
Nata

LumCAT: 2-1678-M	
Luminaire: 92.70.124.00	
Report No: NT2017060504	Voltage(V): 220.1000
Test No: GC2017060504	Current(A): 0.0700
LampCAT: CITIZEN CLU028	Power (W): 14.3000
Lamp flux(lm): 1554.0	PF: 0.9280
Number of Lamps: 1	Ballast type: DC
Length(mm): 70	Width(mm): 70
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1431.29
Efficiency(%): 92.10%
Lumens(lm)/Power(W): 100.09
Central intensity(cd): 16477.010
Maximum intensity(cd): 16477.010
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=11.2
[C90/270]Total=11.2
Field angle(10%Imax): [C0/180]Total=22.5
[C90/270]Total=22.5
Maximum s/h(1/2): C0_180=0.19 C90_270=0.19
Maximum s/h(1/4): C0_180=0.20 C90_270=0.20
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 92.10%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.834%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16477.004	0.000	0	.000%	.000%
1.0	16207.228	15.639	15.639	1.006%	1.093%
2.0	14915.949	44.671	60.31	2.875%	4.214%
3.0	13564.589	68.116	128.426	4.383%	8.973%
4.0	11786.268	84.857	213.283	5.461%	14.902%
5.0	9147.759	90.057	303.34	5.795%	21.194%
6.0	7593.654	87.981	391.321	5.662%	27.341%
7.0	5777.619	82.995	474.316	5.341%	33.139%
8.0	4225.923	71.593	545.91	4.607%	38.141%
9.0	3026.588	58.778	604.687	3.782%	42.248%
10.0	2165.513	46.987	651.674	3.024%	45.531%
11.0	1773.318	39.357	691.031	2.533%	48.280%
12.0	1283.069	33.411	724.442	2.150%	50.615%
13.0	1029.562	27.445	751.887	1.766%	52.532%
14.0	906.972	24.787	776.674	1.595%	54.264%
15.0	814.752	23.637	800.311	1.521%	55.916%
16.0	750.783	22.939	823.25	1.476%	57.518%
17.0	705.204	22.674	845.924	1.459%	59.102%
18.0	671.812	22.704	868.628	1.461%	60.689%
19.0	649.191	22.983	891.611	1.479%	62.294%
20.0	629.880	23.411	915.021	1.506%	63.930%
21.0	613.239	23.870	938.892	1.536%	65.598%
22.0	601.250	24.406	963.297	1.571%	67.303%
23.0	588.498	24.964	988.261	1.606%	69.047%
24.0	577.129	25.485	1013.746	1.640%	70.828%
25.0	566.014	25.993	1039.739	1.673%	72.644%
26.0	555.891	26.483	1066.221	1.704%	74.494%
27.0	544.439	26.920	1093.141	1.732%	76.375%
28.0	534.722	27.322	1120.463	1.758%	78.284%
29.0	525.665	27.743	1148.206	1.785%	80.222%
30.0	516.346	28.134	1176.34	1.810%	82.188%
31.0	506.643	28.468	1204.808	1.832%	84.177%
32.0	496.898	28.750	1233.559	1.850%	86.185%
33.0	477.545	28.707	1262.266	1.847%	88.191%
34.0	445.661	27.939	1290.205	1.798%	90.143%
35.0	405.146	26.423	1316.628	1.700%	91.989%
36.0	341.556	23.775	1340.403	1.530%	93.650%
37.0	276.707	20.164	1360.567	1.298%	95.059%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	202.738	16.003	1376.571	1.030%	96.177%
39.0	143.209	11.808	1388.379	.760%	97.002%
40.0	85.909	7.991	1396.369	.514%	97.561%
41.0	51.423	4.890	1401.26	.315%	97.902%
42.0	22.835	2.698	1403.958	.174%	98.091%
43.0	13.337	1.340	1405.298	.086%	98.184%
44.0	10.151	0.887	1406.184	.057%	98.246%
45.0	7.323	0.672	1406.856	.043%	98.293%
46.0	6.696	0.548	1407.404	.035%	98.331%
47.0	6.373	0.520	1407.924	.033%	98.368%
48.0	6.256	0.511	1408.434	.033%	98.403%
49.0	6.146	0.509	1408.943	.033%	98.439%
50.0	6.042	0.508	1409.452	.033%	98.475%
51.0	5.960	0.508	1409.959	.033%	98.510%
52.0	5.905	0.509	1410.469	.033%	98.546%
53.0	5.836	0.511	1410.979	.033%	98.581%
54.0	5.788	0.512	1411.492	.033%	98.617%
55.0	5.733	0.514	1412.006	.033%	98.653%
56.0	5.685	0.516	1412.522	.033%	98.689%
57.0	5.636	0.518	1413.039	.033%	98.725%
58.0	5.588	0.519	1413.558	.033%	98.761%
59.0	5.554	0.521	1414.079	.034%	98.798%
60.0	5.513	0.523	1414.602	.034%	98.834%
61.0	5.485	0.525	1415.127	.034%	98.871%
62.0	5.464	0.528	1415.655	.034%	98.908%
63.0	5.457	0.531	1416.186	.034%	98.945%
64.0	5.430	0.534	1416.72	.034%	98.982%
65.0	5.416	0.537	1417.257	.035%	99.020%
66.0	5.361	0.538	1417.794	.035%	99.057%
67.0	5.375	0.540	1418.334	.035%	99.095%
68.0	5.368	0.544	1418.879	.035%	99.133%
69.0	5.368	0.548	1419.426	.035%	99.171%
70.0	5.347	0.550	1419.977	.035%	99.210%
71.0	5.334	0.552	1420.529	.036%	99.248%
72.0	5.299	0.553	1421.081	.036%	99.287%
73.0	5.292	0.554	1421.635	.036%	99.326%
74.0	5.292	0.556	1422.192	.036%	99.365%
75.0	5.292	0.559	1422.751	.036%	99.404%

