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Nata

LumCAT: 2-2264-M	
Luminaire: 92.70.131.00	
Report No: 200921-B033	Voltage(V): 230.7000
Test No: 200921-C033	Current(A): 0.0920
LampCAT: OSRAM OPTO SOLERIQ S15	Power (W): 20.3100
Lamp flux(lm): 2197.0	PF: 0.9560
Number of Lamps: 1	Ballast type: AC
Length(feet)(ft.):0.000	Width(feet)(ft.):0.000
Phm Type: C	Height(feet)(ft.):0.000

Photometric Results

Lumens(lm): 2131.86
Efficiency(%): 97.04%
Lumens(lm)/Power(W): 104.97
Central intensity(cd): 4856.458
Maximum intensity(cd): 4856.458
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=35.9
[C90/270]Total=35.9
Field angle(10%Imax): [C0/180]Total=68.3
[C90/270]Total=68.3
Maximum s/h(1/2): C0_180=0.59 C90_270=0.59
Maximum s/h(1/4): C0_180=0.58 C90_270=0.58
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 97.09%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.376%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4856.458	1.162	1.162	.053%	.055%
1.0	4851.354	9.285	10.447	.423%	.490%
2.0	4834.184	18.501	28.948	.842%	1.358%
3.0	4804.718	27.575	56.523	1.255%	2.651%
4.0	4767.828	36.472	92.995	1.660%	4.362%
5.0	4705.647	44.975	137.969	2.047%	6.472%
6.0	4637.782	53.161	191.131	2.420%	8.965%
7.0	4545.730	60.750	251.881	2.765%	11.815%
8.0	4418.816	67.439	319.32	3.070%	14.978%
9.0	4294.862	73.677	392.998	3.354%	18.435%
10.0	4138.134	78.800	471.798	3.587%	22.131%
11.0	3957.393	82.806	554.603	3.769%	26.015%
12.0	3756.757	85.653	640.257	3.899%	30.033%
13.0	3551.132	87.600	727.857	3.987%	34.142%
14.0	3311.981	87.865	815.722	3.999%	38.263%
15.0	3078.978	87.389	903.11	3.978%	42.363%
16.0	2863.434	86.552	989.662	3.940%	46.422%
17.0	2614.074	83.812	1073.474	3.815%	50.354%
18.0	2415.062	81.839	1155.313	3.725%	54.193%
19.0	2178.695	77.784	1233.097	3.541%	57.841%
20.0	1975.100	74.079	1307.176	3.372%	61.316%
21.0	1770.172	69.566	1376.742	3.166%	64.579%
22.0	1586.182	65.160	1441.902	2.966%	67.636%
23.0	1423.133	60.978	1502.88	2.776%	70.496%
24.0	1275.947	56.911	1559.791	2.590%	73.166%
25.0	1174.440	54.429	1614.22	2.477%	75.719%
26.0	1079.765	51.907	1666.127	2.363%	78.154%
27.0	1007.347	50.151	1716.278	2.283%	80.506%
28.0	924.906	47.617	1763.894	2.167%	82.740%
29.0	880.927	46.834	1810.728	2.132%	84.937%
30.0	826.148	45.298	1856.026	2.062%	87.061%
31.0	755.951	42.696	1898.722	1.943%	89.064%
32.0	676.149	39.292	1938.014	1.788%	90.907%
33.0	588.313	35.137	1973.152	1.599%	92.555%
34.0	497.856	30.529	2003.681	1.390%	93.987%
35.0	407.810	25.651	2029.332	1.168%	95.191%
36.0	320.450	20.655	2049.987	.940%	96.160%
37.0	245.178	16.181	2066.168	.737%	96.919%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	191.744	12.945	2079.113	.589%	97.526%
39.0	136.756	9.438	2088.551	.430%	97.969%
40.0	91.577	6.455	2095.006	.294%	98.271%
41.0	44.547	3.205	2098.211	.146%	98.422%
42.0	33.080	2.427	2100.638	.110%	98.536%
43.0	27.187	2.033	2102.671	.093%	98.631%
44.0	22.871	1.742	2104.414	.079%	98.713%
45.0	19.594	1.519	2105.933	.069%	98.784%
46.0	17.065	1.346	2107.279	.061%	98.847%
47.0	15.243	1.223	2108.502	.056%	98.904%
48.0	13.828	1.127	2109.629	.051%	98.957%
49.0	12.744	1.055	2110.683	.048%	99.007%
50.0	11.798	0.991	2111.674	.045%	99.053%
51.0	11.009	0.938	2112.613	.043%	99.097%
52.0	10.342	0.894	2113.506	.041%	99.139%
53.0	9.762	0.855	2114.361	.039%	99.179%
54.0	9.321	0.827	2115.188	.038%	99.218%
55.0	8.892	0.799	2115.987	.036%	99.255%
56.0	8.480	0.771	2116.758	.035%	99.292%
57.0	8.155	0.750	2117.508	.034%	99.327%
58.0	7.825	0.728	2118.236	.033%	99.361%
59.0	7.564	0.711	2118.947	.032%	99.394%
60.0	7.233	0.687	2119.634	.031%	99.427%
61.0	6.914	0.663	2120.297	.030%	99.458%
62.0	6.612	0.640	2120.937	.029%	99.488%
63.0	6.351	0.621	2121.558	.028%	99.517%
64.0	6.090	0.600	2122.158	.027%	99.545%
65.0	5.708	0.567	2122.725	.026%	99.572%
66.0	5.423	0.543	2123.268	.025%	99.597%
67.0	5.151	0.520	2123.788	.024%	99.621%
68.0	4.913	0.500	2124.288	.023%	99.645%
69.0	4.681	0.479	2124.767	.022%	99.667%
70.0	4.466	0.460	2125.227	.021%	99.689%
71.0	4.281	0.444	2125.671	.020%	99.710%
72.0	4.072	0.425	2126.096	.019%	99.730%
73.0	3.846	0.403	2126.499	.018%	99.749%
74.0	3.619	0.382	2126.881	.017%	99.766%
75.0	3.474	0.368	2127.249	.017%	99.784%

