
Nata

Client:

LumCAT: 1656-S

Luminaire: 92.70.124.00

Report No: nata0100

Test No: GC2018050801

LampCAT: CITIZEN CLU028

Lamp flux(lm): 1709.9

Number of Lamps: 1

Length(mm): 47

Phm Type: C

Voltage(V): 38.6000

Current(A): 0.4000

Power (W): 15.4400

PF: 0.0000

Ballast type: DC

Width(mm): 47

Height(mm): 0

Photometric Results

Lumens(lm): 1538.96, Efficiency(%): 90.00% , Luminous Efficacy(lm/W): 99.67

Central intensity(cd): 9508.723, Maximum intensity(cd): 9508.723

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=16.2

[C90/270]Total=16.2

Field angle(10%Imax): [C0/180]Total=37.6

[C90/270]Total=37.6

Maximum s/h(1/2): C0_180=0.28 C90_270=0.28

Maximum s/h(1/4): C0_180=0.30 C90_270=0.30

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 90.52%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.750%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9508.722	9.099	9.099	.532%	.591%
2.0	9106.879	69.703	78.803	4.077%	5.121%
4.0	7924.887	121.239	200.042	7.091%	12.999%
6.0	6352.476	145.627	345.669	8.517%	22.461%
8.0	4800.092	146.511	492.18	8.568%	31.981%
10.0	3419.209	130.215	622.395	7.615%	40.443%
12.0	2490.614	113.567	735.962	6.642%	47.822%
14.0	1773.917	94.118	830.08	5.504%	53.938%
16.0	1310.177	79.201	909.281	4.632%	59.084%
18.0	1022.762	69.314	978.596	4.054%	63.588%
20.0	838.729	62.913	1041.508	3.679%	67.676%
22.0	725.602	59.613	1101.121	3.486%	71.550%
24.0	657.477	58.649	1159.77	3.430%	75.361%
26.0	609.103	58.560	1218.329	3.425%	79.166%
28.0	567.872	58.469	1276.798	3.419%	82.965%
30.0	520.765	57.105	1333.904	3.340%	86.676%
32.0	442.027	51.372	1385.275	3.004%	90.014%
34.0	341.535	41.885	1427.161	2.450%	92.736%
36.0	232.400	29.958	1457.119	1.752%	94.682%
38.0	139.664	18.858	1475.977	1.103%	95.908%
40.0	64.099	9.036	1485.013	.528%	96.495%
42.0	32.167	4.720	1489.734	.276%	96.802%
44.0	20.839	3.175	1492.909	.186%	97.008%
46.0	17.370	2.740	1495.649	.160%	97.186%
48.0	16.125	2.628	1498.277	.154%	97.357%
50.0	15.182	2.551	1500.828	.149%	97.522%
52.0	14.535	2.512	1503.34	.147%	97.686%
54.0	13.964	2.478	1505.817	.145%	97.847%
56.0	13.448	2.445	1508.262	.143%	98.005%
58.0	12.869	2.394	1510.656	.140%	98.161%
60.0	12.333	2.342	1512.998	.137%	98.313%
62.0	11.706	2.267	1515.265	.133%	98.461%
64.0	11.004	2.169	1517.434	.127%	98.601%
66.0	10.275	2.059	1519.493	.120%	98.735%
68.0	9.504	1.933	1521.425	.113%	98.861%
70.0	8.885	1.831	1523.256	.107%	98.980%
72.0	8.520	1.777	1525.033	.104%	99.095%
74.0	8.375	1.766	1526.799	.103%	99.210%

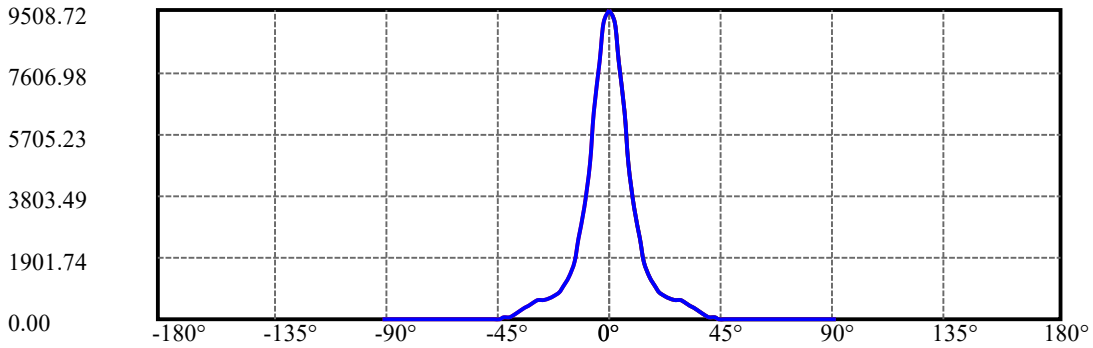
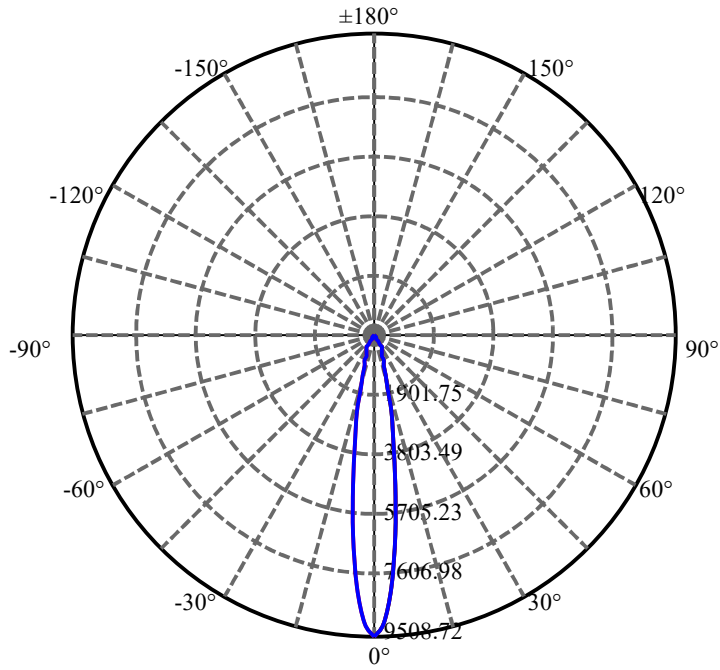
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.183	1.741	1528.54	.102%	99.323%
78.0	7.956	1.707	1530.247	.100%	99.434%
80.0	7.784	1.681	1531.928	.098%	99.543%
82.0	7.474	1.623	1533.551	.095%	99.649%
84.0	7.398	1.614	1535.165	.094%	99.754%
86.0	7.309	1.599	1536.764	.094%	99.858%
88.0	6.717	1.472	1538.236	.086%	99.953%
90.0	6.572	0.721	1538.957	.042%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1333.90	78.01%	86.68%
0-40	1485.01	86.85%	96.49%
0-60	1513.00	88.49%	98.31%
0-90	1538.24	89.96%	99.95%
0-120	1538.24	89.96%	99.95%
0-180	1538.96	90.00%	100.00%
60-90	27.58	1.61%	1.79%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.44	1231.17	72.00%	80.00%