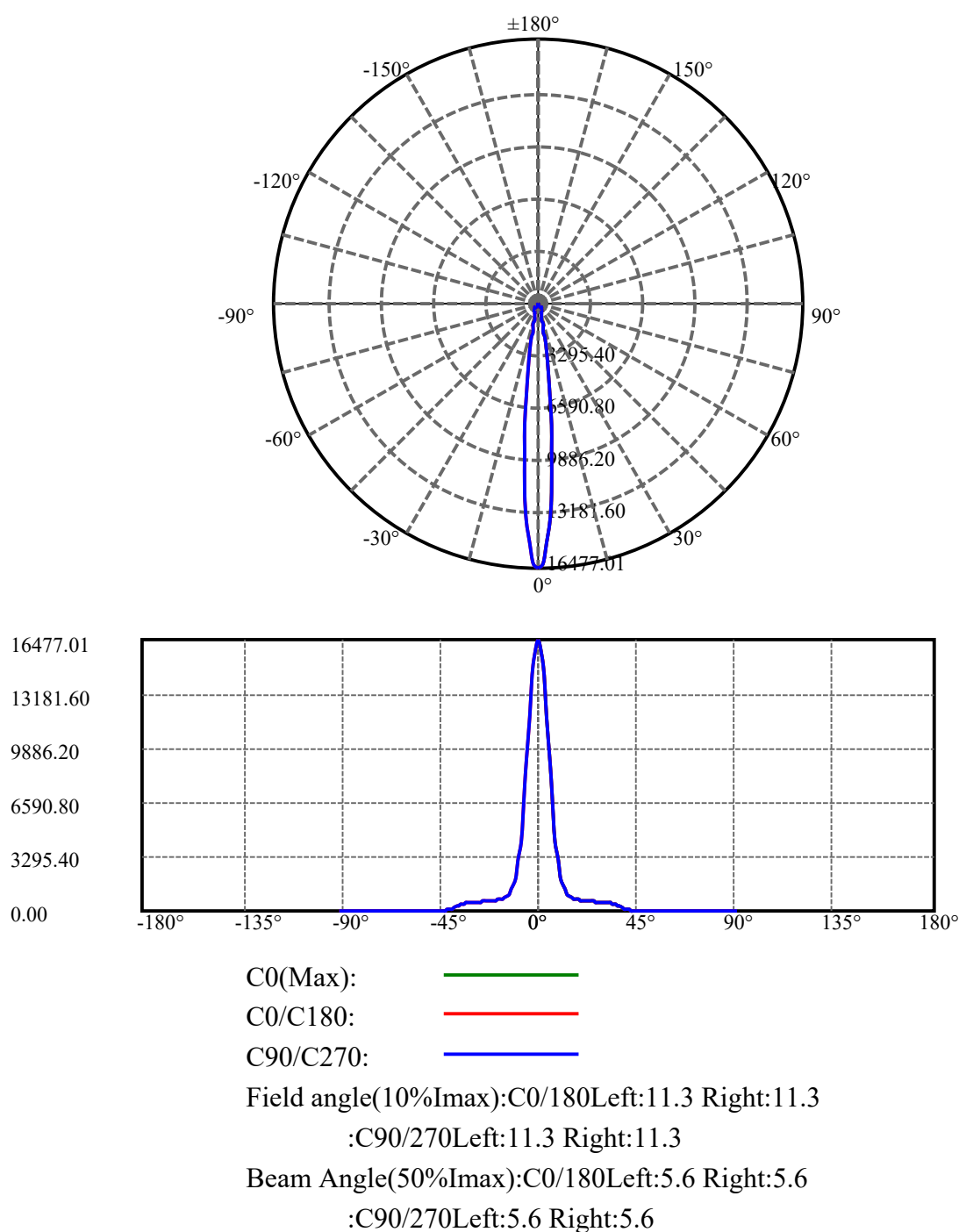
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.299	0.562	1423.313	.036%	99.443%
77.0	5.292	0.565	1423.878	.036%	99.482%
78.0	5.285	0.566	1424.444	.036%	99.522%
79.0	5.265	0.567	1425.011	.036%	99.562%
80.0	5.258	0.567	1425.578	.037%	99.601%
81.0	5.244	0.568	1426.146	.037%	99.641%
82.0	5.251	0.569	1426.715	.037%	99.681%
83.0	5.230	0.570	1427.285	.037%	99.721%
84.0	5.230	0.570	1427.855	.037%	99.760%
85.0	5.237	0.571	1428.426	.037%	99.800%
86.0	5.223	0.572	1428.998	.037%	99.840%
87.0	5.217	0.571	1429.57	.037%	99.880%
88.0	5.217	0.572	1430.141	.037%	99.920%
89.0	5.217	0.572	1430.713	.037%	99.960%
90.0	5.223	0.572	1431.285	.037%	100.000%