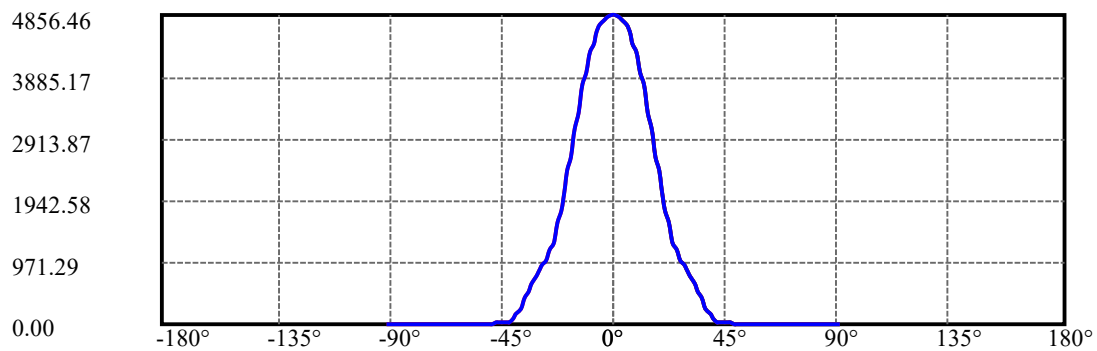
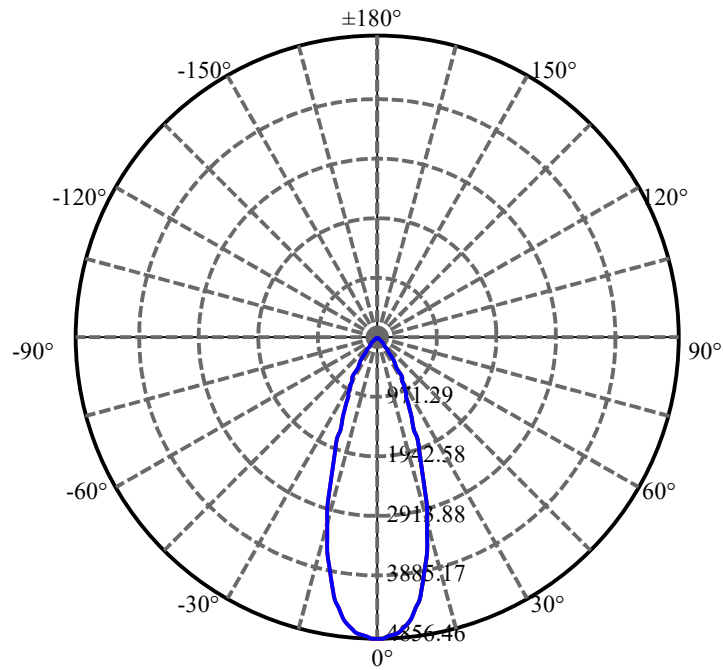
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	3.376	0.359	2127.608	.016%	99.801%
77.0	3.277	0.350	2127.958	.016%	99.817%
78.0	3.242	0.348	2128.306	.016%	99.833%
79.0	3.150	0.339	2128.645	.015%	99.849%
80.0	3.097	0.335	2128.979	.015%	99.865%
81.0	3.034	0.329	2129.308	.015%	99.880%
82.0	2.947	0.320	2129.628	.015%	99.895%
83.0	2.906	0.316	2129.944	.014%	99.910%
84.0	2.831	0.309	2130.253	.014%	99.925%
85.0	2.778	0.304	2130.557	.014%	99.939%
86.0	2.715	0.297	2130.854	.014%	99.953%
87.0	2.680	0.293	2131.147	.013%	99.967%
88.0	2.628	0.288	2131.435	.013%	99.980%
89.0	2.587	0.284	2131.719	.013%	99.993%
90.0	2.564	0.141	2131.859	.006%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1856.03	84.48%	87.06%
0-40	2095.01	95.36%	98.27%
0-60	2119.63	96.48%	99.43%
0-90	2131.72	97.03%	99.99%
0-120	2131.72	97.03%	99.99%
0-180	2131.86	97.04%	100.00%
60-90	12.77	0.58%	0.60%
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%
0-26.78	1705.49	77.63%	80.00%

ZONAL LUMEN SUMMARY

0-10	471.80
10-20	835.38
20-30	548.85
30-40	238.98
40-50	16.67
50-60	7.96
60-70	5.59
70-80	3.75
80-90	2.74
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

