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: LN01D02817DA-N
Luminaire: 92.70.307.00

Report No: 211111-B003	Voltage(V): 35.3100
Test No: 211111-C003	Current(A): 0.1850
LampCAT: LUMINUS CXM-4 LES4.5	Power (W): 6.5320
Lamp flux(lm): 742.4	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 111	Width(mm): 111
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 480.82
Efficiency(%): 64.77%
Lumens(lm)/Power(W): 73.61
Central intensity(cd): 1953.173
Maximum intensity(cd): 1953.173
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=22.3
[C90/270]Total=22.3
Field angle(10%Imax): [C0/180]Total=46.5
[C90/270]Total=46.5
Maximum s/h(1/2): C0_180=0.38 C90_270=0.38
Maximum s/h(1/4): C0_180=0.40 C90_270=0.40
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 64.77%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 95.164%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1953.173	0.000	0	.000%	.000%
1.0	1939.953	1.863	1.863	.251%	.387%
2.0	1908.059	5.523	7.386	.744%	1.536%
3.0	1850.547	8.989	16.375	1.211%	3.406%
4.0	1774.064	12.133	28.508	1.634%	5.929%
5.0	1688.841	14.897	43.405	2.007%	9.027%
6.0	1579.269	17.175	60.58	2.314%	12.599%
7.0	1450.054	18.803	79.383	2.533%	16.510%
8.0	1351.319	20.049	99.432	2.701%	20.679%
9.0	1223.448	20.867	120.299	2.811%	25.019%
10.0	1091.402	20.949	141.247	2.822%	29.376%
11.0	991.487	20.812	162.06	2.804%	33.705%
12.0	886.606	20.530	182.59	2.766%	37.974%
13.0	774.248	19.710	202.3	2.655%	42.074%
14.0	683.939	18.665	220.965	2.514%	45.955%
15.0	601.547	17.648	238.613	2.377%	49.626%
16.0	523.025	16.478	255.091	2.220%	53.053%
17.0	457.453	15.269	270.359	2.057%	56.228%
18.0	398.238	14.108	284.468	1.900%	59.163%
19.0	352.086	13.054	297.522	1.758%	61.877%
20.0	302.029	11.972	309.494	1.613%	64.367%
21.0	262.636	10.843	320.337	1.461%	66.622%
22.0	234.470	9.990	330.326	1.346%	68.700%
23.0	201.382	9.145	339.472	1.232%	70.602%
24.0	177.324	8.280	347.752	1.115%	72.324%
25.0	155.507	7.568	355.319	1.019%	73.898%
26.0	138.560	6.941	362.261	.935%	75.342%
27.0	122.971	6.398	368.659	.862%	76.672%
28.0	108.788	5.868	374.527	.790%	77.893%
29.0	97.614	5.400	379.927	.727%	79.016%
30.0	88.143	5.015	384.942	.676%	80.059%
31.0	78.836	4.647	389.589	.626%	81.025%
32.0	71.457	4.306	393.895	.580%	81.921%
33.0	65.317	4.029	397.924	.543%	82.759%
34.0	59.230	3.769	401.694	.508%	83.543%
35.0	54.390	3.529	405.222	.475%	84.277%
36.0	50.088	3.327	408.549	.448%	84.968%
37.0	46.204	3.140	411.689	.423%	85.622%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	42.701	2.968	414.657	.400%	86.239%
39.0	39.646	2.811	417.468	.379%	86.823%
40.0	36.763	2.665	420.132	.359%	87.378%
41.0	34.492	2.537	422.67	.342%	87.905%
42.0	32.319	2.427	425.097	.327%	88.410%
43.0	30.272	2.319	427.416	.312%	88.892%
44.0	28.674	2.225	429.641	.300%	89.355%
45.0	27.270	2.150	431.79	.290%	89.802%
46.0	25.783	2.075	433.865	.279%	90.234%
47.0	24.536	2.001	435.867	.270%	90.650%
48.0	23.490	1.941	437.808	.262%	91.054%
49.0	22.377	1.884	439.692	.254%	91.445%
50.0	21.414	1.826	441.517	.246%	91.825%
51.0	20.637	1.779	443.297	.240%	92.195%
52.0	19.823	1.736	445.033	.234%	92.556%
53.0	19.091	1.693	446.726	.228%	92.908%
54.0	18.441	1.654	448.38	.223%	93.252%
55.0	17.814	1.618	449.998	.218%	93.589%
56.0	17.231	1.584	451.582	.213%	93.918%
57.0	16.679	1.550	453.132	.209%	94.241%
58.0	16.088	1.515	454.647	.204%	94.556%
59.0	15.543	1.479	456.126	.199%	94.863%
60.0	14.998	1.443	457.569	.194%	95.164%
61.0	14.326	1.399	458.969	.189%	95.455%
62.0	13.683	1.350	460.318	.182%	95.735%
63.0	13.063	1.301	461.619	.175%	96.006%
64.0	12.354	1.247	462.866	.168%	96.265%
65.0	11.644	1.188	464.054	.160%	96.512%
66.0	10.965	1.128	465.182	.152%	96.747%
67.0	10.285	1.068	466.25	.144%	96.969%
68.0	9.620	1.008	467.259	.136%	97.179%
69.0	8.985	0.949	468.208	.128%	97.376%
70.0	8.410	0.893	469.101	.120%	97.562%
71.0	7.865	0.841	469.943	.113%	97.737%
72.0	7.342	0.791	470.733	.107%	97.901%
73.0	6.924	0.746	471.479	.100%	98.056%
74.0	6.528	0.707	472.186	.095%	98.204%
75.0	6.214	0.673	472.86	.091%	98.344%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.072	0.652	473.512	.088%	98.479%
77.0	6.476	0.669	474.181	.090%	98.618%
78.0	6.879	0.715	474.896	.096%	98.767%
79.0	7.170	0.755	475.651	.102%	98.924%
80.0	6.954	0.761	476.412	.103%	99.082%
81.0	6.916	0.750	477.162	.101%	99.238%
82.0	6.214	0.712	477.874	.096%	99.386%
83.0	5.460	0.635	478.509	.085%	99.518%
84.0	4.780	0.558	479.067	.075%	99.635%
85.0	3.690	0.462	479.529	.062%	99.731%
86.0	2.547	0.341	479.87	.046%	99.802%
87.0	2.300	0.265	480.135	.036%	99.857%
88.0	2.129	0.243	480.378	.033%	99.907%
89.0	1.994	0.226	480.604	.030%	99.954%
90.0	2.024	0.220	480.824	.030%	100.000%

