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Nata

LumCAT: 2-2077-M	
Luminaire: 92.70.131.00	
Report No: NATA0100	Voltage(V): 34.5600
Test No: GC2019092506	Current(A): 0.4470
LampCAT: OSRAM OPTO SOLERIQ S15	Power (W): 15.4500
Lamp flux(lm): 1643.0	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): 1294.73
Efficiency(%): 78.80%
Lumens(lm)/Power(W): 83.80
Central intensity(cd): 7316.297
Maximum intensity(cd): 7316.297
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=22.9
[C90/270]Total=22.9
Field angle(10%Imax): [C0/180]Total=41.2
[C90/270]Total=41.2
Maximum s/h(1/2): C0_180=0.39 C90_270=0.39
Maximum s/h(1/4): C0_180=0.39 C90_270=0.39
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 78.80%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.517%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7316.297	0.000	0	.000%	.000%
1.0	7285.781	6.987	6.987	.425%	.540%
2.0	7192.617	20.781	27.768	1.265%	2.145%
3.0	7034.766	34.027	61.795	2.071%	4.773%
4.0	6815.391	46.361	108.156	2.822%	8.354%
5.0	6506.648	57.311	165.466	3.488%	12.780%
6.0	6152.273	66.526	231.992	4.049%	17.918%
7.0	5725.336	73.724	305.717	4.487%	23.612%
8.0	5289.609	78.832	384.548	4.798%	29.701%
9.0	4807.547	81.832	466.38	4.981%	36.022%
10.0	4317.891	82.582	548.962	5.026%	42.400%
11.0	3853.758	81.652	630.614	4.970%	48.706%
12.0	3403.477	79.332	709.946	4.828%	54.834%
13.0	2950.383	75.404	785.35	4.589%	60.658%
14.0	2551.148	70.419	855.769	4.286%	66.097%
15.0	2194.875	65.156	920.925	3.966%	71.129%
16.0	1851.398	59.289	980.214	3.609%	75.708%
17.0	1519.179	52.489	1032.703	3.195%	79.762%
18.0	1272.867	46.035	1078.738	2.802%	83.318%
19.0	1048.141	40.381	1119.118	2.458%	86.437%
20.0	855.014	34.833	1153.952	2.120%	89.127%
21.0	655.017	28.996	1182.947	1.765%	91.367%
22.0	493.559	23.081	1206.028	1.405%	93.149%
23.0	356.154	17.829	1223.858	1.085%	94.526%
24.0	233.114	12.884	1236.741	.784%	95.521%
25.0	146.827	8.639	1245.38	.526%	96.189%
26.0	68.238	5.077	1250.457	.309%	96.581%
27.0	32.745	2.471	1252.927	.150%	96.772%
28.0	21.059	1.362	1254.289	.083%	96.877%
29.0	17.677	1.013	1255.303	.062%	96.955%
30.0	15.968	0.908	1256.211	.055%	97.025%
31.0	14.590	0.850	1257.062	.052%	97.091%
32.0	13.465	0.804	1257.865	.049%	97.153%
33.0	12.600	0.768	1258.633	.047%	97.212%
34.0	11.805	0.739	1259.372	.045%	97.269%
35.0	11.138	0.713	1260.084	.043%	97.324%
36.0	10.554	0.691	1260.775	.042%	97.378%
37.0	10.069	0.673	1261.448	.041%	97.430%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	9.633	0.658	1262.105	.040%	97.480%
39.0	9.253	0.645	1262.75	.039%	97.530%
40.0	8.937	0.634	1263.384	.039%	97.579%
41.0	8.655	0.626	1264.011	.038%	97.628%
42.0	8.381	0.619	1264.63	.038%	97.675%
43.0	8.163	0.613	1265.243	.037%	97.723%
44.0	7.966	0.609	1265.851	.037%	97.770%
45.0	7.798	0.606	1266.457	.037%	97.817%
46.0	7.636	0.604	1267.061	.037%	97.863%
47.0	7.488	0.602	1267.662	.037%	97.910%
48.0	7.376	0.601	1268.263	.037%	97.956%
49.0	7.270	0.601	1268.865	.037%	98.003%
50.0	7.144	0.601	1269.466	.037%	98.049%
51.0	7.059	0.601	1270.066	.037%	98.095%
52.0	6.961	0.602	1270.668	.037%	98.142%
53.0	6.891	0.603	1271.271	.037%	98.188%
54.0	6.813	0.604	1271.875	.037%	98.235%
55.0	6.757	0.606	1272.48	.037%	98.282%
56.0	6.673	0.607	1273.087	.037%	98.329%
57.0	6.609	0.607	1273.695	.037%	98.376%
58.0	6.574	0.610	1274.304	.037%	98.423%
59.0	6.532	0.613	1274.917	.037%	98.470%
60.0	6.483	0.615	1275.532	.037%	98.517%
61.0	6.441	0.617	1276.149	.038%	98.565%
62.0	6.405	0.619	1276.768	.038%	98.613%
63.0	6.377	0.622	1277.389	.038%	98.661%
64.0	6.314	0.623	1278.012	.038%	98.709%
65.0	6.300	0.624	1278.636	.038%	98.757%
66.0	6.272	0.627	1279.264	.038%	98.806%
67.0	6.237	0.629	1279.892	.038%	98.854%
68.0	6.223	0.631	1280.524	.038%	98.903%
69.0	6.195	0.633	1281.157	.039%	98.952%
70.0	6.173	0.635	1281.792	.039%	99.001%
71.0	6.138	0.636	1282.429	.039%	99.050%
72.0	6.117	0.637	1283.066	.039%	99.099%
73.0	6.103	0.639	1283.705	.039%	99.149%
74.0	6.096	0.641	1284.346	.039%	99.198%
75.0	6.075	0.643	1284.989	.039%	99.248%

