



SGSO

Address: LIT by CARDI

Client:

LumCAT: 0017440222 RIO 20W 4000K 2000lm

Luminaire:

Report No:

Voltage(V): 230.3300

Test No: KYZ-A250922053-01-002

Current(A): 0.0934

LampCAT: LED

Power (W): 20.0000

Lamp flux(lm): -1.0

PF: 0.9294

Number of Lamps: 1

Ballast type:

Length(mm): -249

Width(mm): -249

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 2000.00

Efficiency(%): 100.00%

Lumens(lm)/Power(W): 100.00

Central intensity(cd): 1032.540

Maximum intensity(cd): 1032.540

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=83.8

[C90/270]Total=84.6

Field angle(10%Imax): [C0/180]Total=143.6

[C90/270]Total=144.6

Maximum s/h(1/2): C0_180=1.08 C90_270=1.12

Maximum s/h(1/4): C0_180=1.14 C90_270=1.19

Up flux rate of lamp(%): 0.39%

Down flux rate of lamp(%): 99.61%

Up flux rate of LUM(%): 0.39%

Down flux rate of LUM(%): 99.61%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 86.976%

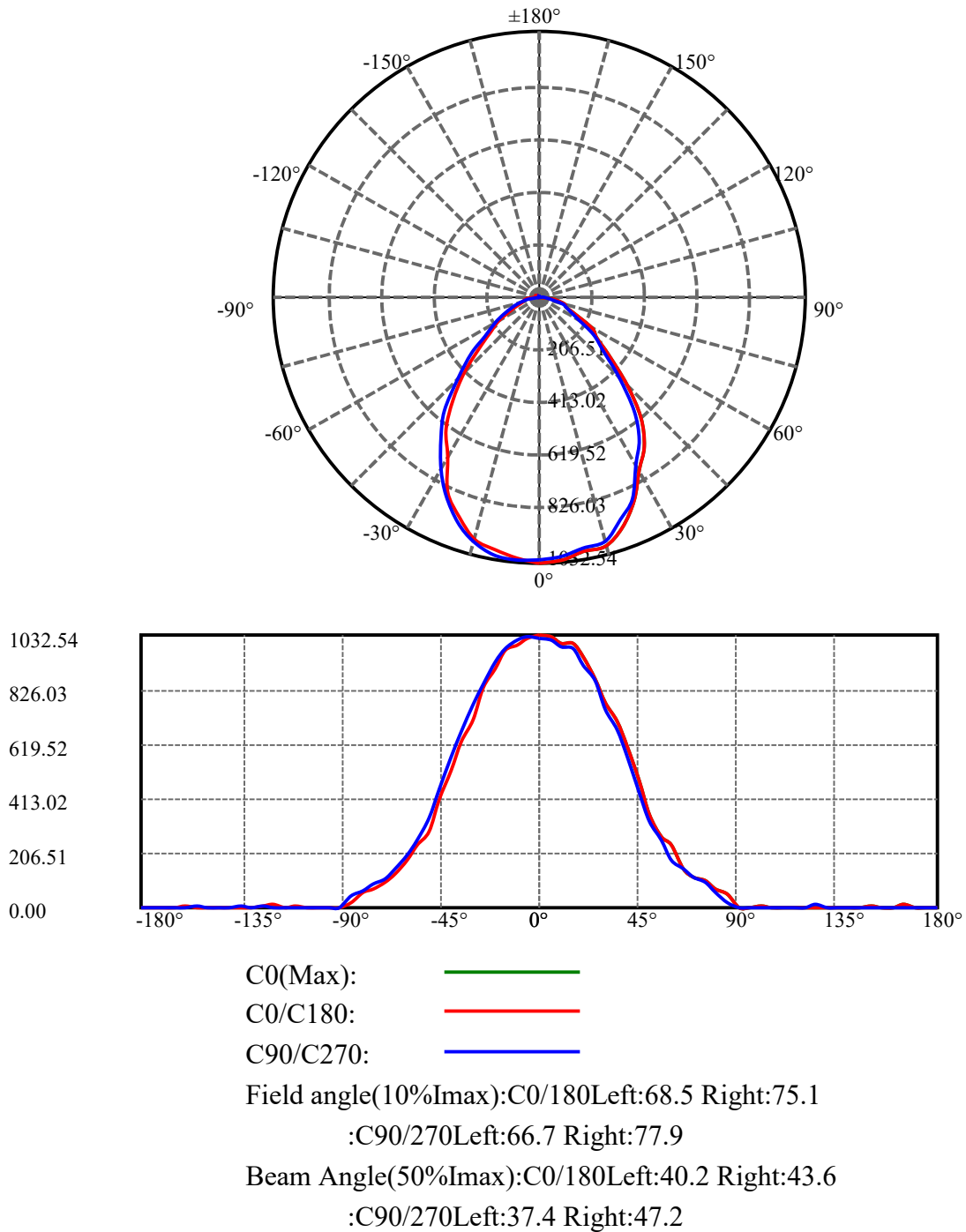
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1149.360	0.000	0	.000%	.000%
5.0	1148.539	24.406	24.406	.000%	1.220%
10.0	1129.650	72.407	96.814	.000%	4.841%
15.0	1100.893	117.555	214.369	.000%	10.718%
20.0	1046.429	157.229	371.598	.000%	18.580%
25.0	957.313	186.714	558.312	.000%	27.916%
30.0	853.049	203.547	761.859	.000%	38.093%
35.0	748.785	209.570	971.429	.000%	48.572%
40.0	636.859	205.397	1176.826	.000%	58.841%
45.0	498.046	186.697	1363.523	.000%	68.176%
50.0	364.845	154.911	1518.433	.000%	75.922%
55.0	272.705	123.162	1641.595	.000%	82.080%
60.0	204.067	97.912	1739.507	.000%	86.976%
65.0	155.908	77.749	1817.256	.000%	90.863%
70.0	117.976	61.614	1878.87	.000%	93.944%
75.0	91.397	48.622	1927.492	.000%	96.375%
80.0	60.359	36.076	1963.569	.000%	98.179%
85.0	27.835	21.291	1984.86	.000%	99.243%
90.0	2.537	7.388	1992.248	.000%	99.613%
95.0	0.051	0.630	1992.878	.000%	99.644%
100.0	0.871	0.223	1993.101	.000%	99.655%
105.0	1.538	0.573	1993.673	.000%	99.684%
110.0	1.256	0.649	1994.322	.000%	99.716%
115.0	2.102	0.755	1995.077	.000%	99.754%
120.0	1.102	0.692	1995.769	.000%	99.789%
125.0	2.717	0.784	1996.554	.000%	99.828%
130.0	0.948	0.708	1997.262	.000%	99.863%
135.0	2.332	0.589	1997.851	.000%	99.893%
140.0	0.769	0.510	1998.361	.000%	99.918%
145.0	0.974	0.258	1998.619	.000%	99.931%
150.0	1.435	0.315	1998.934	.000%	99.947%
155.0	1.410	0.320	1999.254	.000%	99.963%
160.0	0.641	0.191	1999.445	.000%	99.972%
165.0	1.692	0.171	1999.616	.000%	99.981%
170.0	1.205	0.153	1999.769	.000%	99.989%
175.0	3.588	0.152	1999.921	.000%	99.996%
180.0	3.435	0.075	1999.995	.000%	100.000%