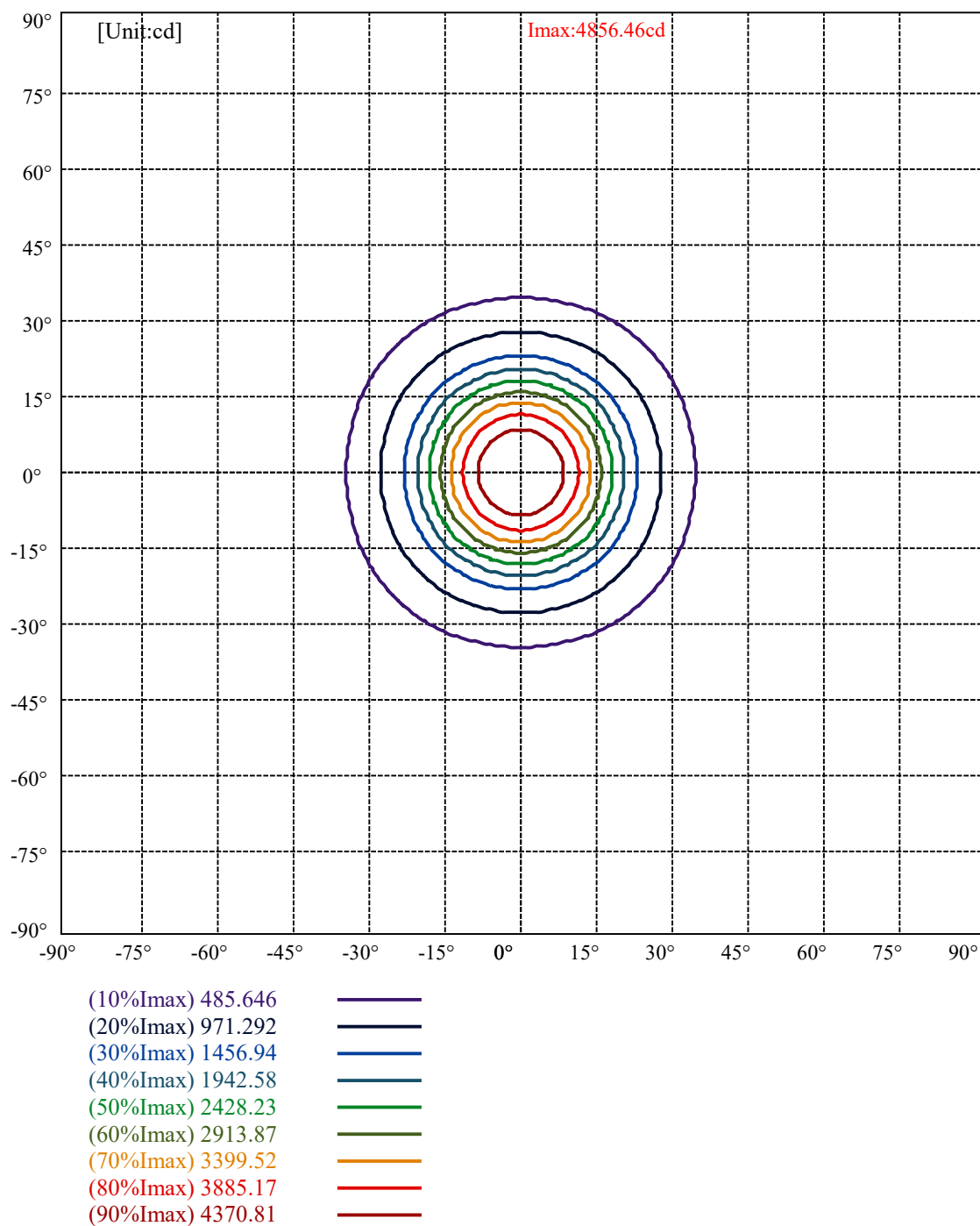
C0(Max): —————C0/C180: —————C90/C270: —————

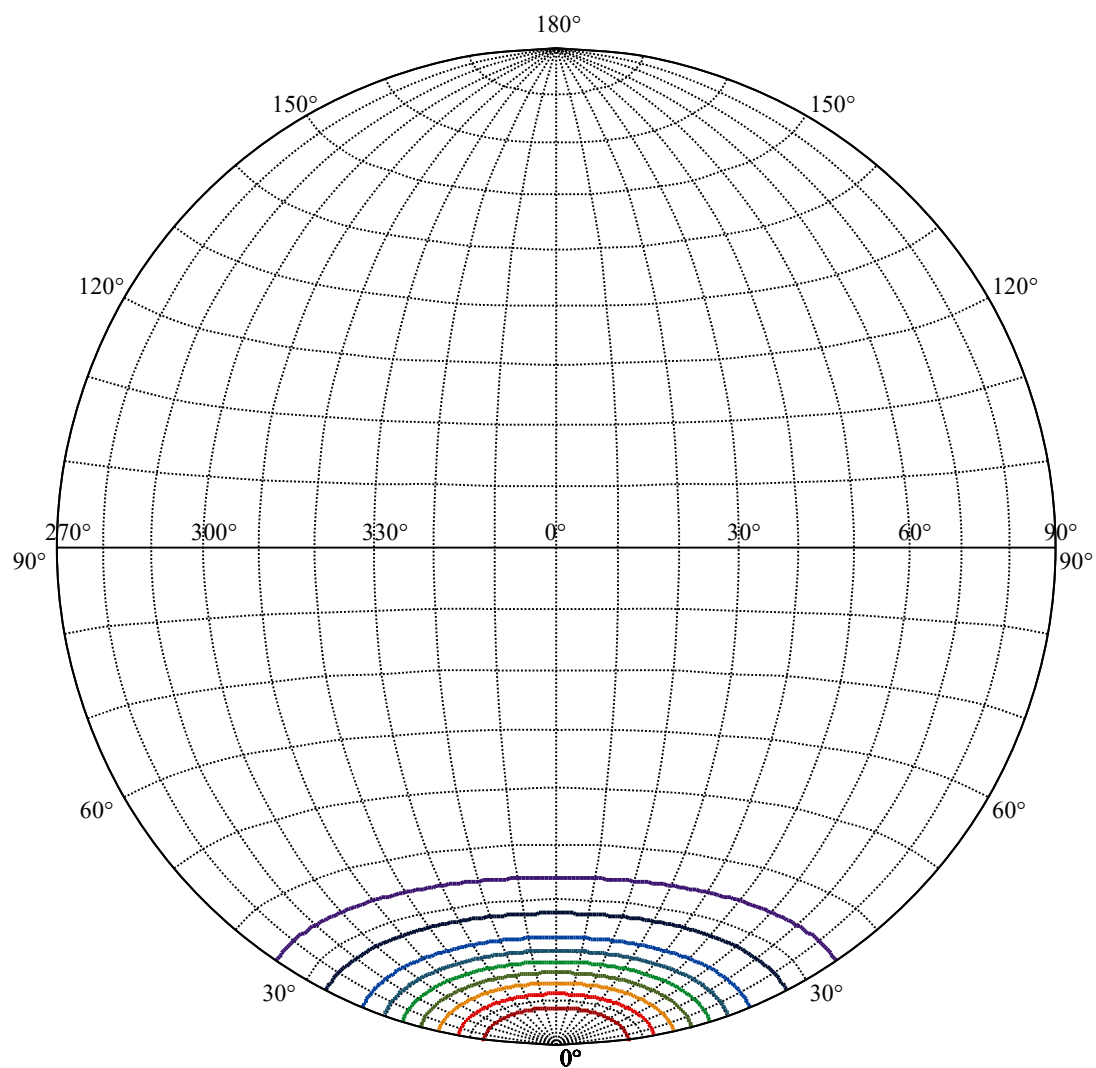
Field angle(10%Imax):C0/180Left:34.1 Right:34.1