ZONAL LUMEN SUMMARY

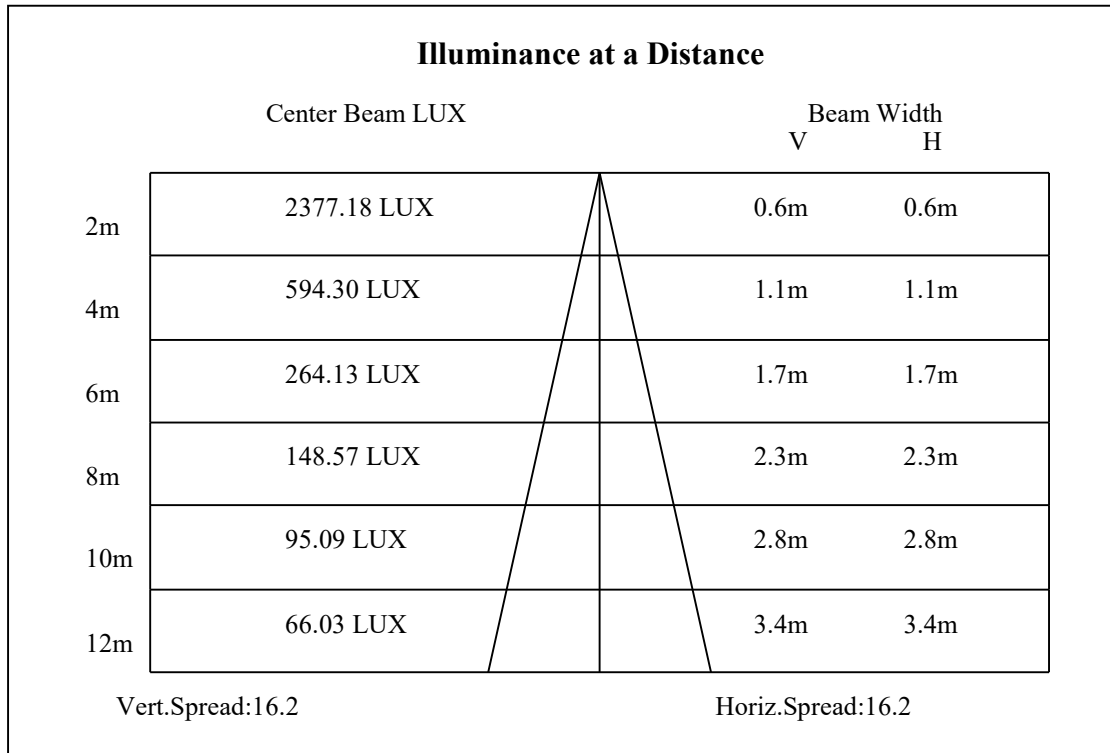
0-10	622.40
10-20	419.11
20-30	292.40
30-40	151.11
40-50	15.81
50-60	12.17
60-70	10.26
70-80	8.67
80-90	6.31
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