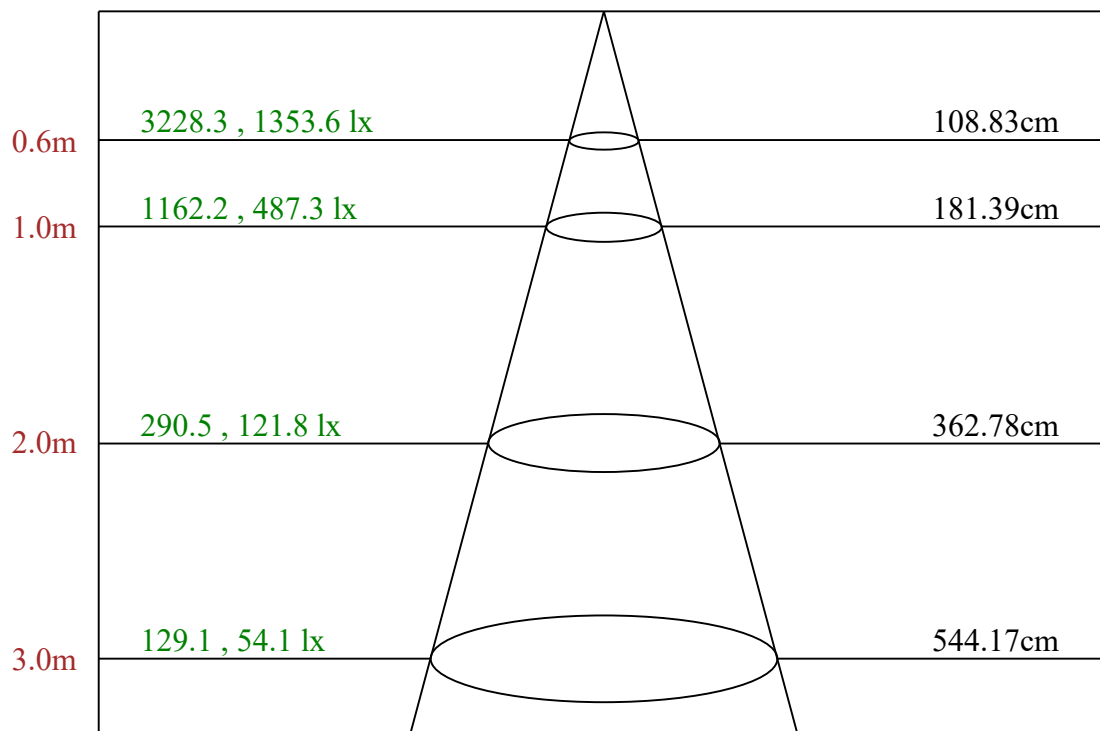
ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	761.86	N.A.	38.09%
0-40	1176.83	N.A.	58.84%
0-60	1739.51	N.A.	86.98%
0-90	1992.25	N.A.	99.61%
0-120	1995.77	N.A.	99.79%
0-180	2000.00	N.A.	100.00%
60-90	350.65	N.A.	17.53%
90-120	10.91	N.A.	0.55%
90-130	12.40	N.A.	0.62%
90-150	14.07	N.A.	0.70%
90-180	15.06	N.A.	0.75%
0-53.31	1600.00	N.A.	80.00%

