



NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

LumCAT: 2-2187-M	
Luminaire: 92.70.131.00	
Report No: NATA0100	Voltage(V): 36.0000
Test No: GC20200211722	Current(A): 0.6000
LampCAT: CITIZEN CLU038	Power (W): 21.6000
Lamp flux(lm): 2507.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2021.54
Efficiency(%): 80.64%
Lumens(lm)/Power(W): 93.59
Central intensity(cd): 9490.922
Maximum intensity(cd): 9490.922
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=24.4
 [C90/270]Total=24.4
Field angle(10%Imax): [C0/180]Total=47.0
 [C90/270]Total=47.0
Maximum s/h(1/2): C0_180=0.41 C90_270=0.41
Maximum s/h(1/4): C0_180=0.42 C90_270=0.42
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 80.64%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.727%

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/2/17
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9490.922	0.000	0	.000%	.000%
1.0	9441.844	9.059	9.059	.361%	.448%
2.0	9307.828	26.911	35.97	1.073%	1.779%
3.0	9093.234	44.009	79.98	1.755%	3.956%
4.0	8806.148	59.915	139.895	2.390%	6.920%
5.0	8478.141	74.356	214.251	2.966%	10.598%
6.0	8038.406	86.799	301.049	3.462%	14.892%
7.0	7538.695	96.687	397.736	3.857%	19.675%
8.0	7057.125	104.460	502.196	4.167%	24.842%
9.0	6532.523	110.137	612.333	4.393%	30.290%
10.0	5891.063	112.429	724.761	4.485%	35.852%
11.0	5369.344	112.515	837.276	4.488%	41.418%
12.0	4881.234	112.054	949.33	4.470%	46.961%
13.0	4270.570	108.609	1057.938	4.332%	52.333%
14.0	3823.453	103.603	1161.541	4.133%	57.458%
15.0	3411.773	99.328	1260.87	3.962%	62.372%
16.0	2970.844	93.523	1354.393	3.730%	66.998%
17.0	2579.906	86.440	1440.833	3.448%	71.274%
18.0	2269.688	79.959	1520.792	3.189%	75.229%
19.0	1958.133	73.555	1594.348	2.934%	78.868%
20.0	1699.875	66.952	1661.299	2.671%	82.180%
21.0	1466.578	60.802	1722.102	2.425%	85.188%
22.0	1218.270	53.953	1776.055	2.152%	87.857%
23.0	1048.901	47.571	1823.626	1.898%	90.210%
24.0	852.701	41.576	1865.202	1.658%	92.266%
25.0	653.245	34.242	1899.444	1.366%	93.960%
26.0	491.034	27.011	1926.455	1.077%	95.296%
27.0	347.013	20.503	1946.958	.818%	96.311%
28.0	210.030	14.103	1961.061	.563%	97.008%
29.0	103.451	8.202	1969.262	.327%	97.414%
30.0	44.121	3.984	1973.247	.159%	97.611%
31.0	16.854	1.697	1974.944	.068%	97.695%
32.0	13.008	0.856	1975.799	.034%	97.737%
33.0	12.298	0.746	1976.545	.030%	97.774%
34.0	11.609	0.723	1977.268	.029%	97.810%
35.0	11.074	0.704	1977.973	.028%	97.845%
36.0	10.673	0.692	1978.665	.028%	97.879%
37.0	10.294	0.684	1979.349	.027%	97.913%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	10.005	0.678	1980.026	.027%	97.947%
39.0	9.731	0.674	1980.7	.027%	97.980%
40.0	9.520	0.671	1981.372	.027%	98.013%
41.0	9.345	0.672	1982.043	.027%	98.046%
42.0	9.190	0.673	1982.717	.027%	98.080%
43.0	9.049	0.676	1983.392	.027%	98.113%
44.0	8.944	0.679	1984.071	.027%	98.147%
45.0	8.873	0.685	1984.756	.027%	98.180%
46.0	8.768	0.690	1985.446	.028%	98.215%
47.0	8.705	0.695	1986.141	.028%	98.249%
48.0	8.677	0.703	1986.844	.028%	98.284%
49.0	8.613	0.710	1987.554	.028%	98.319%
50.0	8.557	0.716	1988.27	.029%	98.354%
51.0	8.515	0.722	1988.992	.029%	98.390%
52.0	8.487	0.730	1989.721	.029%	98.426%
53.0	8.452	0.737	1990.458	.029%	98.463%
54.0	8.438	0.744	1991.203	.030%	98.499%
55.0	8.395	0.751	1991.954	.030%	98.537%
56.0	8.388	0.758	1992.712	.030%	98.574%
57.0	8.325	0.764	1993.477	.030%	98.612%
58.0	8.325	0.770	1994.247	.031%	98.650%
59.0	8.290	0.777	1995.023	.031%	98.688%
60.0	8.290	0.783	1995.807	.031%	98.727%
61.0	8.269	0.790	1996.597	.032%	98.766%
62.0	8.276	0.797	1997.394	.032%	98.806%
63.0	8.262	0.804	1998.198	.032%	98.845%
64.0	8.255	0.810	1999.009	.032%	98.886%
65.0	8.248	0.817	1999.825	.033%	98.926%
66.0	8.234	0.822	2000.648	.033%	98.967%
67.0	8.227	0.828	2001.475	.033%	99.008%
68.0	8.213	0.833	2002.308	.033%	99.049%
69.0	8.191	0.837	2003.145	.033%	99.090%
70.0	8.205	0.842	2003.987	.034%	99.132%
71.0	8.191	0.847	2004.835	.034%	99.174%
72.0	8.213	0.853	2005.688	.034%	99.216%
73.0	8.177	0.857	2006.545	.034%	99.258%
74.0	8.198	0.861	2007.406	.034%	99.301%
75.0	8.191	0.866	2008.272	.035%	99.344%