Zonal flux distribution table

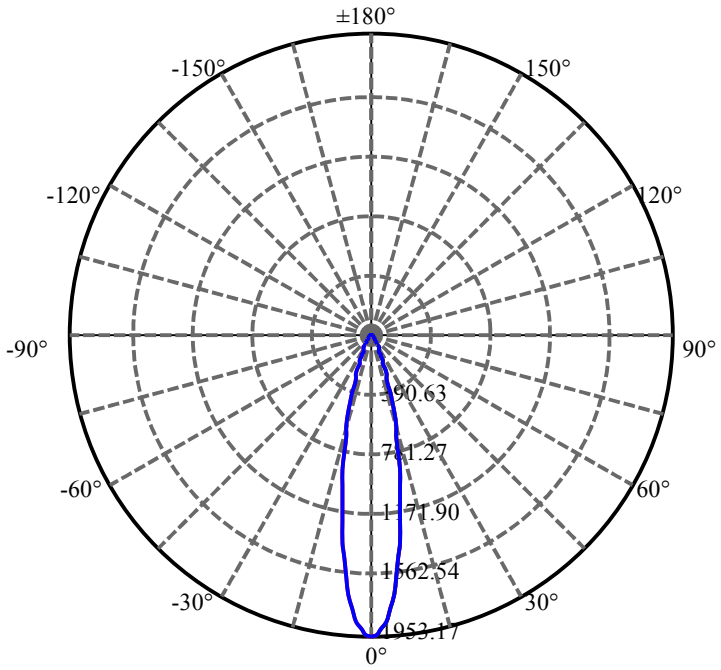
ZONAL LUMEN SUMMARY

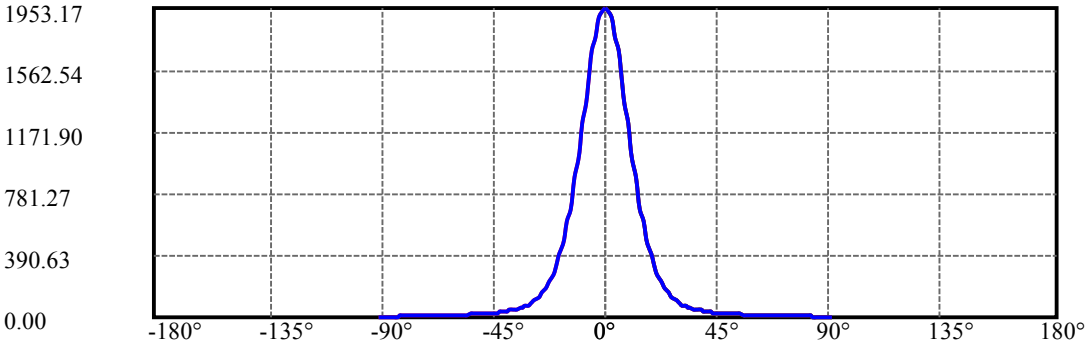
Zone	Lumens	%Lamp	%Fixt
0-30	384.94	51.85%	80.06%
0-40	420.13	56.59%	87.38%
0-60	457.57	61.64%	95.16%
0-90	480.60	64.74%	99.95%
0-120	480.60	64.74%	99.95%
0-180	480.82	64.77%	100.00%
60-90	24.48	3.30%	5.09%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.94	384.66	51.82%	80.00%

ZONAL LUMEN SUMMARY

0-10	141.25
10-20	168.25
20-30	75.45
30-40	35.19
40-50	21.39
50-60	16.05
60-70	11.53
70-80	7.31
80-90	4.19
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

Light Distribution Curve [Unit:cd]





C0(Max):

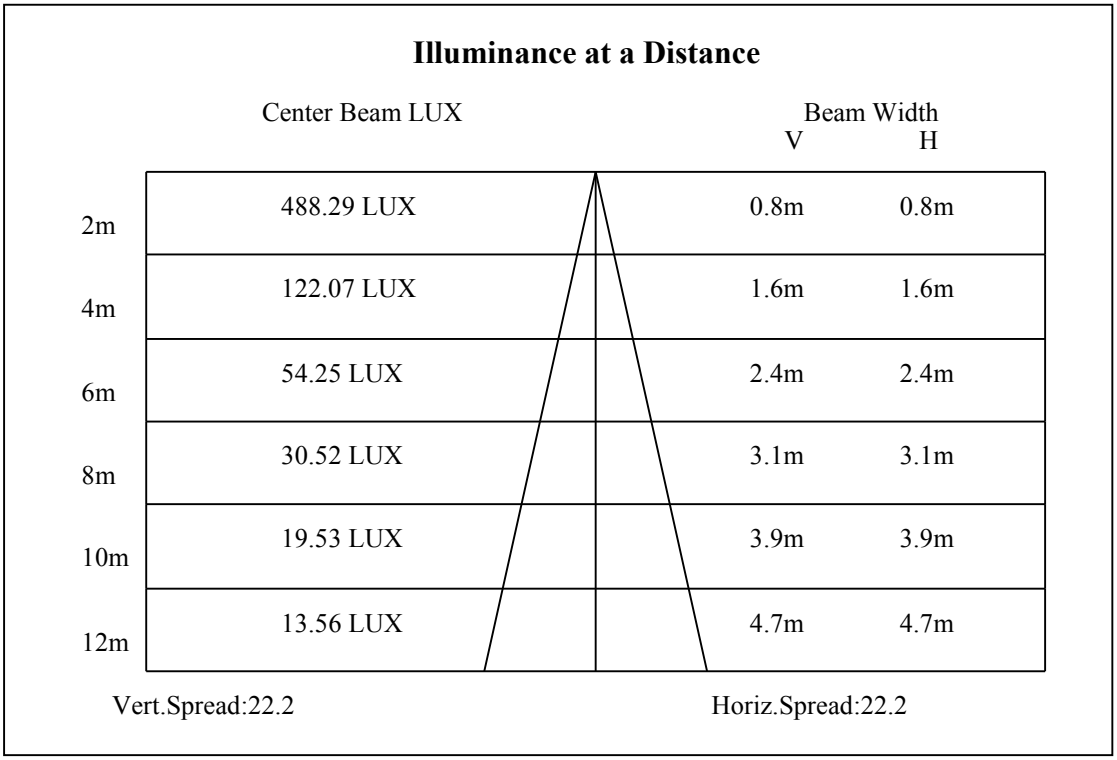
C0/C180:

