



SGSO

Address: LIT by CARDI

Client:

LumCAT: 0017440218 RIO 4.5W 3000K 450lm

Luminaire:

Report No:

Voltage(V): 229.8300

Test No: KYZ-A251014055-01-001

Current(A): 0.0356

LampCAT: LED

Power (W): 4.5000

Lamp flux(lm): -1.0

PF: 0.5495

Number of Lamps: 1

Ballast type:

Length(mm): -80

Width(mm): -80

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 450.00

Efficiency(%): 0.00%

Lumens(lm)/Power(W): 100.00

Central intensity(cd): 213.457

Maximum intensity(cd): 231.275

Angle of maximum intensity: C=180.0 γ =10.0

Beam Angle(50%Imax): [C0/180]Total=82.7

[C90/270]Total=83.0

Field angle(10%Imax): [C0/180]Total=149.8

[C90/270]Total=141.0

Maximum s/h(1/2): C0_180=1.20 C90_270=1.13

Maximum s/h(1/4): C0_180=1.18 C90_270=1.22

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 0.00%

Up flux rate of LUM(%): 2.18%

Down flux rate of LUM(%): 97.82%

CIE Type : Direct lighting

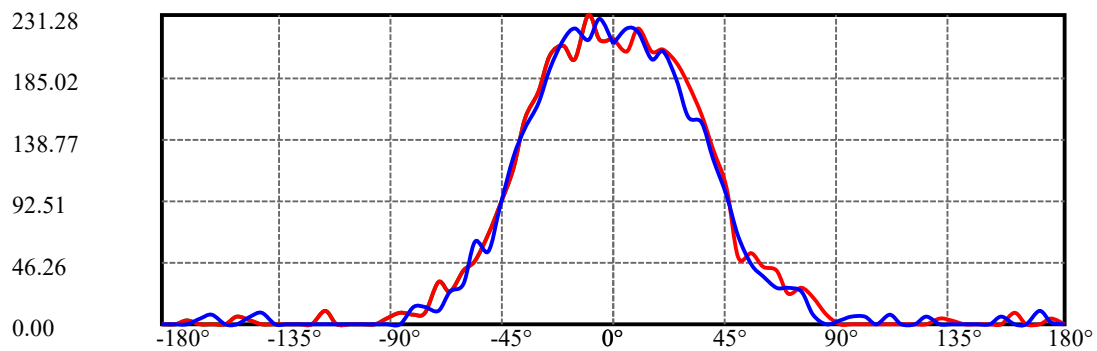
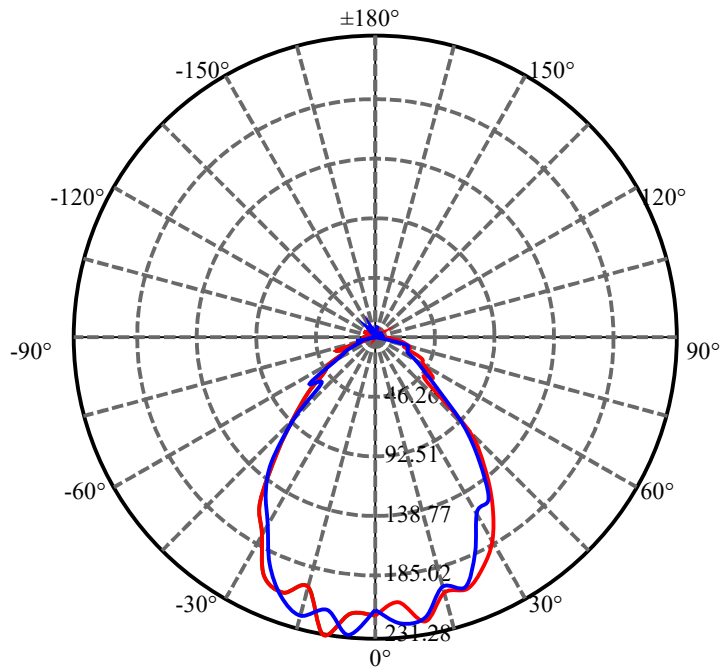
Output flux ratio in π solid angle : 86.118%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	250.591	0.000	0	.000%	.000%
5.0	255.147	5.142	5.142	.000%	1.143%
10.0	255.447	15.535	20.677	.000%	4.595%
15.0	243.607	25.178	45.856	.000%	10.190%
20.0	242.871	34.099	79.955	.000%	17.768%
25.0	223.557	41.607	121.562	.000%	27.014%
30.0	204.434	46.066	167.628	.000%	37.251%
35.0	176.226	47.676	215.304	.000%	47.845%
40.0	147.556	45.945	261.249	.000%	58.056%
45.0	117.630	41.761	303.011	.000%	67.336%
50.0	85.603	34.928	337.938	.000%	75.098%
55.0	65.253	27.898	365.836	.000%	81.297%
60.0	45.093	21.693	387.529	.000%	86.118%
65.0	36.582	16.887	404.417	.000%	89.871%
70.0	25.670	13.406	417.823	.000%	92.850%
75.0	18.332	9.782	427.605	.000%	95.024%
80.0	13.313	7.201	434.807	.000%	96.624%
85.0	3.983	3.997	438.804	.000%	97.512%
90.0	1.991	1.391	440.195	.000%	97.821%
95.0	1.610	0.839	441.034	.000%	98.008%
100.0	2.101	0.857	441.891	.000%	98.198%
105.0	2.073	0.950	442.841	.000%	98.409%
110.0	0.709	0.619	443.459	.000%	98.547%
115.0	1.582	0.493	443.953	.000%	98.656%
120.0	0.982	0.530	444.483	.000%	98.774%
125.0	1.582	0.504	444.987	.000%	98.886%
130.0	3.765	0.989	445.976	.000%	99.106%
135.0	2.292	1.041	447.017	.000%	99.337%
140.0	1.255	0.558	447.575	.000%	99.461%
145.0	2.046	0.468	448.044	.000%	99.566%
150.0	3.083	0.642	448.686	.000%	99.708%
155.0	0.818	0.420	449.106	.000%	99.802%
160.0	2.673	0.311	449.417	.000%	99.871%
165.0	0.982	0.256	449.674	.000%	99.928%
170.0	2.019	0.151	449.825	.000%	99.961%
175.0	2.019	0.123	449.948	.000%	99.989%
180.0	3.001	0.051	449.999	.000%	100.000%