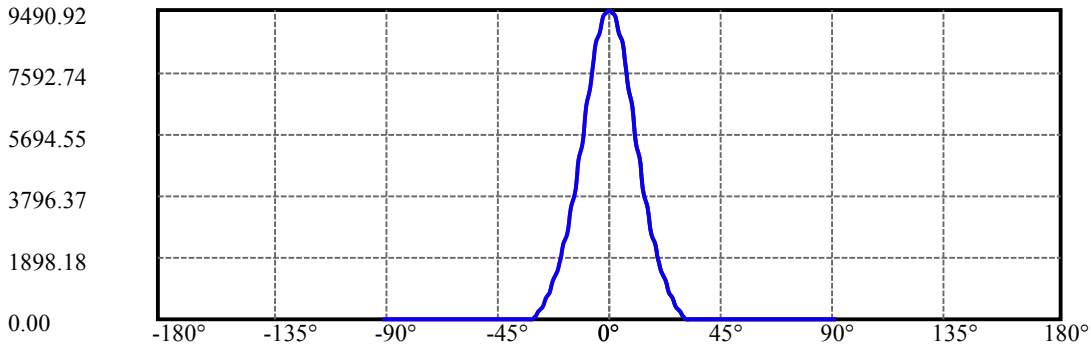
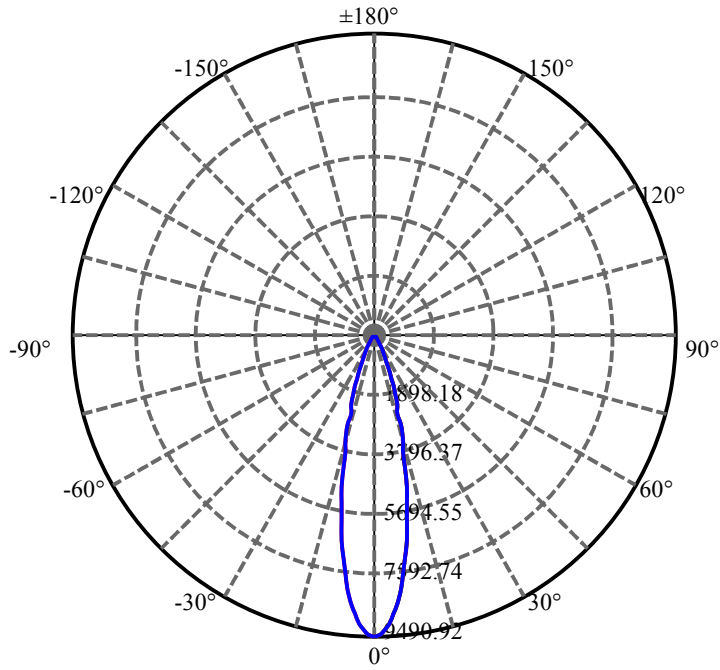
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.177	0.869	2009.14	.035%	99.387%
77.0	8.177	0.872	2010.012	.035%	99.430%
78.0	8.184	0.876	2010.888	.035%	99.473%
79.0	8.170	0.879	2011.767	.035%	99.517%
80.0	8.170	0.881	2012.648	.035%	99.560%
81.0	8.177	0.884	2013.532	.035%	99.604%
82.0	8.184	0.887	2014.419	.035%	99.648%
83.0	8.198	0.891	2015.31	.036%	99.692%
84.0	8.191	0.893	2016.203	.036%	99.736%
85.0	8.163	0.893	2017.095	.036%	99.780%
86.0	8.135	0.891	2017.986	.036%	99.824%
87.0	8.114	0.889	2018.876	.035%	99.868%
88.0	8.086	0.887	2019.763	.035%	99.912%
89.0	8.100	0.887	2020.65	.035%	99.956%
90.0	8.100	0.888	2021.538	.035%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1973.25	78.71%	97.61%
0-40	1981.37	79.03%	98.01%
0-60	1995.81	79.61%	98.73%
0-90	2020.65	80.60%	99.96%
0-120	2020.65	80.60%	99.96%
0-180	2021.54	80.64%	100.00%
60-90	25.63	1.02%	1.27%
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%
0-19.34	1617.23	64.51%	80.00%

ZONAL LUMEN SUMMARY

0-10	724.76
10-20	936.54
20-30	311.95
30-40	8.12
40-50	6.90
50-60	7.54
60-70	8.18
70-80	8.66
80-90	8.00
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: —————