:C90/270Left:34.1 Right:34.1

Beam Angle(50%Imax):C0/180Left:17.9 Right:17.9

:C90/270Left:17.9 Right:17.9





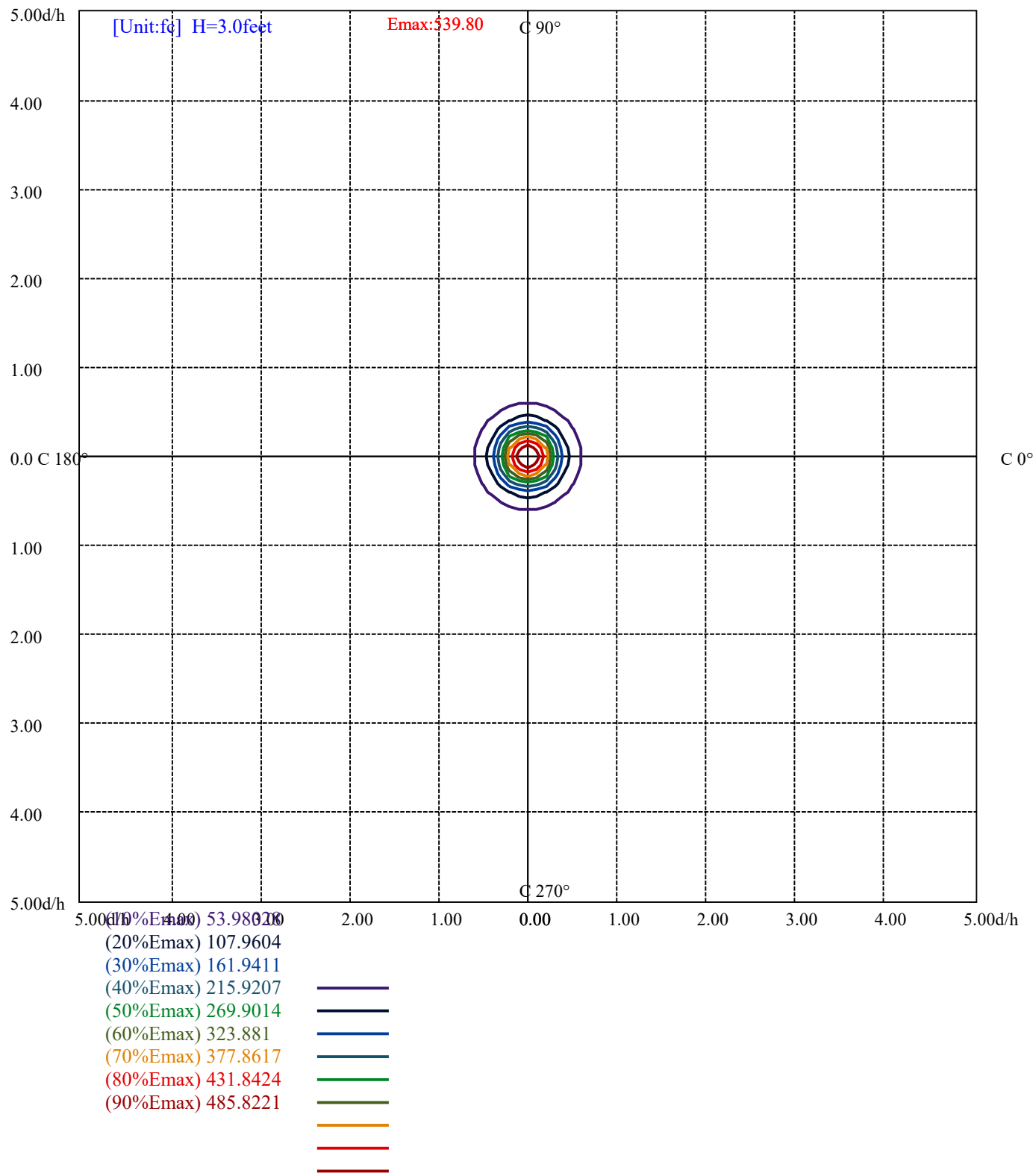
House

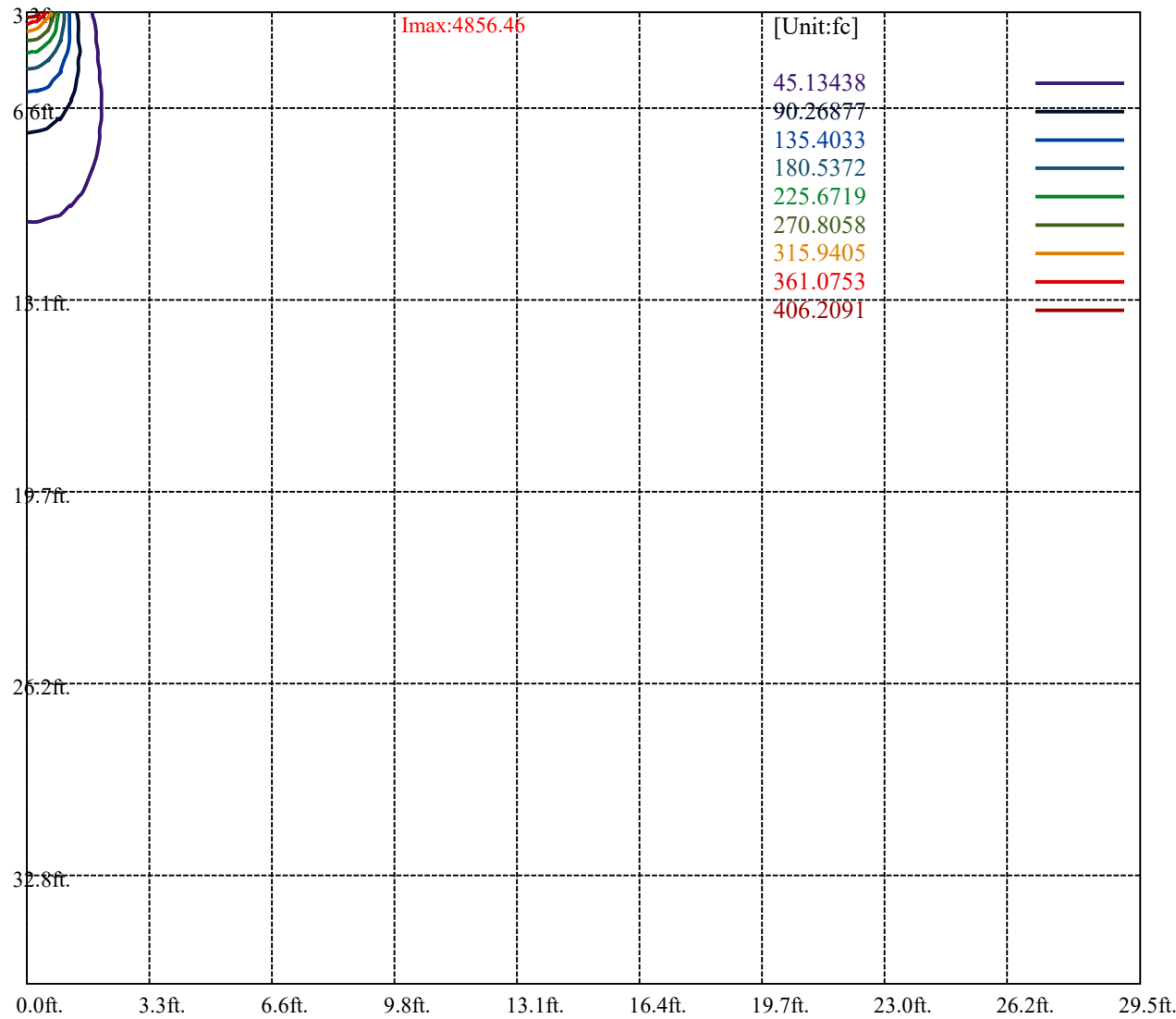
[Unit:cd]

Road

Imax:4856.46

(10%Imax)	485.646	—
(20%Imax)	971.292	—