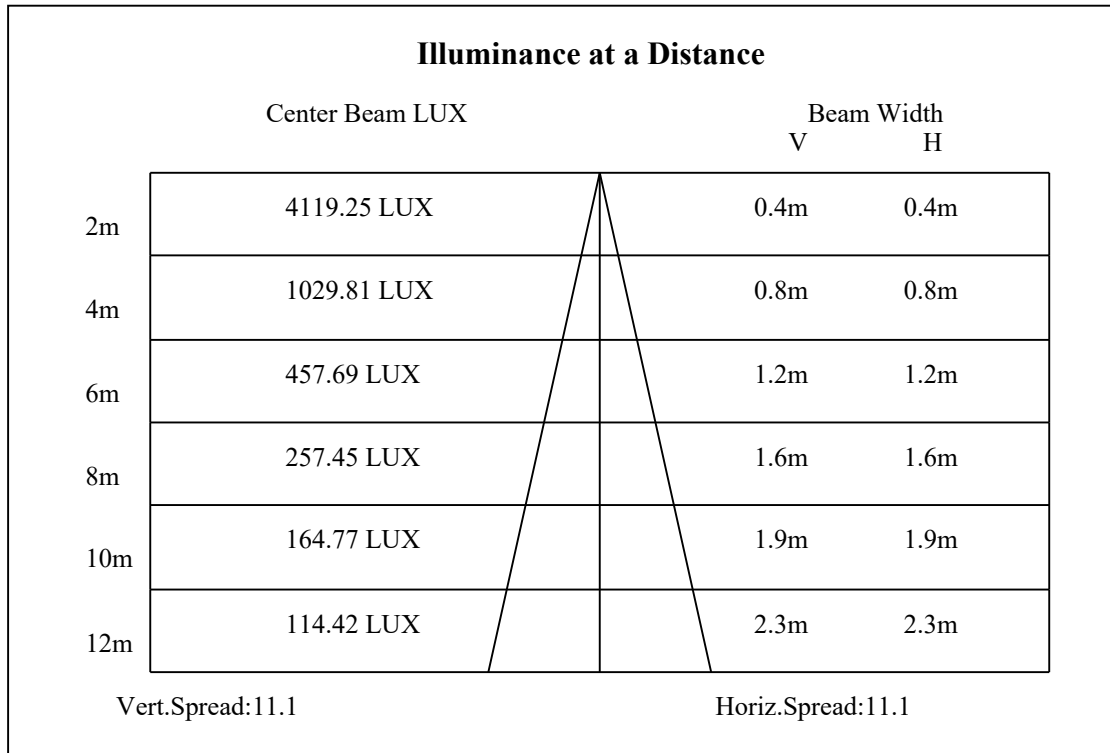
ZONAL LUMEN SUMMARY

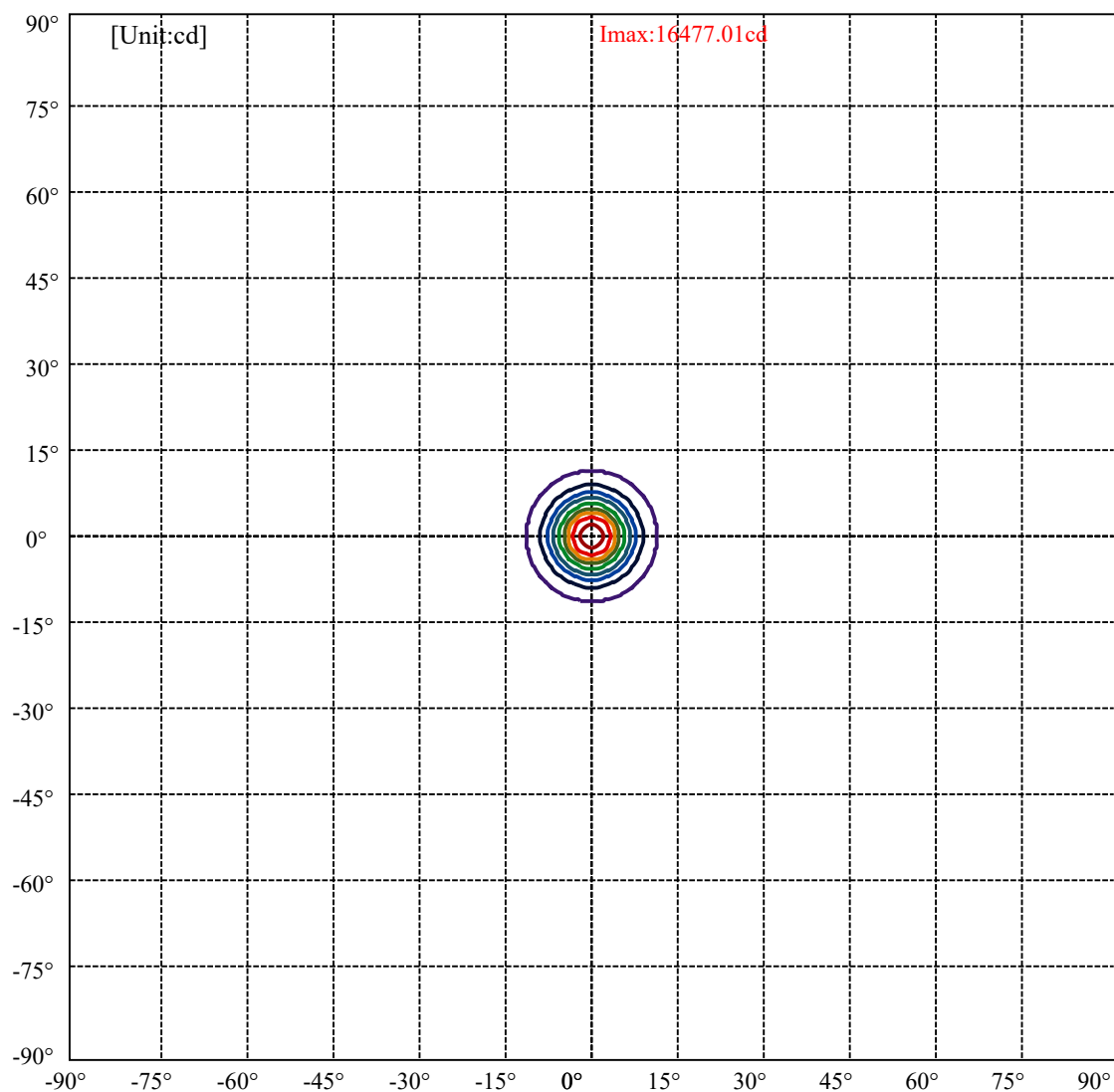
Zone	Lumens	%Lamp	%Fixt
0-30	1176.34	75.70%	82.19%
0-40	1396.37	89.86%	97.56%
0-60	1414.60	91.03%	98.83%
0-90	1430.71	92.07%	99.96%
0-120	1430.71	92.07%	99.96%
0-180	1431.29	92.10%	100.00%
60-90	16.63	1.07%	1.16%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.89	1145.03	73.68%	80.00%