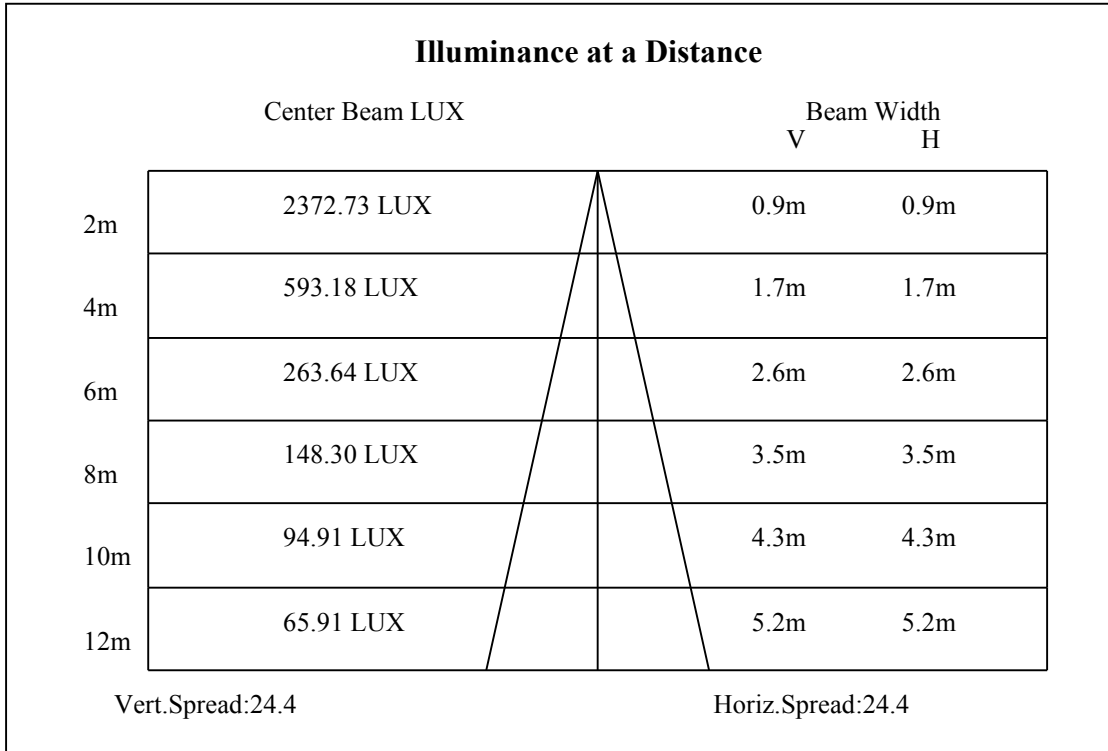
C90/C270: —————

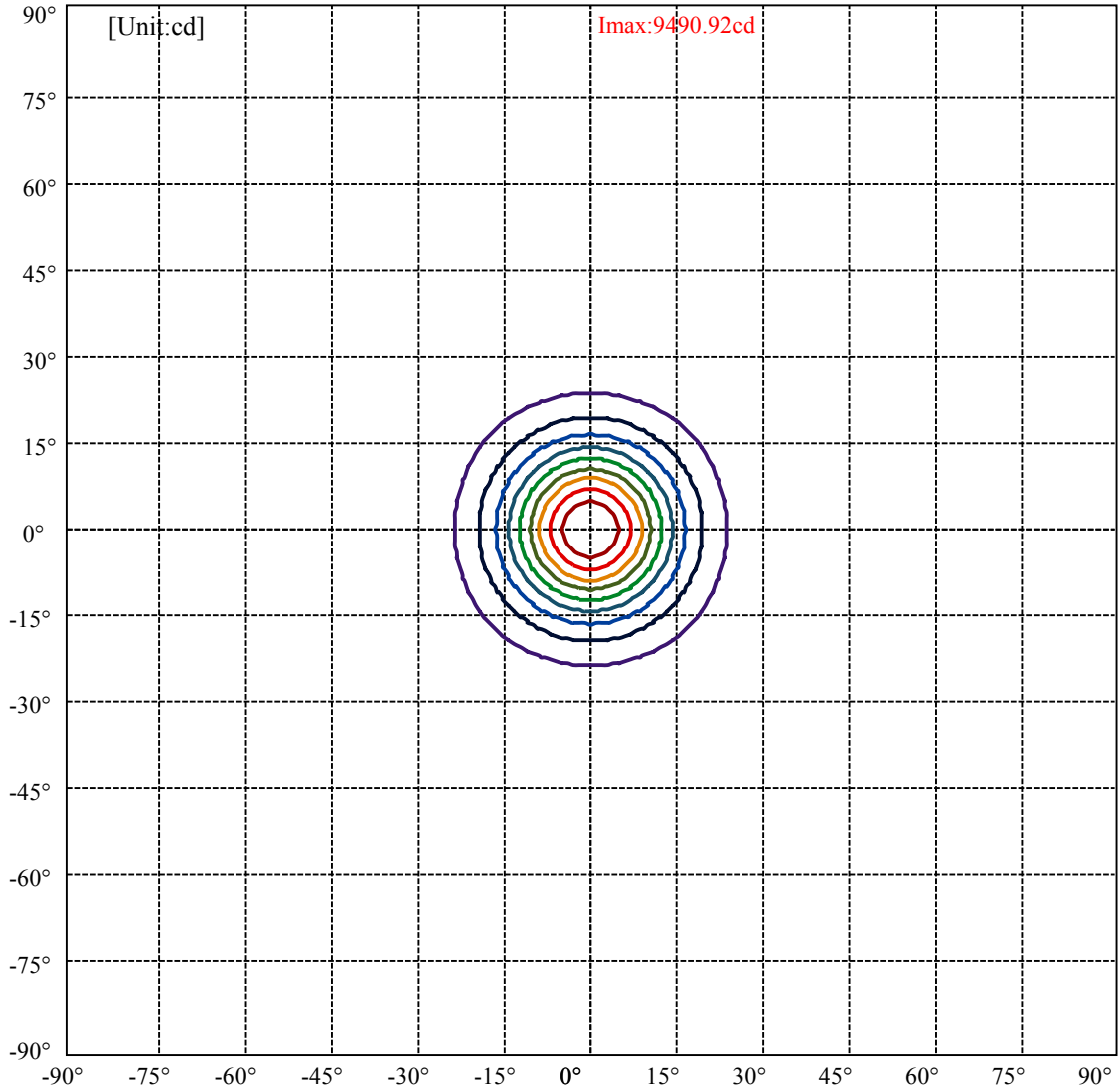
Field angle(10%Imax):C0/180Left:23.5 Right:23.5

:C90/270Left:23.5 Right:23.5

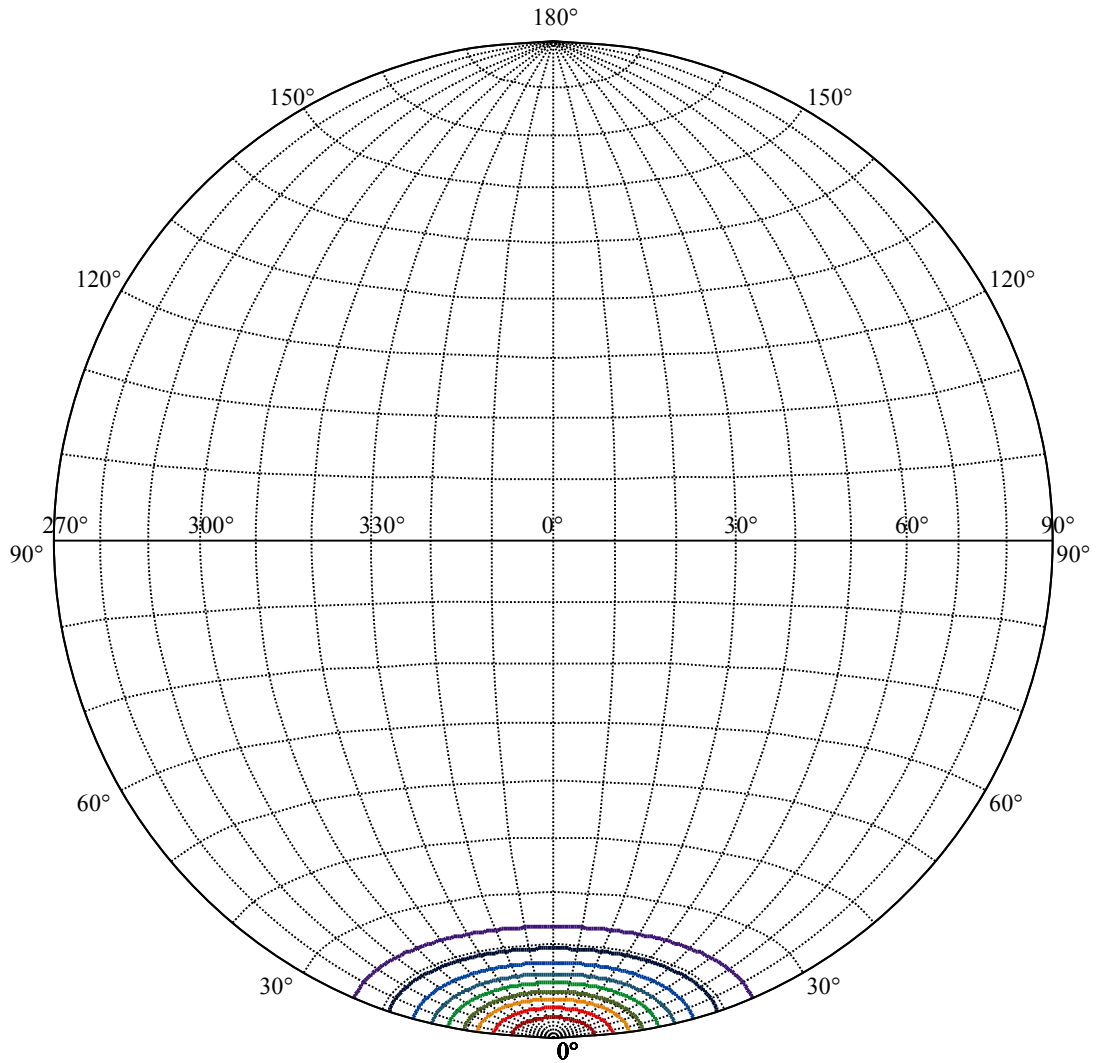
Beam Angle(50%Imax):C0/180Left:12.2 Right:12.2