(30%Imax)	1456.94	—
(40%Imax)	1942.58	—
(50%Imax)	2428.23	—
(60%Imax)	2913.87	—
(70%Imax)	3399.52	—
(80%Imax)	3885.17	—
(90%Imax)	4370.81	—





Luminance Table

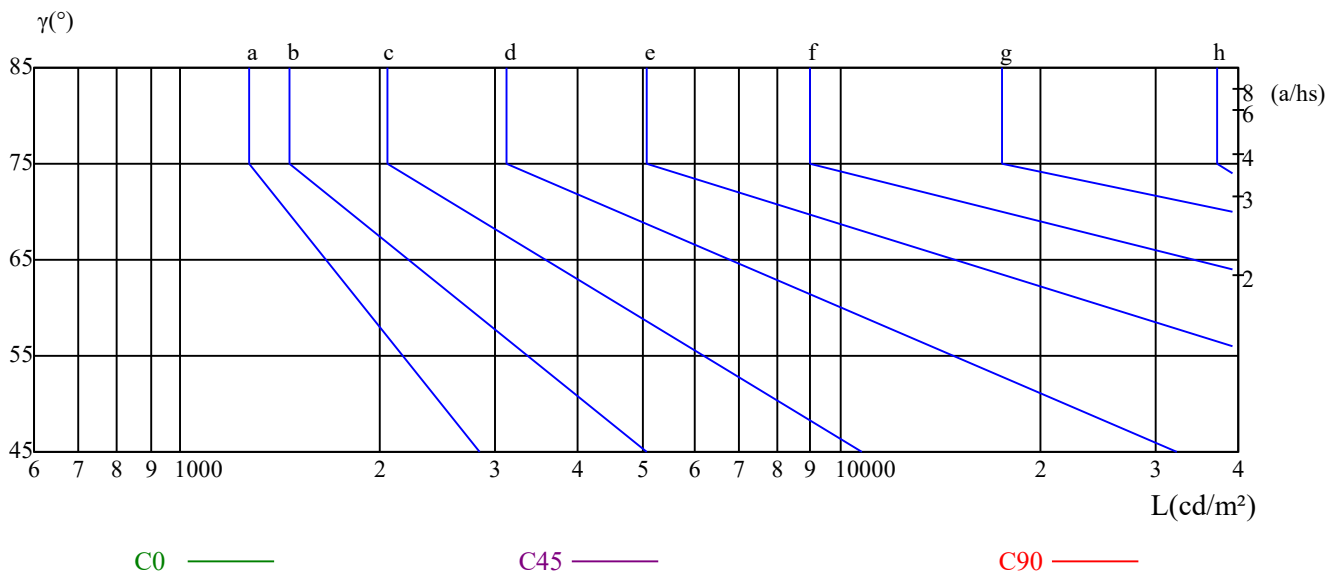
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