ZONAL LUMEN SUMMARY

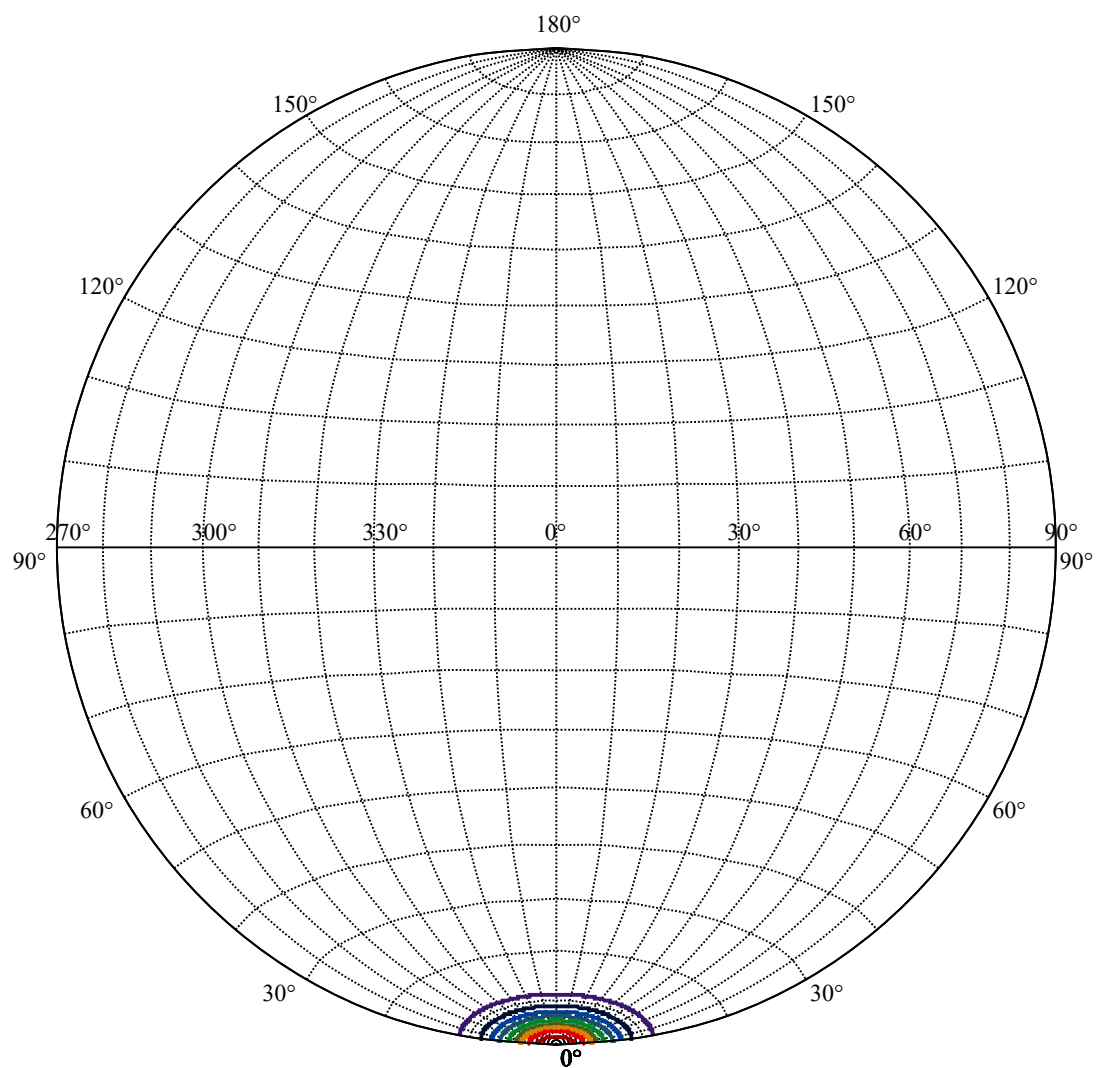
0-10	651.67
10-20	263.35
20-30	261.32
30-40	220.03
40-50	13.08
50-60	5.15
60-70	5.37
70-80	5.60
80-90	5.13
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00







