

---

Nata

---

Client:

LumCAT: 3-1698-N

Luminaire: 92.70.045.00+92.70.089.00

Report No: nata-0100

Voltage(V): 36.2000

Test No: GC2018052901

Current(A): 0.5000

LampCAT: NICHIA NFDWJ130B-V3

Power (W): 18.1000

Lamp flux(lm): 2390.3

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 79

Width(mm): 79

Phm Type: C

Height(mm): 0

---

Photometric Results

---

Lumens(lm): 1888.48, Efficiency(%): 79.01% , Luminous Efficacy(lm/W): 104.34

Central intensity(cd): 11648.560, Maximum intensity(cd): 11648.560

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=18.0

[C90/270]Total=18.0

Field angle(10%Imax): [C0/180]Total=35.0

[C90/270]Total=35.0

Maximum s/h(1/2): C0\_180=0.31 C90\_270=0.31

Maximum s/h(1/4): C0\_180=0.31 C90\_270=0.31

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 79.46%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 97.591%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11648.558	11.147	11.147	.466%	.590%
2.0	11312.370	86.584	97.731	3.622%	5.175%
4.0	10380.265	158.803	256.534	6.644%	13.584%
6.0	8879.771	203.564	460.098	8.516%	24.363%
8.0	6906.963	210.818	670.916	8.820%	35.527%
10.0	4781.717	182.104	853.02	7.618%	45.170%
12.0	3222.589	146.943	999.963	6.147%	52.951%
14.0	2062.963	109.454	1109.417	4.579%	58.746%
16.0	1379.672	83.403	1192.82	3.489%	63.163%
18.0	1084.026	73.466	1266.286	3.073%	67.053%
20.0	900.337	67.534	1333.82	2.825%	70.629%
22.0	757.425	62.227	1396.047	2.603%	73.924%
24.0	647.181	57.730	1453.777	2.415%	76.981%
26.0	543.840	52.285	1506.063	2.187%	79.750%
28.0	458.166	47.173	1553.236	1.974%	82.248%
30.0	387.177	42.457	1595.693	1.776%	84.496%
32.0	321.901	37.411	1633.103	1.565%	86.477%
34.0	272.385	33.405	1666.508	1.398%	88.246%
36.0	229.482	29.582	1696.091	1.238%	89.812%
38.0	195.127	26.347	1722.437	1.102%	91.207%
40.0	168.473	23.750	1746.187	.994%	92.465%
42.0	144.206	21.162	1767.349	.885%	93.586%
44.0	120.718	18.391	1785.74	.769%	94.559%
46.0	99.845	15.752	1801.492	.659%	95.394%
48.0	80.802	13.169	1814.661	.551%	96.091%
50.0	63.336	10.641	1825.302	.445%	96.654%
52.0	49.805	8.607	1833.909	.360%	97.110%
54.0	38.264	6.789	1840.698	.284%	97.470%
56.0	29.042	5.280	1845.979	.221%	97.749%
58.0	22.408	4.168	1850.146	.174%	97.970%
60.0	18.107	3.439	1853.585	.144%	98.152%
62.0	15.918	3.082	1856.668	.129%	98.315%
64.0	14.865	2.930	1859.598	.123%	98.470%
66.0	14.088	2.822	1862.421	.118%	98.620%
68.0	13.386	2.722	1865.142	.114%	98.764%
70.0	12.787	2.635	1867.778	.110%	98.904%
72.0	12.202	2.545	1870.323	.106%	99.038%
74.0	11.679	2.462	1872.785	.103%	99.169%

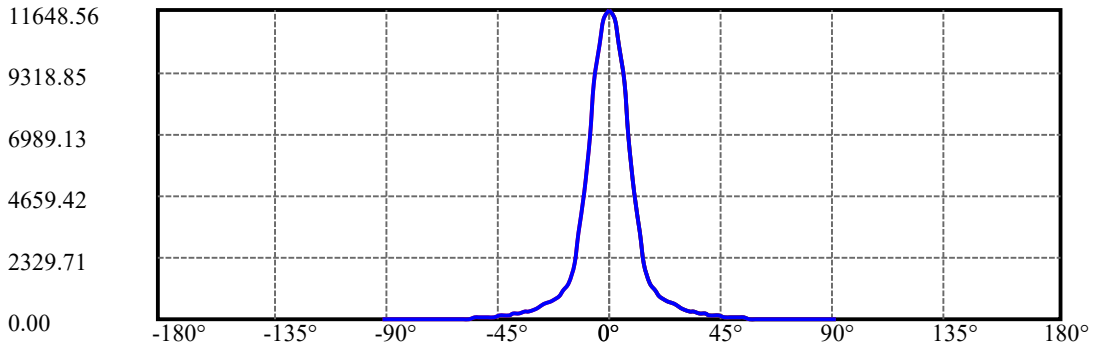
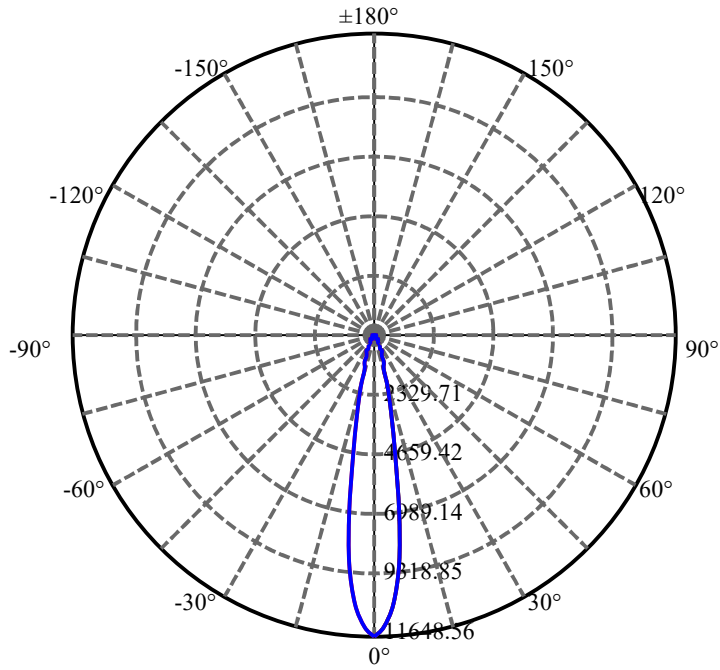
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	11.287	2.402	1875.187	.100%	99.296%
78.0	10.963	2.352	1877.538	.098%	99.420%
80.0	10.564	2.282	1879.82	.095%	99.541%
82.0	10.034	2.179	1881.999	.091%	99.657%
84.0	9.373	2.044	1884.044	.086%	99.765%
86.0	8.548	1.870	1885.914	.078%	99.864%
88.0	7.907	1.733	1887.647	.073%	99.956%
90.0	7.632	0.837	1888.484	.035%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1595.69	66.76%	84.50%
0-40	1746.19	73.05%	92.47%
0-60	1853.59	77.55%	98.15%
0-90	1887.65	78.97%	99.96%
0-120	1887.65	78.97%	99.96%
0-180	1888.48	79.01%	100.00%
60-90	37.50	1.57%	1.99%
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%
0-26.20	1510.79	63.20%	80.00%