:C90/270Left:12.2 Right:12.2





(10%Imax) 949.092	—
(20%Imax) 1898.18	—
(30%Imax) 2847.28	—
(40%Imax) 3796.37	—
(50%Imax) 4745.46	—
(60%Imax) 5694.55	—
(70%Imax) 6643.65	—
(80%Imax) 7592.74	—
(90%Imax) 8541.83	—



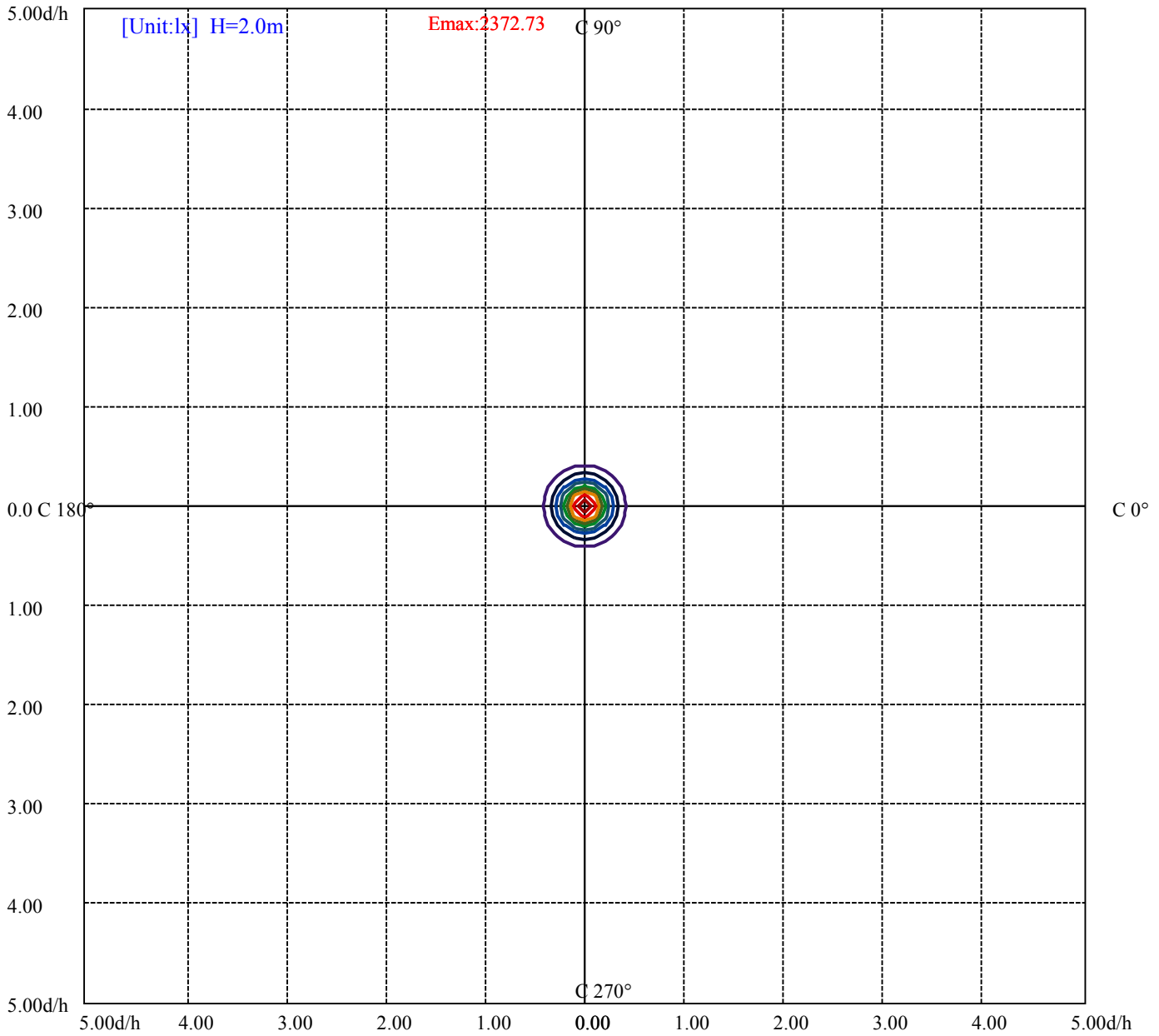
House

[Unit:cd]