C90/C270:

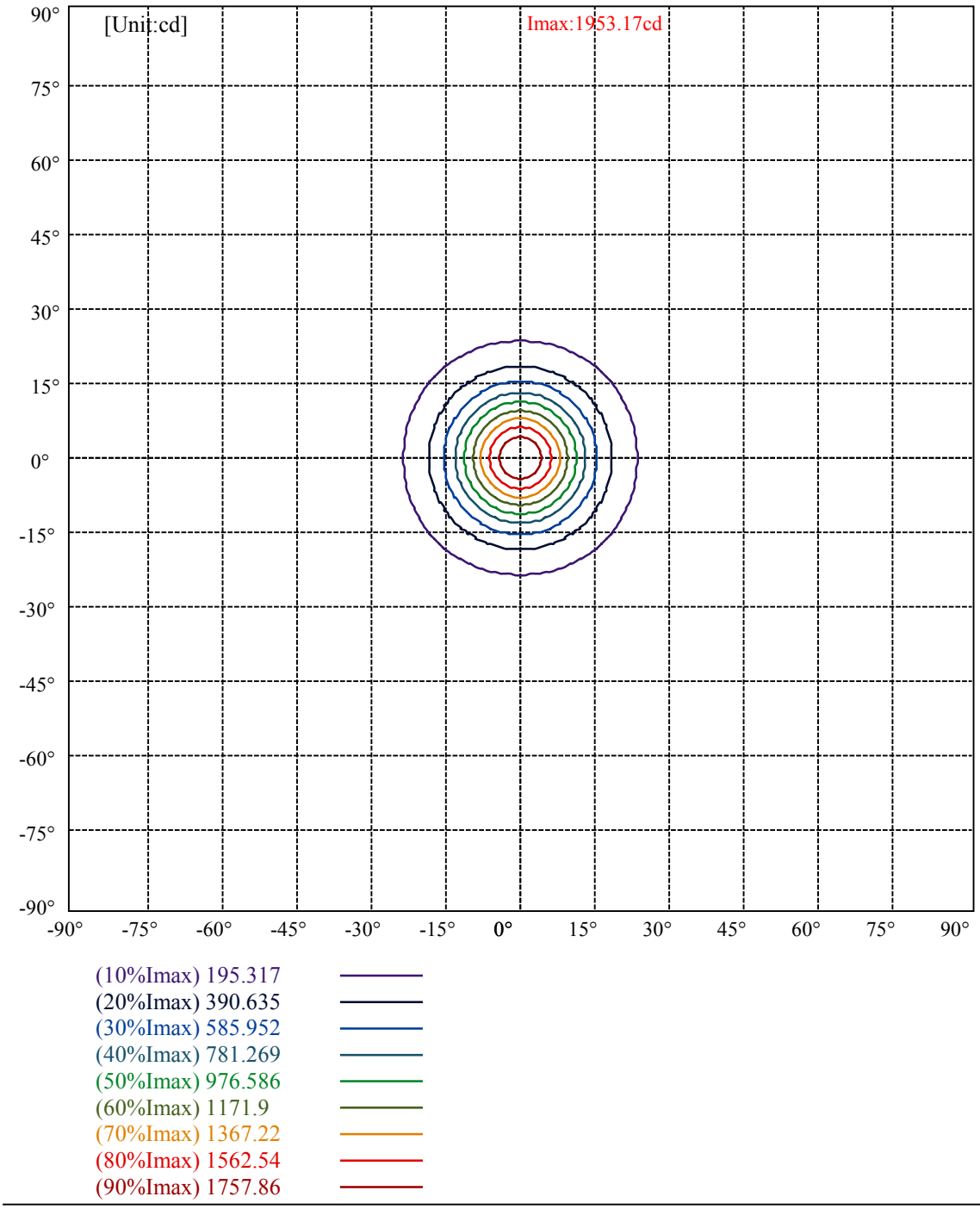
Field angle(10%Imax):C0/180Left:23.3 Right:23.3
:C90/270Left:23.3 Right:23.3

Beam Angle(50%Imax):C0/180Left:11.1 Right:11.1
:C90/270Left:11.1 Right:11.1

Lux distance Curve



ISO-Intensity(V-H)