ZONAL LUMEN SUMMARY

0-10	853.02
10-20	480.80
20-30	261.87
30-40	150.49
40-50	79.11
50-60	28.28
60-70	14.19
70-80	12.04
80-90	7.83
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): —————

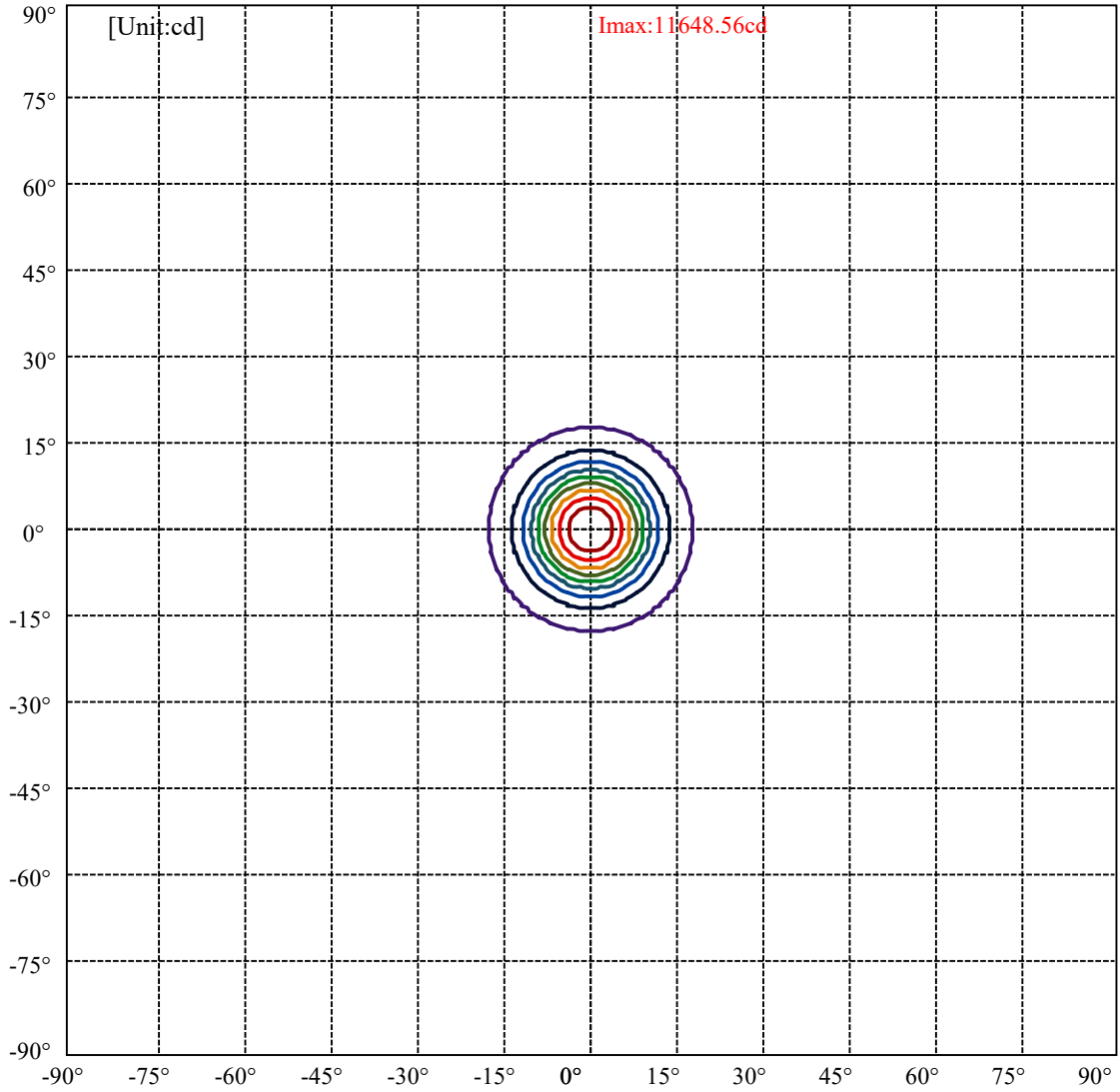
C0/C180: —————

C90/C270: —————

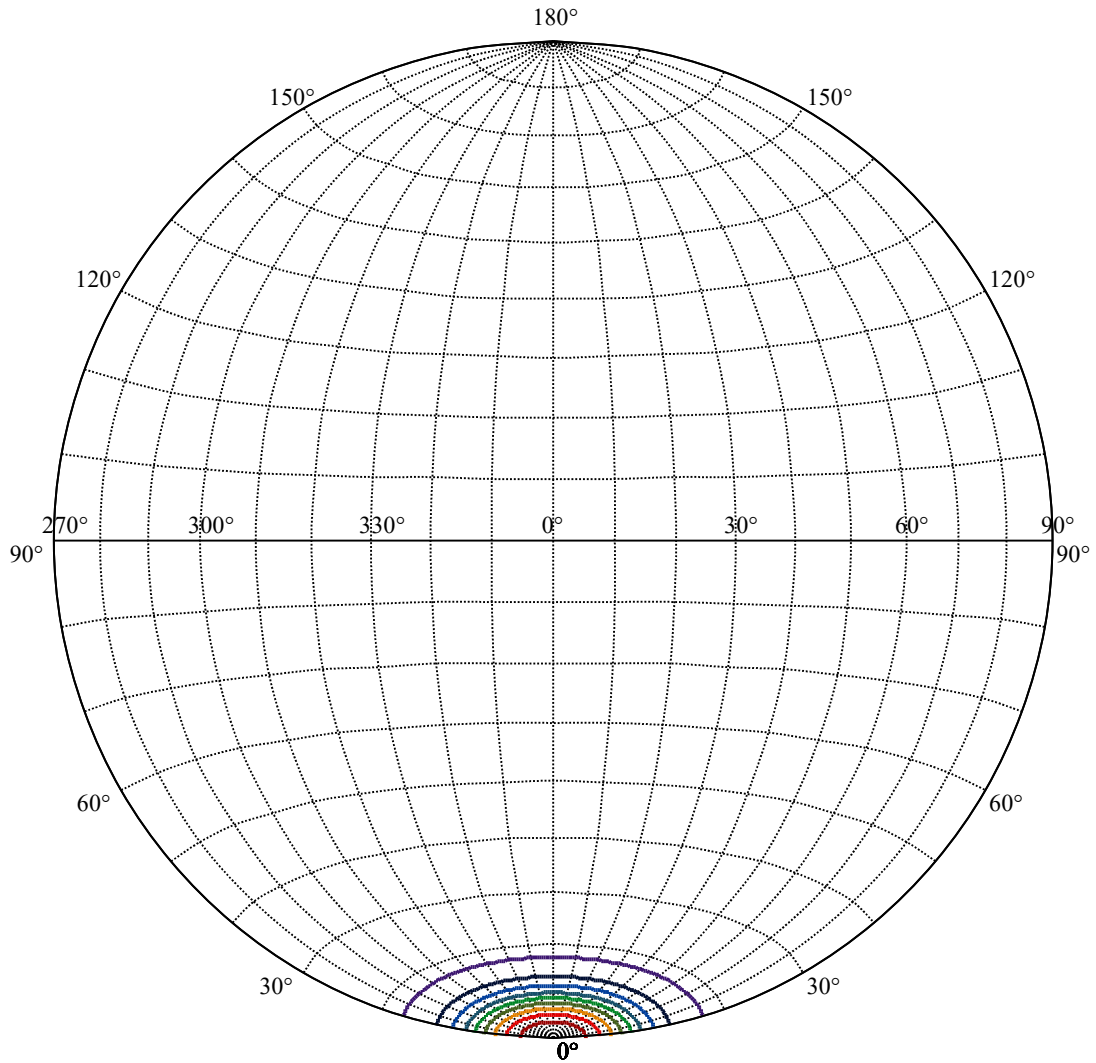
Field angle(10%Imax):C0/180Left:17.5 Right:17.5  
:C90/270Left:17.5 Right:17.5

Beam Angle(50%Imax):C0/180Left:9.0 Right:9.0  
:C90/270Left:9.0 Right:9.0





(10%Imax) 1164.86	—
(20%Imax) 2329.71	—
(30%Imax) 3494.57	—
(40%Imax) 4659.42	—
(50%Imax) 5824.28	—
(60%Imax) 6989.14	—
(70%Imax) 8153.99	—
(80%Imax) 9318.85	—
(90%Imax) 10483.7	—