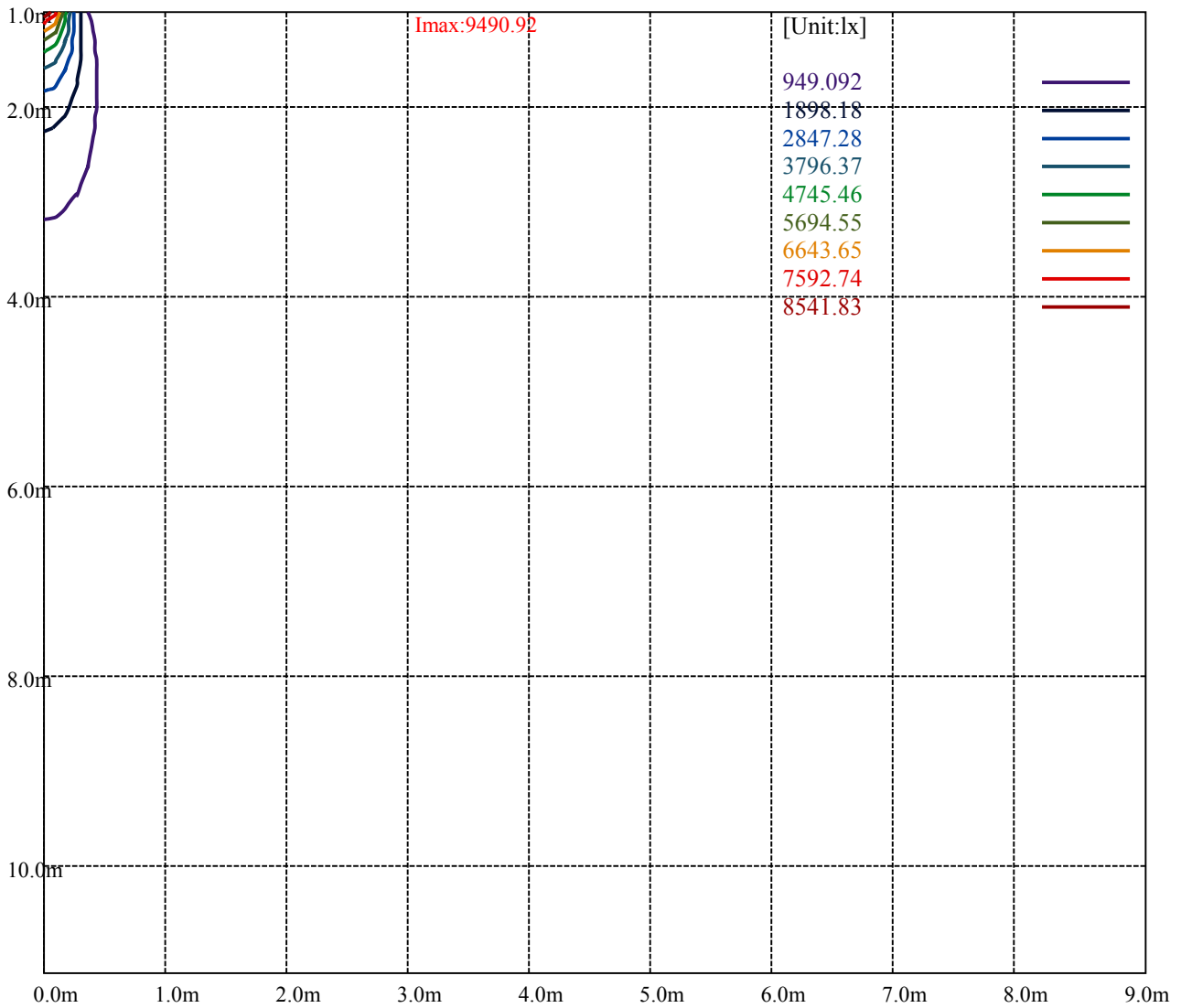
Road

Imax:9490.92

(10%Imax)	949.092	—
(20%Imax)	1898.18	—
(30%Imax)	2847.28	—
(40%Imax)	3796.37	—
(50%Imax)	4745.46	—
(60%Imax)	5694.55	—
(70%Imax)	6643.65	—
(80%Imax)	7592.74	—
(90%Imax)	8541.83	—



(10%Emax) 237.2728	—
(20%Emax) 474.545	—
(30%Emax) 711.8175	—
(40%Emax) 949.0925	—
(50%Emax) 1186.365	—
(60%Emax) 1423.637	—
(70%Emax) 1660.91	—
(80%Emax) 1898.182	—
(90%Emax) 2135.455	—



Luminance Table

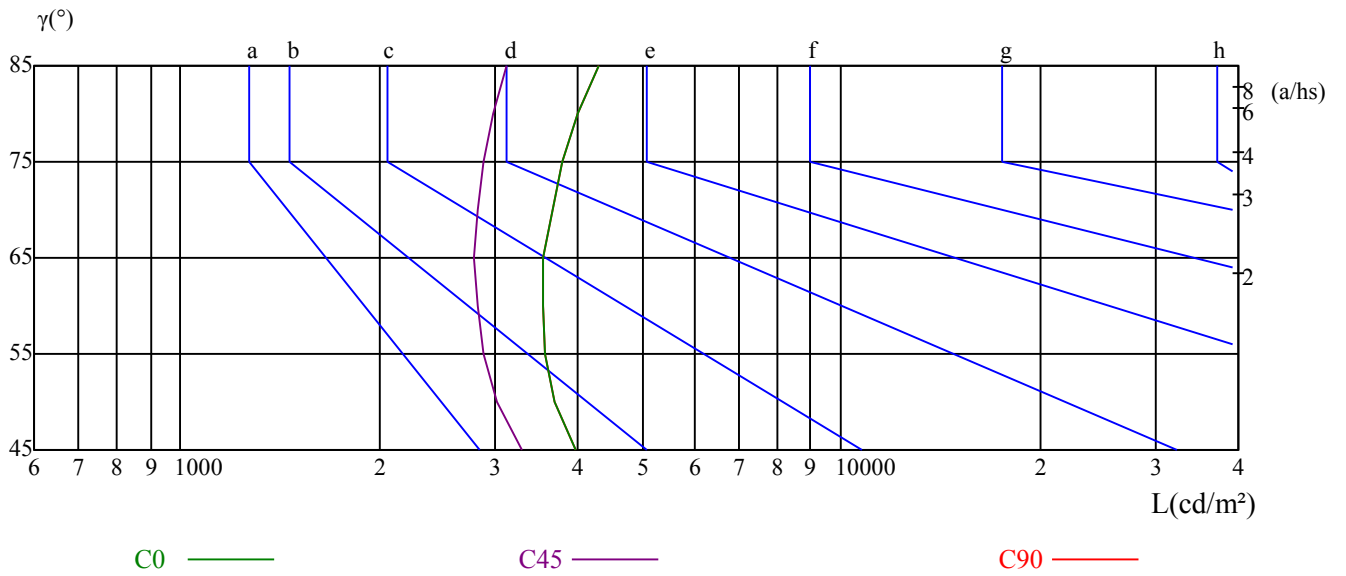
γ	45	50	55	60	65	70	75	80	85
C0	3955	3683	3556	3535	3547	3659	3797	4003	4302
C45	3296	3023	2875	2815	2780	2819	2873	2969	3120
C90	3955	3683	3556	3535	3547	3659	3797	4003	4302