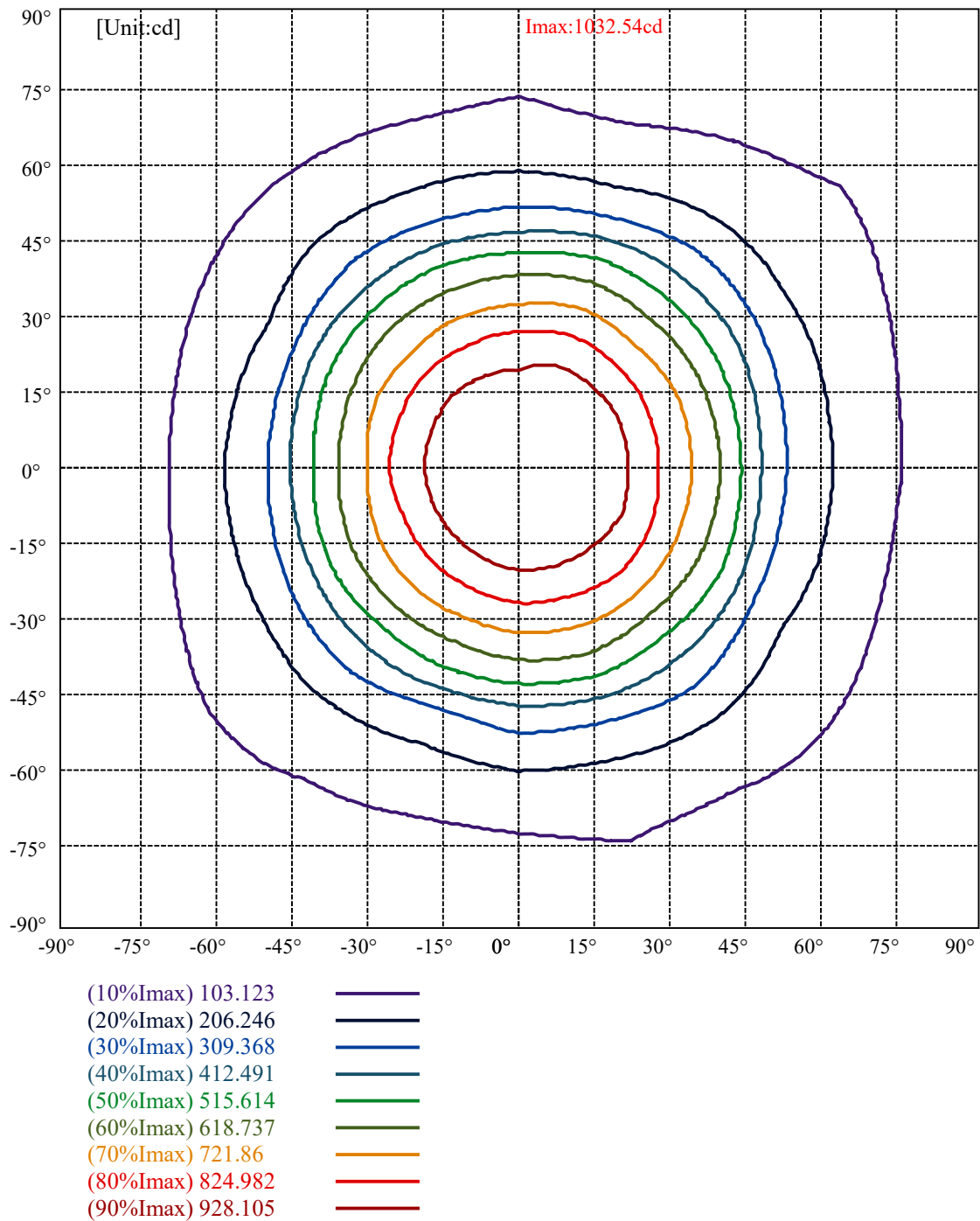
ZONAL LUMEN SUMMARY

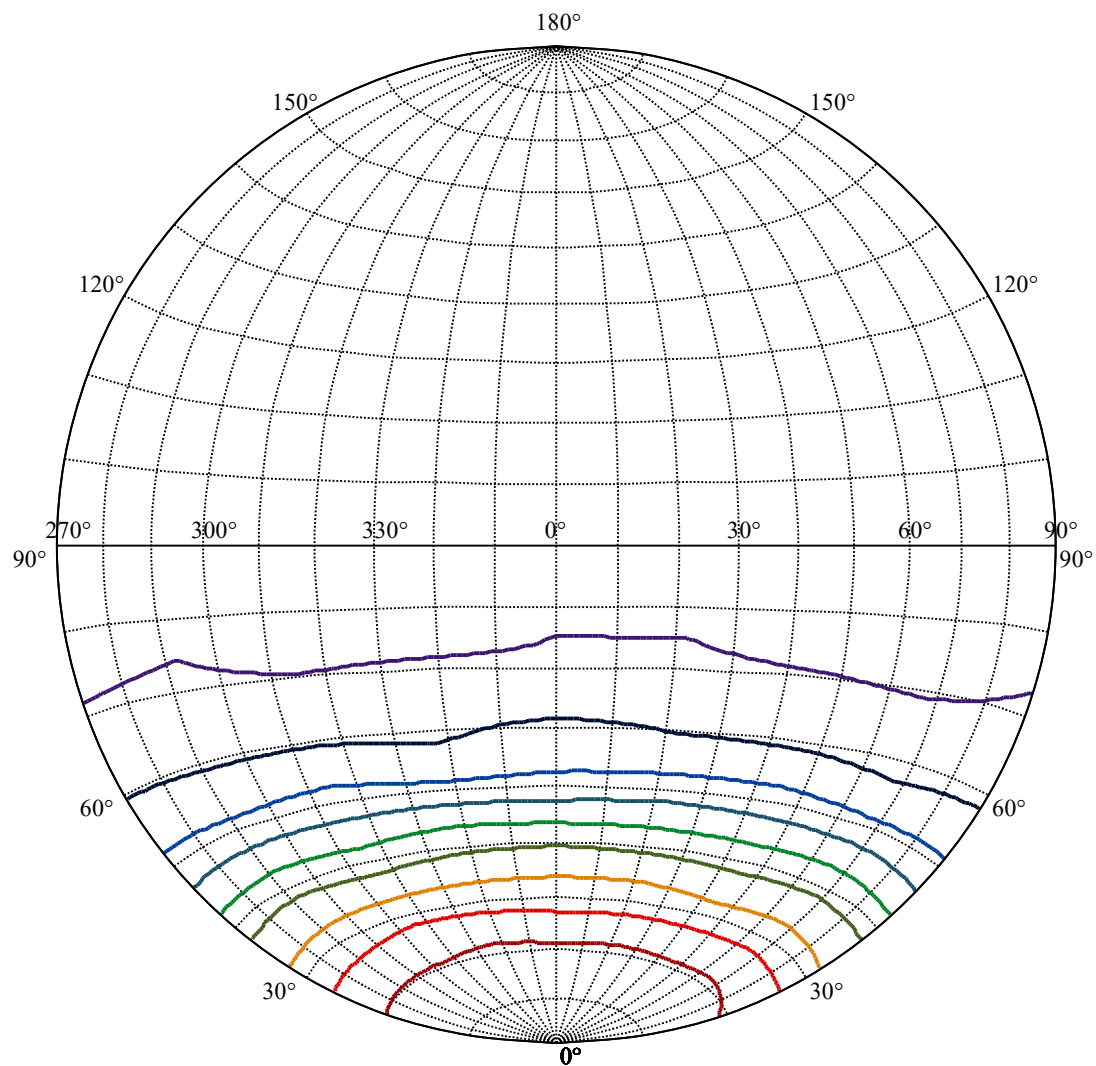
0-10	96.81
10-20	274.78
20-30	390.26
30-40	414.97
40-50	341.61
50-60	221.07
60-70	139.36
70-80	84.70
80-90	28.68
90-100	0.85
100-110	1.22
110-120	1.45
120-130	1.49
130-140	1.10
140-150	0.57
150-160	0.51
160-170	0.32
170-180	0.15





Max , Ave Beam angle of C0 plane 84.41





[Unit:cd]