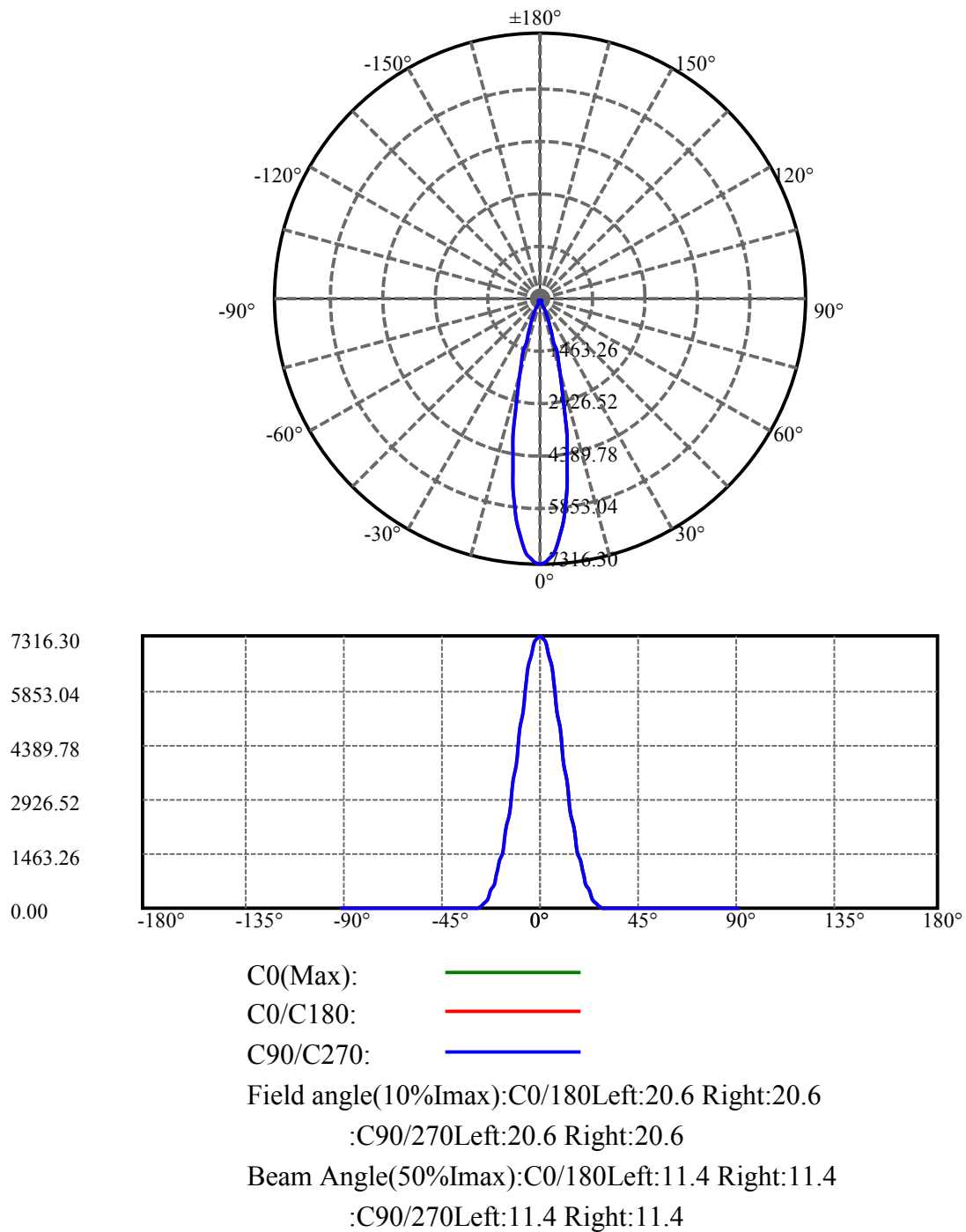
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.061	0.644	1285.634	.039%	99.298%
77.0	6.047	0.646	1286.279	.039%	99.348%
78.0	6.047	0.647	1286.926	.039%	99.398%
79.0	6.026	0.649	1287.575	.039%	99.448%
80.0	6.012	0.649	1288.224	.039%	99.498%
81.0	5.998	0.649	1288.874	.040%	99.548%
82.0	5.991	0.650	1289.524	.040%	99.598%
83.0	5.984	0.651	1290.175	.040%	99.648%
84.0	5.984	0.652	1290.827	.040%	99.699%
85.0	5.963	0.652	1291.479	.040%	99.749%
86.0	5.941	0.651	1292.129	.040%	99.799%
87.0	5.927	0.650	1292.779	.040%	99.850%
88.0	5.927	0.649	1293.428	.040%	99.900%
89.0	5.920	0.649	1294.078	.040%	99.950%
90.0	5.920	0.649	1294.727	.040%	100.000%

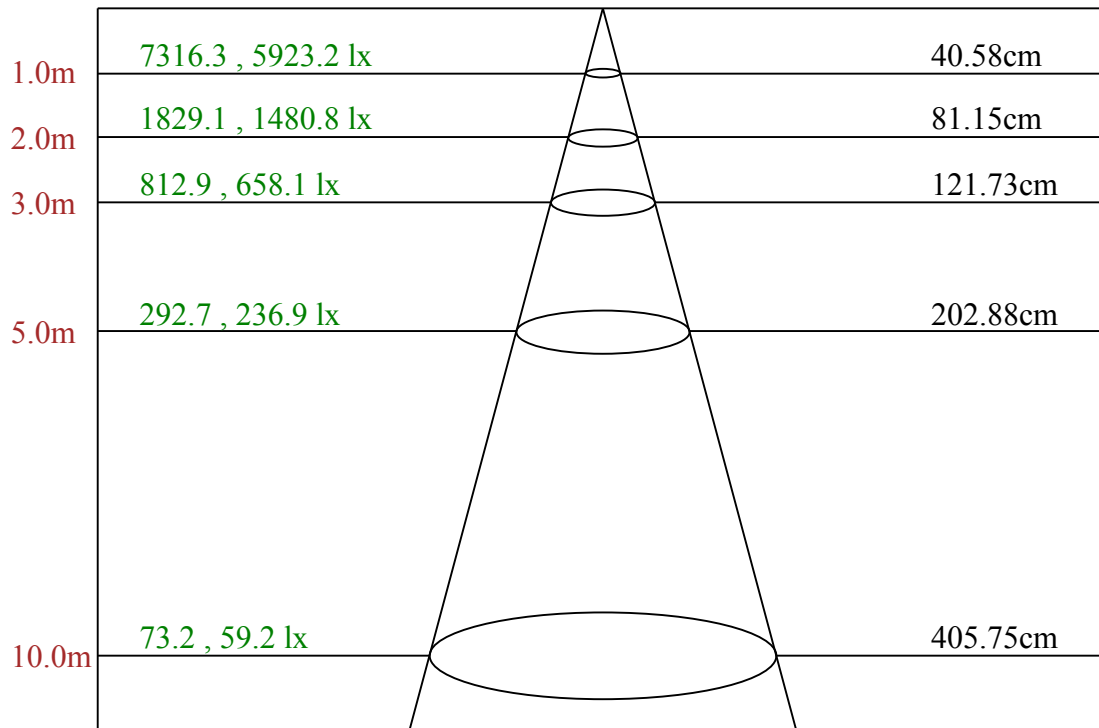
ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1256.21	76.46%	97.03%
0-40	1263.38	76.89%	97.58%
0-60	1275.53	77.63%	98.52%
0-90	1294.08	78.76%	99.95%
0-120	1294.08	78.76%	99.95%
0-180	1294.73	78.80%	100.00%
60-90	19.16	1.17%	1.48%
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%
0-17.07	1035.78	63.04%	80.00%