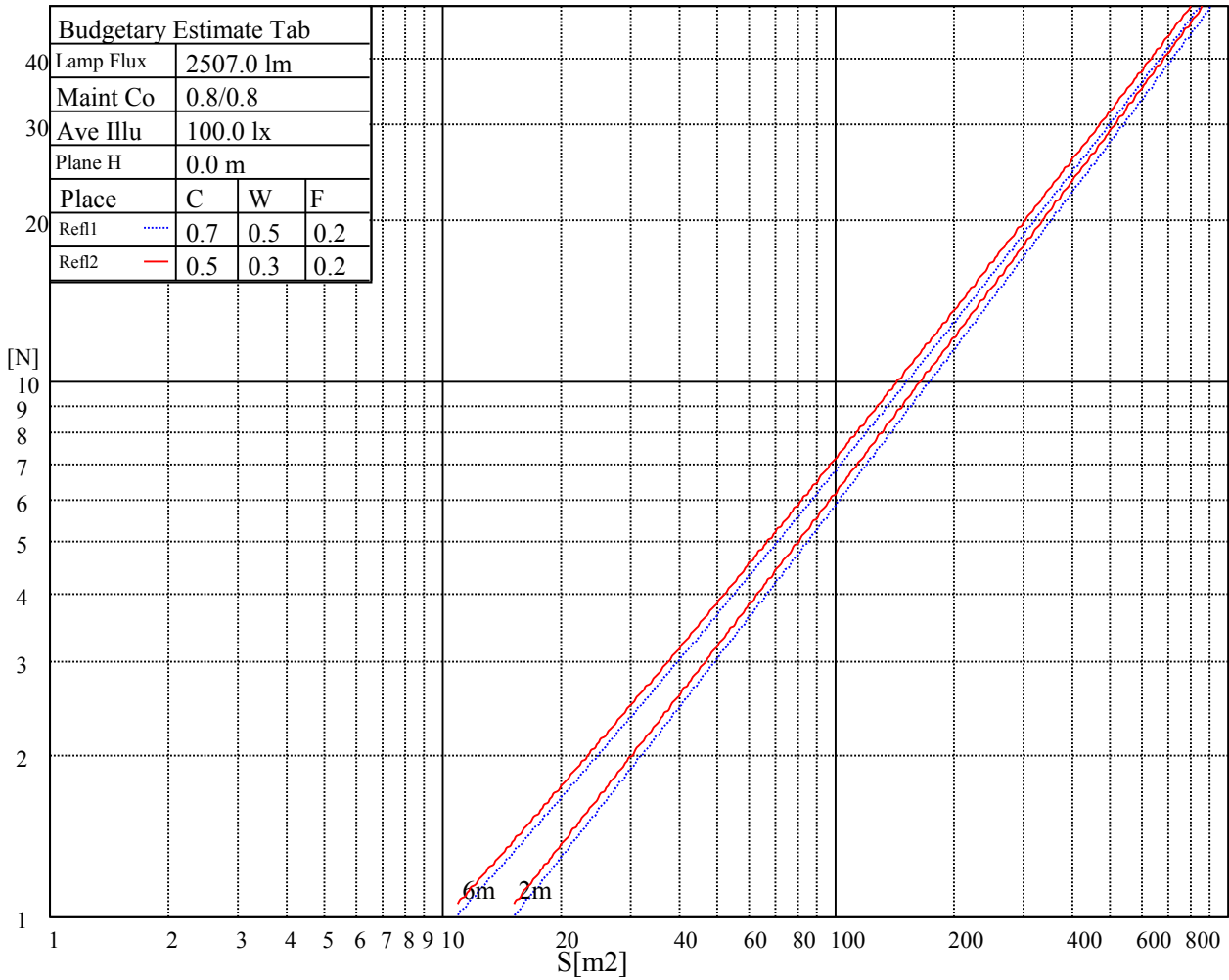
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
10648	10648	10648	17024	17024	17024	50197	50197	50197