Imax:1032.54

(10%Imax) 91.73649

(20%Imax) 183.473

(30%Imax) 275.2094

(40%Imax) 366.946

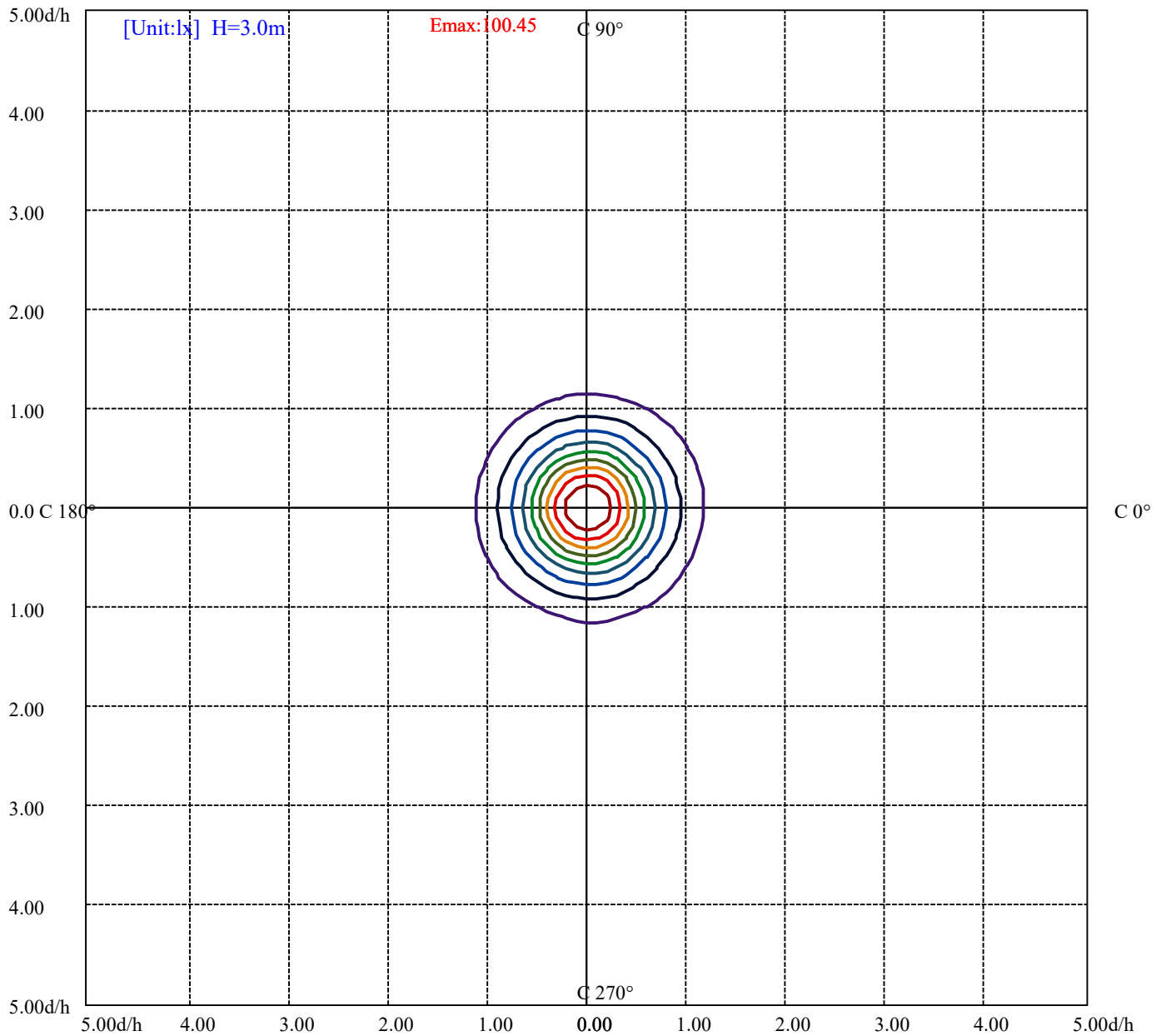
(50%Imax) 458.6825

(60%Imax) 550.4189

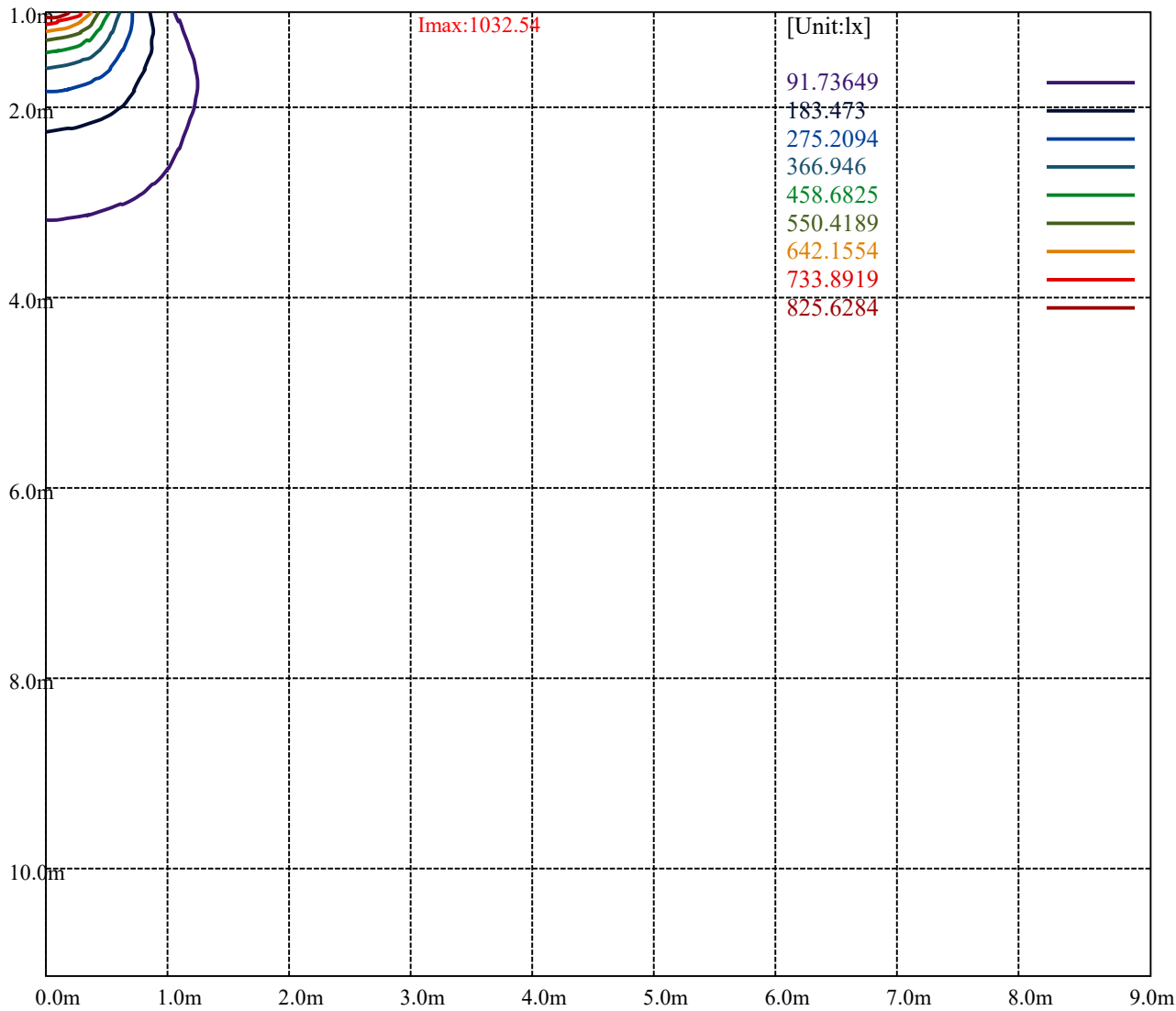
(70%Imax) 642.1554

(80%Imax) 733.8919

(90%Imax) 825.6284



(10%Emax)	10.04546	—
(20%Emax)	20.09092	—
(30%Emax)	30.13638	—
(40%Emax)	40.18184	—
(50%Emax)	50.22739	—
(60%Emax)	60.27285	—
(70%Emax)	70.31831	—
(80%Emax)	80.36378	—
(90%Emax)	90.40923	—