ZONAL LUMEN SUMMARY			
Zone	Lumens	%Lamp	%Fixt
0-30	167.63	N.A.	37.25%
0-40	261.25	N.A.	58.06%
0-60	387.53	N.A.	86.12%
0-90	440.20	N.A.	97.82%
0-120	444.48	N.A.	98.77%
0-180	450.00	N.A.	100.00%
60-90	74.36	N.A.	16.52%
90-120	5.68	N.A.	1.26%
90-130	7.17	N.A.	1.59%
90-150	9.88	N.A.	2.20%
90-180	11.14	N.A.	2.48%
0-53.95	360.00	N.A.	80.00%

ZONAL LUMEN SUMMARY

0-10	20.68
10-20	59.28
20-30	87.67
30-40	93.62
40-50	76.69
50-60	49.59
60-70	30.29
70-80	16.98
80-90	5.39
90-100	1.70
100-110	1.57
110-120	1.02
120-130	1.49
130-140	1.60
140-150	1.11
150-160	0.73
160-170	0.41
170-180	0.12

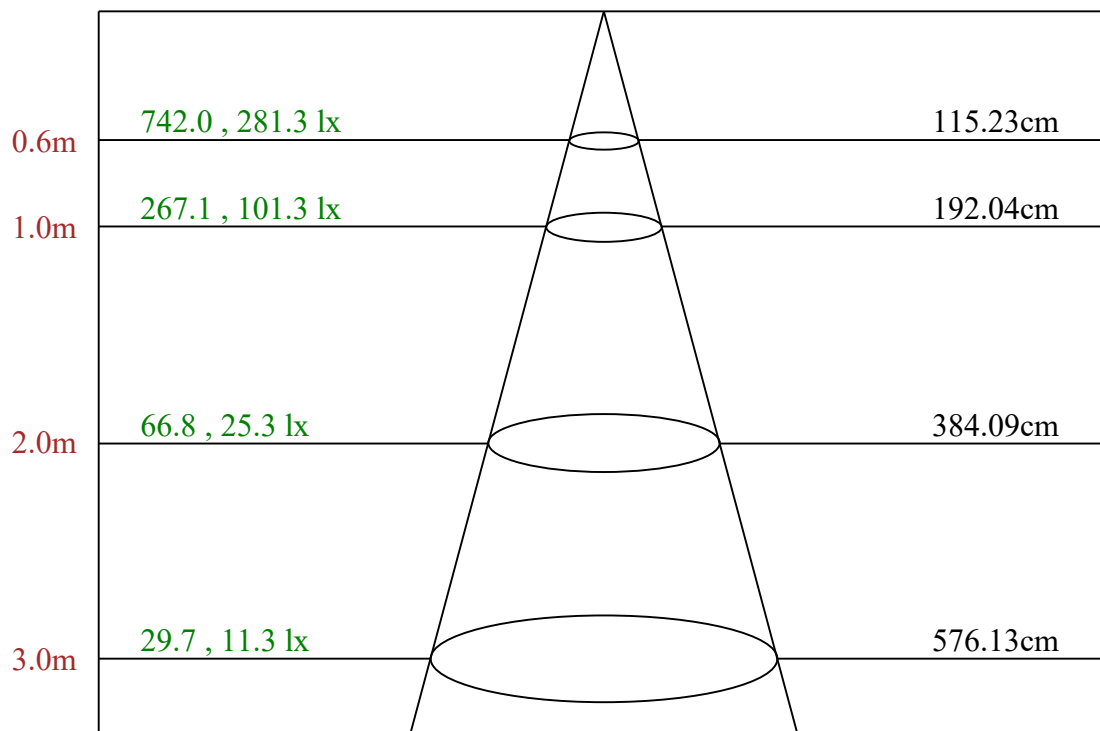
C180(Max): ———C0/C180: ———C90/C270: ———

Field angle(10%Imax):C0/180Left:61.8 Right:88.0

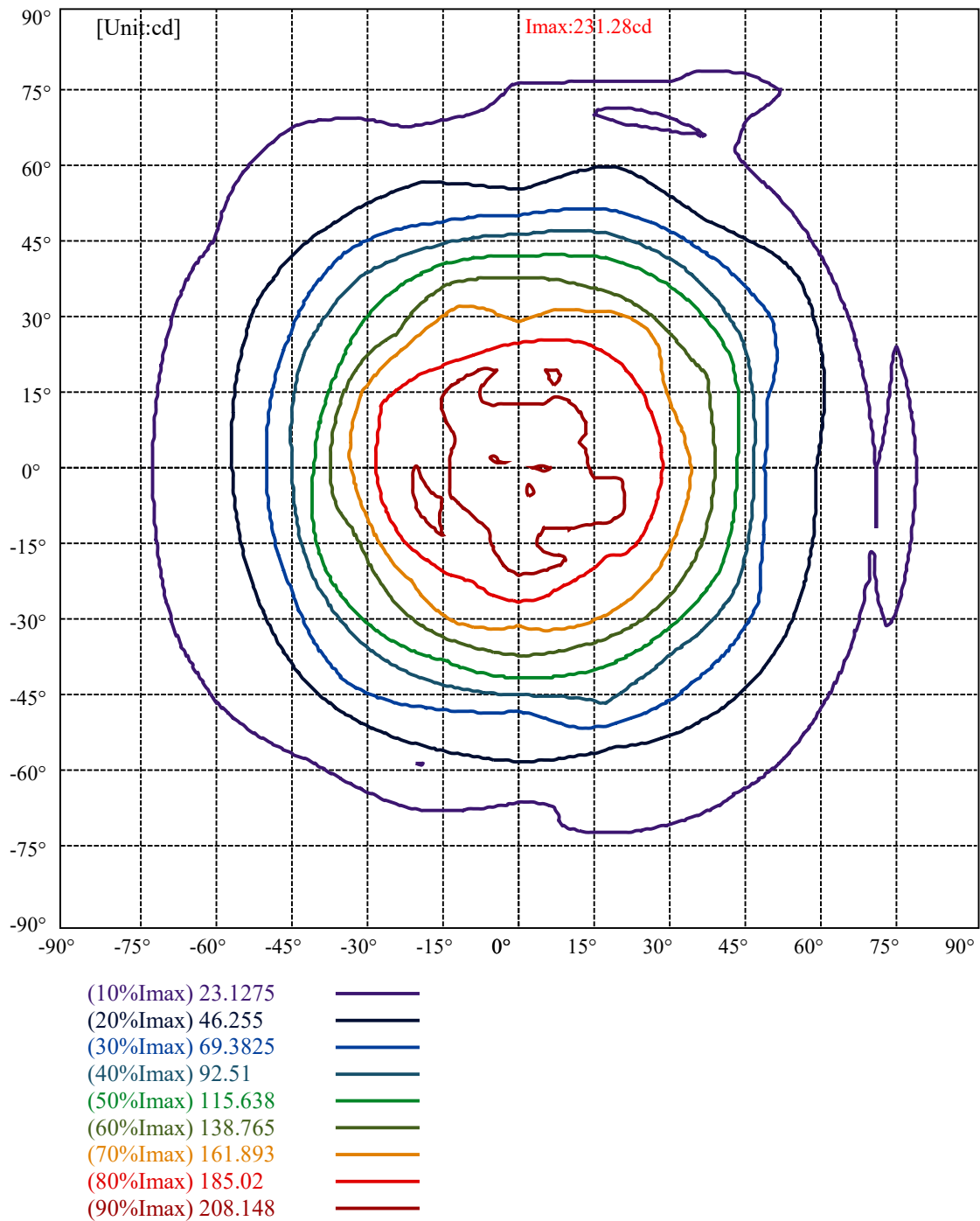
:C90/270Left:60.6 Right:80.4

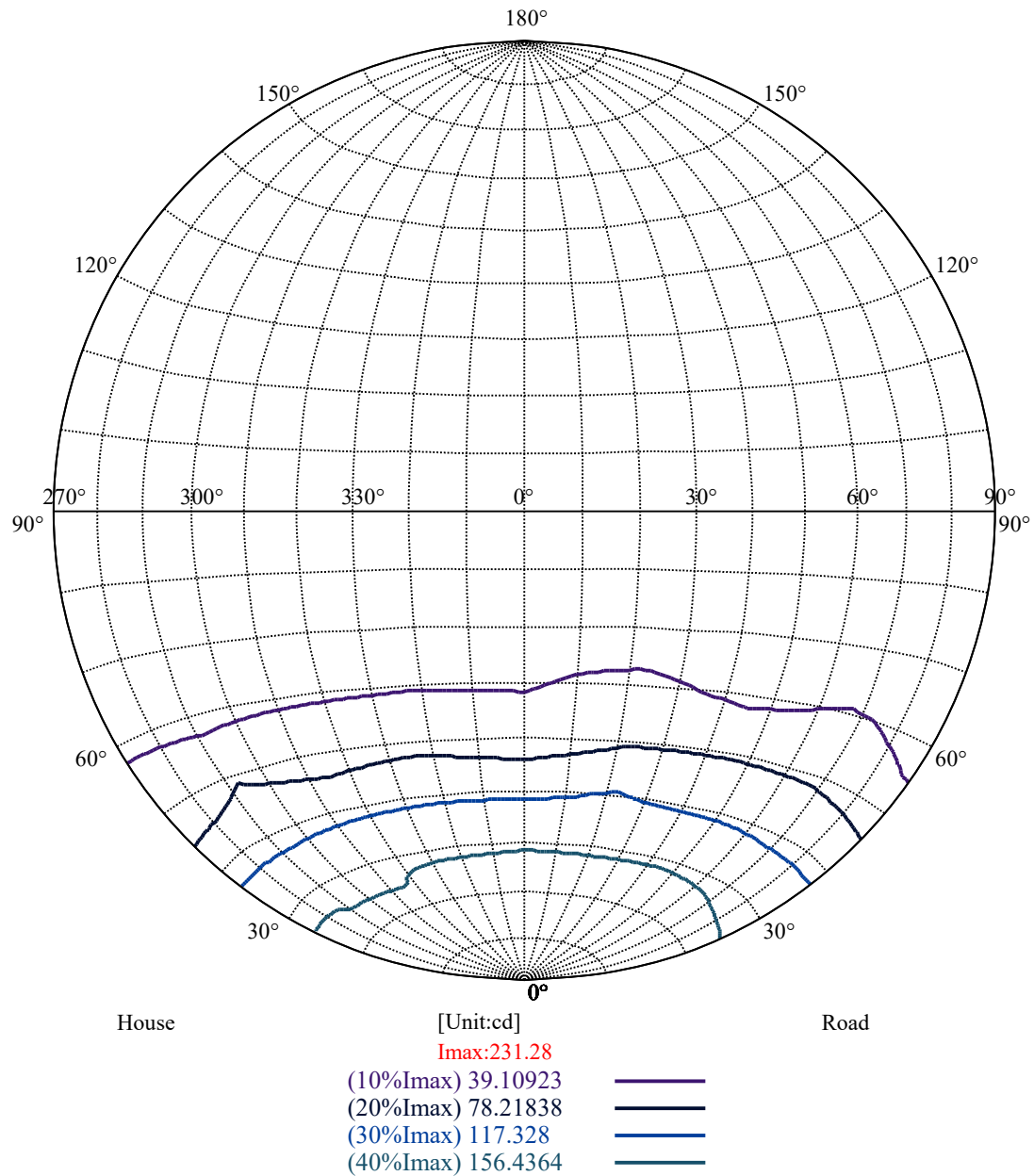
Beam Angle(50%Imax):C0/180Left:30.0 Right:52.7