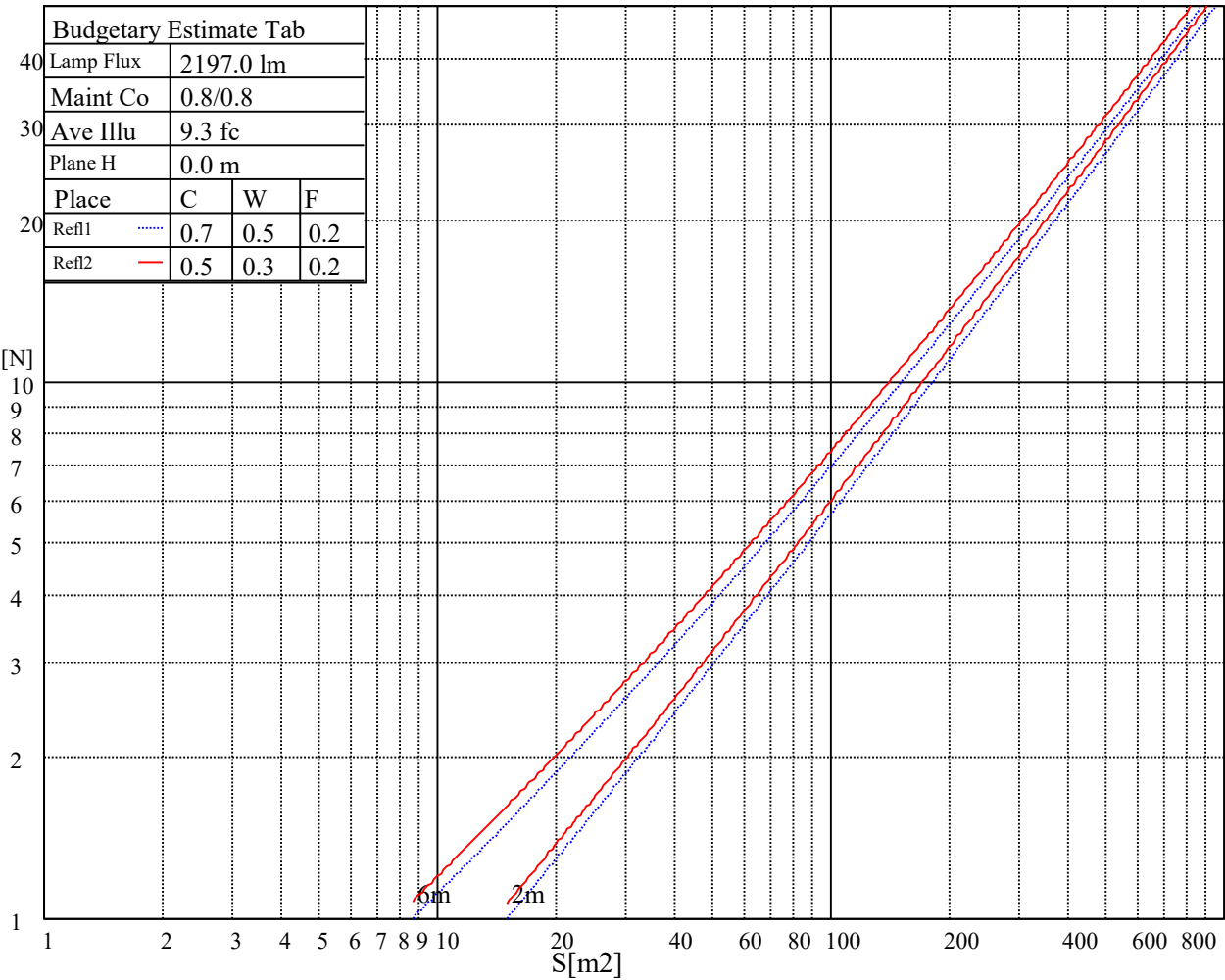
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

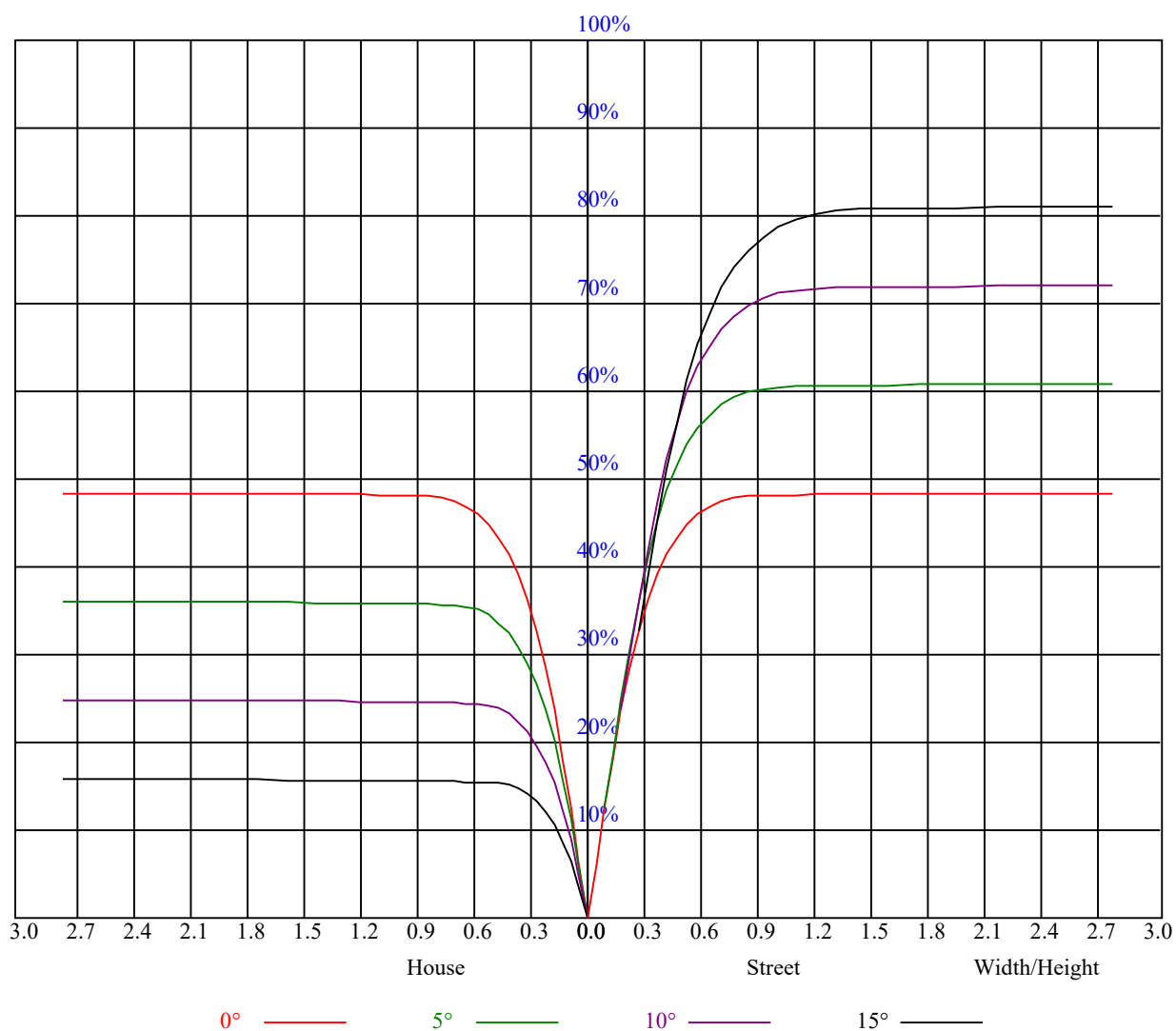
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	1.16	1.16	1.16	1.13	1.13	1.13	1.08	1.08	1.08	1.03	1.03	1.03	0.99	0.99	0.99	0.97
1	1.09	1.06	1.05	1.06	1.05	1.03	1.03	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.92
2	1.02	0.99	0.96	1.01	0.98	0.95	0.98	0.95	0.93	0.95	0.93	0.91	0.92	0.91	0.89	0.88
3	0.97	0.93	0.90	0.96	0.92	0.89	0.93	0.90	0.88	0.91	0.88	0.86	0.89	0.87	0.85	0.84
4	0.92	0.88	0.84	0.91	0.87	0.84	0.89	0.86	0.83	0.87	0.84	0.82	0.86	0.83	0.81	0.80
5	0.88	0.83	0.80	0.87	0.83	0.79	0.85	0.82	0.79	0.84	0.81	0.78	0.82	0.80	0.77	0.76
6	0.84	0.79	0.76	0.83	0.79	0.75	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.73
7	0.80	0.75	0.72	0.80	0.75	0.72	0.78	0.74	0.71	0.77	0.74	0.71	0.76	0.73	0.71	0.70
8	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.68	0.74	0.71	0.68	0.74	0.70	0.68	0.67
9	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.72	0.68	0.65	0.71	0.68	0.65	0.64
10	0.71	0.66	0.63	0.71	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.62