(10%Imax) 1647.7	—
(20%Imax) 3295.4	—
(30%Imax) 4943.1	—
(40%Imax) 6590.8	—
(50%Imax) 8238.5	—
(60%Imax) 9886.2	—
(70%Imax) 11533.9	—
(80%Imax) 13181.6	—
(90%Imax) 14829.3	—



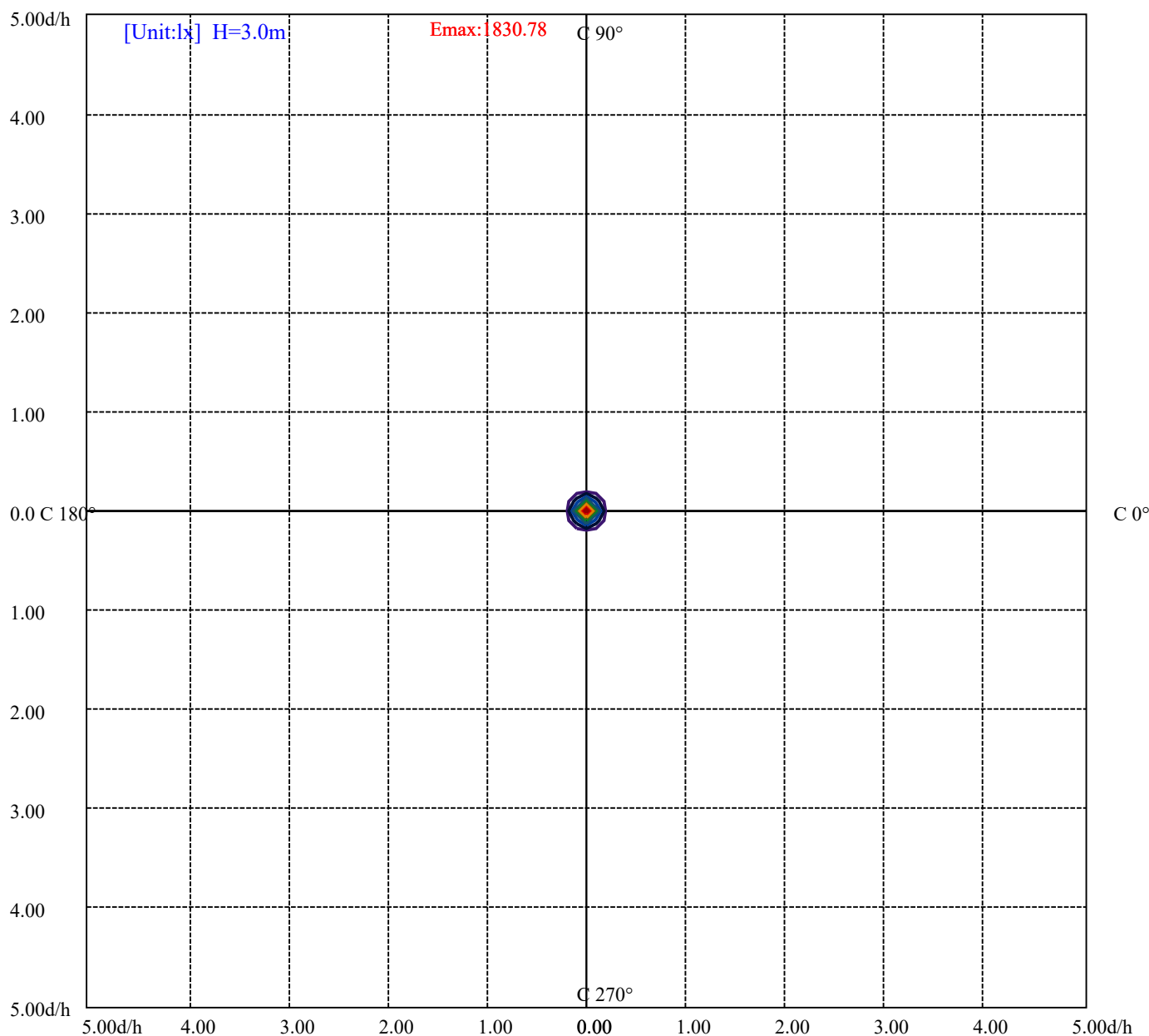
House

[Unit:cd]