House

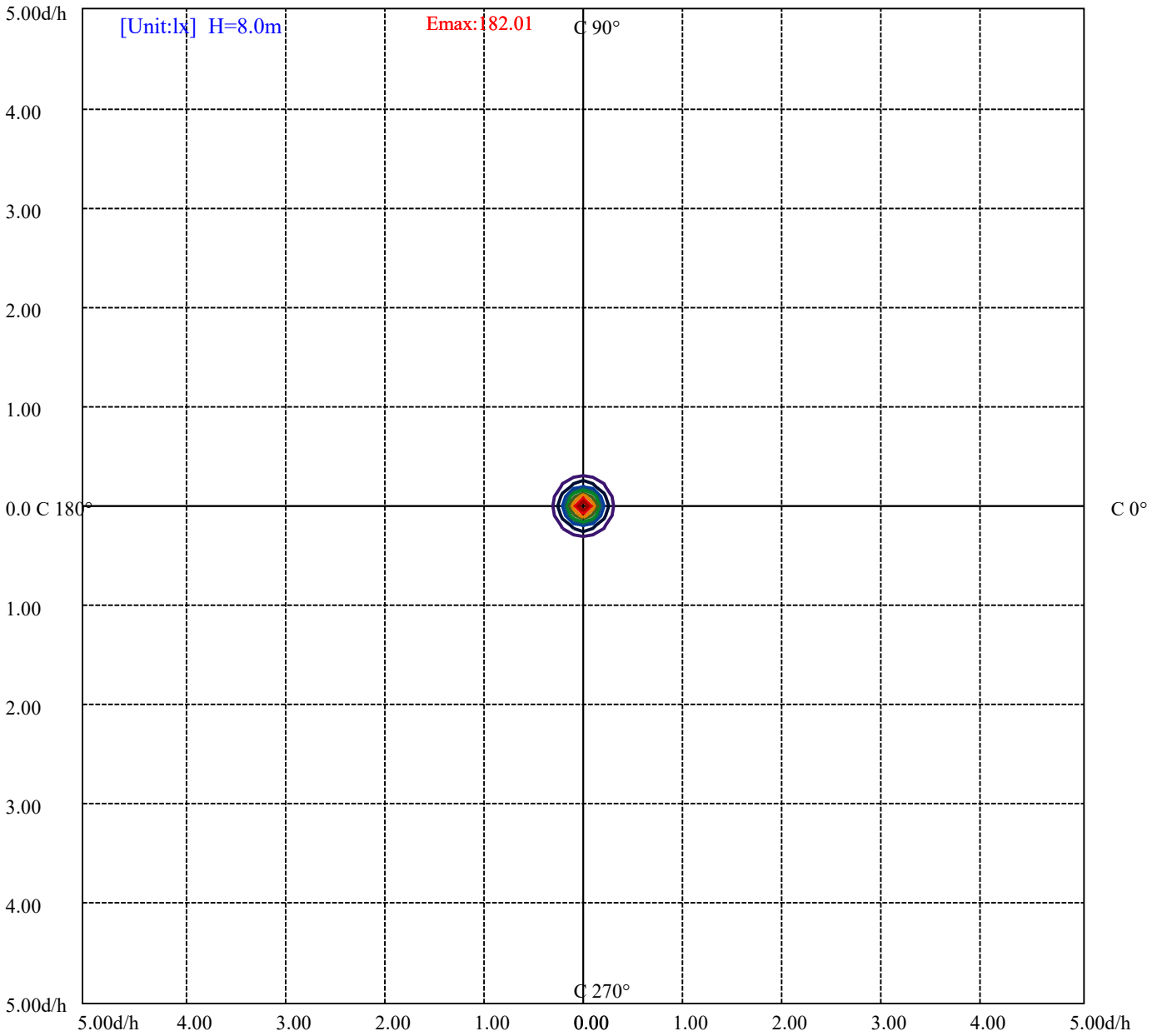
[Unit:cd]