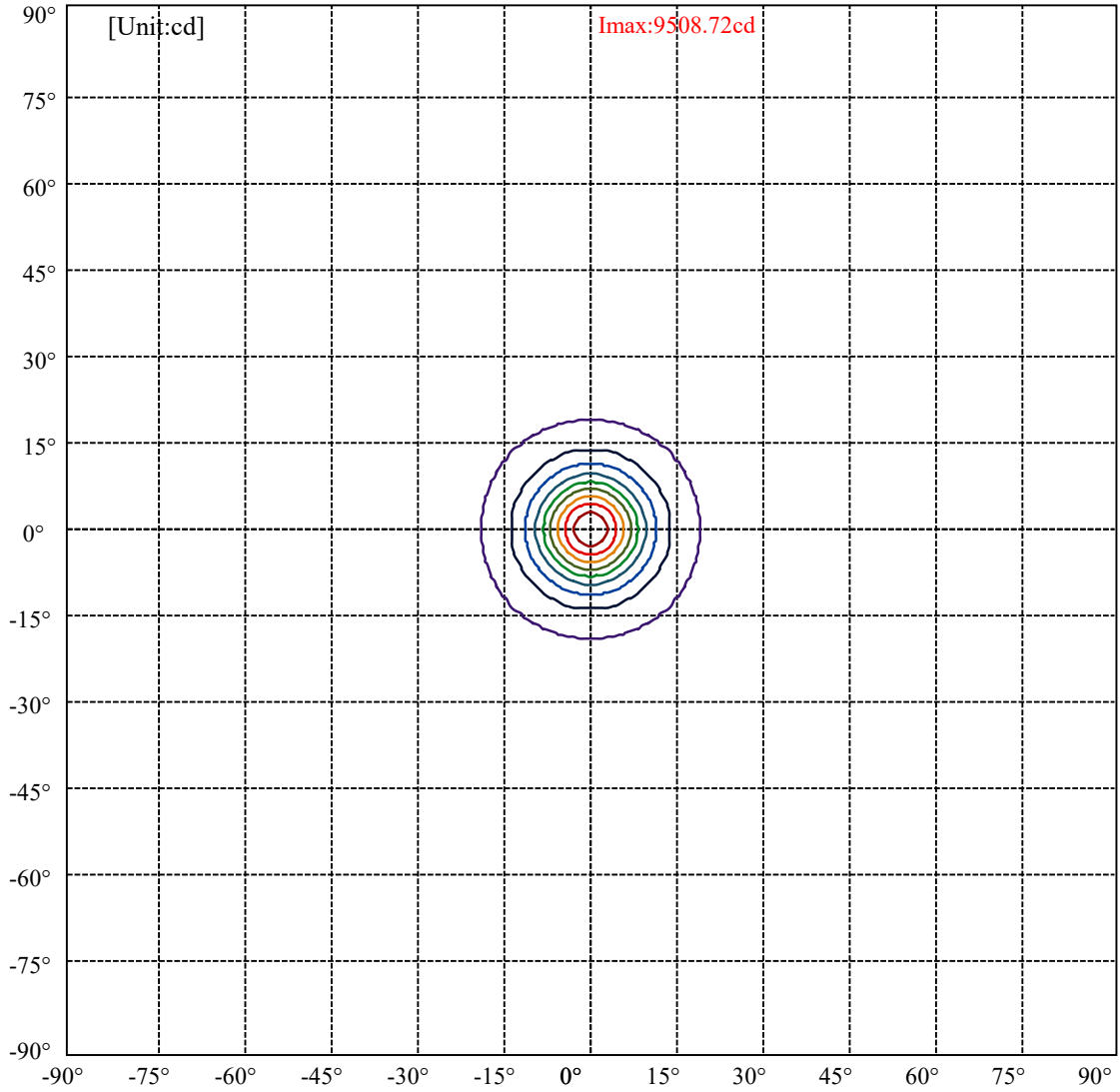


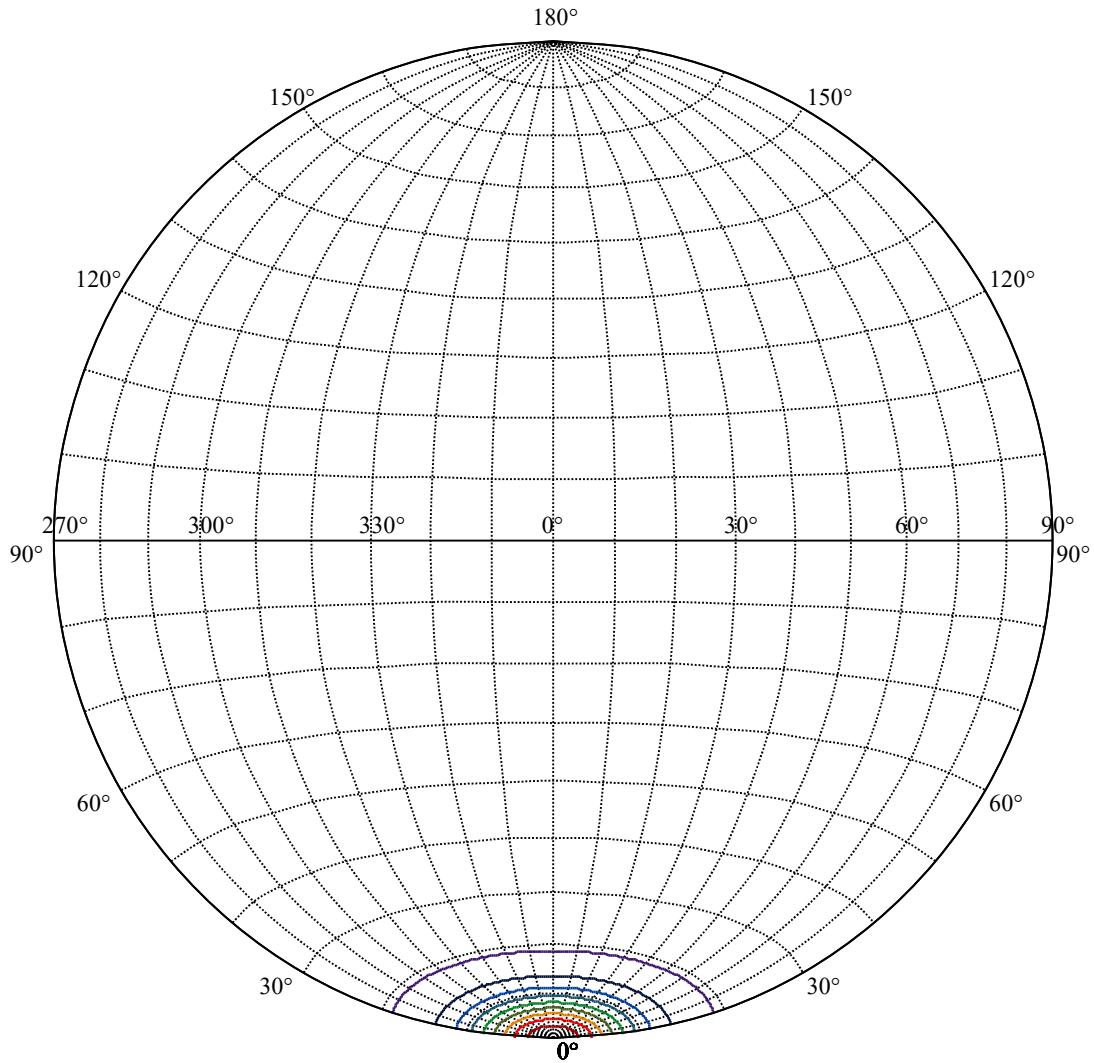
C0(Max): —————
C0/C180: —————
C90/C270: —————