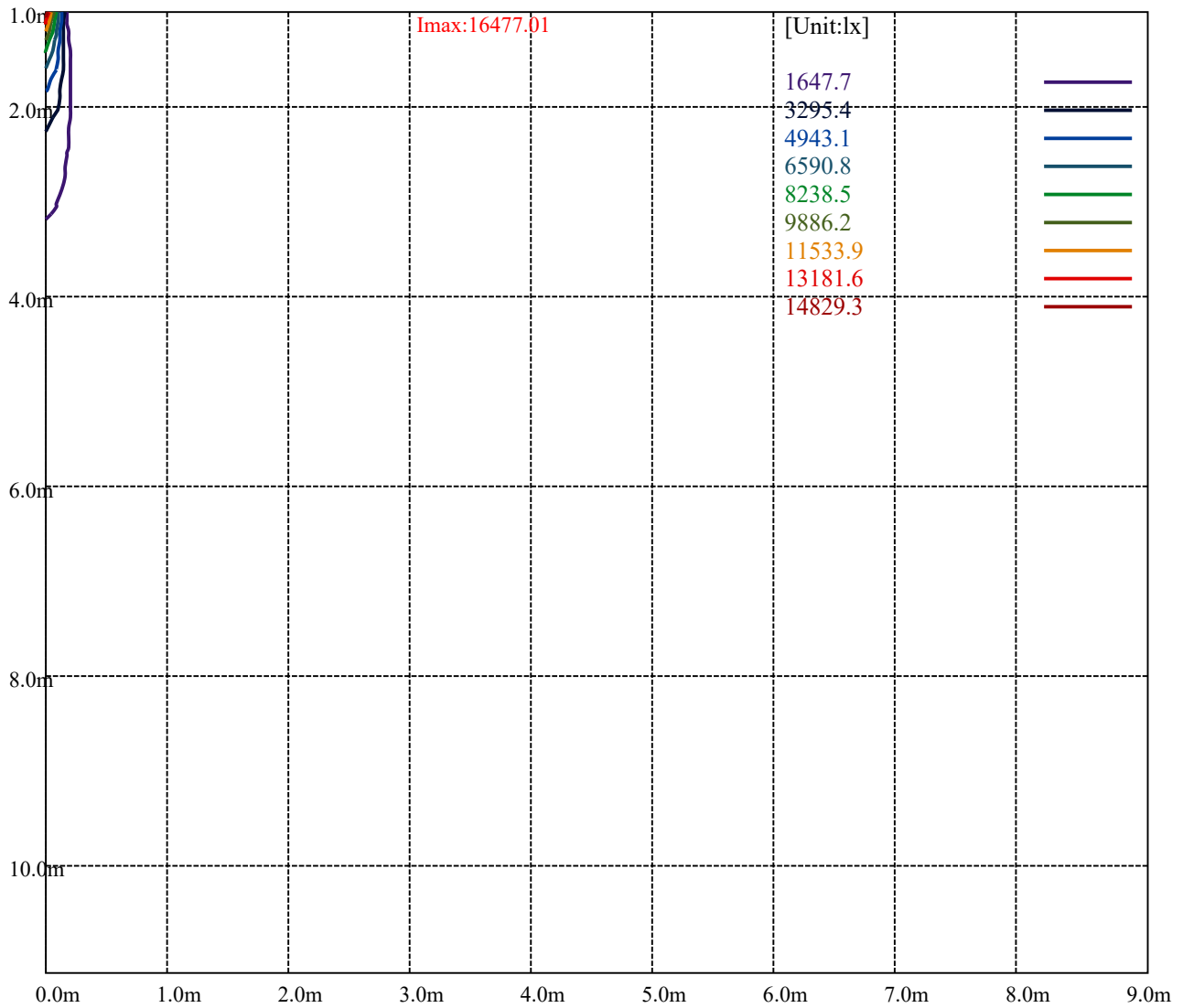
Road

Imax:16477.01

(10%Imax)	1647.7	—
(20%Imax)	3295.4	—
(30%Imax)	4943.1	—
(40%Imax)	6590.8	—
(50%Imax)	8238.5	—
(60%Imax)	9886.2	—
(70%Imax)	11533.9	—
(80%Imax)	13181.6	—
(90%Imax)	14829.3	—



(10%Emax)	183.0778	—
(20%Emax)	366.1544	—
(30%Emax)	549.2322	—
(40%Emax)	732.31	—