Road

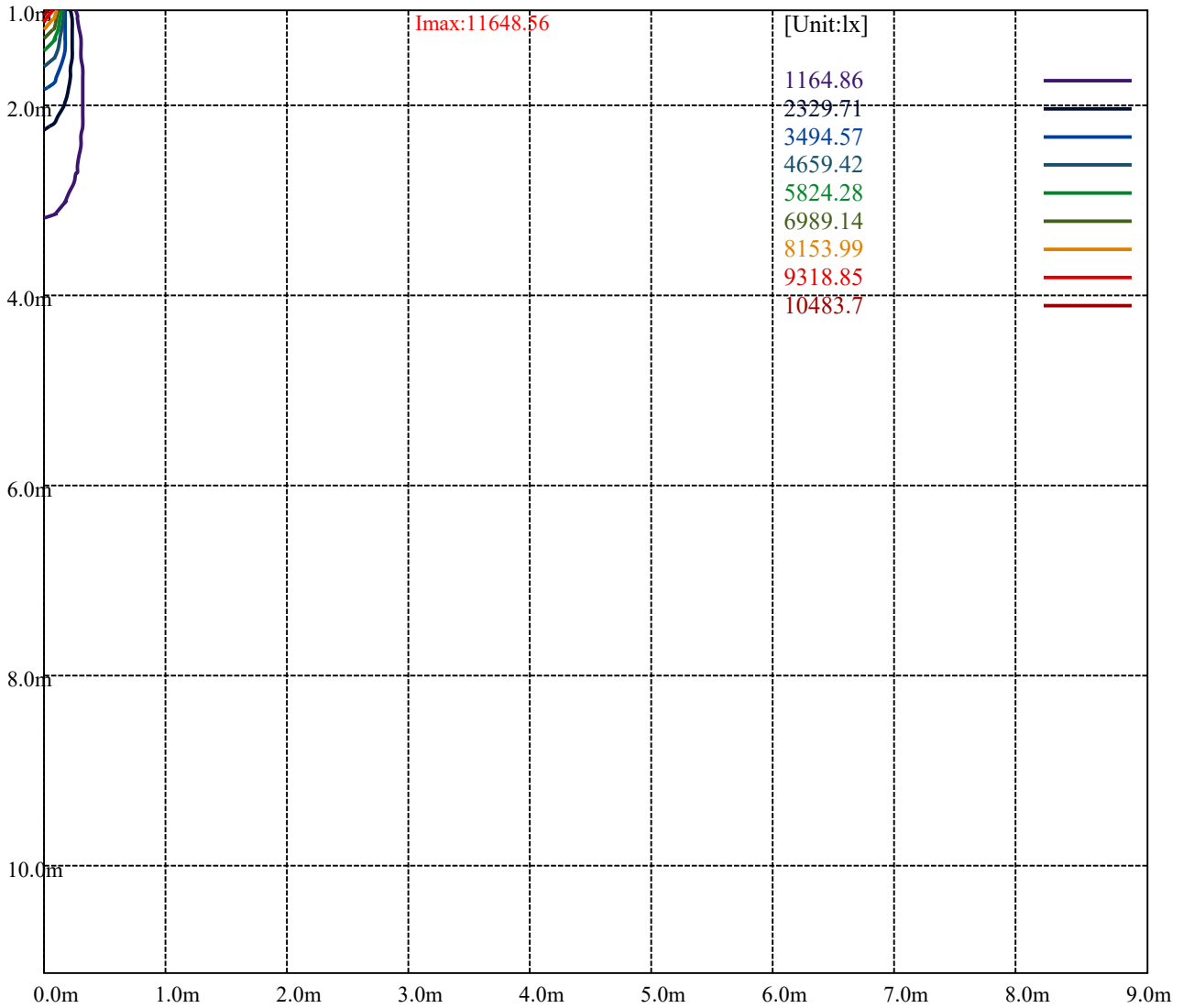
**Imax:11648.56**

(10%Imax) 1164.86	—
(20%Imax) 2329.71	—
(30%Imax) 3494.57	—
(40%Imax) 4659.42	—
(50%Imax) 5824.28	—
(60%Imax) 6989.14	—
(70%Imax) 8153.99	—
(80%Imax) 9318.85	—
(90%Imax) 10483.7	—





(10%Emax) 18.20078	—
(20%Emax) 36.40172	—
(30%Emax) 54.6025	—
(40%Emax) 72.80328	—
(50%Emax) 91.00422	—
(60%Emax) 109.205	—
(70%Emax) 127.4058	—
(80%Emax) 145.6067	—
(90%Emax) 163.8078	—



Luminance Table

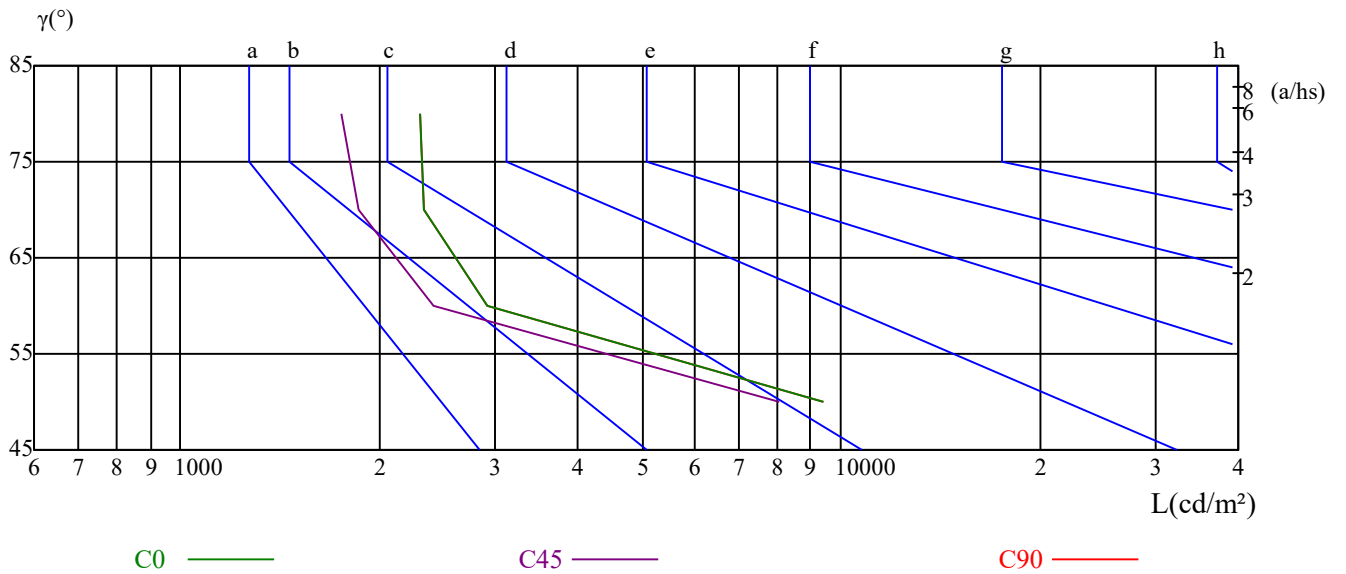
$\gamma$	45	50	55	60	65	70	75	80	85
C0	0	9404	0	2921	0	2335	0	2304	0
C45	0	8055	0	2422	0	1864	0	1750	0
C90	0	9404	0	2921	0	2335	0	2304	0