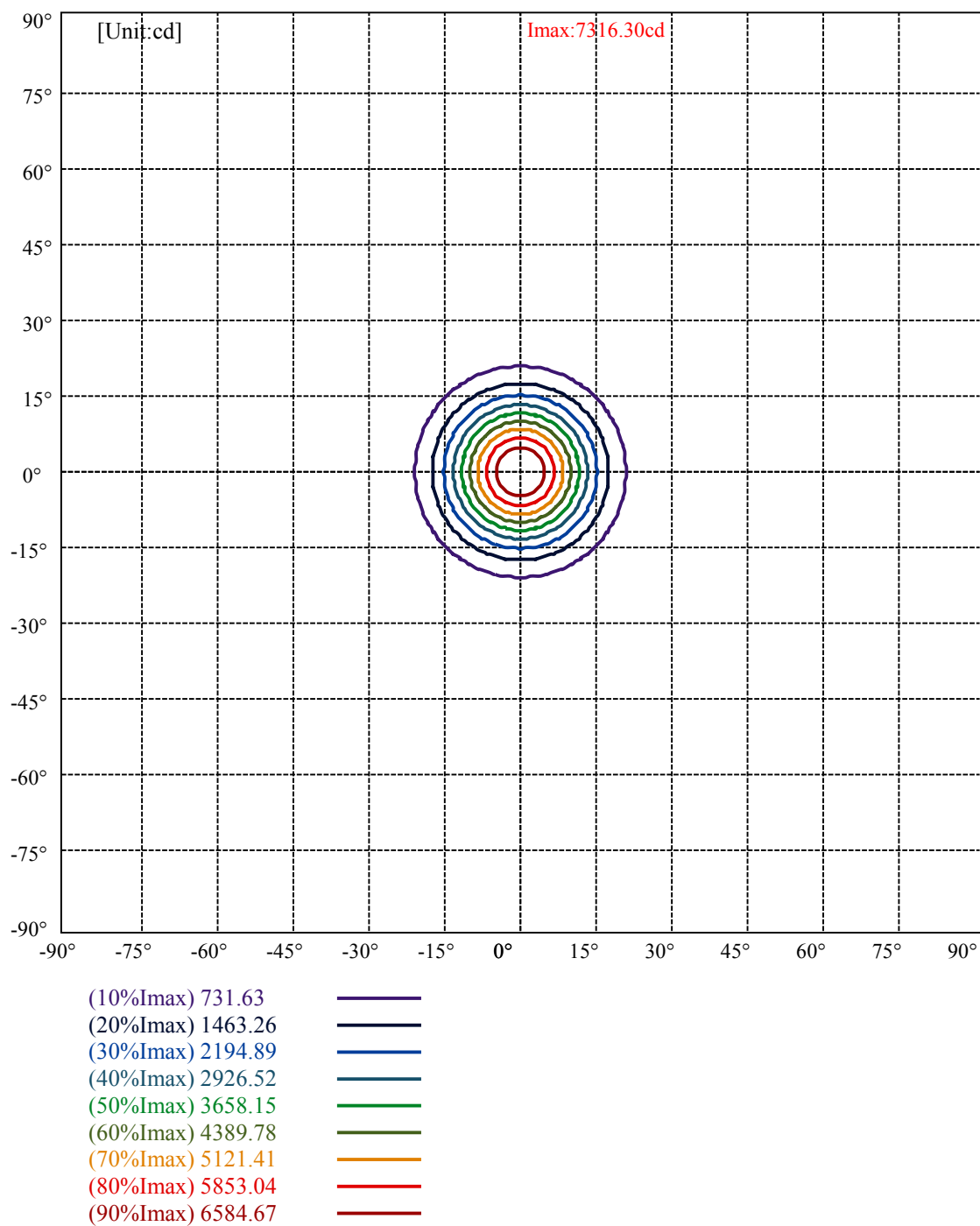
ZONAL LUMEN SUMMARY

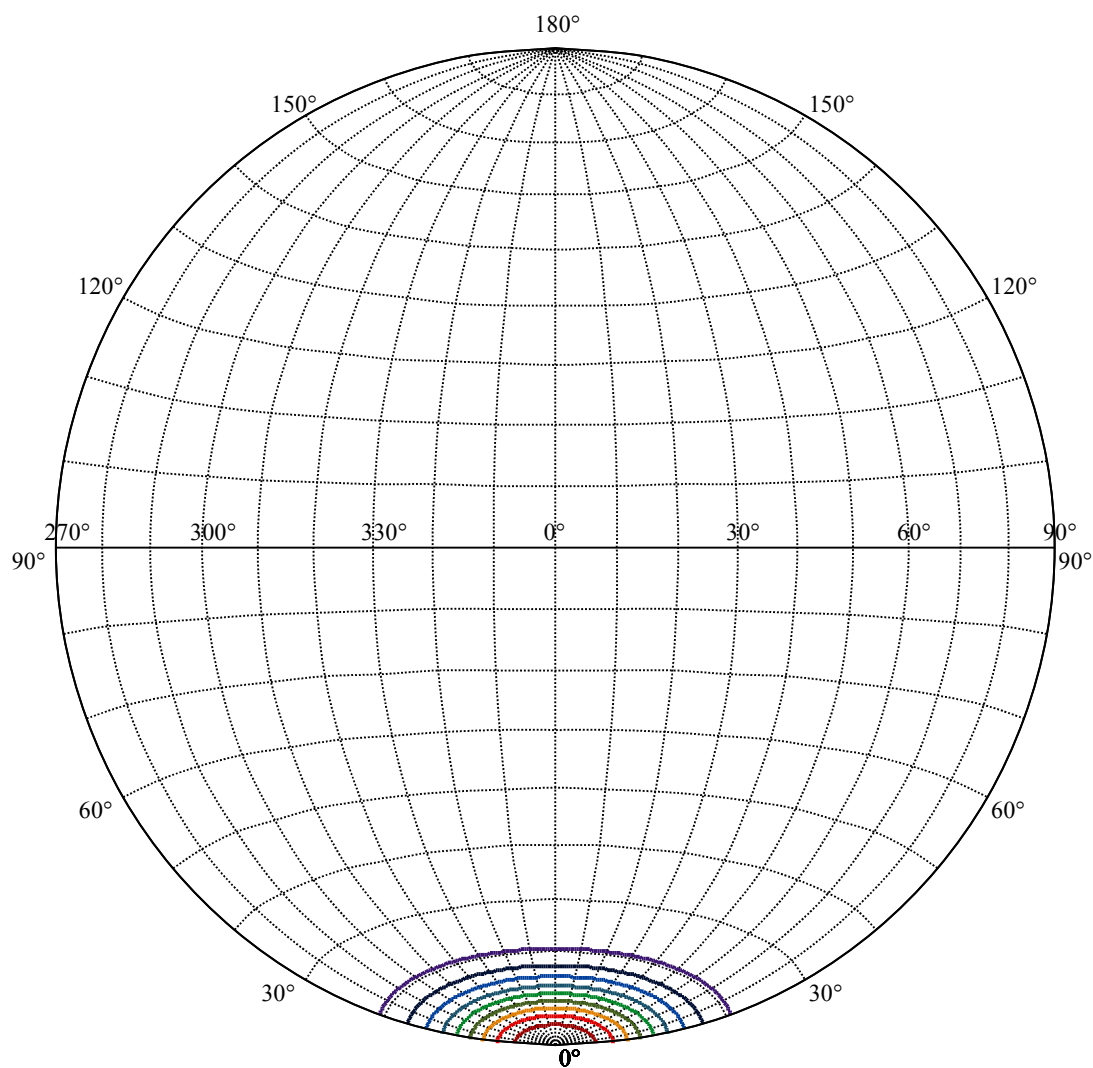
0-10	548.96
10-20	604.99
20-30	102.26
30-40	7.17
40-50	6.08
50-60	6.07
60-70	6.26