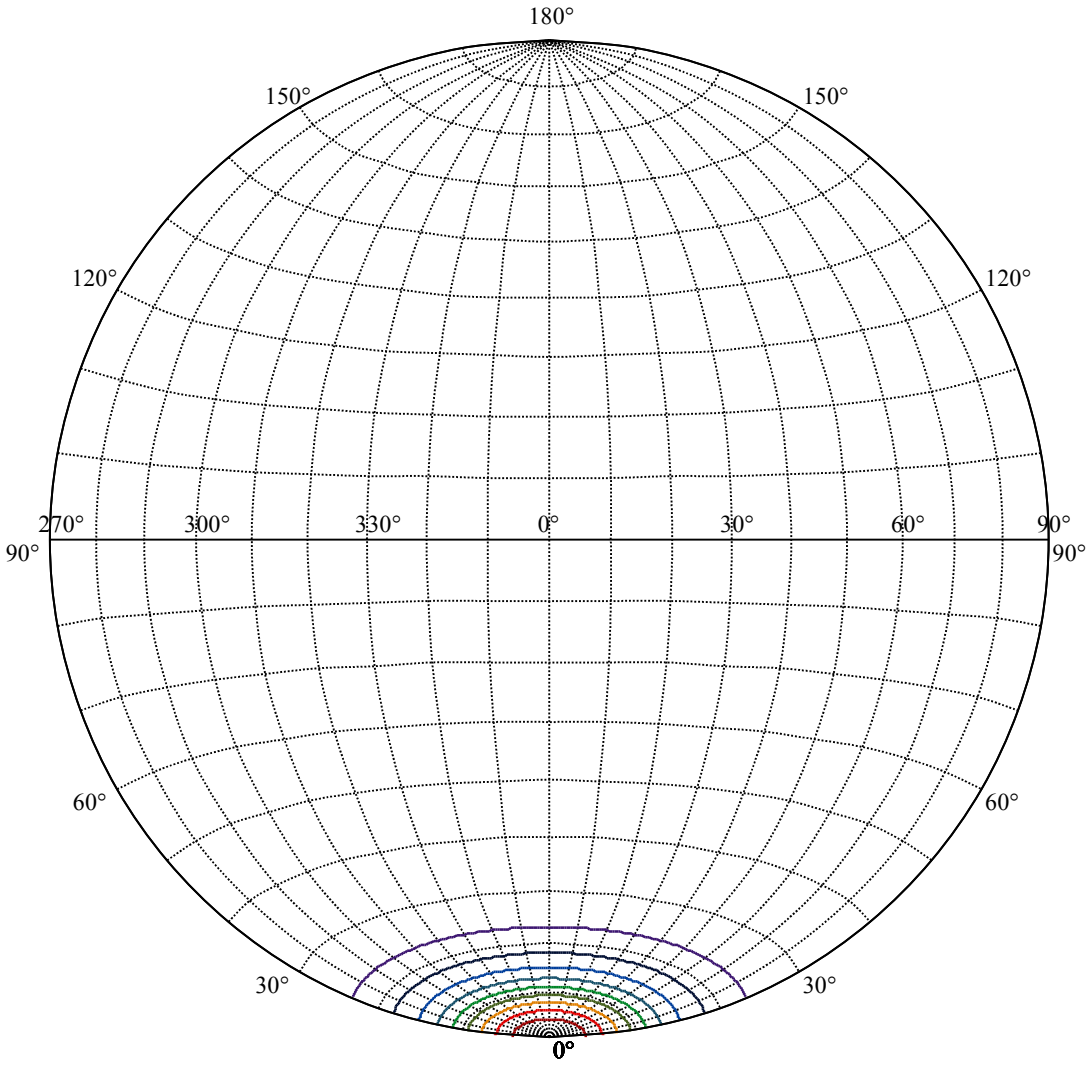
(10%Imax) 195.317
(20%Imax) 390.635
(30%Imax) 585.952
(40%Imax) 781.269
(50%Imax) 976.586
(60%Imax) 1171.9
(70%Imax) 1367.22
(80%Imax) 1562.54
(90%Imax) 1757.86

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2021/11/11
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

