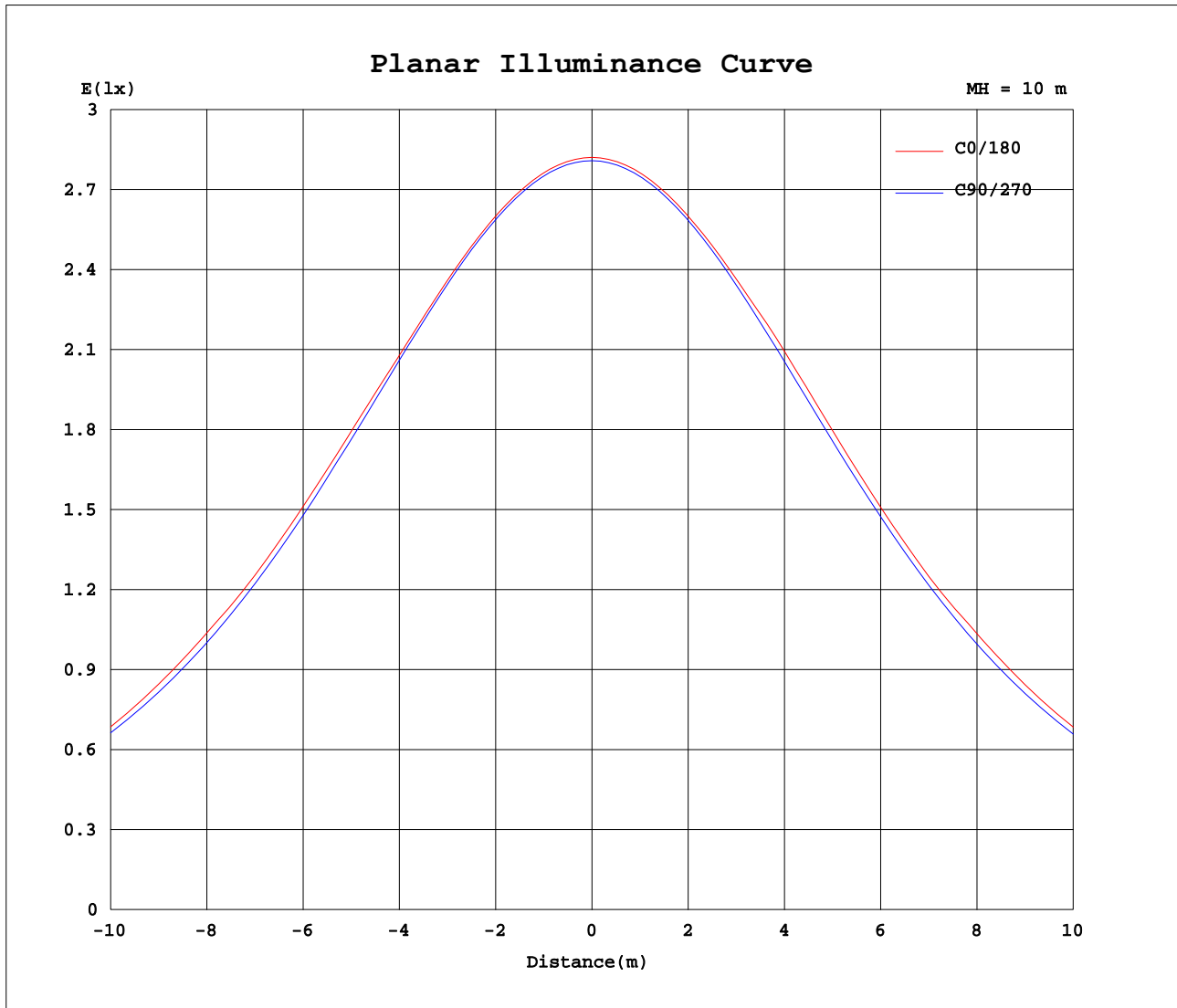
Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	PROTECTION ANGLE:



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-03-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:2.564m [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: 2017-03-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
Humidity: 67.1%  
Test Distance: 2.564m [K=1.0000]  
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	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	282	282	282	282	281	281	281	281	281	281	281	281	281	280	280	280	280	280	282
5	281	281	281	280	280	280	280	280	280	280	280	279	279	279	279	279	279	279	281
10	277	277	278	277	277	277	276	276	276	276	276	276	275	275	275	275	275	275	277
15	271	271	271	271	271	270	270	270	270	270	269	269	269	269	269	269	269	269	271
20	263	263	263	263	262	262	262	262	261	261	261	261	261	261	261	261	262	262	265
25	254	254	254	253	252	252	251	251	250	250	250	250	250	250	251	252	252	253	255
30	242	242	242	242	242	239	238	238	238	237	237	237	237	238	239	240	240	240	242
35	228	227	228	228	227	227	224	223	223	222	222	222	222	224	225	225	225	225	227
40	213	212	214	213	211	210	209	207	206	206	206	205	206	208	208	208	209	210	213
45	194	193	194	194	194	192	191	190	188	188	187	187	189	190	190	191	191	191	194
50	173	172	173	173	173	173	171	170	168	168	168	168	169	170	170	170	170	170	173
55	151	151	152	152	151	151	150	150	148	148	148	148	149	149	149	149	149	149	152
60	129	129	129	130	130	129	129	128	127	127	127	127	127	127	127	128	127	127	129
65	108	108	109	109	108	108	107	106	106	105	105	105	105	105	105	106	106	107	111
70	97.3	97.9	96.7	93.9	89.4	87.0	86.1	85.2	84.6	83.4	82.8	83.0	82.8	83.5	84.4	87.9	93.0	95.7	97.4
75	74.5	74.8	76.7	78.5	78.1	73.2	67.3	64.6	63.3	62.0	61.1	61.3	61.9	63.1	70.2	75.1	74.3	70.6	68.7
80	48.0	47.9	51.4	56.8	60.4	60.9	55.5	47.0	42.7	41.0	40.4	40.7	42.2	51.0	57.2	57.8	52.9	45.8	39.7
85	22.6	21.9	27.4	35.9	43.2	46.1	43.4	36.3	26.8	21.6	21.0	22.2	31.1	38.4	42.3	41.8	34.5	23.1	12.9
90	2.16	0.05	7.66	18.6	28.9	32.4	30.6	24.9	16.9	8.12	4.52	12.1	20.0	25.9	28.9	28.2	21.0	11.2	1.19
95	0.88	0.00	3.98	11.0	17.2	20.7	19.1	14.2	7.48	0.00	0.00	2.74	9.58	14.8	17.7	17.3	12.4	6.71	0.41
100	0.26	0.00	2.05	6.02	9.32	11.2	9.69	5.53	0.00	0.00	0.00	0.00	0.61	5.92	8.91	8.92	6.82	3.68	0.07
105	0.03	0.00	0.89	2.86	4.17	4.22	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.01	2.43	3.41	3.06	1.73	0.00
110	0.00	0.00	0.26	0.92	1.04	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.72	0.50	0.00
115	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	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	0.01	0.00	0.00	0.00	0.00	0.23	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	0.01	0.02	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	0.01	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.06	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
140	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
145	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.23	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00
150	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.07	0.28	0.04	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.00
155	0.01	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.05	1.78	0.12	0.04	0.02	0.02	0.01	0.01	0.01	0.01	0.01
160	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.08	5.17	0.06	0.03	0.02	0.02	0.02	0.01	0.01	0.01
165	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.21	0.38	0.06	0.02	0.02	0.02	0.01	0.02	0.01
170	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.04	4.80	0.12	0.04	0.02	0.02	0.02	0.02	0.01
175	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.60	0.03	0.02	0.01	0.01	0.01	0.00
180	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-03-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:2.564m [K=1.0000]  
 Remarks:



LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.0V I:0.1454A P:17.38W PF:0.9956 Lamp Flux:865.215x1 lm		
NAME:	TYPE:QDR-11P-PC	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: Blackjack Lighting	SUR.:0	PROTECTION ANGLE:

Table--2

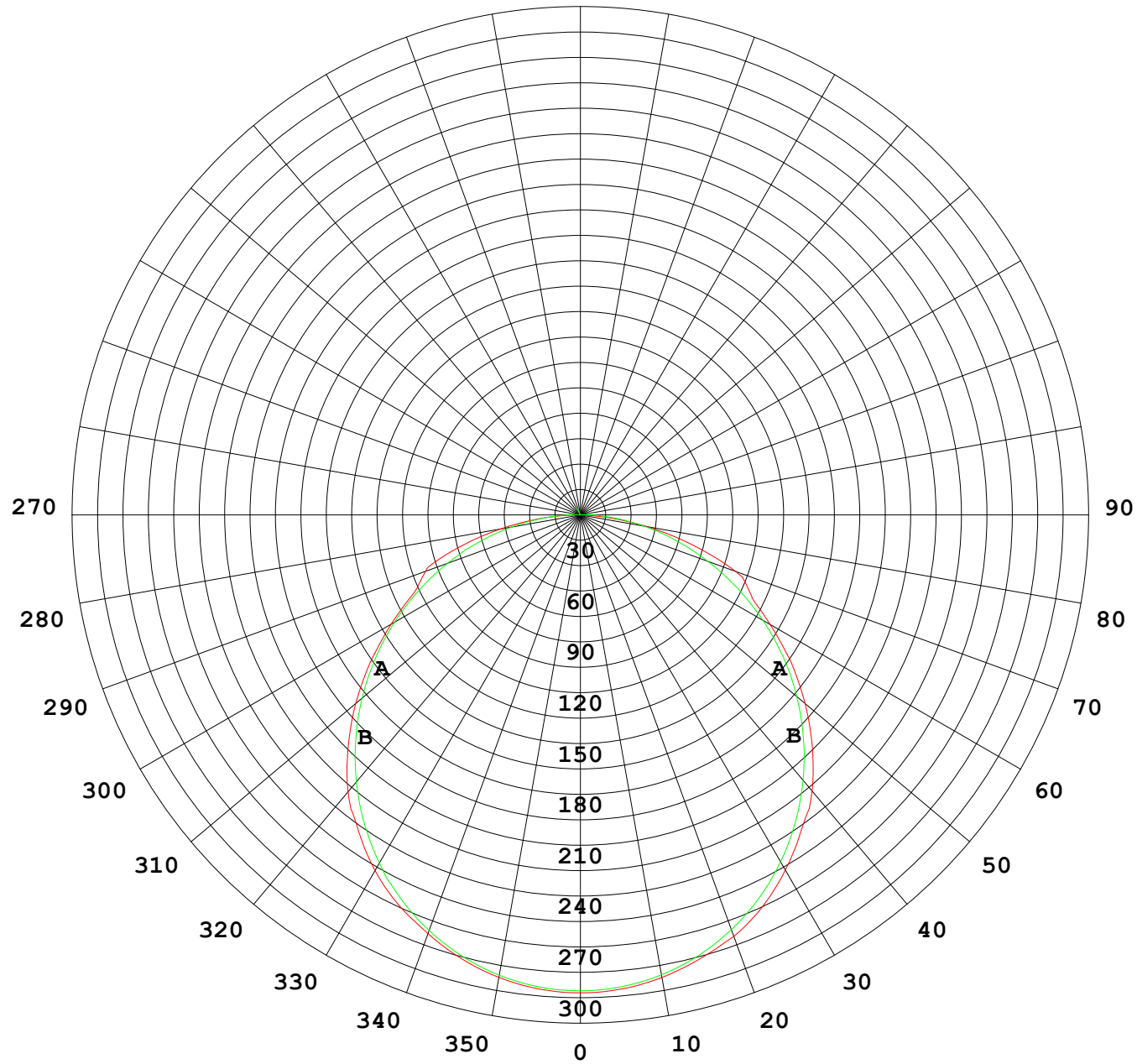
UNIT: cd

C (DEG) γ (DEG)	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350		
0	282	282	282	281	281	281	281	281	281	281	281	281	280	280	280	280	280		
5	281	280	280	280	280	280	280	280	279	279	279	279	279	279	279	279	279		
10	277	277	277	276	276	276	276	276	276	276	275	275	275	275	275	275	275		
15	271	271	271	270	270	270	270	269	269	269	269	269	269	269	269	270	270		
20	265	264	263	262	262	261	261	261	260	260	260	260	261	261	261	261	262		
25	254	255	254	253	252	251	250	250	249	249	250	250	250	250	251	252	252		
30	242	242	242	241	240	239	237	236	236	236	236	237	237	238	239	241	241		
35	227	227	227	226	225	225	222	221	221	221	221	222	222	224	226	227	227		
40	212	213	211	210	209	208	207	205	204	204	205	205	207	208	209	211	212		
45	192	193	192	192	191	190	189	187	186	186	186	187	189	190	192	193	193		
50	172	172	172	171	170	169	169	167	167	167	167	168	170	170	172	172	173		
55	151	151	151	150	149	148	148	147	146	146	147	148	149	149	151	151	152		
60	129	129	128	128	127	126	126	125	124	125	125	127	127	128	129	129	130		
65	111	110	107	106	105	104	103	103	102	102	103	105	105	106	107	108	108		
70	97.0	97.2	95.9	91.2	85.2	82.7	81.5	80.7	80.0	80.3	81.4	82.5	83.7	85.1	86.5	91.6	95.4		
75	68.1	70.6	73.9	75.7	73.8	66.3	60.8	59.3	58.5	58.6	59.6	61.0	62.9	68.9	75.8	78.1	77.6		
80	38.7	43.5	50.6	56.4	58.3	54.6	46.3	39.3	38.0	37.7	38.5	40.1	49.6	57.6	59.9	57.5	53.6		
85	10.9	18.7	29.7	39.7	43.0	40.8	35.0	26.3	19.4	18.4	19.8	29.4	38.1	43.3	43.9	38.4	31.0		
90	0.00	6.70	16.6	25.8	29.4	28.0	23.1	15.8	7.10	2.16	10.4	18.9	25.8	30.1	30.1	23.3	12.4		
95	0.00	3.77	9.86	15.1	18.2	16.9	12.3	5.76	0.00	0.00	1.96	9.04	15.1	18.9	18.8	13.9	7.35		
100	0.00	1.95	5.50	7.92	9.19	7.62	3.49	0.00	0.00	0.00	0.00	1.25	6.39	9.78	9.96	7.74	4.14		
105	0.00	0.86	2.60	3.37	2.84	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.24	3.21	4.27	3.79	2.07		
110	0.00	0.24	0.72	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.80	1.26	0.79		
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	0.01	0.06		
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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	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	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00		
155	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
160	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
165	0.01	0.01	0.02	0.07	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01	0.01	0.01		
170	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.05	0.01	0.01	0.01		
175	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.06	0.01	0.01	0.01		
180	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01		