Glare Table

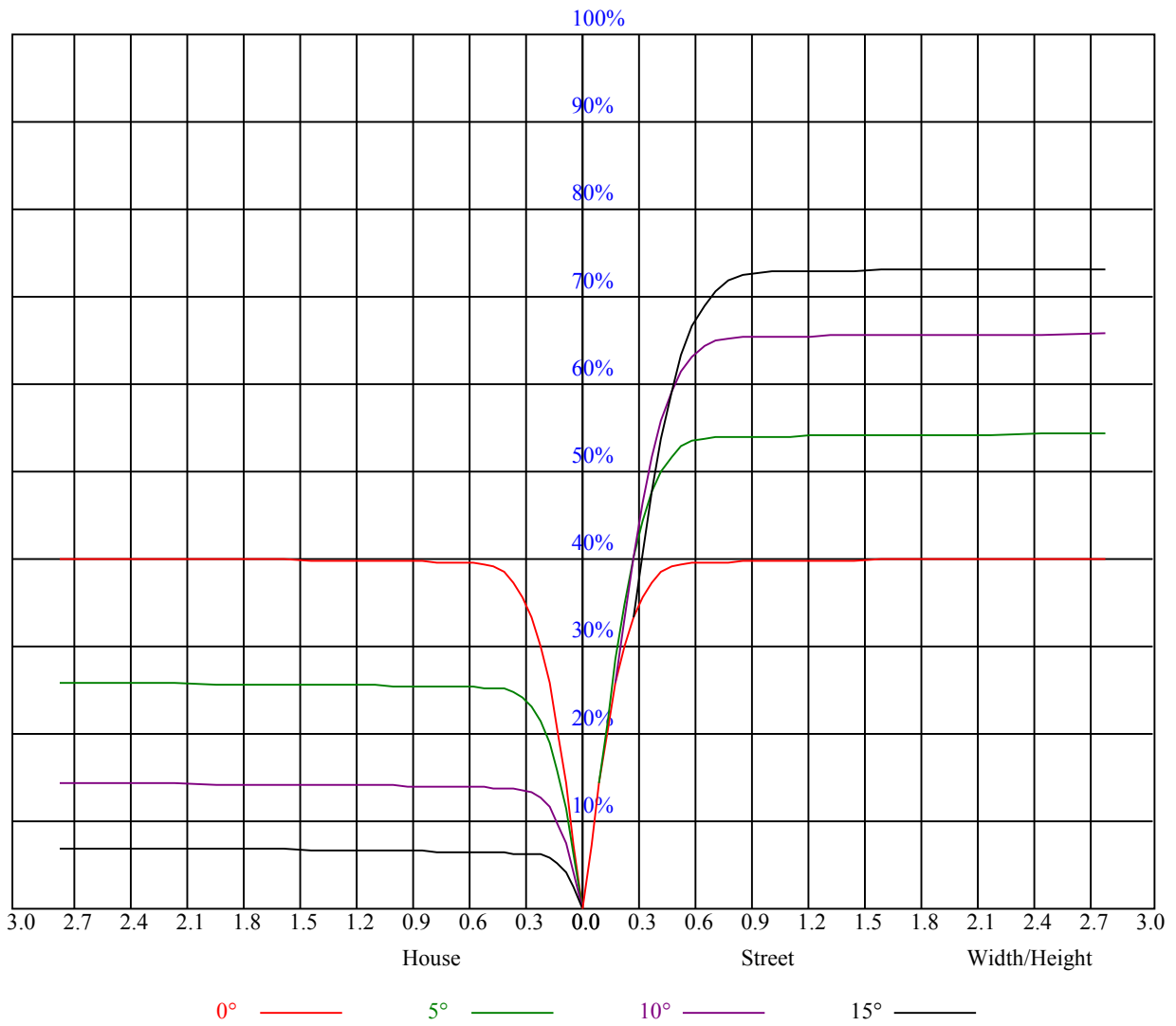
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.82	0.82	0.82	0.81
1	0.91	0.89	0.88	0.89	0.88	0.86	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.80	0.79	0.78
2	0.87	0.84	0.82	0.85	0.83	0.81	0.83	0.81	0.79	0.80	0.79	0.78	0.78	0.77	0.76	0.75
3	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.78	0.76	0.75	0.76	0.75	0.74	0.73
4	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.76	0.74	0.72	0.75	0.73	0.71	0.70
5	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.70	0.73	0.71	0.69	0.68
6	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.72	0.70	0.68	0.71	0.69	0.67	0.67
7	0.72	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.70	0.68	0.66	0.69	0.67	0.66	0.65
8	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.64	0.63
9	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.64	0.62	0.66	0.64	0.62	0.61
10	0.66	0.63	0.61	0.66	0.63	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.65	0.62	0.61	0.60



Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	9497.81	9432.00	9271.69	9059.63	8744.63	8400.94	7943.63	7436.25	6953.06
45.0	9509.06	9408.94	9226.13	9028.69	8672.63	8320.50	7913.25	7327.69	6831.56
90.0	9473.63	9379.69	9216.00	8926.88	8627.63	8274.94	7750.69	7274.81	6765.75
135.0	9486.56	9474.19	9367.88	9195.75	8930.81	8629.31	8212.50	7729.88	7264.69
180.0	9496.13	9461.81	9346.50	9138.94	8850.38	8527.50	8090.44	7584.75	7094.25
225.0	9509.06	9495.56	9402.75	9201.94	8967.38	8665.31	8204.06	7787.81	7324.31
270.0	9473.63	9486.56	9393.19	9235.69	8984.81	8691.75	8341.31	7831.13	7377.75
315.0	9481.50	9396.00	9238.50	8958.38	8670.94	8314.88	7851.38	7337.25	6845.63
360.0	9497.81	9432.00	9271.69	9059.63	8744.63	8400.94	7943.63	7436.25	6953.06
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6384.38	5801.63	5292.00	4862.25	4218.75	3778.88	3415.50	2933.44	2546.44
45.0	6316.31	5652.00	5130.56	4628.25	4050.56	3614.06	3210.75	2797.88	2432.81
90.0	6233.06	5561.44	5040.00	4547.25	3971.81	3538.69	3137.63	2730.38	2368.69
135.0	6701.63	6100.88	5562.56	5106.38	4426.88	3966.75	3586.50	3087.00	2689.88
180.0	6580.13	5921.44	5400.56	4897.69	4304.81	3859.31	3440.25	3005.44	2610.00
225.0	6823.69	6167.81	5640.19	5124.38	4507.31	4047.75	3565.69	3162.94	2745.00
270.0	6890.06	6246.56	5724.56	5211.56	4594.50	4124.25	3683.81	3216.94	2794.50
315.0	6330.94	5676.75	5164.31	4672.13	4089.94	3657.94	3254.06	2832.75	2481.94
360.0	6384.38	5801.63	5292.00	4862.25	4218.75	3778.88	3415.50	2933.44	2546.44
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2280.38	1943.44	1675.13	1482.19	1234.69	1051.31	866.25	641.81	473.06
45.0	2135.25	1821.94	1562.06	1354.50	1149.19	948.94	747.00	562.50	413.44
90.0	2081.25	1791.00	1562.63	1329.19	1116.84	933.53	734.79	550.18	399.32
135.0	2364.19	2033.44	1751.63	1529.44	1311.19	1112.63	906.19	713.25	549.00
180.0	2293.31	1980.00	1734.75	1488.94	1102.22	1080.51	878.18	679.33	513.68
225.0	2381.63	2096.44	1840.50	1553.06	1343.81	1104.58	942.58	736.26	567.23
270.0	2462.63	2135.25	1843.88	1611.00	1370.81	1181.25	974.81	766.69	592.31
315.0	2158.88	1863.56	1628.44	1384.31	1117.41	978.47	771.81	575.94	420.24
360.0	2280.38	1943.44	1675.13	1482.19	1234.69	1051.31	866.25	641.81	473.06
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	323.44	215.49	86.79	35.04	14.23	13.11	12.32	11.64	11.03
45.0	295.88	142.71	66.38	23.85	12.94	12.21	11.64	11.03	10.63
90.0	271.58	142.03	65.19	22.39	13.16	12.32	11.76	11.14	10.69
135.0	389.81	291.38	125.38	52.43	16.26	12.88	12.26	11.59	11.08
180.0	362.36	204.98	108.96	46.91	17.33	12.66	11.98	11.36	10.91
225.0	416.36	250.93	147.21	68.18	23.51	13.78	12.88	12.09	11.48
270.0	432.56	284.06	157.28	77.29	23.23	14.06	13.16	12.38	11.70
315.0	284.12	148.67	70.43	26.89	14.18	13.05	12.38	11.64	11.08
360.0	323.44	215.49	86.79	35.04	14.23	13.11	12.32	11.64	11.03
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	10.63	10.24	9.96	9.62	9.39	9.28	9.11	8.94	8.83
45.0	10.35	10.01	9.73	9.56	9.39	9.17	9.06	8.94	8.83
90.0	10.41	10.07	9.90	9.62	9.39	9.28	9.17	9.06	8.94
135.0	10.63	10.29	10.07	9.79	9.68	9.39	9.23	9.06	9.06
180.0	10.52	10.18	9.90	9.68	9.51	9.28	9.11	9.00	8.89
225.0	10.97	10.52	10.18	9.90	9.62	9.45	9.28	9.11	9.00
270.0	11.25	10.74	10.35	10.01	9.73	9.56	9.39	9.23	9.06
315.0	10.63	10.29	9.96	9.68	9.45	9.34	9.17	9.06	8.94
360.0	10.63	10.24	9.96	9.62	9.39	9.28	9.11	8.94	8.83