ISO candela diagram on circular web

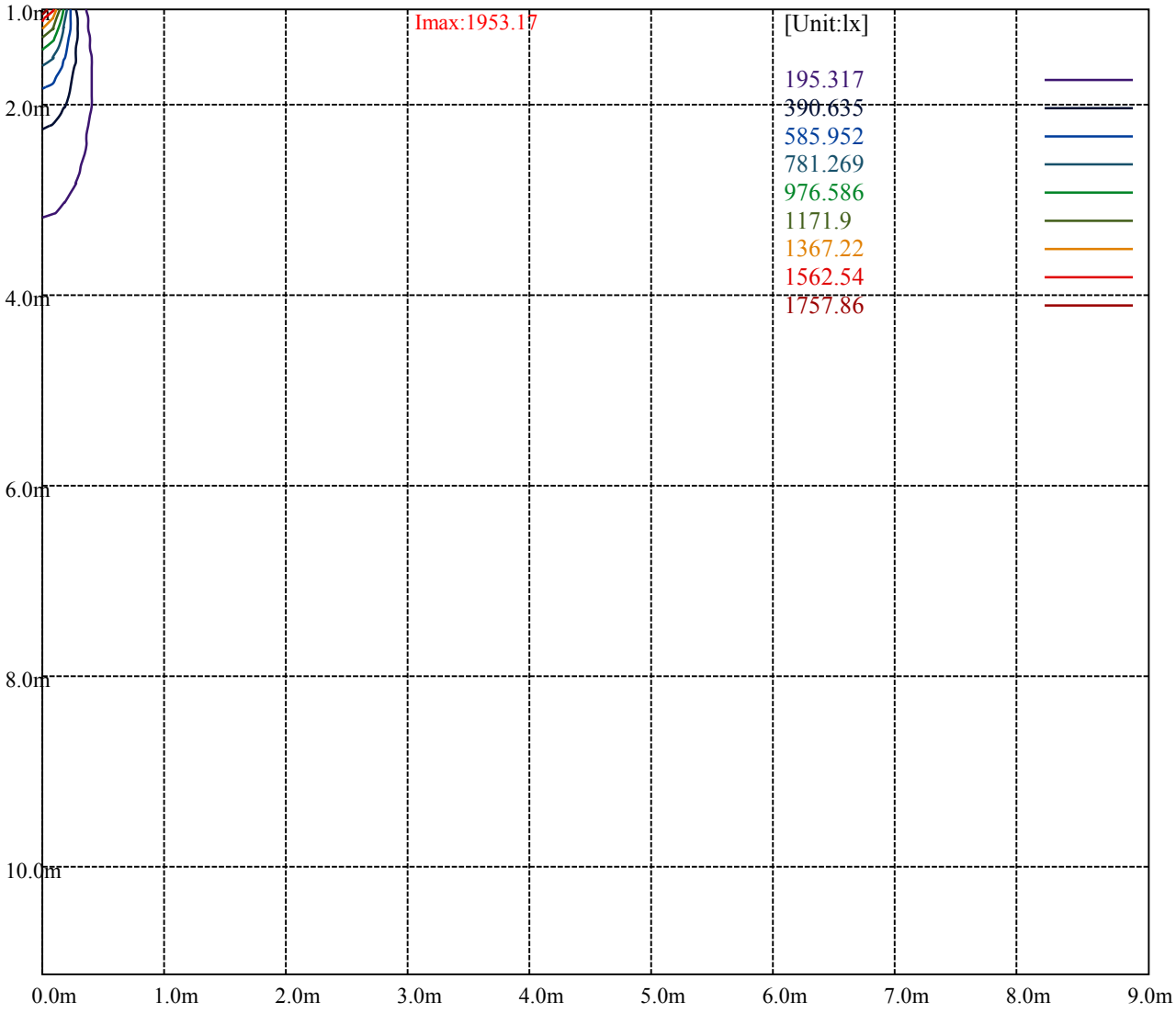


House [Unit:cd] Road

Imax:1953.17

(10%Imax) 195.317
(20%Imax) 390.635
(30%Imax) 585.952
(40%Imax) 781.269
(50%Imax) 976.586
(60%Imax) 1171.9
(70%Imax) 1367.22
(80%Imax) 1562.54
(90%Imax) 1757.86

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2021/11/11
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

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Luminance Limitting Curve(no luminous side)

Luminance Table

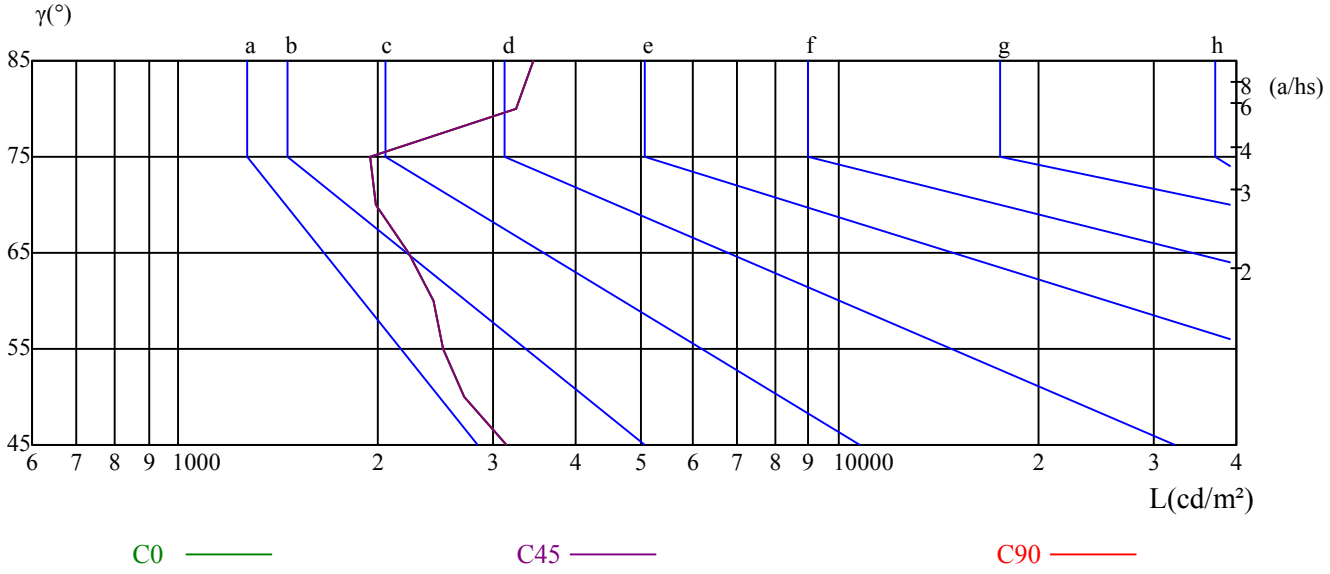
γ	45	50	55	60	65	70	75	80	85
C0	3130	2704	2521	2435	2236	1996	1949	3250	3436
C45	3130	2704	2521	2435	2236	1996	1949	3250	3436
C90	3130	2704	2521	2435	2236	1996	1949	3250	3436

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2236	2236	2236	1949	1949	1949	3436	3436	3436