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.6DEG  
 Operators:David  
 Test Date:2017-03-20

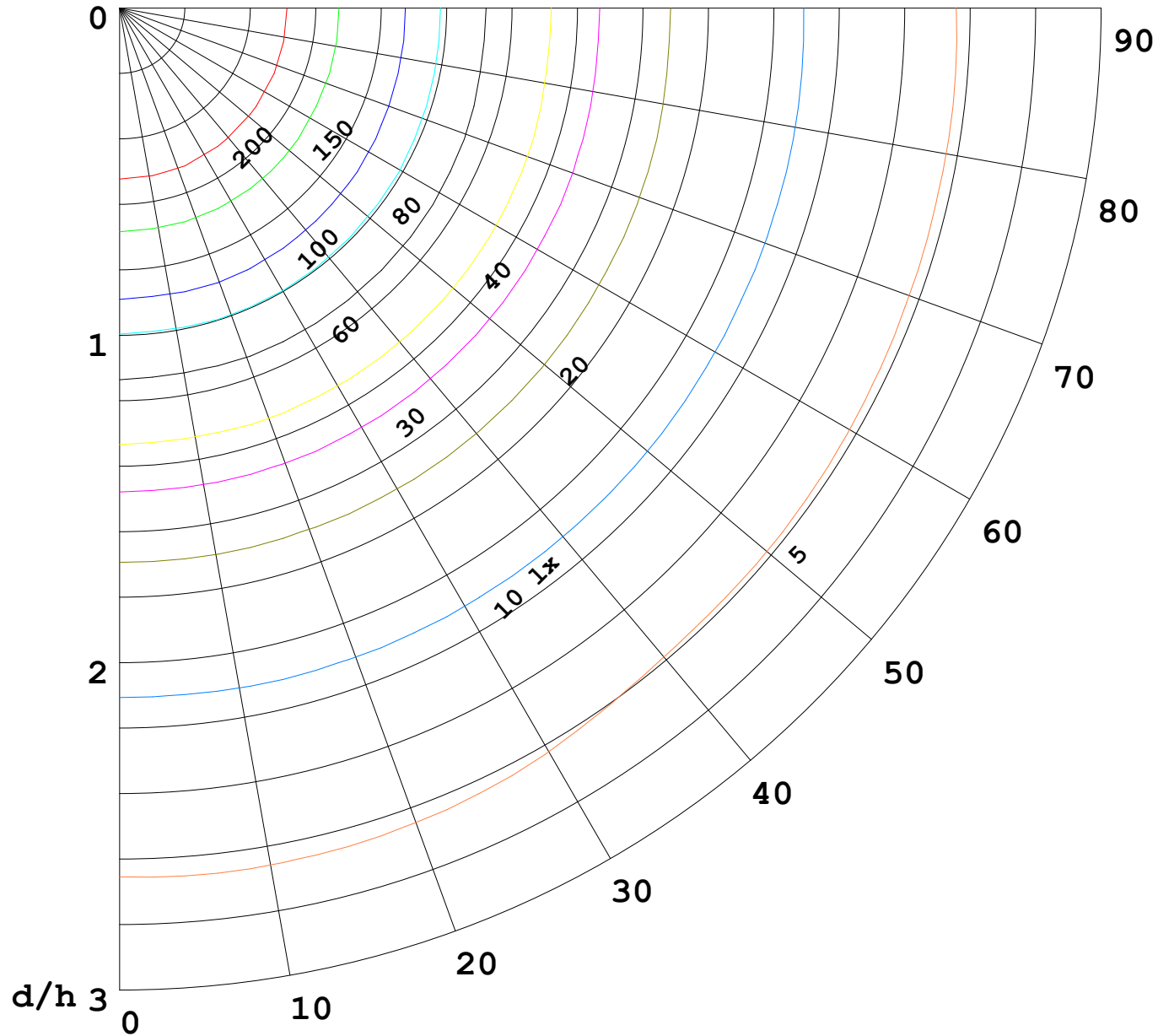
γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.287  
 Humidity:67.1%  
 Test Distance:2.564m [K=1.0000]  
 Remarks:

I (cd)



1000 lm

$K = 1$



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

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