70-80	6.43
80-90	5.85
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00





Max , Ave Beam angle of C0 plane 22.94





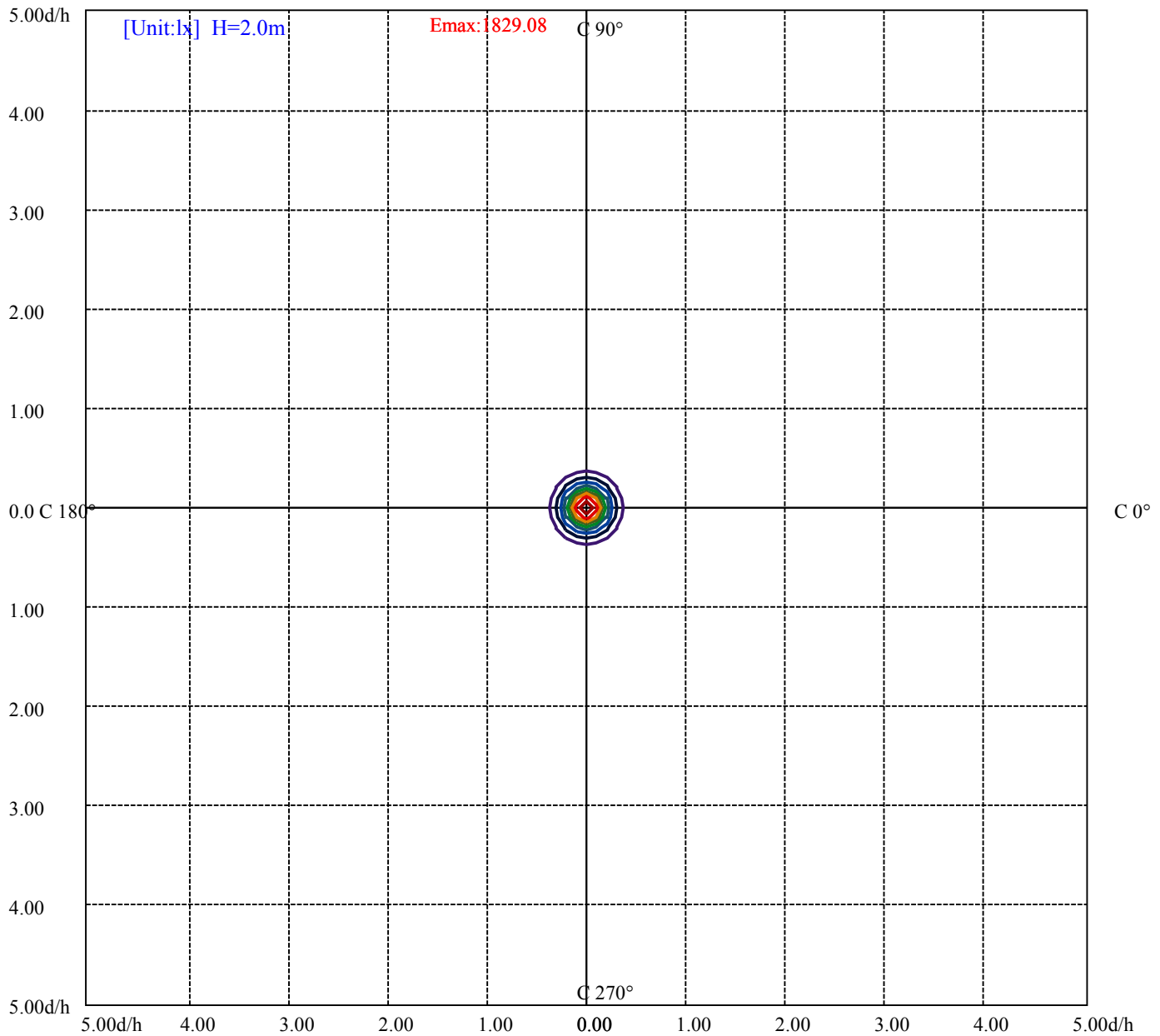
House

[Unit:cd]