Field angle(10%Imax):C0/180Left:18.8 Right:18.8
:C90/270Left:18.8 Right:18.8

Beam Angle(50%Imax):C0/180Left:8.1 Right:8.1
:C90/270Left:8.1 Right:8.1







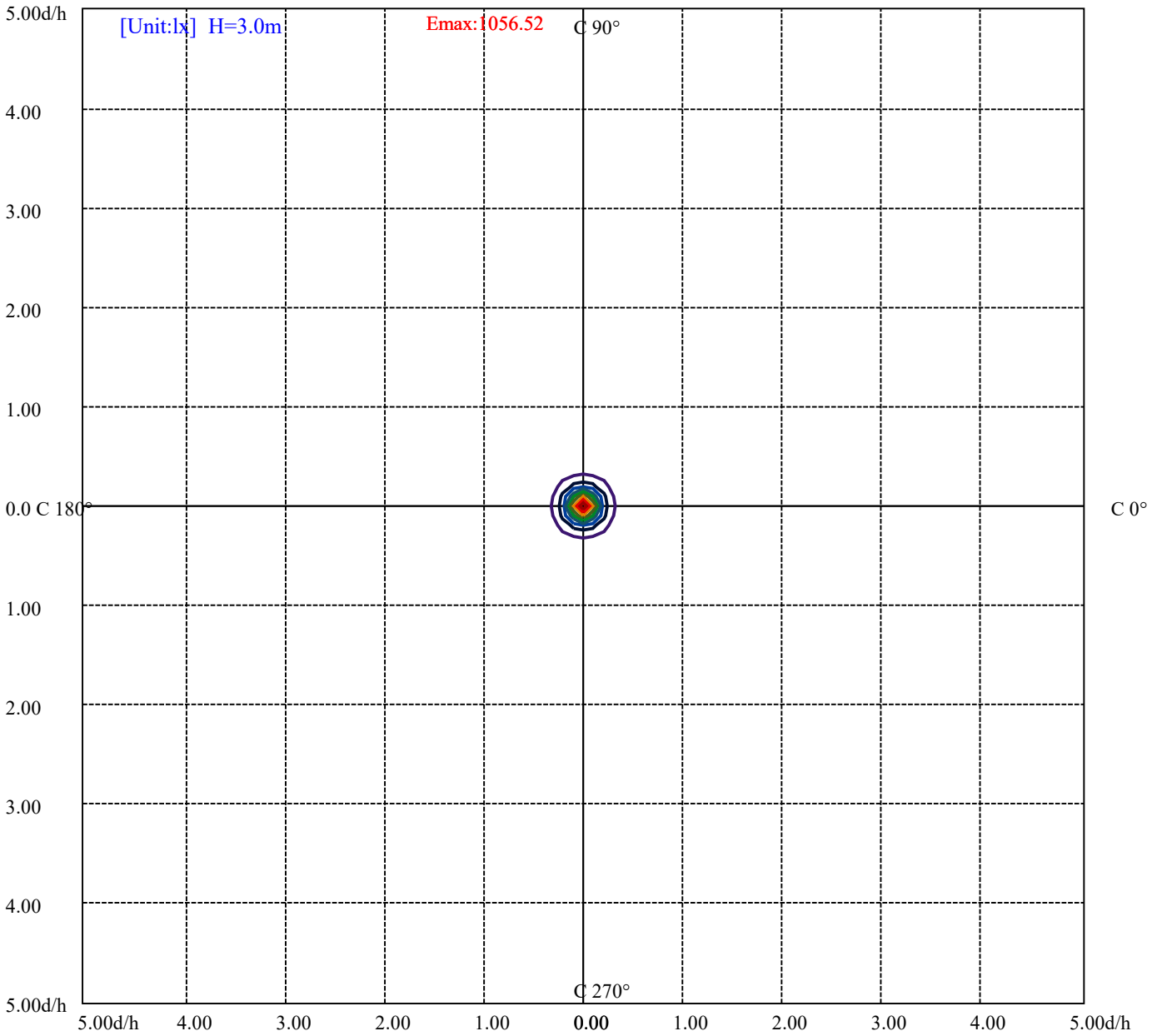
House

[Unit:cd]