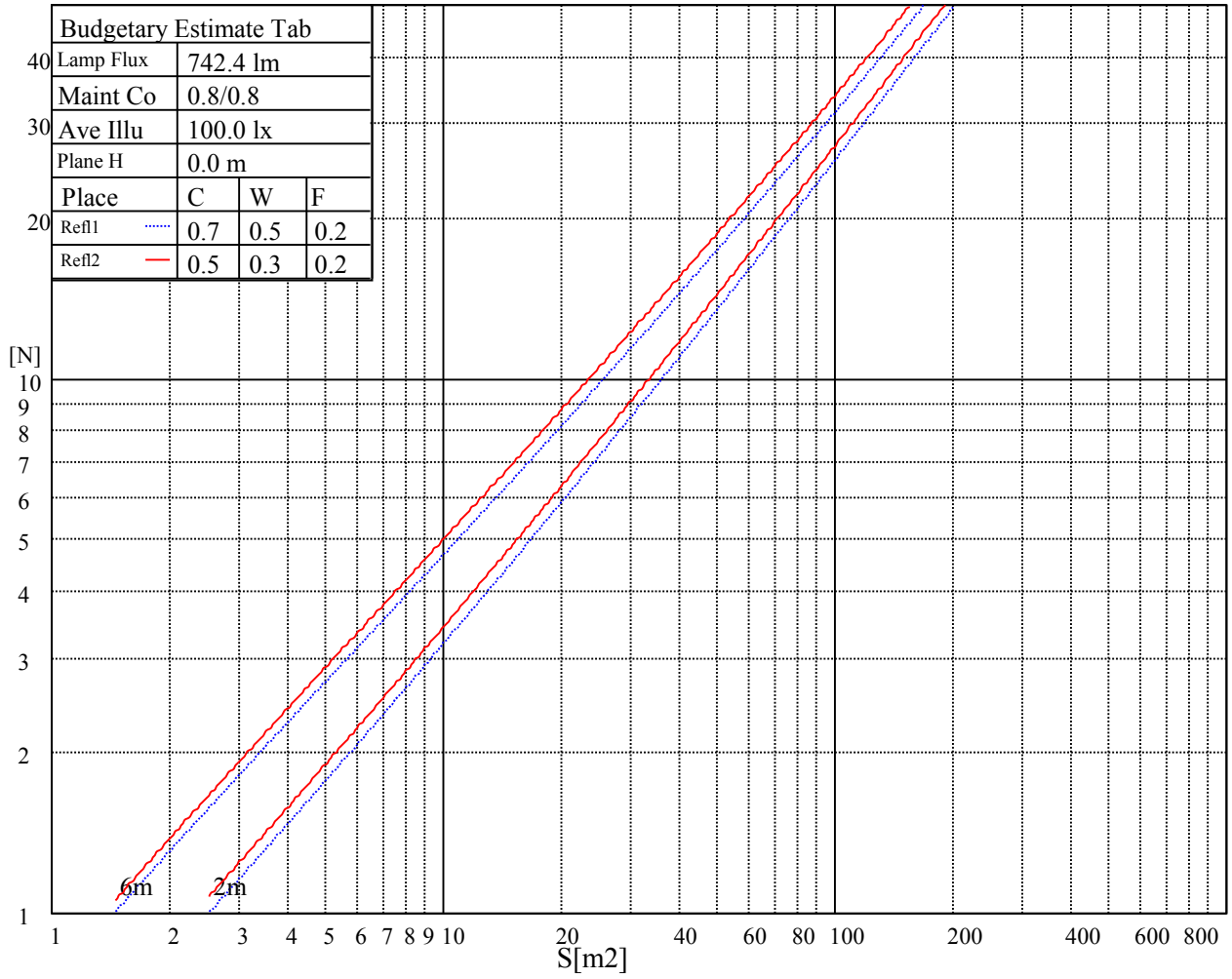
Glare Table

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 Limitting Curve



Budgetary Estimate Table

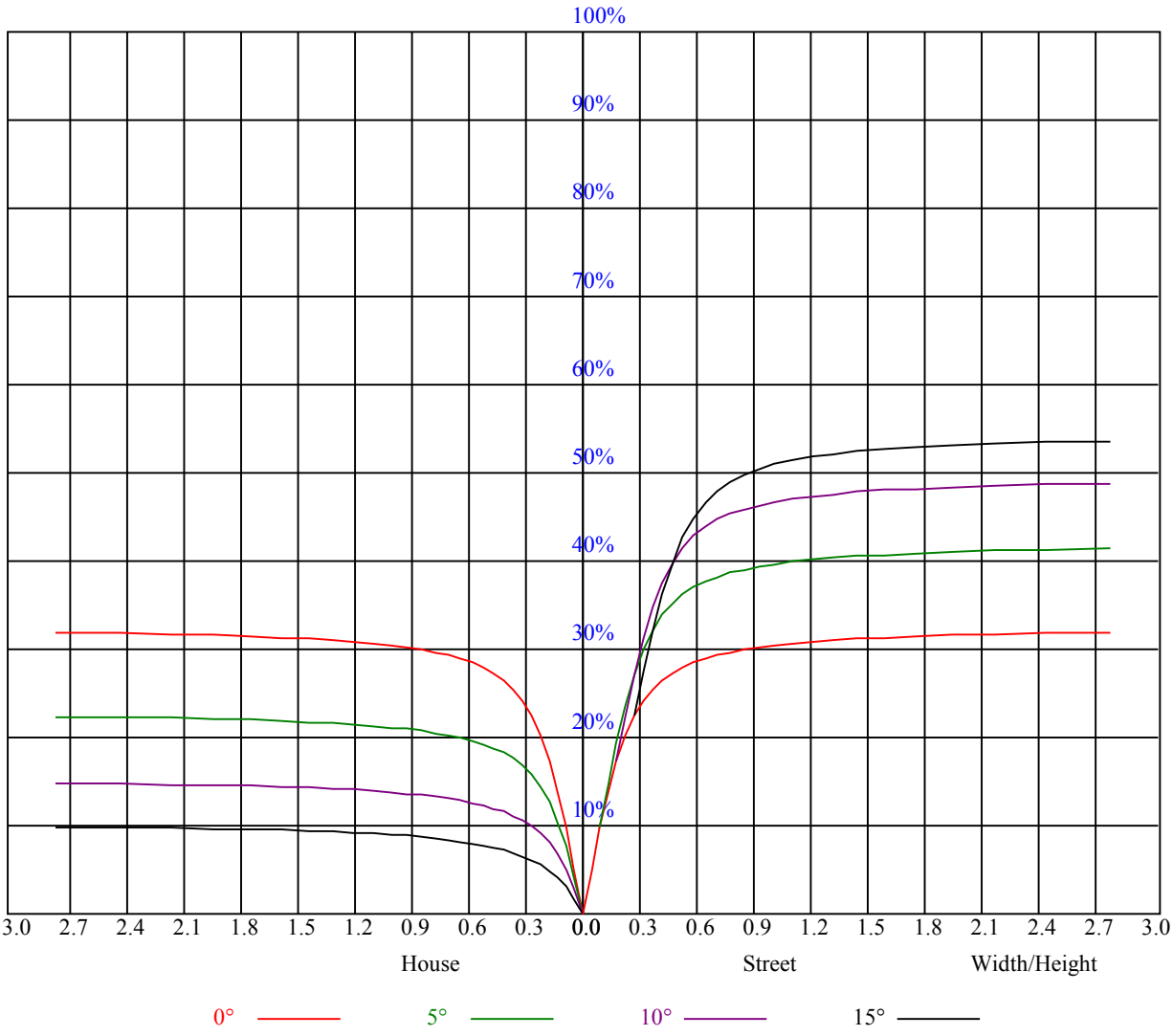


Equipment: GMS1980 Date: 2021/11/11 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.73