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	8.78	8.72	8.61	8.61	8.55	8.44	8.44	8.38	8.38
45.0	8.78	8.72	8.66	8.66	8.61	8.55	8.49	8.49	8.44
90.0	8.89	8.78	8.72	8.66	8.66	8.55	8.55	8.55	8.49
135.0	8.94	8.83	8.78	8.72	8.66	8.61	8.55	8.55	8.49
180.0	8.83	8.72	8.66	8.61	8.55	8.55	8.49	8.44	8.38
225.0	8.89	8.78	8.72	8.72	8.61	8.55	8.49	8.49	8.44
270.0	9.00	8.89	8.83	8.78	8.72	8.66	8.61	8.61	8.55
315.0	8.89	8.72	8.66	8.66	8.55	8.55	8.49	8.38	8.44
360.0	8.78	8.72	8.61	8.61	8.55	8.44	8.44	8.38	8.38
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.38	8.33	8.33	8.27	8.27	8.21	8.21	8.16	8.21
45.0	8.44	8.44	8.38	8.33	8.33	8.27	8.27	8.33	8.27
90.0	8.49	8.44	8.44	8.33	8.38	8.33	8.33	8.38	8.38
135.0	8.49	8.44	8.44	8.38	8.33	8.33	8.33	8.33	8.33
180.0	8.33	8.33	8.33	8.27	8.27	8.21	8.27	8.21	8.21
225.0	8.38	8.38	8.38	8.33	8.33	8.27	8.27	8.21	8.27
270.0	8.55	8.44	8.44	8.38	8.38	8.38	8.38	8.33	8.33
315.0	8.44	8.38	8.38	8.33	8.33	8.33	8.27	8.21	8.21
360.0	8.38	8.33	8.33	8.27	8.27	8.21	8.21	8.16	8.21
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.16	8.21	8.16	8.16	8.16	8.16	8.10	8.10	8.16
45.0	8.27	8.27	8.21	8.21	8.21	8.27	8.16	8.21	8.16
90.0	8.38	8.33	8.33	8.33	8.33	8.33	8.33	8.38	8.38
135.0	8.33	8.27	8.27	8.21	8.21	8.21	8.27	8.21	8.21
180.0	8.21	8.16	8.21	8.16	8.16	8.10	8.10	8.10	8.04
225.0	8.27	8.27	8.27	8.21	8.21	8.21	8.16	8.16	8.16
270.0	8.27	8.33	8.33	8.33	8.33	8.27	8.27	8.33	8.27
315.0	8.21	8.21	8.21	8.27	8.21	8.16	8.16	8.16	8.16
360.0	8.16	8.21	8.16	8.16	8.16	8.16	8.10	8.10	8.16
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.10	8.04	8.16	8.10	8.10	8.10	8.10	8.04	8.04
45.0	8.16	8.16	8.16	8.16	8.21	8.16	8.16	8.10	8.16
90.0	8.38	8.38	8.44	8.38	8.33	8.38	8.33	8.38	8.38
135.0	8.21	8.16	8.16	8.16	8.16	8.16	8.16	8.16	8.16
180.0	8.16	8.10	8.10	8.10	8.04	8.04	8.10	8.04	8.04
225.0	8.21	8.16	8.16	8.10	8.16	8.10	8.10	8.16	8.16
270.0	8.27	8.33	8.33	8.38	8.33	8.33	8.38	8.33	8.33
315.0	8.21	8.10	8.10	8.16	8.10	8.16	8.16	8.16	8.10
360.0	8.10	8.04	8.16	8.10	8.10	8.10	8.10	8.04	8.04
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	8.04	8.04	8.10	8.10	8.04	8.10	8.10	8.04	8.04
45.0	8.10	8.16	8.10	8.16	8.10	8.10	8.10	8.10	8.10
90.0	8.44	8.49	8.49	8.33	8.21	8.10	8.16	8.10	8.16
135.0	8.10	8.10	8.16	8.10	8.16	8.10	8.10	8.10	8.10
180.0	8.04	8.10	8.04	8.10	8.04	8.04	7.99	8.04	8.04
225.0	8.16	8.16	8.16	8.16	8.10	8.10	8.16	8.10	8.10
270.0	8.38	8.33	8.38	8.49	8.55	8.44	8.21	8.10	8.16
315.0	8.16	8.10	8.16	8.10	8.10	8.10	8.10	8.10	8.10
360.0	8.04	8.04	8.10	8.10	8.04	8.10	8.10	8.04	8.04

Intensity data(cd)

C/γ(°)	90.0
0.0	8.04
45.0	8.10
90.0	8.10
135.0	8.10
180.0	8.04
225.0	8.10
270.0	8.16
315.0	8.16
360.0	8.04