Nata 2-2264-M

Intensity data(cd)									Appendix Page: 16 Total:18	
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	
0.0	4859.59	4858.66	4832.68	4802.51	4781.63	4707.85	4658.66	4570.03	4413.19	
45.0	4848.92	4860.05	4866.09	4860.05	4839.17	4819.22	4776.53	4725.02	4649.85	
90.0	4858.66	4853.56	4835.46	4801.12	4763.07	4708.32	4628.97	4533.37	4418.29	
135.0	4858.66	4859.13	4851.24	4830.36	4789.52	4744.51	4671.19	4582.10	4483.26	
180.0	4859.59	4856.34	4843.81	4815.51	4778.38	4718.99	4643.35	4550.54	4435.93	
225.0	4848.92	4829.89	4787.67	4740.33	4705.53	4590.91	4531.52	4415.51	4209.02	
270.0	4858.66	4853.09	4839.17	4813.65	4769.57	4717.60	4644.28	4559.36	4443.82	
315.0	4858.66	4840.10	4817.36	4774.21	4715.74	4637.78	4547.76	4429.90	4297.18	
360.0	4859.59	4858.66	4832.68	4802.51	4781.63	4707.85	4658.66	4570.03	4413.19	
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	
0.0	4323.63	4175.60	3989.99	3791.39	3565.40	3329.67	3086.52	2840.12	2597.89	
45.0	4552.86	4437.78	4295.33	4123.17	4006.23	3699.97	3461.92	3313.43	2959.37	
90.0	4274.91	4109.71	3923.17	3710.18	3494.40	3260.99	3028.05	2799.28	2570.51	
135.0	4354.26	4206.70	4040.57	3851.71	3653.10	3439.65	3223.87	3003.46	2790.93	
180.0	4301.36	4148.23	3965.86	3767.26	3551.94	3319.46	3086.52	2898.58	2618.77	
225.0	4101.36	3908.79	3699.51	3468.42	3226.19	2977.93	2725.50	2480.95	2237.34	
270.0	4311.10	4152.87	3973.29	3770.97	3557.05	3331.53	3105.54	2876.78	2651.26	
315.0	4139.41	3965.40	3771.43	3570.97	3354.73	3136.63	2913.90	2694.87	2486.52	
360.0	4323.63	4175.60	3989.99	3791.39	3565.40	3329.67	3086.52	2840.12	2597.89	
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	
0.0	2360.77	2124.58	1891.63	1672.14	1551.96	1314.37	1183.98	1119.48	924.35	
45.0	2806.24	2554.74	2303.69	2052.65	1806.71	1583.05	1383.98	1224.82	1100.46	
90.0	2351.95	2133.39	1924.58	1729.22	1553.35	1407.18	1285.14	1185.84	1132.94	
135.0	2582.11	2377.48	2213.67	1970.05	1785.37	1650.33	1499.06	1376.09	1269.36	
180.0	2430.84	2207.64	1979.80	1761.24	1557.99	1383.05	1242.91	1129.23	1035.95	
225.0	1994.65	1752.42	1538.04	1347.79	1226.21	1084.68	907.19	907.19	871.13	
270.0	2522.25	2215.99	2086.99	1875.39	1683.28	1516.23	1377.02	1261.01	1163.56	
315.0	2271.68	2063.32	1862.40	1752.89	1524.58	1446.16	1328.30	1191.87	1140.36	
360.0	2360.77	2124.58	1891.63	1672.14	1551.96	1314.37	1183.98	1119.48	924.35	
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	
0.0	924.35	876.70	828.67	775.45	707.93	631.13	544.59	456.47	368.67	
45.0	1002.08	925.05	860.55	811.36	768.21	719.02	649.41	570.53	488.86	
90.0	1025.75	907.37	907.37	871.73	794.98	707.60	614.38	521.20	427.84	
135.0	1182.59	1104.63	1034.56	975.17	910.20	828.07	736.19	636.89	534.80	
180.0	959.39	894.89	842.45	791.87	729.23	653.59	567.74	480.04	392.80	
225.0	822.64	777.72	723.57	656.00	575.77	494.38	411.50	327.79	248.58	
270.0	1076.33	1002.08	939.44	877.72	802.08	714.84	620.18	524.59	431.78	
315.0	1065.65	910.80	910.80	849.88	759.21	660.55	562.50	465.33	369.14	
360.0	924.35	876.70	828.67	775.45	707.93	631.13	544.59	456.47	368.67	
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	
0.0	280.79	199.26	130.86	76.33	38.42	23.71	21.39	18.28	15.03	
45.0	405.80	340.83	245.71	245.71	163.06	60.60	30.25	19.26	16.75	
90.0	338.70	254.38	176.47	112.71	74.25	45.24	37.68	33.18	27.05	
135.0	440.60	348.26	259.16	259.16	243.85	87.28	63.43	52.95	45.48	
180.0	303.25	254.99	254.99	107.93	59.12	32.02	22.78	19.54	16.19	
225.0	174.34	107.89	55.54	28.03	20.51	16.33	14.76	12.02	10.35	
270.0	340.83	256.38	256.38	169.14	72.16	44.45	34.85	29.37	24.55	
315.0	279.30	199.44	154.85	95.03	61.25	46.73	39.49	32.90	27.56	
360.0	280.79	199.26	130.86	76.33	38.42	23.71	21.39	18.28	15.03	