Utilization factor table for indoor luminaire

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	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	0.77	0.77	0.77	0.75	0.75	0.75	0.72	0.72	0.72	0.69	0.69	0.69	0.66	0.66	0.66	0.65
1	0.72	0.70	0.69	0.70	0.69	0.68	0.68	0.67	0.66	0.65	0.64	0.64	0.63	0.62	0.62	0.61
2	0.67	0.65	0.63	0.66	0.64	0.62	0.64	0.62	0.61	0.62	0.61	0.59	0.60	0.59	0.58	0.57
3	0.63	0.60	0.58	0.63	0.60	0.58	0.61	0.59	0.57	0.59	0.57	0.56	0.58	0.56	0.55	0.54
4	0.60	0.57	0.54	0.59	0.56	0.54	0.58	0.55	0.53	0.57	0.55	0.53	0.56	0.54	0.52	0.51
5	0.57	0.54	0.51	0.57	0.54	0.51	0.56	0.53	0.51	0.54	0.52	0.50	0.54	0.52	0.50	0.49
6	0.55	0.51	0.49	0.54	0.51	0.49	0.53	0.51	0.48	0.52	0.50	0.48	0.52	0.49	0.48	0.47
7	0.52	0.49	0.47	0.52	0.49	0.47	0.51	0.48	0.46	0.51	0.48	0.46	0.50	0.48	0.46	0.45
8	0.50	0.47	0.45	0.50	0.47	0.45	0.49	0.47	0.45	0.49	0.46	0.44	0.48	0.46	0.44	0.44
9	0.49	0.45	0.43	0.48	0.45	0.43	0.48	0.45	0.43	0.47	0.45	0.43	0.47	0.44	0.43	0.42
10	0.47	0.44	0.42	0.47	0.44	0.42	0.46	0.44	0.42	0.46	0.43	0.42	0.45	0.43	0.41	0.41

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2021/11/11	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.73

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	1953.92	1978.42	1982.60	1956.31	1911.50	1847.56	1744.19	1646.19	1540.43
45.0	1967.07	1928.82	1865.49	1791.39	1691.01	1576.28	1463.95	1331.29	1215.97
90.0	1933.60	1866.08	1788.40	1683.84	1565.53	1453.19	1334.28	1181.97	1067.37
135.0	1958.10	1908.51	1830.83	1732.83	1633.64	1526.09	1380.89	1261.98	1148.45
180.0	1953.92	1895.96	1838.00	1747.77	1627.07	1533.86	1419.73	1181.26	1152.51
225.0	1967.07	1978.42	1969.46	1928.82	1875.64	1805.14	1693.99	1594.21	1487.25
270.0	1933.60	1973.04	1993.95	1986.78	1957.51	1899.54	1818.88	1731.04	1631.85
315.0	1958.10	1990.37	1995.75	1976.63	1930.62	1869.07	1778.25	1672.48	1566.72
360.0	1953.92	1978.42	1982.60	1956.31	1911.50	1847.56	1744.19	1646.19	1540.43

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1399.41	1282.89	1168.17	1041.49	919.60	818.61	714.64	619.64	545.54
45.0	1088.10	963.22	858.65	762.45	654.89	578.41	509.09	435.00	381.82
90.0	958.26	831.88	739.92	656.62	572.31	497.44	438.71	380.75	335.27
135.0	1009.23	903.46	803.68	703.29	613.06	542.56	472.05	417.08	362.10
180.0	1039.94	920.02	809.29	719.60	637.80	546.44	481.97	424.84	367.96
225.0	1345.04	1180.90	1109.67	998.71	879.86	770.10	672.04	593.11	521.52
270.0	1495.02	1379.69	1260.79	1144.87	1002.65	893.90	793.52	679.39	597.53
315.0	1452.59	1269.15	1181.73	1065.81	913.80	824.05	730.36	634.40	547.87
360.0	1399.41	1282.89	1168.17	1041.49	919.60	818.61	714.64	619.64	545.54

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	471.45	414.09	358.52	309.52	304.74	234.29	203.88	180.39	159.90
45.0	334.02	304.14	249.29	218.64	191.69	168.38	149.98	132.35	119.09
90.0	290.34	251.98	222.76	194.50	170.42	151.89	135.82	118.67	106.78
135.0	314.90	305.34	239.91	211.94	185.95	166.29	144.36	129.66	116.58
180.0	318.30	280.36	243.67	212.36	188.28	165.22	147.47	130.20	115.32
225.0	451.31	391.20	344.65	294.28	259.39	229.21	202.86	174.72	155.60
270.0	524.63	454.12	392.58	344.77	302.95	255.98	225.99	196.59	174.00
315.0	480.95	415.46	364.85	315.08	272.35	239.79	208.24	181.47	161.21
360.0	471.45	414.09	358.52	309.52	304.74	234.29	203.88	180.39	159.90

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	138.15	123.45	110.84	98.71	88.43	80.55	72.72	65.91	60.71
45.0	105.46	94.29	85.27	77.50	68.90	63.10	58.08	52.46	48.52
90.0	96.38	86.16	77.26	70.39	63.58	57.84	53.36	48.82	45.23
135.0	104.87	92.38	83.71	76.01	67.70	61.96	57.00	51.99	47.56
180.0	103.91	92.68	82.88	75.35	68.72	61.72	56.88	52.58	48.40
225.0	139.10	122.79	108.99	98.29	87.96	79.05	72.00	65.07	59.75
270.0	152.07	133.55	119.63	107.61	94.83	86.04	78.28	69.91	64.06
315.0	143.83	125.00	112.34	101.28	90.59	81.38	74.21	67.10	60.89
360.0	138.15	123.45	110.84	98.71	88.43	80.55	72.72	65.91	60.71