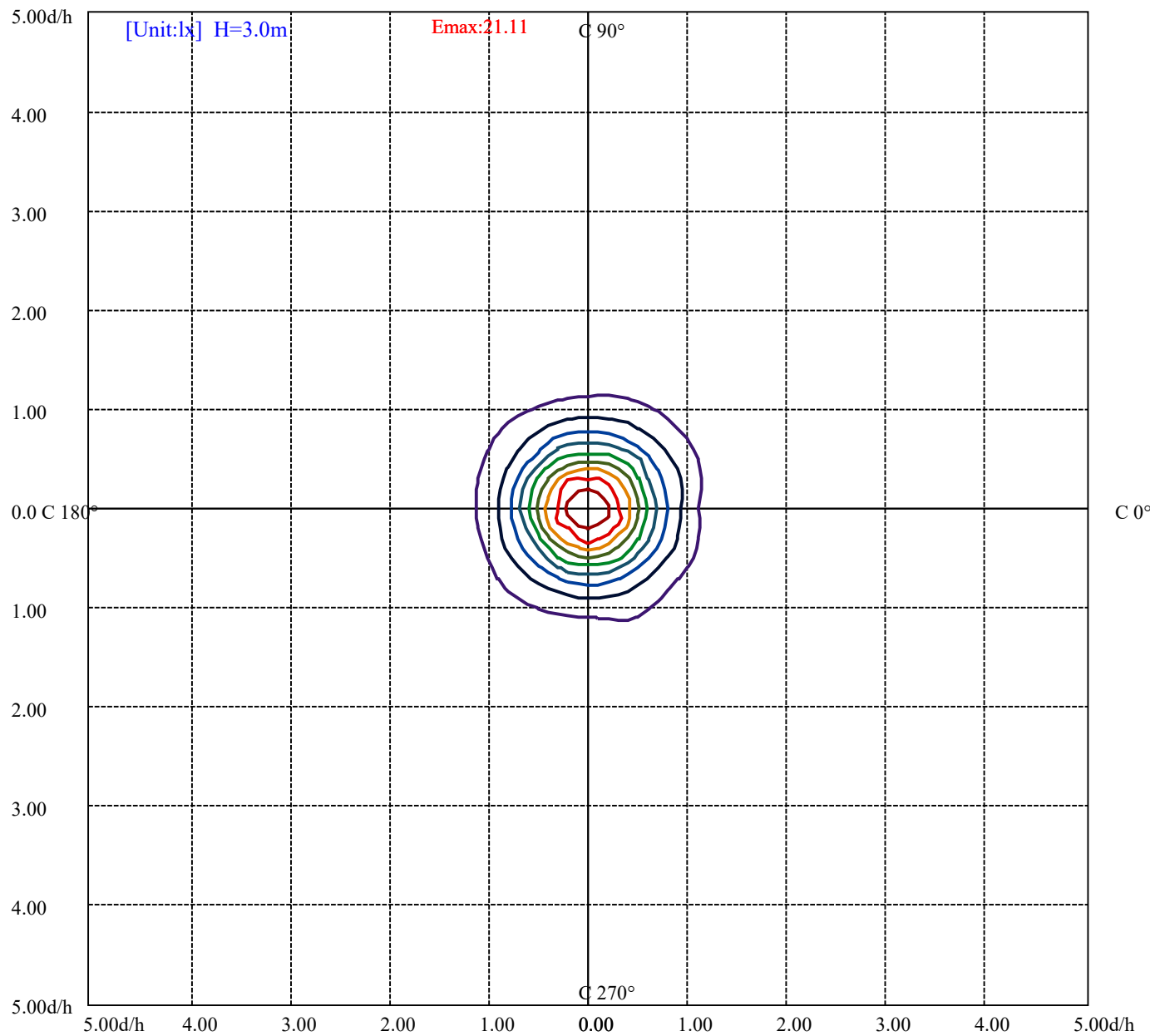
:C90/270Left:36.4 Right:46.6



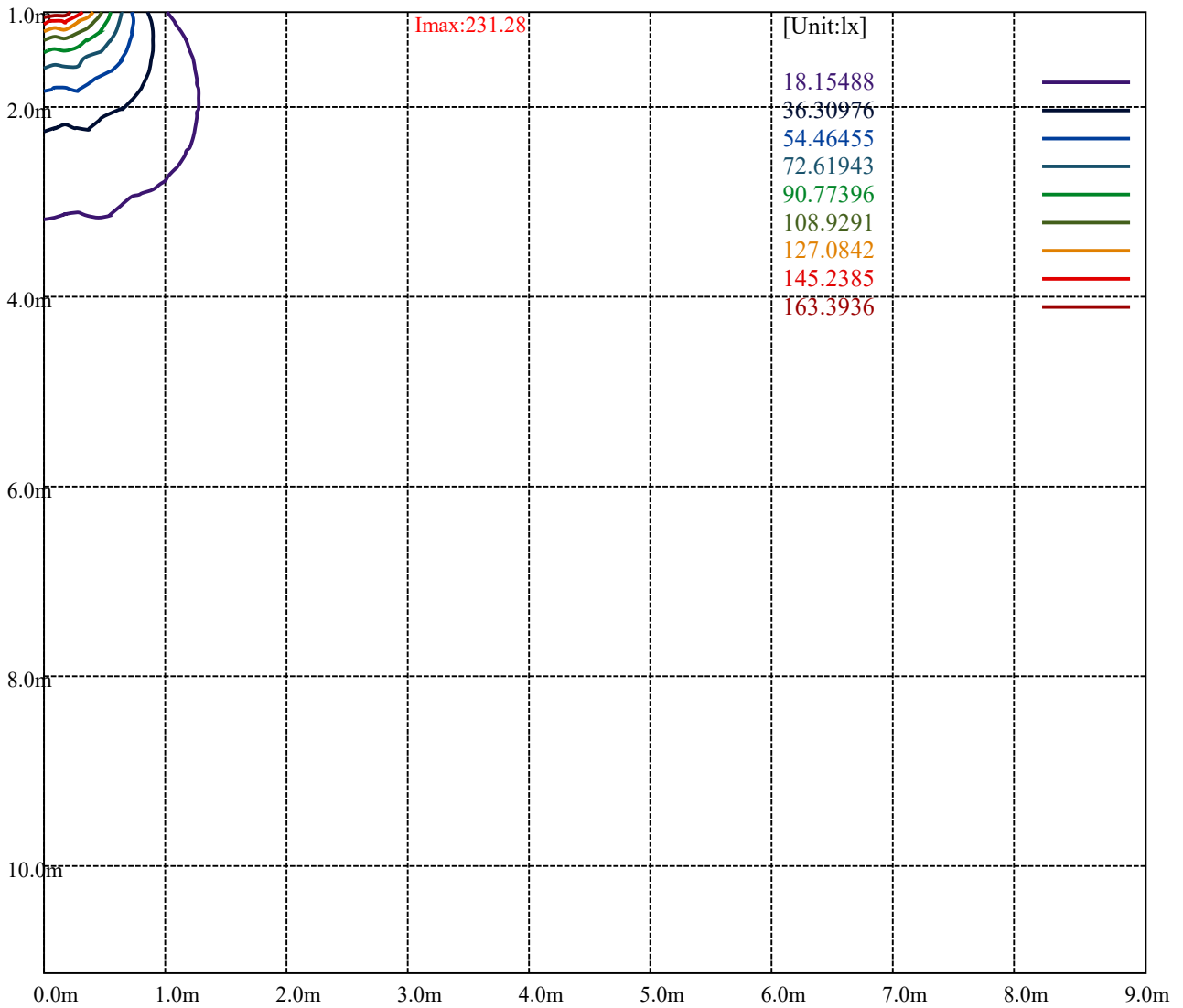
Max , Ave Beam angle of C180 plane 87.67







(10%Emax) 2.110851	—
(20%Emax) 4.221692	—
(30%Emax) 6.332542	—
(40%Emax) 8.443393	—
(50%Emax) 10.55425	—
(60%Emax) 12.66505	—
(70%Emax) 14.77594	—
(80%Emax) 16.88682	—
(90%Emax) 18.99762	—



Luminance Limiting Curve(no luminous side)