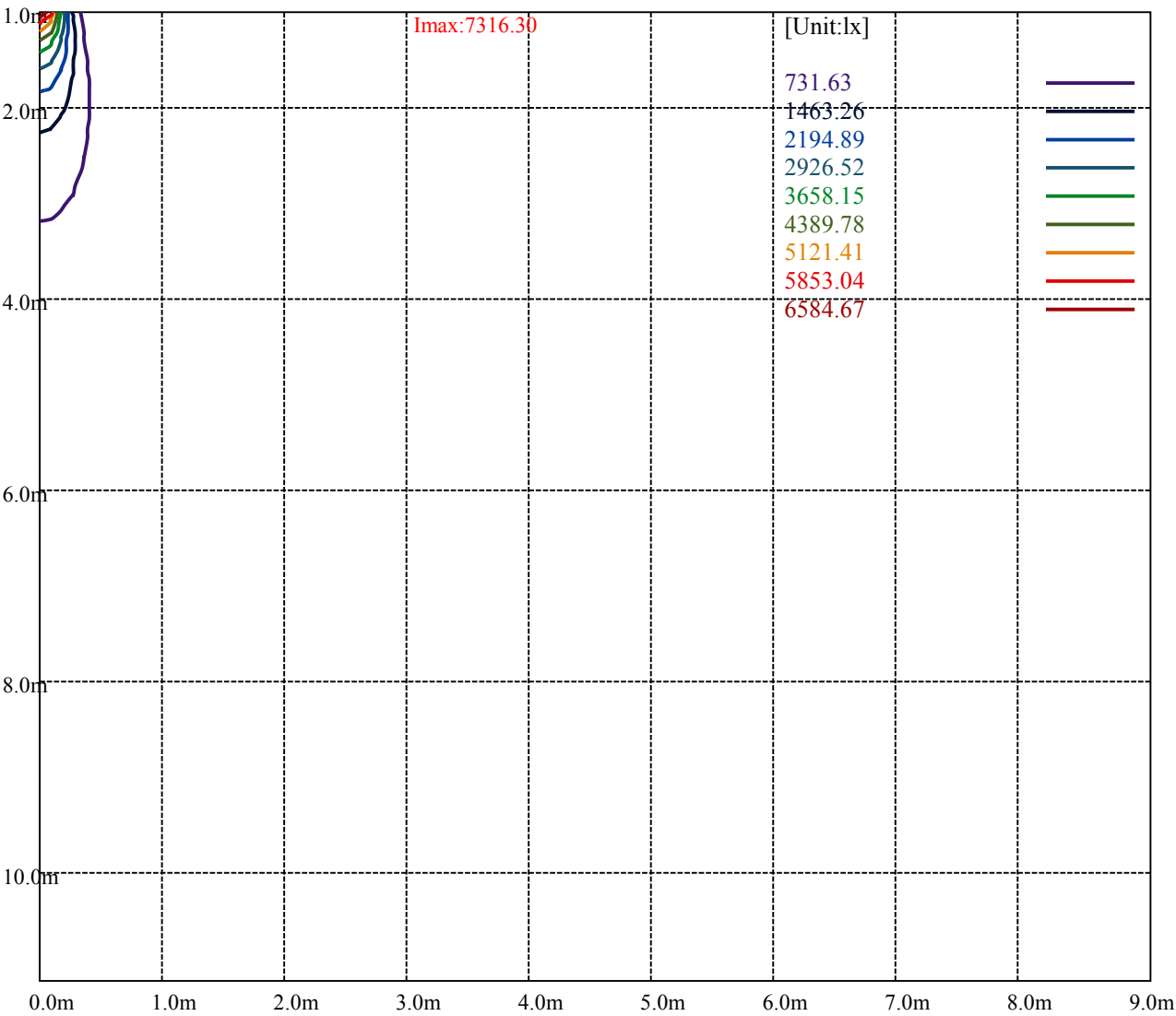
Road

Imax:7316.30

(10%Imax)	731.63	—
(20%Imax)	1463.26	—
(30%Imax)	2194.89	—
(40%Imax)	2926.52	—
(50%Imax)	3658.15	—
(60%Imax)	4389.78	—
(70%Imax)	5121.41	—
(80%Imax)	5853.04	—
(90%Imax)	6584.67	—



(10%Emax) 182.9073	—
(20%Emax) 365.815	—
(30%Emax) 548.7225	—
(40%Emax) 731.63	—
(50%Emax) 914.5375	—
(60%Emax) 1097.445	—
(70%Emax) 1280.353	—
(80%Emax) 1463.257	—
(90%Emax) 1646.165	—



Luminance Table

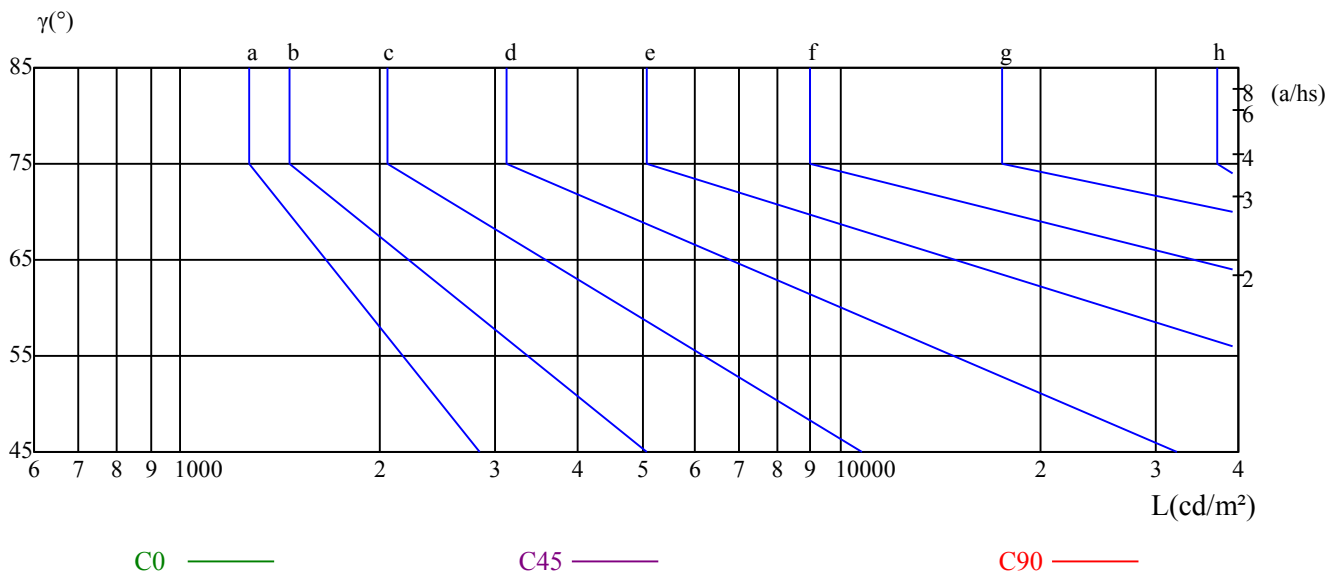
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