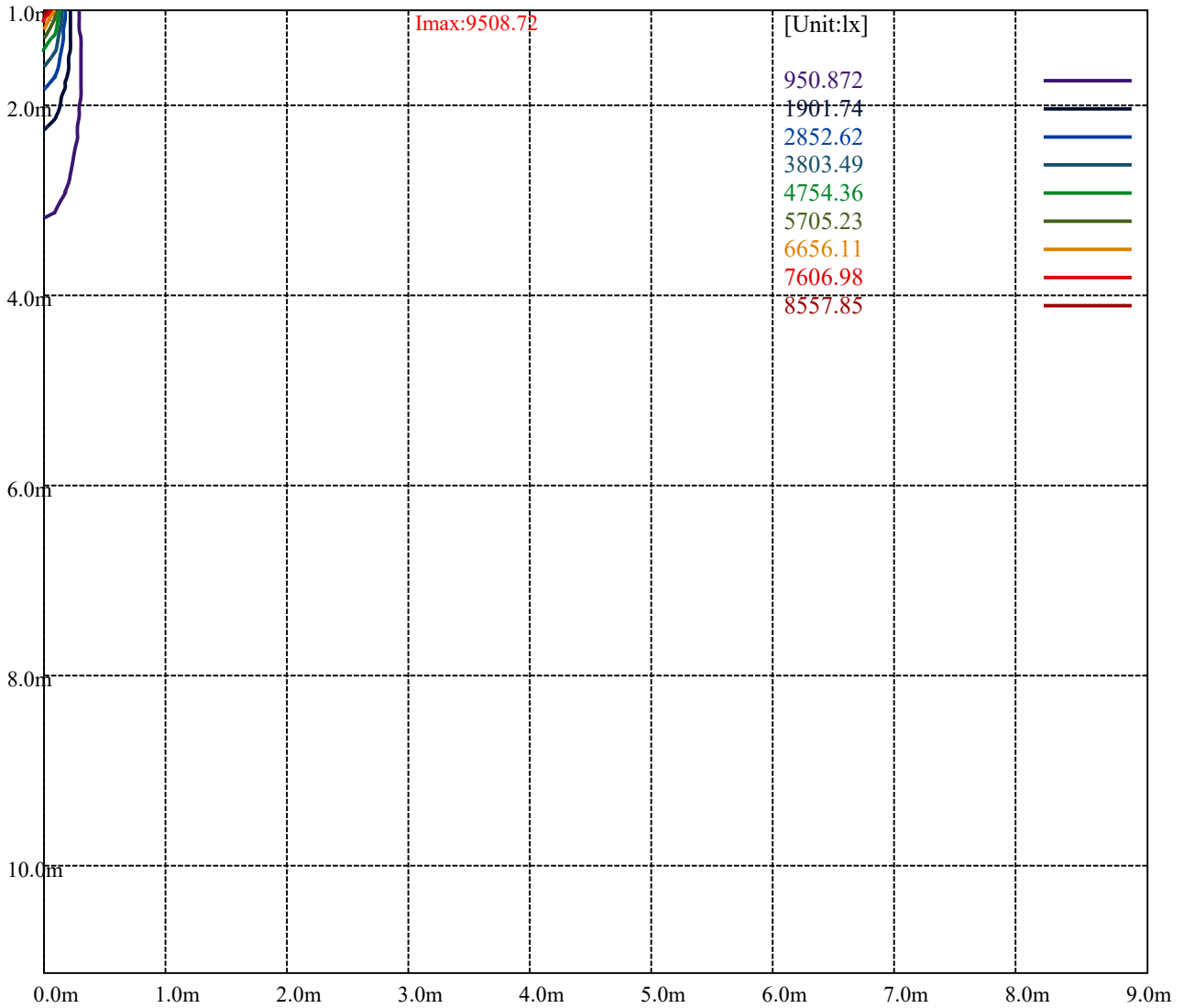
Road

Imax:9508.72

(10%Imax)	950.872	—
(20%Imax)	1901.74	—
(30%Imax)	2852.62	—
(40%Imax)	3803.49	—
(50%Imax)	4754.36	—
(60%Imax)	5705.23	—
(70%Imax)	6656.11	—
(80%Imax)	7606.98	—
(90%Imax)	8557.85	—



- (10%E_{max}) 105.6521
- (20%E_{max}) 211.3044
- (30%E_{max}) 316.9567
- (40%E_{max}) 422.6089
- (50%E_{max}) 528.2611
- (60%E_{max}) 633.9133
- (70%E_{max}) 739.5645
- (80%E_{max}) 845.2167
- (90%E_{max}) 950.8689



Luminance Table

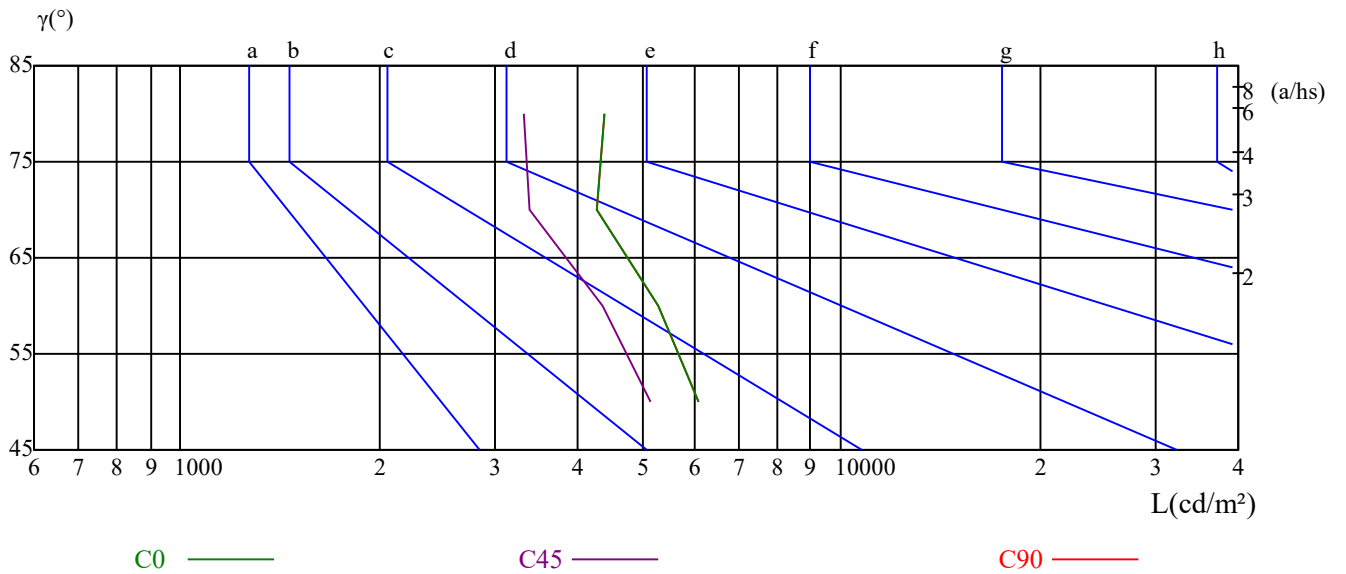
γ	45	50	55	60	65	70	75	80	85
C0	0	6073	0	5303	0	4270	0	4392	0
C45	0	5151	0	4356	0	3379	0	3316	0
C90	0	6073	0	5303	0	4270	0	4392	0