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	55.57	51.45	47.38	43.86	41.23	38.90	36.45	34.84	33.70
45.0	44.99	41.53	38.30	35.79	33.04	30.95	28.80	26.89	25.34
90.0	41.71	38.60	36.03	33.64	31.07	29.16	27.43	25.57	24.14
135.0	44.16	40.81	37.94	35.13	32.51	30.53	28.26	26.71	25.10
180.0	44.75	41.89	39.14	36.75	34.90	33.28	32.21	30.71	29.58
225.0	54.38	49.71	46.07	42.72	39.02	36.39	34.00	31.37	29.46
270.0	58.98	53.78	49.18	45.53	41.95	39.08	36.21	33.64	31.61
315.0	56.17	51.87	47.56	43.74	40.39	37.64	35.19	32.45	30.47
360.0	55.57	51.45	47.38	43.86	41.23	38.90	36.45	34.84	33.70

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	33.10	31.97	31.01	30.41	29.94	29.64	29.46	29.28	29.10
45.0	23.66	22.29	21.09	20.02	18.82	17.81	16.91	16.13	15.18
90.0	22.83	21.45	20.20	19.12	17.93	17.03	16.13	15.06	14.40
135.0	23.90	22.23	21.03	20.08	18.88	17.81	17.03	16.01	15.12
180.0	28.86	28.20	27.49	26.89	26.41	25.93	25.69	25.45	25.28
225.0	27.67	25.87	24.26	22.95	21.57	20.32	19.30	18.22	17.33
270.0	29.46	27.61	25.99	24.62	22.89	21.63	20.50	19.30	18.22
315.0	28.68	26.65	25.22	23.84	22.59	21.15	20.08	19.12	18.11
360.0	33.10	31.97	31.01	30.41	29.94	29.64	29.46	29.28	29.10

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	29.10	29.16	29.22	29.22	29.16	28.98	28.62	28.08	27.31
45.0	14.46	13.74	12.97	12.31	11.71	11.17	10.64	10.10	9.56
90.0	13.56	12.79	12.19	11.59	10.82	10.34	9.80	9.14	8.78
135.0	14.52	13.62	13.03	12.37	11.77	11.23	10.76	10.16	9.68
180.0	25.10	24.98	24.80	24.56	24.20	23.60	23.00	22.05	20.91
225.0	16.37	15.54	14.82	14.10	13.27	12.61	12.07	11.35	10.82
270.0	17.27	16.31	15.36	14.58	13.80	13.09	12.37	11.65	10.99
315.0	17.15	16.37	15.48	14.70	13.98	13.32	12.73	12.07	11.41
360.0	29.10	29.16	29.22	29.22	29.16	28.98	28.62	28.08	27.31

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	26.35	24.86	23.54	21.93	20.26	18.70	16.91	15.48	13.98
45.0	9.14	8.66	8.25	7.89	7.47	7.11	6.81	6.51	6.15
90.0	8.31	7.89	7.47	7.05	6.69	6.39	5.98	5.68	5.44
135.0	9.26	8.72	8.37	8.01	7.59	7.17	6.87	6.51	6.21
180.0	19.78	18.58	17.03	15.72	14.46	13.15	11.95	10.93	9.98
225.0	10.34	9.80	9.26	8.84	8.43	8.01	7.65	7.23	6.93
270.0	10.46	9.86	9.38	8.90	8.37	7.95	7.59	7.17	6.81
315.0	10.88	10.46	9.86	9.38	9.02	8.48	8.13	7.77	7.41
360.0	26.35	24.86	23.54	21.93	20.26	18.70	16.91	15.48	13.98

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	12.67	11.65	10.82	10.58	12.01	14.94	18.70	20.44	21.93
45.0	5.86	5.56	5.26	4.96	4.96	7.17	8.19	8.25	4.60
90.0	5.14	4.78	4.48	4.24	3.94	3.70	3.53	3.29	3.05
135.0	5.86	5.56	5.26	4.96	4.60	4.36	4.12	3.88	3.64
180.0	9.14	8.66	8.19	7.65	6.69	6.15	5.74	5.68	6.33
225.0	6.57	6.27	5.98	5.74	5.38	5.08	4.90	6.63	7.35
270.0	6.45	6.15	5.86	5.50	5.20	4.90	4.60	4.30	4.06
315.0	7.05	6.75	6.39	6.09	5.80	5.50	5.26	4.90	4.66
360.0	12.67	11.65	10.82	10.58	12.01	14.94	18.70	20.44	21.93

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	23.42	22.77	20.14	15.72	10.70	3.88	2.99	2.57	2.15
45.0	3.47	3.35	3.17	3.05	2.27	2.09	2.03	1.91	1.97
90.0	2.87	2.69	2.45	2.27	1.97	1.97	1.97	1.91	1.91
135.0	3.35	3.11	3.29	3.64	2.27	2.21	2.09	1.97	2.03
180.0	6.45	5.80	3.76	3.35	2.87	2.45	2.09	2.03	1.97
225.0	7.53	4.30	3.59	3.35	3.23	2.51	2.39	2.15	1.91
270.0	3.82	3.53	3.35	3.11	2.81	2.57	2.33	2.21	1.97
315.0	4.42	4.18	3.94	3.76	3.41	2.69	2.51	2.27	2.03
360.0	23.42	22.77	20.14	15.72	10.70	3.88	2.99	2.57	2.15

Intensity data(cd)

C/γ(°)	90.0
0.0	2.15
45.0	1.97
90.0	1.91
135.0	2.03
180.0	2.15
225.0	1.97
270.0	1.97
315.0	2.03
360.0	2.15