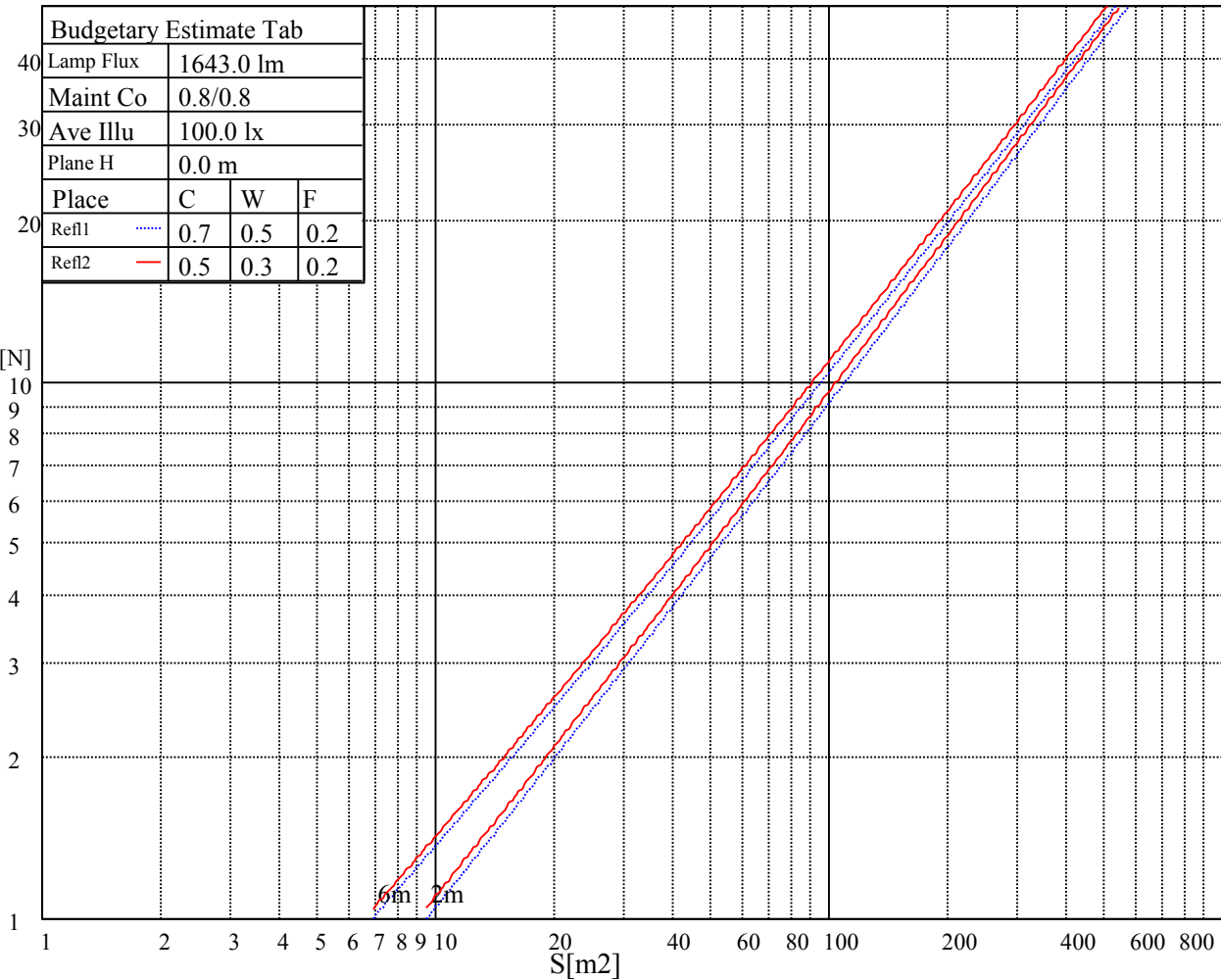
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