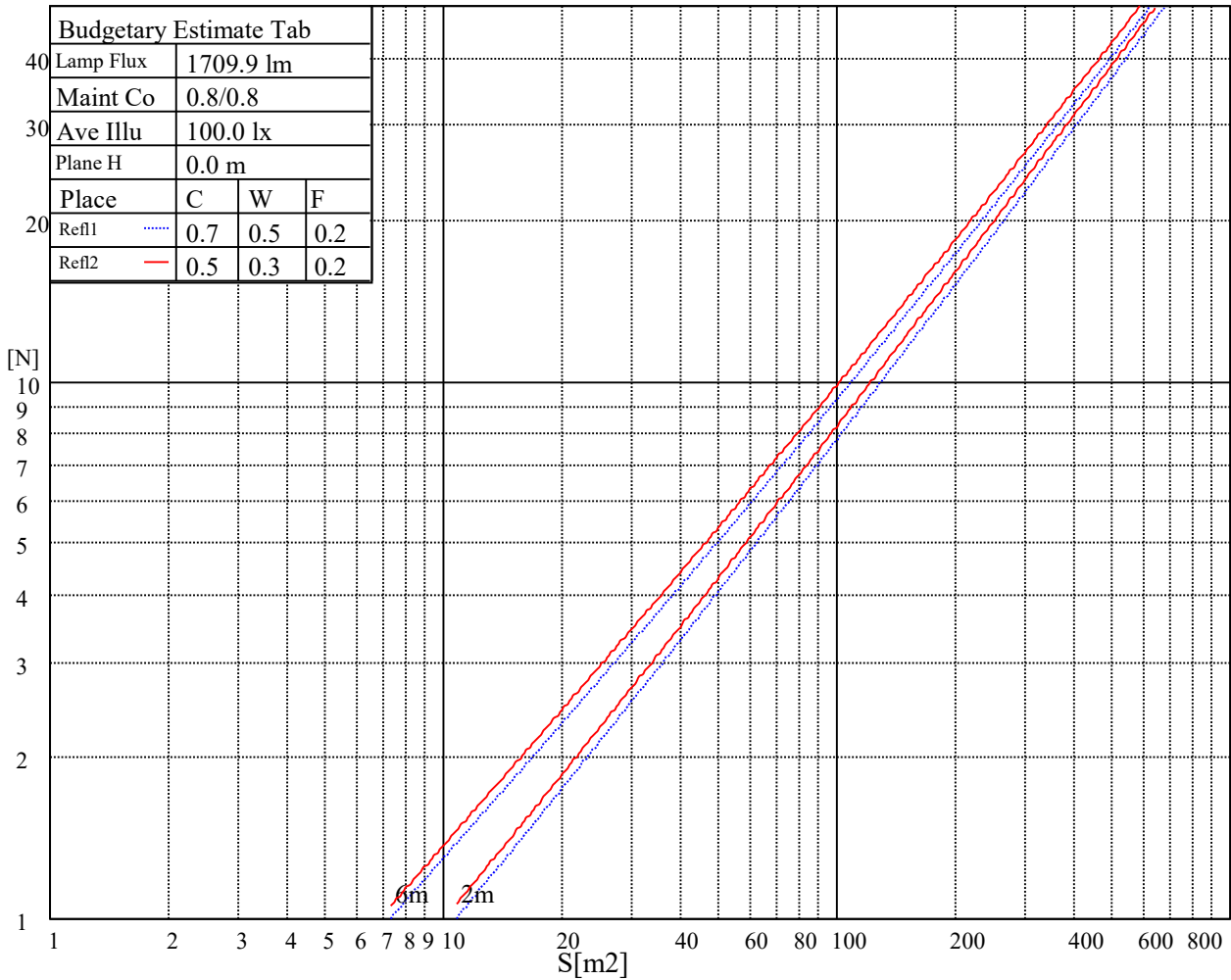
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6664	6664	6664	10882	10689	10882	32600	32886	33816

Glare Table

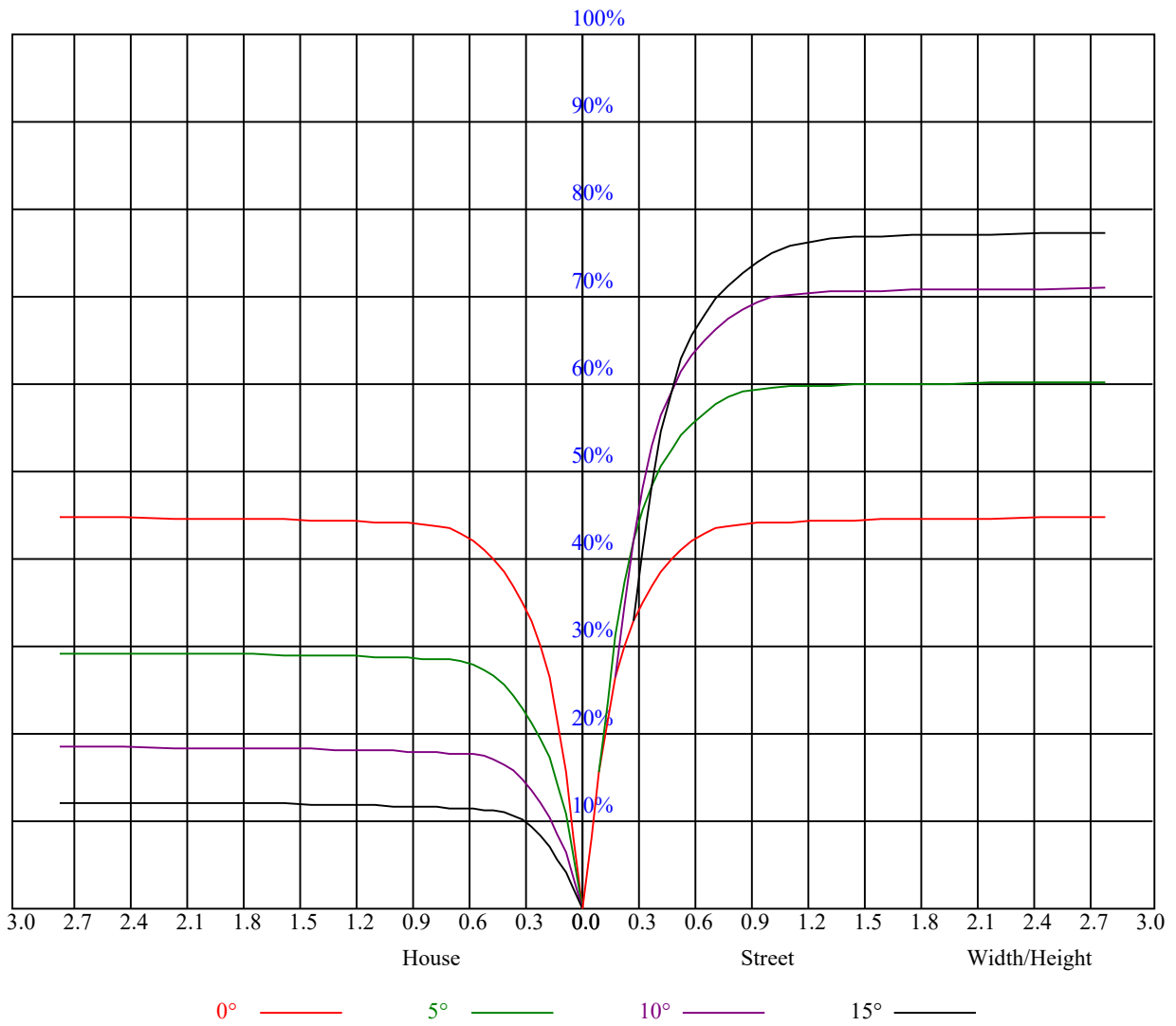
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