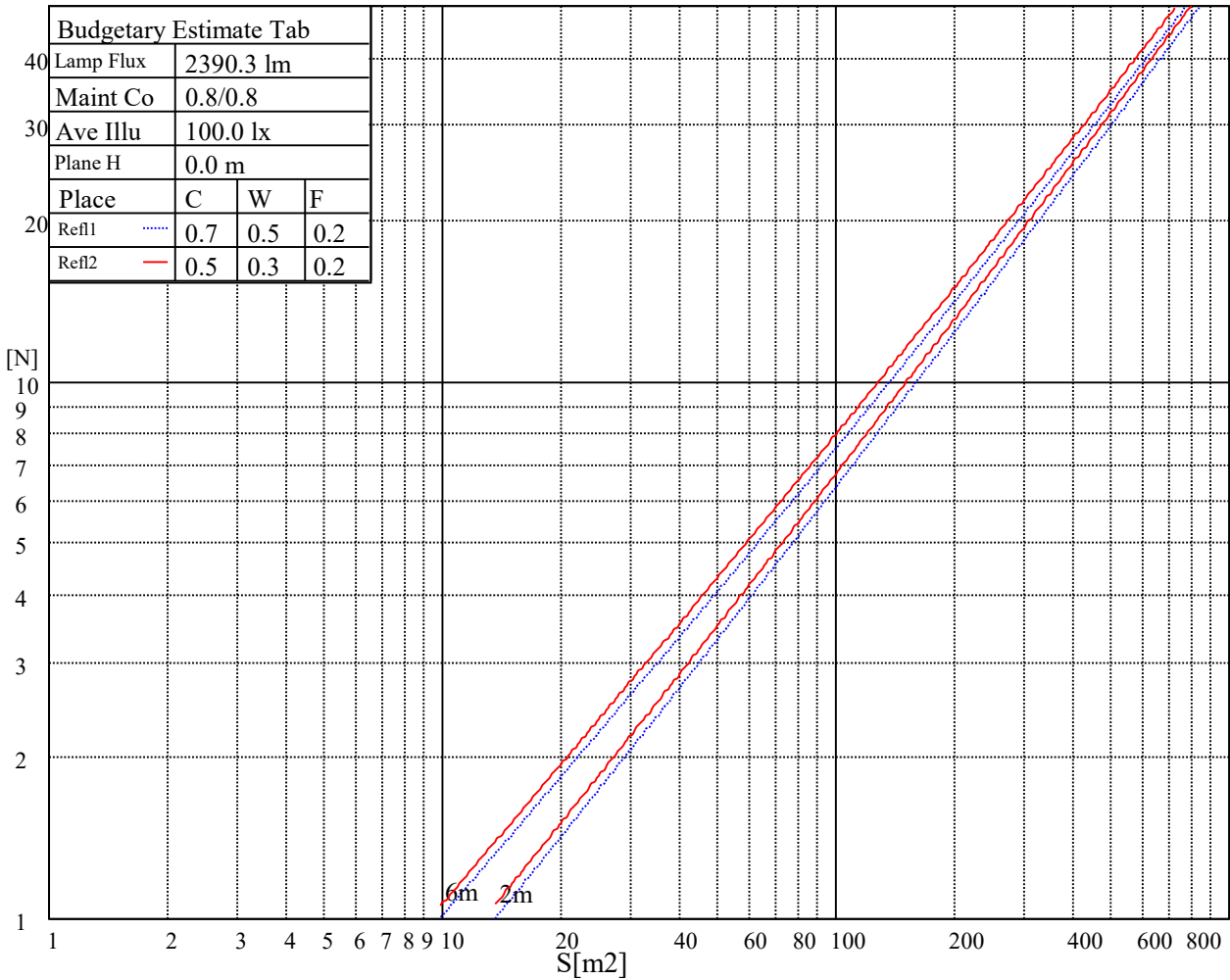
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4618	4618	4618	6370	6370	6370	15815	15815	15815

Glare Table

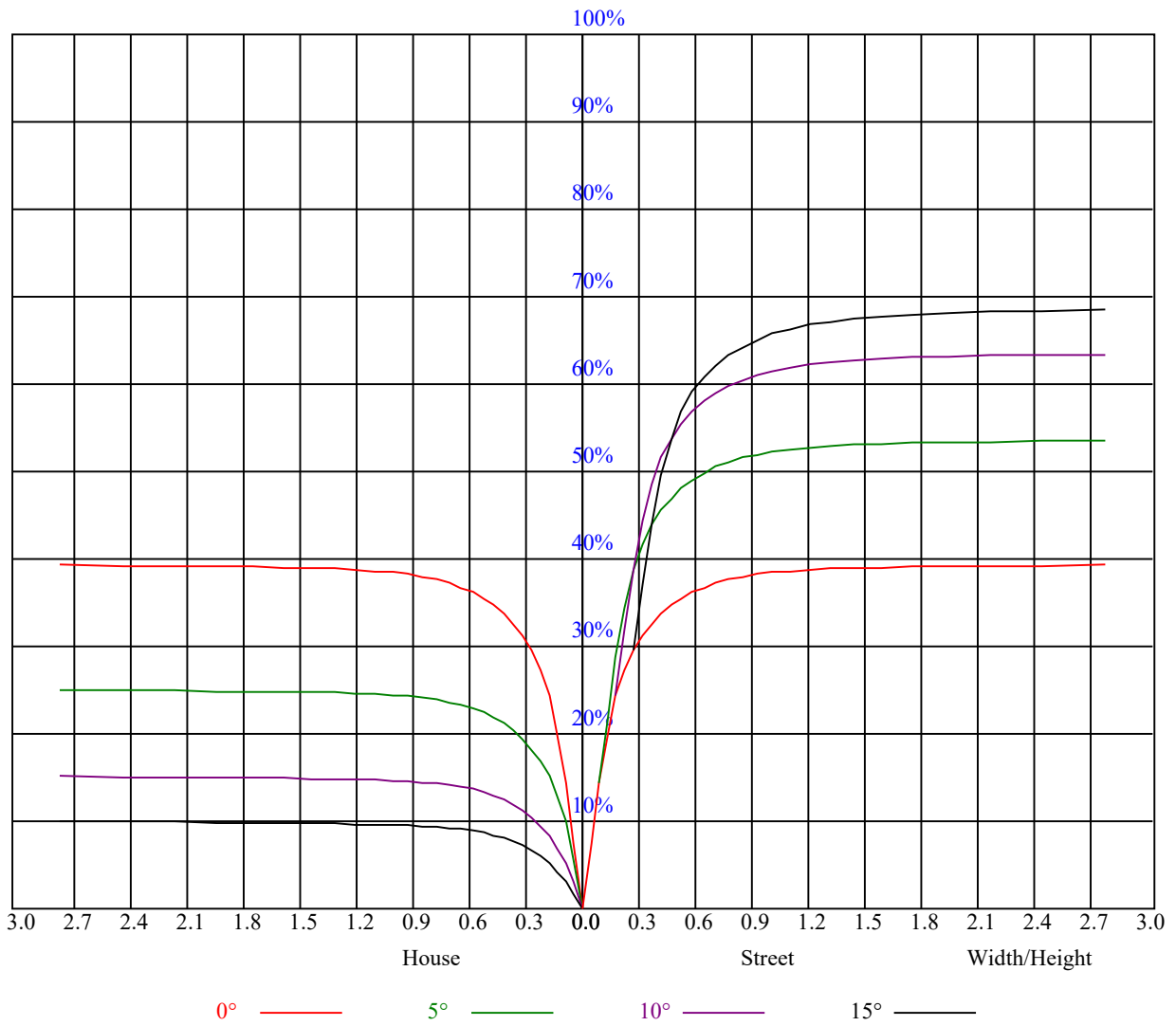
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