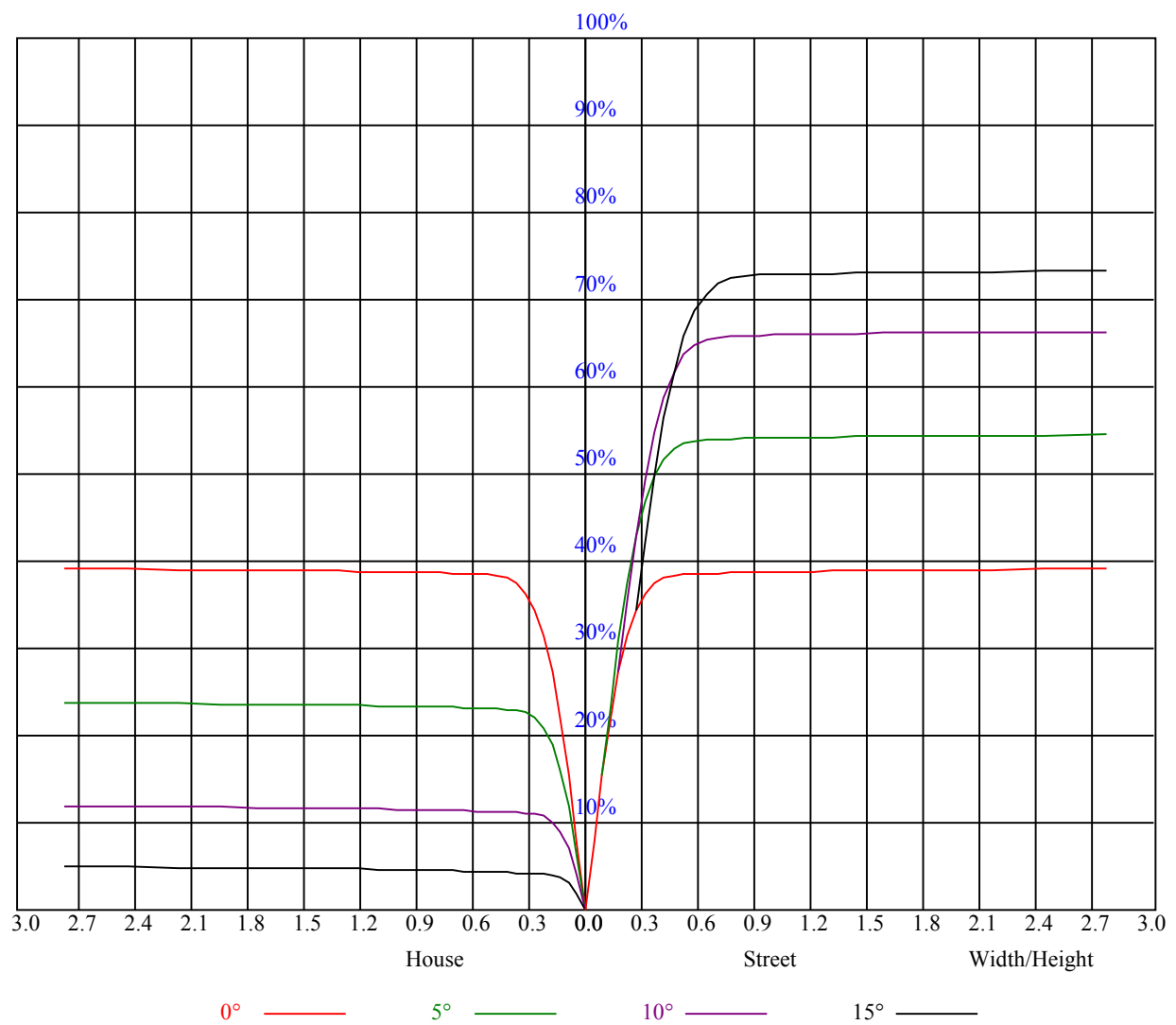
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	0.94	0.94	0.94	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.80	0.80	0.80	0.79
1	0.89	0.87	0.86	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.80	0.79	0.78	0.77	0.76
2	0.85	0.83	0.81	0.84	0.82	0.80	0.81	0.80	0.78	0.79	0.78	0.77	0.77	0.76	0.75	0.74
3	0.82	0.79	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.77	0.75	0.74	0.75	0.74	0.73	0.72
4	0.79	0.76	0.74	0.78	0.75	0.73	0.77	0.74	0.73	0.75	0.73	0.72	0.74	0.72	0.71	0.70
5	0.77	0.73	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.73	0.71	0.70	0.72	0.71	0.69	0.68
6	0.74	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	0.68	0.67
7	0.72	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.66	0.69	0.68	0.66	0.65
8	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.69	0.66	0.65	0.68	0.66	0.65	0.64
9	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.64	0.67	0.65	0.63	0.67	0.65	0.63	0.63
10	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.66	0.64	0.62	0.66	0.63	0.62	0.61



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	7321.50	7302.38	7189.88	7026.75	6801.19	6468.75	6067.69	5672.25	5196.94
45.0	7315.31	7329.38	7296.75	7201.13	7056.56	6818.63	6503.63	6152.63	5757.19
90.0	7327.13	7328.81	7290.00	7203.94	7034.06	6809.63	6534.56	6081.19	5668.31
135.0	7301.25	7328.81	7320.38	7242.75	7105.50	6896.81	6607.13	6267.38	5925.38
180.0	7321.50	7308.56	7211.25	7074.00	6878.81	6544.69	6199.31	5808.38	5283.00
225.0	7315.31	7224.75	7074.56	6853.50	6536.81	6194.81	5812.88	5284.13	4840.31
270.0	7327.13	7265.81	7113.94	6886.69	6609.38	6230.81	5793.19	5369.63	4932.00
315.0	7301.25	7197.75	7044.19	6789.38	6500.81	6089.06	5699.81	5167.13	4713.75
360.0	7321.50	7302.38	7189.88	7026.75	6801.19	6468.75	6067.69	5672.25	5196.94
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4709.25	4260.94	3761.44	3341.25	2898.00	2482.88	2145.94	1836.56	1496.81
45.0	5220.00	4772.25	4312.69	3804.75	3322.69	2920.50	2507.63	2129.63	1829.81
90.0	5226.75	4663.69	4208.63	3758.06	3236.63	2836.69	2475.00	2061.56	1803.38
135.0	5366.81	4923.00	4522.50	3944.81	3448.69	3083.06	2607.19	2223.56	1944.56
180.0	4887.00	4370.63	3815.44	3438.56	2976.19	2512.13	2215.69	1905.19	1521.00
225.0	4395.94	3834.56	3402.00	2988.00	2566.69	2181.94	1875.94	1558.13	1118.59
270.0	4379.06	3943.13	3512.81	3055.50	2624.06	2276.44	1917.56	1595.25	1338.75
315.0	4275.56	3774.94	3294.56	2896.88	2530.13	2115.56	1814.06	1501.31	1100.53
360.0	4709.25	4260.94	3761.44	3341.25	2898.00	2482.88	2145.94	1836.56	1496.81
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1253.25	1044.00	806.63	631.69	477.00	327.38	297.00	111.32	47.48
45.0	1549.69	1265.06	1027.69	808.88	631.69	470.25	306.56	293.06	113.23
90.0	1489.50	1105.82	1006.03	790.54	616.89	445.16	315.28	191.59	99.39
135.0	1587.94	1329.19	1109.25	867.38	684.56	523.69	345.94	288.56	136.80
180.0	1106.72	1081.69	888.86	666.56	506.76	367.82	223.20	131.79	66.99
225.0	1069.71	824.85	668.53	492.81	326.36	226.97	133.37	45.73	26.61
270.0	1097.44	903.94	700.88	520.31	375.19	284.06	130.56	65.81	31.05
315.0	1028.70	830.59	632.25	461.98	330.02	203.91	113.01	46.74	24.36
360.0	1253.25	1044.00	806.63	631.69	477.00	327.38	297.00	111.32	47.48
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	24.36	19.41	17.10	15.58	14.23	13.11	12.26	11.59	10.86
45.0	46.58	23.51	19.01	17.21	15.30	14.18	13.33	12.26	11.64
90.0	47.31	24.86	19.13	17.10	15.64	14.23	13.33	12.49	11.70
135.0	53.72	26.89	20.19	17.55	15.92	14.63	13.61	12.66	11.93
180.0	28.80	19.86	17.55	15.75	14.57	13.44	12.49	11.76	11.03
225.0	20.59	18.06	16.26	15.02	13.78	12.83	12.04	11.31	10.74
270.0	20.70	18.28	16.54	15.08	13.89	12.99	12.09	11.42	10.80
315.0	19.91	17.61	15.64	14.46	13.39	12.32	11.64	10.97	10.41
360.0	24.36	19.41	17.10	15.58	14.23	13.11	12.26	11.59	10.86
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	10.29	9.84	9.39	9.00	8.72	8.44	8.16	7.99	7.76
45.0	11.14	10.46	10.01	9.68	9.28	9.00	8.72	8.44	8.21
90.0	11.08	10.58	10.07	9.62	9.34	8.94	8.66	8.44	8.21
135.0	11.19	10.63	10.13	9.73	9.34	9.06	8.66	8.44	8.21
180.0	10.41	10.01	9.56	9.23	8.89	8.61	8.33	8.10	7.93
225.0	10.18	9.73	9.39	9.00	8.72	8.49	8.27	8.04	7.88
270.0	10.24	9.84	9.39	9.06	8.72	8.49	8.27	8.04	7.88
315.0	9.90	9.45	9.11	8.72	8.49	8.21	7.99	7.82	7.65
360.0	10.29	9.84	9.39	9.00	8.72	8.44	8.16	7.99	7.76