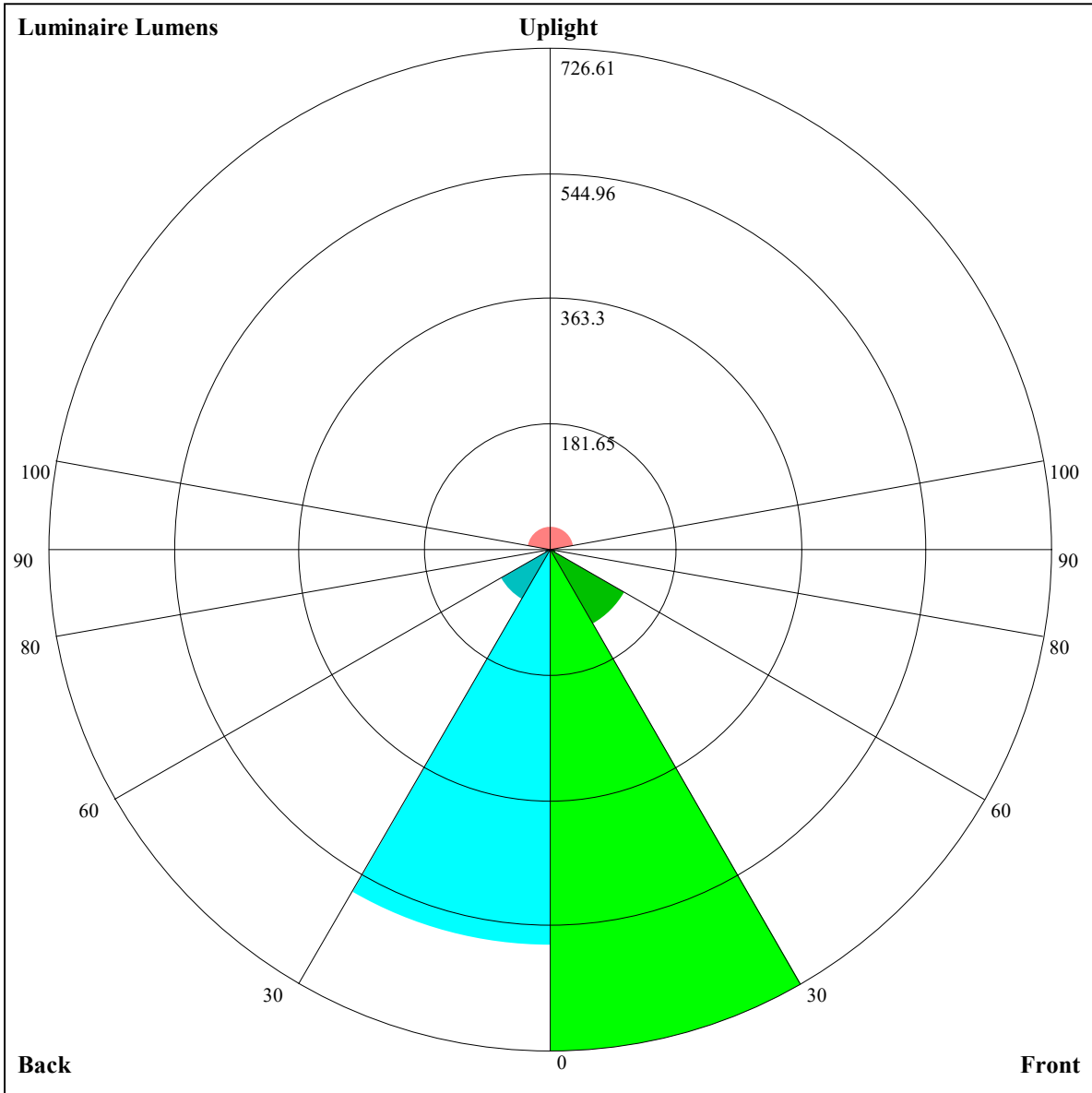
Luminance Limiting Curve





RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 CU															
0	1.08	1.08	1.08	1.05	1.05	1.05	1.01	1.01	1.01	0.96	0.96	0.96	0.92	0.92	0.92	0.91
1	1.01	0.99	0.97	0.99	0.97	0.95	0.95	0.94	0.92	0.92	0.91	0.90	0.89	0.88	0.87	0.85
2	0.96	0.92	0.90	0.94	0.91	0.89	0.91	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.83	0.82
3	0.91	0.87	0.84	0.90	0.86	0.84	0.88	0.85	0.82	0.85	0.83	0.81	0.83	0.82	0.80	0.79
4	0.87	0.83	0.80	0.86	0.82	0.80	0.84	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
5	0.84	0.79	0.76	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.73
6	0.80	0.76	0.73	0.80	0.76	0.73	0.79	0.75	0.73	0.77	0.74	0.72	0.76	0.74	0.72	0.71
7	0.78	0.74	0.71	0.77	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.72	0.69	0.68
8	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.66
9	0.73	0.69	0.66	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.64
10	0.71	0.67	0.64	0.70	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.69	0.66	0.64	0.63