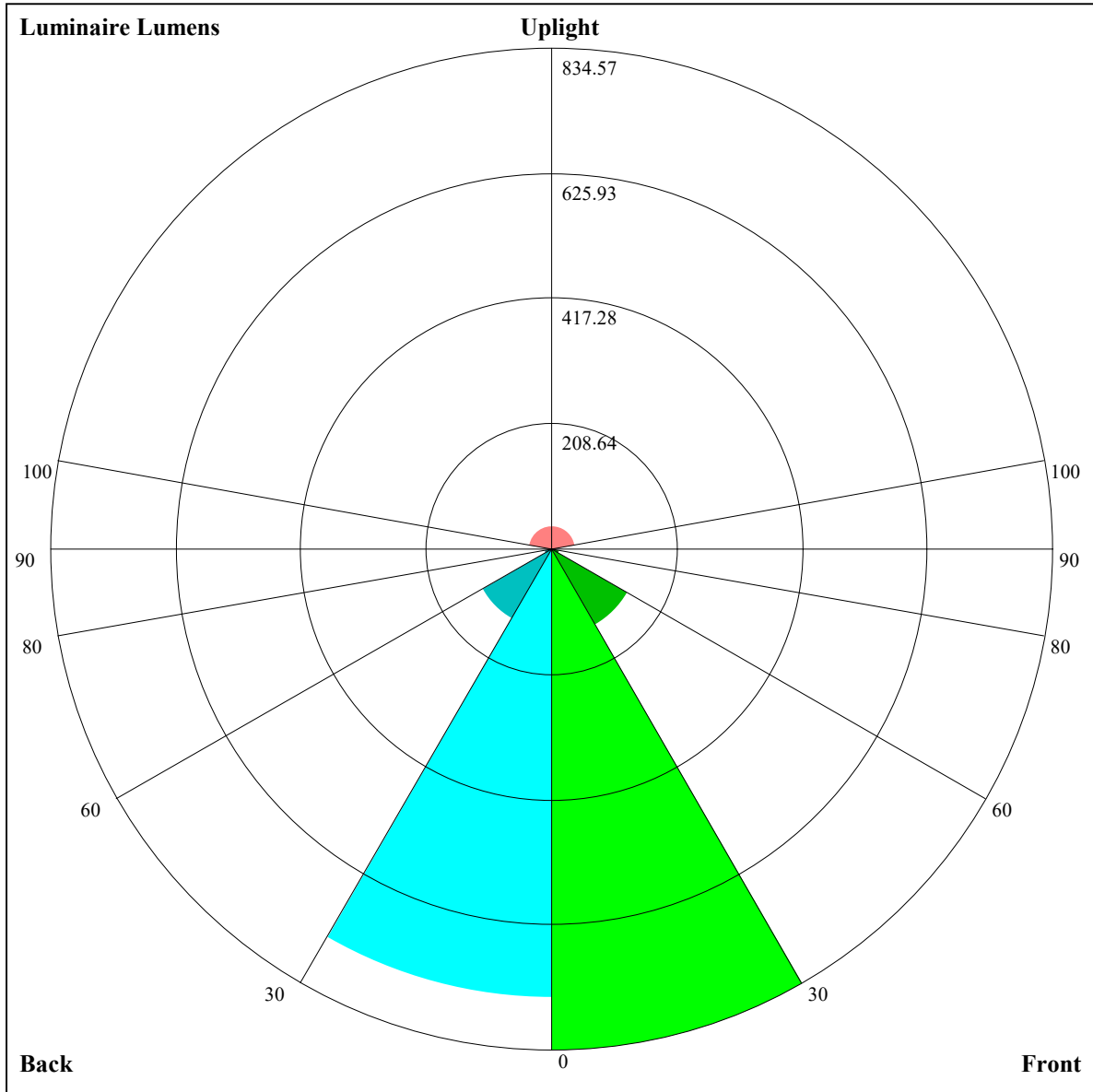
Luminance Limiting Curve





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	0.95	0.95	0.95	0.92	0.92	0.92	0.88	0.88	0.88	0.85	0.85	0.85	0.81	0.81	0.81	0.79
1	0.89	0.87	0.85	0.87	0.85	0.84	0.84	0.82	0.81	0.81	0.80	0.79	0.78	0.77	0.76	0.75
2	0.84	0.81	0.79	0.83	0.80	0.78	0.80	0.78	0.76	0.78	0.76	0.75	0.76	0.74	0.73	0.72
3	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.74	0.72	0.75	0.73	0.71	0.73	0.72	0.70	0.69
4	0.77	0.73	0.70	0.76	0.72	0.70	0.74	0.71	0.69	0.73	0.70	0.68	0.71	0.69	0.68	0.67
5	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.70	0.68	0.66	0.69	0.67	0.65	0.64
6	0.71	0.67	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.67	0.65	0.63	0.62
7	0.69	0.65	0.62	0.68	0.65	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.66	0.63	0.61	0.61
8	0.66	0.63	0.60	0.66	0.63	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.64	0.61	0.60	0.59
9	0.65	0.61	0.59	0.64	0.61	0.59	0.64	0.61	0.59	0.63	0.60	0.58	0.62	0.60	0.58	0.57
10	0.63	0.59	0.57	0.63	0.59	0.57	0.62	0.59	0.57	0.61	0.59	0.57	0.61	0.59	0.57	0.56