Luminance Table

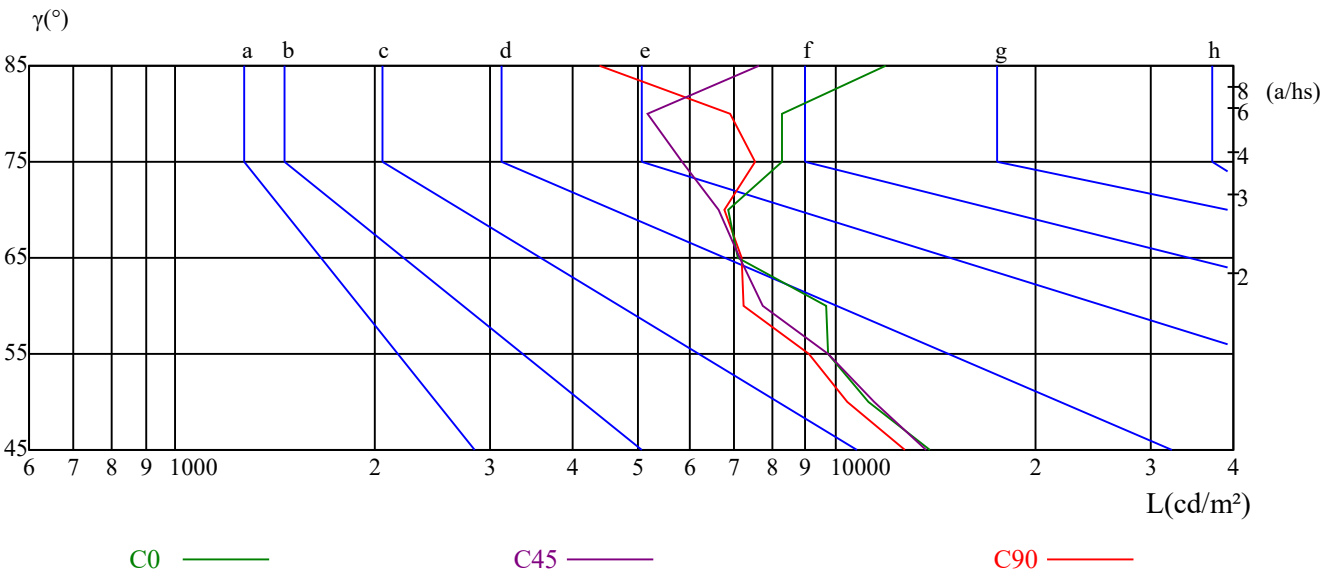
γ	45	50	55	60	65	70	75	80	85
C0	13914	11174	9731	9652	7117	6891	8268	8316	11933
C45	13703	11407	9705	7751	7152	6628	5839	5170	7640
C90	12719	10406	9092	7273	7188	6782	7545	6894	4378

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6630	7232	6196	6837	7372	5861	8499	7211	3670