Luminaire Lumens:
FL=726.61,FM=123.64,FH=10.05,FVH=3.87
BL=573.15,BM=84.67,BH=9.09,BVH=3.95
UL=7.17,UH=34.12

BUG Rating:B2-U2-G0

Intensity data(cd)

C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	9371.15	10032.93	9904.65	8799.66	7077.50	5142.27	3644.73	2549.66	1813.56
45.0	9467.50	9994.39	9588.07	8316.27	6434.99	4600.51	3321.00	2317.32	1661.05
90.0	9615.60	9275.35	8070.17	6197.15	4655.02	3270.35	2386.14	1692.98	1255.84
135.0	9578.16	8717.08	7096.22	5385.62	3949.75	2789.16	2051.40	1479.92	1111.59
180.0	9371.15	7845.54	5903.15	4338.44	3127.75	2239.14	1692.98	1277.86	995.69
225.0	9467.50	8274.98	6348.00	4608.77	3409.64	2438.45	1800.89	1365.40	1063.74
270.0	9620.56	9086.51	7723.31	5953.25	4394.60	3095.82	2307.96	1610.95	1202.43
315.0	9578.16	9628.26	8765.53	7220.65	5351.48	3777.97	2719.79	1897.24	1377.51
360.0	9371.15	10032.93	9904.65	8799.66	7077.50	5142.27	3644.73	2549.66	1813.56
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1323.56	1042.22	869.89	759.23	683.25	629.29	596.26	567.63	514.23
45.0	1280.61	1010.84	853.37	748.22	679.40	628.74	595.16	561.58	488.35
90.0	973.89	798.15	692.88	631.94	592.35	567.25	541.04	463.46	358.20
135.0	901.27	751.52	663.98	612.23	581.40	553.32	501.01	403.01	280.79
180.0	835.21	726.58	653.46	615.75	585.14	525.40	435.00	305.40	184.49
225.0	866.86	758.18	678.68	630.78	591.42	549.13	465.56	342.29	210.21
270.0	959.63	792.26	702.52	652.42	610.58	582.50	547.26	450.91	333.64
315.0	1041.06	830.09	690.02	609.25	549.30	507.34	484.83	441.94	362.38
360.0	1323.56	1042.22	869.89	759.23	683.25	629.29	596.26	567.63	514.23
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	409.62	286.29	151.96	64.69	27.25	17.84	13.98	12.22	10.85
45.0	374.93	280.79	119.20	42.45	23.45	14.92	12.72	11.12	10.02
90.0	241.26	133.35	53.18	32.32	24.61	23.29	23.40	23.12	22.79
135.0	174.09	80.88	34.69	24.83	20.15	19.21	17.29	15.64	14.76
180.0	86.00	32.26	19.49	13.43	11.34	10.02	9.41	9.03	8.92
225.0	102.68	38.87	21.31	14.48	11.45	10.08	9.36	9.03	8.97
270.0	207.12	101.52	38.59	26.15	20.04	19.38	18.44	17.56	17.73
315.0	263.50	163.35	74.38	38.98	28.41	24.22	24.39	23.73	22.24
360.0	409.62	286.29	151.96	64.69	27.25	17.84	13.98	12.22	10.85
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	10.08	10.19	11.18	12.11	12.83	12.94	12.44	11.29	10.08
45.0	9.47	9.58	10.52	12.28	14.26	15.91	15.64	13.38	11.01
90.0	22.08	20.65	17.95	15.14	12.44	10.41	9.19	8.59	8.42
135.0	14.09	13.16	12.17	11.18	10.13	9.14	8.81	8.59	8.53
180.0	8.81	8.86	8.97	9.19	9.25	8.92	8.70	8.64	8.48
225.0	9.19	9.86	10.63	11.34	11.56	10.57	9.30	8.59	8.09
270.0	18.33	18.28	17.07	14.48	12.00	10.13	8.97	8.26	8.04
315.0	19.66	17.01	14.48	12.94	11.18	10.02	9.14	8.70	8.42
360.0	10.08	10.19	11.18	12.11	12.83	12.94	12.44	11.29	10.08
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	9.25	8.86	8.53	8.48	8.48	7.60	7.05	7.05	6.99
45.0	9.63	8.75	8.26	8.31	7.98	7.21	7.05	6.99	6.88
90.0	8.31	8.26	8.20	8.15	7.93	7.54	7.27	7.49	6.50
135.0	8.59	8.53	8.42	8.26	8.20	7.71	7.71	7.87	6.44
180.0	8.20	8.48	8.31	7.54	7.27	7.65	8.37	7.54	6.83
225.0	7.98	8.20	7.98	7.43	7.27	7.38	7.76	7.98	6.94
270.0	7.82	7.65	7.54	7.38	7.21	7.05	6.88	6.77	6.61
315.0	8.37	8.26	8.20	8.09	7.93	7.65	7.10	6.77	6.55
360.0	9.25	8.86	8.53	8.48	8.48	7.60	7.05	7.05	6.99

Intensity data(cd)

C/γ(°)	90.0
0.0	6.99
45.0	6.83
90.0	6.39
135.0	6.28
180.0	6.55
225.0	6.77
270.0	6.44
315.0	6.33
360.0	6.99