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Luminance Table

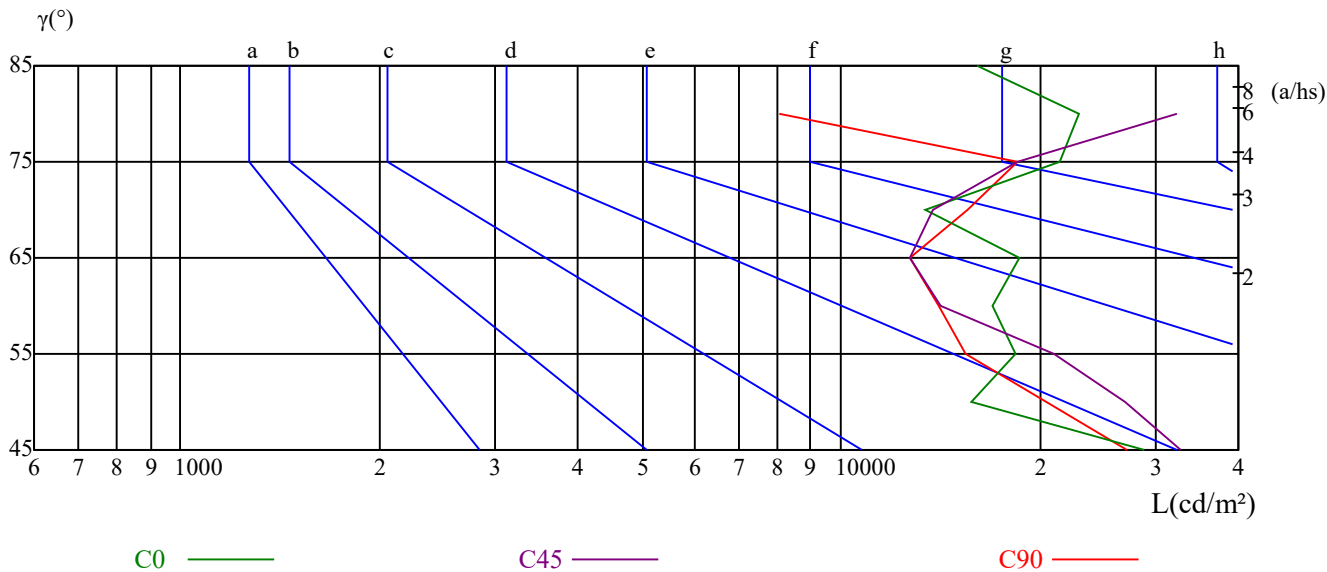
γ	45	50	55	60	65	70	75	80	85
C0	28827	15741	18413	16986	18699	13388	21401	22967	16100
C45	32796	26886	20988	14180	12757	13820	18548	32323	0
C90	27051	20451	15451	14032	12757	15547	18548	8081	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
15204	12145	12801	13982	14410	13055	17371	0	7838

Glare Table

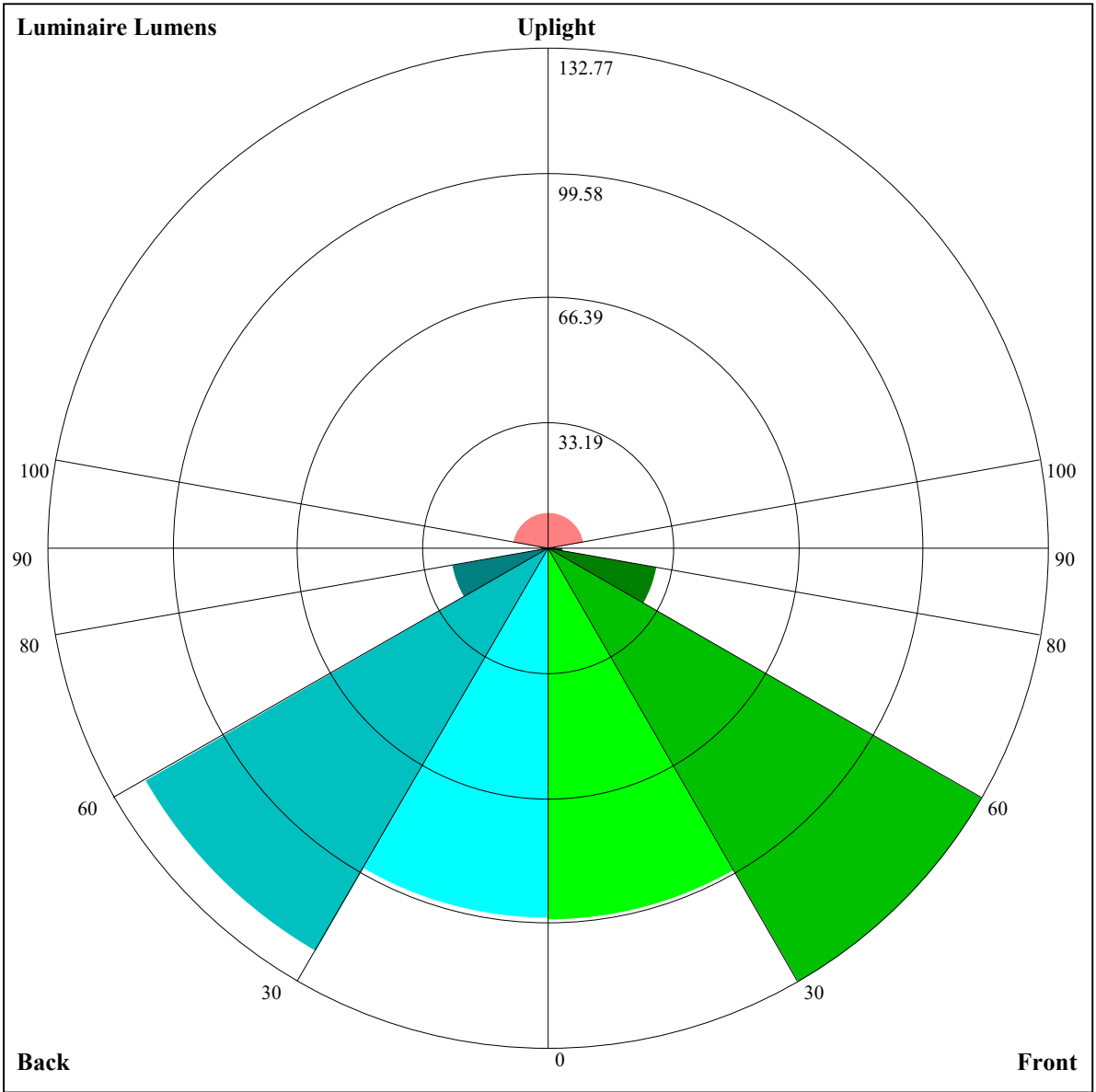
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve



Illumination assessment according UGR											
Rf of Ceiling		70	70	50	50	30	70	70	50	50	30
Rf of Wall		50	30	50	30	30	50	30	50	30	30
Rf of Floor		20	20	20	20	20	20	20	20	20	20
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	19.31	20.72	19.71	21.08	21.45	18.66	20.06	19.05	20.42	20.79
	3H	20.04	21.30	20.46	21.68	22.08	19.55	20.81	19.97	21.20	21.59
	4H	20.56	21.73	20.99	22.13	22.55	20.32	21.50	20.76	21.90	22.32
	6H	21.34	22.43	21.78	22.84	23.29	20.76	21.85	21.20	22.26	22.71
	8H	21.63	22.67	22.08	23.09	23.55	20.77	21.81	21.21	22.23	22.69
	12H	21.77	22.78	22.23	23.21	23.67	20.72	21.72	21.17	22.15	22.61
4H	2H	19.56	20.74	19.99	21.14	21.55	19.00	20.18	19.43	20.58	20.99
	3H	20.32	21.32	20.78	21.75	22.21	20.13	21.12	20.59	21.56	22.02
	4H	20.97	21.84	21.44	22.30	22.79	21.23	22.10	21.70	22.56	23.05
	6H	21.88	22.66	22.38	23.14	23.64	21.86	22.63	22.36	23.12	23.62
	8H	22.30	23.02	22.81	23.51	24.03	21.94	22.66	22.45	23.15	23.67
	12H	22.56	23.23	23.07	23.71	24.27	21.92	22.59	22.44	23.08	23.63
8H	4H	21.41	22.13	21.92	22.62	23.14	21.65	22.38	22.16	22.86	23.38
	6H	22.53	23.13	23.06	23.64	24.19	22.61	23.22	23.14	23.72	24.28
	8H	23.04	23.56	23.59	24.11	24.65	22.82	23.34	23.37	23.89	24.43
	12H	23.36	23.80	23.92	24.35	24.91	22.81	23.25	23.37	23.80	24.36
12H	4H	21.53	22.20	22.04	22.68	23.24	21.73	22.41	22.25	22.89	23.45
	6H	22.77	23.30	23.32	23.85	24.39	22.83	23.36	23.39	23.91	24.45
	8H	23.26	23.70	23.82	24.25	24.81	23.03	23.47	23.59	24.02	24.58
Variation with the observer position at spacings:											
S = 1.0H		0.6/-0.9					0.4/-1.1				
S = 1.5H		0.7/-0.9					0.9/-1.1				
S = 2.0H		1.4/-1.2					1.3/-1.7				
Standard tables:		BK4					BK3				
Uncorrected UGR		7.3					7.6				

UGR calculation is based on CIE Publ. 117 ,S/H = 0.25



Luminaire Lumens:

FL=98.57,FM=132.77,FH=29.14,FVH=3.82

BL=98.1,BM=123.52,BH=25.84,BVH=2.23

UL=1.99,UH=9.53

BUG Rating:B0-U1-G0

Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	213.46	203.43	221.62	203.43	205.66	194.90	179.68	156.29	130.67
22.5	214.57	229.05	210.12	206.77	201.21	199.35	175.22	142.18	140.70
45.0	211.97	221.62	215.68	213.09	194.90	200.09	176.71	176.33	126.22
67.5	214.57	208.26	211.97	206.77	210.12	190.81	174.48	152.20	126.59
90.0	209.74	220.51	219.03	197.87	204.55	182.27	155.17	151.46	123.25
112.5	216.06	227.93	217.17	203.06	211.97	175.22	174.48	156.29	128.45
135.0	215.68	229.79	214.20	218.65	210.86	186.73	176.33	137.35	121.02
157.5	209.00	204.18	216.80	203.80	199.35	192.67	184.13	154.80	112.48
180.0	213.46	212.71	231.28	198.61	208.63	201.58	173.36	154.06	115.82
202.5	214.57	210.49	218.28	207.15	212.71	196.75	167.42	131.79	134.76
225.0	211.97	224.59	223.48	198.24	207.52	185.24	162.60	139.58	125.10
247.5	214.57	218.65	210.86	207.89	198.98	181.90	180.05	144.41	115.82
270.0	209.74	229.05	212.71	220.88	211.97	191.18	165.57	146.26	124.73
292.5	216.06	201.95	219.77	200.09	212.34	182.64	183.76	146.64	124.36
315.0	215.68	213.83	220.14	211.60	198.24	181.90	181.16	152.20	127.70
337.5	209.00	216.06	213.09	217.17	216.06	198.98	171.88	156.29	130.30
360.0	213.46	203.43	221.62	203.43	205.66	194.90	179.68	156.29	130.67
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	102.46	50.86	53.09	42.69	39.72	23.02	27.84	20.05	7.05
22.5	122.13	86.50	71.28	57.17	37.87	6.68	12.99	13.36	7.05
45.0	116.57	86.87	60.51	35.64	27.10	23.76	24.13	28.21	0.00
67.5	111.74	82.78	58.28	49.75	29.70	21.16	26.36	17.08	0.74
90.0	96.15	66.08	44.55	35.27	27.10	26.73	24.13	7.05	0.00
112.5	96.89	69.05	51.60	42.32	37.12	16.71	8.17	9.28	0.00
135.0	99.86	83.16	50.49	41.21	29.33	41.95	15.59	8.54	0.00
157.5	102.09	70.53	49.75	44.18	31.18	20.79	8.91	14.11	0.00
180.0	88.72	66.82	47.89	40.84	24.87	31.18	8.54	7.42	8.17
202.5	88.72	66.08	48.63	25.99	40.84	20.05	19.68	7.05	0.00
225.0	91.32	78.33	53.46	28.59	27.84	0.37	12.99	6.68	0.37
247.5	89.84	66.82	57.17	22.27	40.09	15.59	7.80	9.65	7.42
270.0	87.98	54.20	62.00	30.81	24.50	10.39	13.36	13.36	0.00
292.5	100.23	89.47	51.23	37.87	23.02	43.43	7.05	2.97	0.00
315.0	96.52	71.28	66.45	36.38	24.50	25.24	15.22	0.00	13.36
337.5	109.51	76.10	61.62	42.69	33.04	22.27	16.71	16.33	10.02
360.0	102.46	50.86	53.09	42.69	39.72	23.02	27.84	20.05	7.05
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.83
22.5	1.11	1.49	0.00	0.00	0.00	0.00	2.60	0.00	12.99
45.0	3.71	0.00	0.00	0.00	0.00	1.86	0.00	0.00	0.00
67.5	5.57	0.00	12.62	0.00	0.00	0.00	7.42	0.00	8.17
90.0	3.34	5.20	5.20	0.00	7.05	0.00	0.00	5.94	0.00
112.5	0.00	0.00	0.00	3.71	0.00	0.00	0.00	2.23	0.00
135.0	0.00	0.00	0.00	0.00	0.00	4.08	0.37	6.31	8.17
157.5	0.00	10.02	0.00	8.17	1.11	0.00	0.00	0.00	10.77
180.0	4.08	0.00	0.00	0.00	0.00	10.02	0.00	0.00	0.00
202.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.0	2.97	0.00	0.00	0.37	0.00	4.83	0.00	0.00	0.00
247.5	0.00	0.00	5.57	4.08	1.49	0.00	0.00	0.00	1.86
270.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
292.5	6.31	5.20	5.20	1.11	0.00	0.00	0.00	0.00	0.00
315.0	0.00	0.00	0.00	0.00	0.00	0.74	0.00	7.05	0.00
337.5	0.00	0.00	0.00	10.77	0.00	0.00	2.97	0.00	4.46
360.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.83

0017440218 RIO 4.5W 3000K 450lm

Intensity data(cd)

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C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	2.97	0.00	0.00	0.00	0.00	8.54	0.00	0.00	4.46
22.5	1.86	0.00	0.00	0.00	5.57	1.86	0.00	0.00	0.00
45.0	0.74	6.68	0.37	0.37	0.00	3.71	1.86	8.91	2.97
67.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.31
90.0	0.00	0.00	0.00	0.00	5.57	0.00	0.00	9.65	1.49
112.5	0.00	0.00	7.80	0.00	0.00	0.00	0.00	0.00	1.11
135.0	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157.5	3.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180.0	0.00	0.00	2.23	6.31	0.00	0.00	0.00	2.23	0.00
202.5	0.00	0.00	0.00	3.71	0.00	0.74	0.00	0.00	0.74
225.0	14.11	0.00	0.00	0.00	0.00	0.74	0.00	2.97	0.74
247.5	6.68	0.00	0.00	9.65	0.00	7.05	3.34	2.97	0.00
270.0	0.00	9.28	5.20	0.00	0.00	7.80	4.08	0.00	0.00
292.5	0.00	0.00	4.46	10.39	0.00	0.00	0.00	0.00	4.46
315.0	0.74	1.11	7.80	5.94	0.00	0.00	4.08	0.74	5.20
337.5	0.00	0.00	0.00	5.57	0.00	5.94	0.00	0.00	0.00
360.0	2.97	0.00	0.00	0.00	0.00	8.54	0.00	0.00	4.46

C/γ(°)	180.0
0.0	0.00
22.5	0.00
45.0	0.00
67.5	0.00
90.0	0.00
112.5	13.74
135.0	5.57
157.5	1.11
180.0	0.00
202.5	0.00
225.0	0.00
247.5	0.00
270.0	0.00
292.5	13.74
315.0	5.57
337.5	1.11
360.0	0.00