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	7.65	7.48	7.31	7.20	7.14	6.98	6.92	6.81	6.75
45.0	8.04	7.82	7.71	7.59	7.43	7.31	7.26	7.14	7.09
90.0	8.04	7.88	7.71	7.54	7.48	7.31	7.20	7.09	7.03
135.0	7.99	7.82	7.65	7.54	7.43	7.31	7.20	7.09	6.98
180.0	7.76	7.59	7.43	7.31	7.20	7.09	6.98	6.92	6.81
225.0	7.71	7.59	7.48	7.37	7.26	7.14	7.03	6.98	6.92
270.0	7.71	7.54	7.43	7.31	7.20	7.09	7.03	6.92	6.86
315.0	7.48	7.37	7.20	7.14	7.03	6.92	6.86	6.75	6.69
360.0	7.65	7.48	7.31	7.20	7.14	6.98	6.92	6.81	6.75
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	6.69	6.64	6.58	6.47	6.47	6.41	6.36	6.30	6.30
45.0	6.98	6.92	6.81	6.75	6.69	6.64	6.58	6.58	6.53
90.0	6.92	6.86	6.81	6.75	6.69	6.64	6.58	6.53	6.47
135.0	6.92	6.86	6.75	6.69	6.64	6.58	6.53	6.53	6.47
180.0	6.75	6.69	6.58	6.53	6.47	6.47	6.41	6.36	6.36
225.0	6.81	6.75	6.69	6.64	6.58	6.58	6.53	6.47	6.41
270.0	6.81	6.75	6.64	6.58	6.58	6.53	6.53	6.47	6.41
315.0	6.64	6.58	6.53	6.47	6.47	6.41	6.36	6.30	6.30
360.0	6.69	6.64	6.58	6.47	6.47	6.41	6.36	6.30	6.30
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	6.24	6.19	6.19	6.13	6.13	6.13	6.08	6.08	6.02
45.0	6.53	6.41	6.41	6.36	6.36	6.36	6.30	6.24	6.24
90.0	6.47	6.41	6.36	6.36	6.30	6.30	6.24	6.24	6.24
135.0	6.41	6.36	6.36	6.30	6.24	6.24	6.24	6.19	6.13
180.0	6.30	6.24	6.24	6.19	6.19	6.13	6.13	6.13	6.08
225.0	6.41	6.36	6.36	6.36	6.30	6.30	6.24	6.24	6.19
270.0	6.41	6.36	6.30	6.30	6.24	6.24	6.24	6.19	6.19
315.0	6.24	6.19	6.19	6.19	6.13	6.08	6.08	6.08	6.02
360.0	6.24	6.19	6.19	6.13	6.13	6.13	6.08	6.08	6.02
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.91	5.91
45.0	6.24	6.19	6.19	6.19	6.13	6.13	6.13	6.08	6.08
90.0	6.24	6.19	6.19	6.13	6.13	6.13	6.13	6.13	6.08
135.0	6.13	6.13	6.13	6.08	6.08	6.08	6.08	6.02	6.02
180.0	6.02	6.02	6.02	6.02	5.96	5.96	5.96	5.96	5.96
225.0	6.19	6.19	6.13	6.13	6.13	6.08	6.08	6.08	6.08
270.0	6.13	6.13	6.13	6.13	6.13	6.13	6.08	6.08	6.08
315.0	6.02	6.02	6.02	5.96	5.96	5.91	5.96	5.96	5.91
360.0	5.96	5.96	5.96	5.96	5.96	5.96	5.96	5.91	5.91
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.91	5.91	5.85	5.91	5.85	5.85	5.85	5.85	5.85
45.0	6.08	6.08	6.08	6.02	6.02	6.02	6.02	6.02	5.96
90.0	6.08	6.08	6.08	6.08	6.02	5.96	6.02	5.96	5.96
135.0	5.96	5.96	5.96	5.96	5.96	5.91	5.91	5.91	5.91
180.0	5.91	5.91	5.85	5.91	5.85	5.85	5.85	5.85	5.85
225.0	6.08	6.02	6.08	6.02	6.02	5.96	5.96	6.02	6.02
270.0	6.08	6.08	6.08	6.08	6.08	6.02	5.96	5.96	5.96
315.0	5.91	5.91	5.91	5.91	5.91	5.91	5.85	5.85	5.85
360.0	5.91	5.91	5.85	5.91	5.85	5.85	5.85	5.85	5.85

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	5.85
45.0	6.02
90.0	5.96
135.0	5.85
180.0	5.85
225.0	6.02
270.0	5.96
315.0	5.85
360.0	5.85