Luminaire Lumens:

FL=834.57,FM=145.16,FH=13.67,FVH=4.98

BL=746.32,BM=134.77,BH=13.26,BVH=4.83

UL=8.33,UH=39.63

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	11605.89	11644.43	11033.30	9772.51	8010.71	5830.47	4046.65	2807.88	1591.13
45.0	11638.92	11804.09	11391.17	10279.03	8698.91	6474.63	4294.40	2796.87	1737.03
90.0	11699.49	11682.97	10978.80	9846.84	7862.05	5548.58	3759.80	2309.07	1522.31
135.0	11649.93	11490.27	10708.47	9310.04	7399.58	5202.83	3396.98	2134.54	1405.04
180.0	11605.89	10939.71	9724.06	8032.18	5797.99	3791.18	2500.11	1598.29	1170.50
225.0	11638.92	10852.17	9317.75	7460.14	5236.41	3361.74	2186.29	1455.14	1089.24
270.0	11699.49	11115.89	9833.07	7878.57	5995.64	3875.97	2846.42	1666.56	1250.33
315.0	11649.93	10969.44	10055.50	8458.87	6254.41	4168.32	2750.07	1735.38	1271.80
360.0	11605.89	11644.43	11033.30	9772.51	8010.71	5830.47	4046.65	2807.88	1591.13
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1201.33	976.15	821.99	703.62	586.35	495.51	421.18	350.71	293.45
45.0	1262.44	1007.53	846.77	721.24	612.23	512.58	430.54	354.56	294.00
90.0	1094.74	946.97	787.42	684.85	573.03	486.37	412.04	344.98	289.49
135.0	1111.59	912.28	772.99	659.03	554.97	464.13	391.45	320.43	278.03
180.0	982.10	820.84	685.95	582.39	488.79	416.45	347.46	286.79	242.91
225.0	949.01	802.23	673.78	574.95	482.13	405.38	338.05	284.81	242.03
270.0	1036.71	865.49	736.10	623.79	528.54	447.06	385.95	323.73	279.69
315.0	1034.29	871.21	734.40	627.59	524.69	437.86	370.75	309.20	259.48
360.0	1201.33	976.15	821.99	703.62	586.35	495.51	421.18	350.71	293.45
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	246.27	207.07	179.37	154.65	131.09	110.55	91.17	71.52	55.77
45.0	249.02	208.72	180.31	156.91	132.19	111.76	94.20	75.21	59.90
90.0	243.68	204.42	174.14	149.42	124.65	105.93	85.50	67.99	53.68
135.0	228.48	193.08	167.65	142.65	121.23	100.04	82.14	64.69	51.75
180.0	207.29	179.04	154.05	131.92	109.62	89.52	71.08	55.88	42.17
225.0	207.56	180.47	156.31	132.36	109.34	89.08	69.54	53.90	42.61
270.0	230.19	195.01	169.02	142.05	118.04	94.26	75.10	57.48	45.48
315.0	223.36	193.19	166.93	143.70	119.58	97.61	77.68	60.01	47.07
360.0	246.27	207.07	179.37	154.65	131.09	110.55	91.17	71.52	55.77
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	43.33	32.70	25.38	19.49	16.57	15.42	14.65	13.87	13.27
45.0	47.51	35.79	27.09	21.20	17.01	15.42	14.53	13.76	13.10
90.0	41.13	31.49	24.39	19.32	16.30	15.31	14.48	13.76	13.16
135.0	40.14	30.17	23.62	18.22	15.86	14.81	14.04	13.27	12.77
180.0	32.21	24.56	18.77	16.41	15.25	14.37	13.65	13.05	12.44
225.0	31.55	24.22	18.77	16.13	14.98	14.09	13.38	12.77	12.22
270.0	34.08	25.82	20.15	16.96	15.75	14.81	14.09	13.38	12.77
315.0	36.17	27.58	21.09	17.12	15.64	14.70	13.87	13.21	12.55
360.0	43.33	32.70	25.38	19.49	16.57	15.42	14.65	13.87	13.27
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	12.66	12.06	11.62	11.29	11.01	10.52	9.80	9.03	8.20
45.0	12.55	11.95	11.45	11.07	10.74	10.30	9.80	9.03	8.31
90.0	12.55	12.00	11.45	10.96	10.46	10.02	9.41	8.70	8.04
135.0	12.17	11.62	11.18	10.85	10.46	9.91	9.36	8.53	7.87
180.0	11.89	11.40	11.01	10.74	10.30	9.69	8.92	8.15	7.60
225.0	11.62	11.23	11.01	10.74	10.30	9.69	8.92	8.09	7.65
270.0	12.22	11.73	11.40	11.12	10.68	10.13	9.41	8.37	7.76
315.0	11.95	11.45	11.18	10.96	10.57	10.02	9.36	8.48	7.82
360.0	12.66	12.06	11.62	11.29	11.01	10.52	9.80	9.03	8.20



Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>7.65</b>
<b>45.0</b>	<b>7.82</b>
<b>90.0</b>	<b>7.65</b>
<b>135.0</b>	<b>7.54</b>
<b>180.0</b>	<b>7.60</b>
<b>225.0</b>	<b>7.65</b>
<b>270.0</b>	<b>7.60</b>
<b>315.0</b>	<b>7.54</b>
<b>360.0</b>	<b>7.65</b>