Glare Table

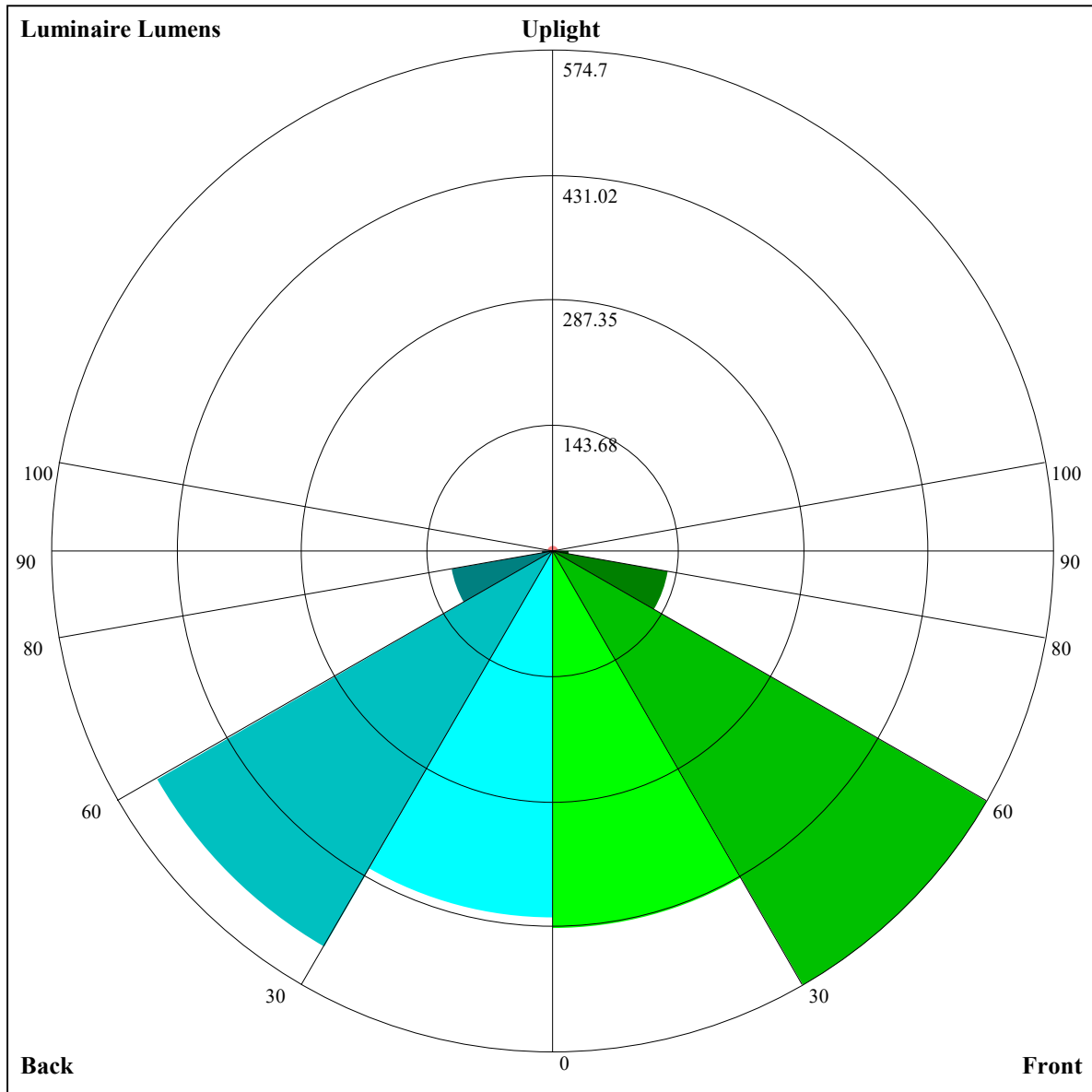
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	16.13	17.57	16.49	17.89	18.22	15.54	16.99	15.91	17.31	17.64
	3H	17.16	18.46	17.55	18.81	19.16	16.55	17.85	16.94	18.19	18.55
	4H	17.78	18.99	18.18	19.35	19.73	17.09	18.31	17.49	18.67	19.04
	6H	18.38	19.51	18.80	19.89	20.29	17.60	18.72	18.01	19.10	19.50
	8H	18.64	19.73	19.06	20.11	20.52	17.74	18.82	18.16	19.21	19.62
	12H	18.93	19.97	19.36	20.36	20.78	17.79	18.83	18.22	19.23	19.65
4H	2H	16.47	17.69	16.87	18.05	18.42	15.98	17.20	16.38	17.56	17.93
	3H	17.73	18.75	18.15	19.15	19.57	17.13	18.15	17.55	18.55	18.97
	4H	18.58	19.48	19.02	19.91	20.35	17.82	18.72	18.26	19.15	19.60
	6H	19.31	20.12	19.78	20.57	21.02	18.41	19.21	18.88	19.66	20.12
	8H	19.68	20.43	20.16	20.89	21.36	18.64	19.39	19.12	19.84	20.32
	12H	20.09	20.79	20.57	21.24	21.75	18.76	19.46	19.25	19.91	20.42
8H	4H	18.71	19.46	19.19	19.92	20.39	18.01	18.77	18.50	19.22	19.69
	6H	19.59	20.22	20.09	20.69	21.20	18.71	19.34	19.21	19.82	20.33
	8H	20.13	20.68	20.65	21.20	21.69	19.07	19.62	19.59	20.14	20.64
	12H	20.69	21.15	21.22	21.67	22.19	19.28	19.74	19.81	20.25	20.77
12H	4H	18.72	19.41	19.20	19.86	20.38	18.05	18.75	18.54	19.20	19.71
	6H	19.66	20.21	20.19	20.73	21.23	18.82	19.37	19.35	19.89	20.39
	8H	20.21	20.67	20.75	21.19	21.71	19.18	19.64	19.72	20.16	20.68
Variation with the observer position at spacings:											
S = 1.0H		0.2/-0.7					0.3/-0.7				
S = 1.5H		0.9/-1.1					0.6/-0.8				
S = 2.0H		1.6/-1.2					1.1/-1.2				
Standard tables:		BK3					BKBF				
Uncorrected UGR		4.1					8.4				

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



Luminaire Lumens:

FL=434.21,FM=574.7,FH=135.8,FVH=19.46

BL=422.11,BM=525.69,BH=118.41,BVH=13.35

UL=0.96,UH=7.75

BUG Rating:B1-U1-G1

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	1032.54	1025.98	1002.30	998.29	950.56	868.95	778.23	707.55	610.63
22.5	1011.04	1030.72	1017.60	995.01	959.67	867.86	784.79	702.08	596.06
45.0	1017.60	1019.79	1016.51	982.99	944.37	877.33	766.57	676.22	582.94
67.5	1016.87	1024.16	1008.86	986.63	950.56	869.68	788.80	687.14	593.87
90.0	1022.34	1011.04	989.55	983.35	917.41	862.39	751.27	675.12	571.65
112.5	1025.98	1026.71	1008.13	968.42	919.23	839.80	749.08	652.17	565.82
135.0	1019.79	1012.86	996.11	962.59	919.96	837.98	727.22	645.61	545.05
157.5	1023.07	1022.70	999.02	962.59	913.04	828.14	736.33	631.40	539.22
180.0	1032.54	1016.51	991.73	973.52	907.21	833.25	714.11	625.94	519.91
202.5	1011.04	1006.31	992.46	965.86	905.75	813.21	728.68	633.95	539.59
225.0	1017.60	1014.32	997.93	967.69	905.38	817.21	733.42	633.22	517.73
247.5	1016.87	1014.32	1005.21	965.50	917.41	829.24	742.89	635.77	545.78
270.0	1022.34	1025.98	1012.14	981.90	927.97	849.28	766.94	669.29	572.74
292.5	1025.98	1023.43	1005.58	978.25	935.63	861.30	769.49	691.15	585.86
315.0	1019.79	1023.43	998.66	984.08	941.45	867.49	802.28	679.86	568.01
337.5	1023.07	1028.53	1016.51	992.83	959.67	885.35	786.25	697.71	598.25
360.0	1032.54	1025.98	1002.30	998.29	950.56	868.95	778.23	707.55	610.63
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	479.11	349.77	271.80	235.00	146.46	114.77	104.20	70.32	50.64
22.5	479.11	371.63	260.14	201.48	161.04	119.14	103.47	65.95	42.99
45.0	471.82	357.05	271.07	188.73	147.19	110.39	73.60	43.72	32.43
67.5	473.64	338.47	230.99	171.24	138.45	94.00	74.69	50.64	25.50
90.0	437.94	325.72	253.95	177.07	147.92	112.95	95.09	58.29	18.58
112.5	427.73	313.33	221.88	183.26	135.53	99.47	79.06	46.27	16.76
135.0	409.15	310.05	234.63	149.74	119.50	91.81	81.98	33.88	11.29
157.5	411.70	273.62	202.21	162.13	122.78	82.71	52.83	34.61	15.30
180.0	408.06	290.01	236.09	180.71	126.43	93.64	68.13	55.74	21.50
202.5	394.94	298.76	217.87	164.32	118.77	107.48	77.97	49.55	24.78
225.0	407.70	308.23	227.71	149.74	112.22	100.19	65.58	37.16	5.46
247.5	418.26	279.08	220.43	164.32	139.91	100.19	79.06	48.82	11.29
270.0	446.32	341.75	259.41	199.29	149.74	108.94	90.72	62.67	42.63
292.5	466.72	338.84	255.77	194.19	159.94	115.13	101.65	61.57	33.16
315.0	460.16	351.59	277.26	194.19	131.16	106.39	74.33	71.41	13.12
337.5	487.49	338.47	235.36	185.45	159.22	119.87	76.88	67.40	30.24
360.0	479.11	349.77	271.80	235.00	146.46	114.77	104.20	70.32	50.64
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	9.47	0.00	0.00	1.46	1.09	0.00	0.00
22.5	0.00	0.00	0.00	0.00	0.00	5.83	0.00	3.28	0.00
45.0	8.38	0.00	0.00	0.00	0.00	0.00	0.00	1.09	5.83
67.5	0.36	0.00	0.00	0.00	0.00	0.73	0.00	0.00	2.92
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.93	0.00
112.5	0.00	0.00	1.09	0.00	0.36	1.82	0.00	8.74	0.00
135.0	0.00	0.00	0.00	4.74	2.55	0.00	0.00	2.92	0.36
157.5	6.92	0.00	0.00	1.82	0.00	0.00	0.00	0.00	0.00
180.0	0.00	0.00	0.00	0.00	4.37	0.00	12.39	6.19	0.00
202.5	9.84	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.0	6.19	0.00	0.00	0.00	0.00	1.09	0.00	0.00	1.46
247.5	0.00	0.00	0.00	2.19	10.57	8.74	2.19	0.00	0.00
270.0	0.00	0.00	0.00	0.00	0.00	0.73	0.00	5.46	0.00
292.5	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	2.92
315.0	0.00	0.00	1.82	10.20	0.00	0.00	0.00	0.00	0.00
337.5	4.37	0.00	0.00	1.82	0.00	9.47	0.00	0.00	0.00
360.0	0.00	0.00	9.47	0.00	0.00	1.46	1.09	0.00	0.00

Intensity data(cd)

Appendix Page: 14 Total:14

C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	0.00	0.36	0.00	5.10	0.00	0.00	9.84	0.00	0.00
22.5	0.00	4.74	0.00	0.00	2.55	0.00	0.00	7.65	0.00
45.0	0.00	5.83	0.00	1.09	3.64	0.00	0.00	0.00	1.46
67.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.02
90.0	0.00	0.00	2.19	0.36	0.00	0.00	2.92	0.00	2.92
112.5	4.37	0.00	0.00	4.74	0.00	1.09	0.00	0.00	0.00
135.0	0.00	0.00	1.46	0.36	0.00	0.00	0.00	1.82	0.00
157.5	4.74	0.00	0.00	1.46	0.00	0.00	8.02	0.00	3.64
180.0	0.00	0.00	0.00	0.00	0.00	4.37	0.00	0.73	0.00
202.5	0.00	0.00	0.36	0.00	0.00	0.73	0.00	0.00	17.49
225.0	5.83	0.00	1.46	0.00	3.64	0.00	0.00	0.00	0.00
247.5	2.55	0.00	0.73	0.00	0.00	0.00	0.00	6.92	0.00
270.0	6.19	0.00	0.00	0.00	5.83	0.00	0.00	0.00	0.00
292.5	9.47	0.00	4.01	0.00	0.00	0.73	0.73	0.00	4.01
315.0	0.00	0.00	3.64	7.29	4.37	2.19	2.55	0.00	6.92
337.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.56
360.0	0.00	0.36	0.00	5.10	0.00	0.00	9.84	0.00	0.00

C/γ(°)	180.0
0.0	2.55
22.5	2.55
45.0	0.00
67.5	13.84
90.0	0.00
112.5	2.92
135.0	2.55
157.5	0.00
180.0	2.55
202.5	2.55
225.0	0.00
247.5	13.84
270.0	0.00
292.5	2.92
315.0	2.55
337.5	0.00
360.0	2.55