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	12.85	11.55	10.49	9.84	9.33	8.96	8.49	8.12	7.89
45.0	14.25	11.65	10.16	9.37	8.91	8.45	8.07	7.84	7.42
90.0	23.71	20.70	18.51	16.80	15.36	14.20	13.18	12.25	11.32
135.0	38.56	32.95	29.00	25.52	22.92	20.51	18.51	16.71	15.31
180.0	13.18	11.46	10.35	9.37	8.58	7.98	7.61	7.38	7.10
225.0	9.37	8.72	8.21	7.84	7.70	7.47	7.29	7.19	7.19
270.0	21.07	18.70	16.84	15.50	14.29	13.32	12.53	11.79	11.14
315.0	23.76	20.79	18.38	16.38	14.85	13.50	12.39	11.46	10.72
360.0	12.85	11.55	10.49	9.84	9.33	8.96	8.49	8.12	7.89
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.61	7.33	7.01	6.77	6.54	6.26	6.03	5.85	5.48
45.0	7.29	7.05	6.68	6.54	6.36	6.22	5.99	5.80	5.61
90.0	10.63	9.98	9.37	8.82	8.45	8.07	7.66	7.24	6.82
135.0	14.20	13.09	12.34	11.37	10.63	10.07	9.28	8.77	8.21
180.0	6.91	6.82	6.73	6.64	6.54	6.54	6.59	6.54	6.40
225.0	7.15	7.10	7.01	7.01	6.91	6.68	6.36	6.13	5.94
270.0	10.67	10.26	9.84	9.65	9.14	8.86	8.45	8.03	7.61
315.0	10.12	9.51	8.86	8.45	8.03	7.80	7.52	6.96	6.82
360.0	7.61	7.33	7.01	6.77	6.54	6.26	6.03	5.85	5.48
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.38	5.10	4.78	4.59	4.36	4.13	3.90	3.76	3.62
45.0	5.43	5.24	4.97	4.78	4.59	4.41	4.13	3.99	3.85
90.0	6.45	6.22	5.57	5.34	4.97	4.73	4.45	4.22	3.99
135.0	7.70	7.15	6.64	6.13	5.75	5.34	4.92	4.55	4.32
180.0	6.36	6.26	5.94	5.66	5.43	5.20	4.97	4.78	4.69
225.0	5.80	5.57	5.24	5.01	4.87	4.73	4.64	4.45	4.32
270.0	7.24	6.96	6.64	6.22	5.89	5.61	5.43	5.15	4.92
315.0	6.45	6.22	5.89	5.66	5.34	5.15	5.01	4.83	4.55
360.0	5.38	5.10	4.78	4.59	4.36	4.13	3.90	3.76	3.62
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	3.39	3.20	3.06	2.92	2.83	2.78	2.78	2.74	2.64
45.0	3.71	3.57	3.34	3.20	3.06	2.97	2.92	2.78	2.78
90.0	3.71	3.43	3.16	3.02	2.92	2.78	2.78	2.78	2.69
135.0	4.08	3.76	3.39	3.16	3.02	2.92	2.83	2.78	2.74
180.0	4.50	4.22	4.04	3.90	3.81	3.71	3.71	3.57	3.53
225.0	4.18	4.04	3.85	3.76	3.76	3.67	3.57	3.43	3.43
270.0	4.69	4.41	4.18	4.04	3.90	3.76	3.76	3.62	3.53
315.0	4.32	4.13	3.94	3.81	3.71	3.62	3.57	3.48	3.43
360.0	3.39	3.20	3.06	2.92	2.83	2.78	2.78	2.74	2.64
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	2.64	2.64	2.60	2.55	2.60	2.60	2.55	2.51	2.51
45.0	2.78	2.64	2.64	2.60	2.60	2.55	2.55	2.51	2.55
90.0	2.60	2.60	2.55	2.60	2.55	2.46	2.46	2.51	2.51
135.0	2.74	2.64	2.60	2.60	2.55	2.55	2.55	2.51	2.46
180.0	3.43	3.20	3.20	3.06	2.92	2.88	2.78	2.69	2.55
225.0	3.39	3.29	3.20	3.06	3.06	2.97	2.92	2.83	2.78
270.0	3.39	3.29	3.29	3.16	3.02	2.88	2.83	2.74	2.69
315.0	3.29	3.25	3.16	3.02	2.92	2.83	2.78	2.74	2.64
360.0	2.64	2.64	2.60	2.55	2.60	2.60	2.55	2.51	2.51

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	2.46
45.0	2.51
90.0	2.51
135.0	2.51
180.0	2.55
225.0	2.74
270.0	2.64
315.0	2.60
360.0	2.46