(50%Emax)	915.3867	—
(60%Emax)	1098.464	—
(70%Emax)	1281.544	—
(80%Emax)	1464.622	—
(90%Emax)	1647.7	—



Luminance Table

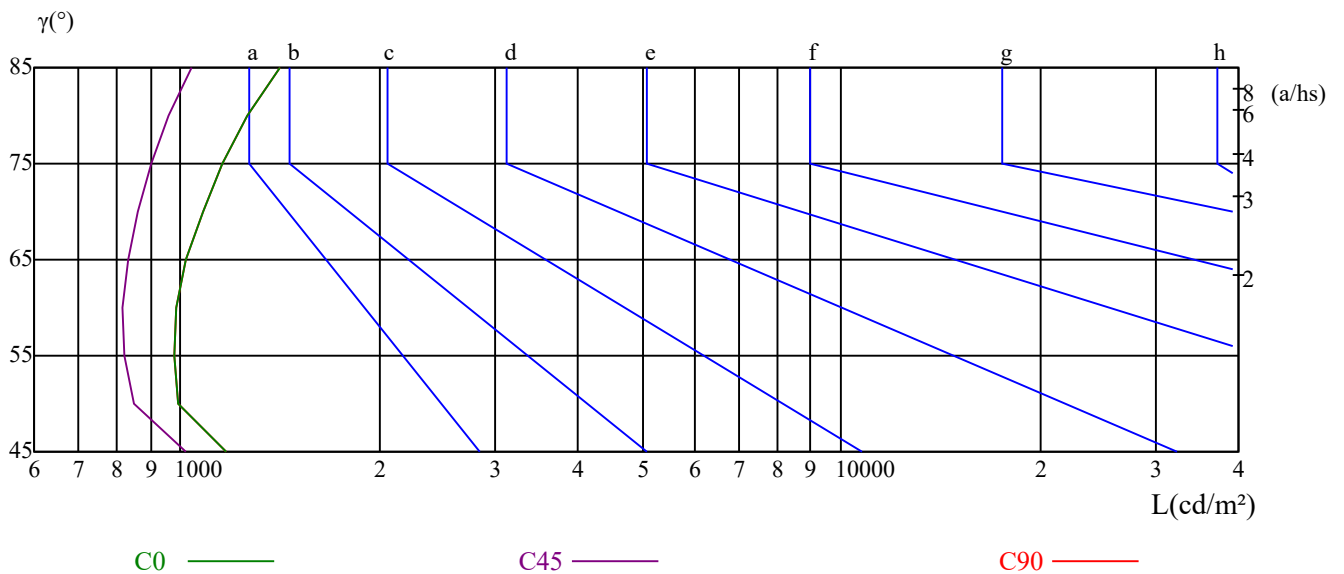
γ	45	50	55	60	65	70	75	80	85
C0	1170	993	977	983	1022	1079	1158	1266	1414
C45	1017	850	823	815	832	861	903	962	1040
C90	1170	993	977	983	1022	1079	1158	1266	1414

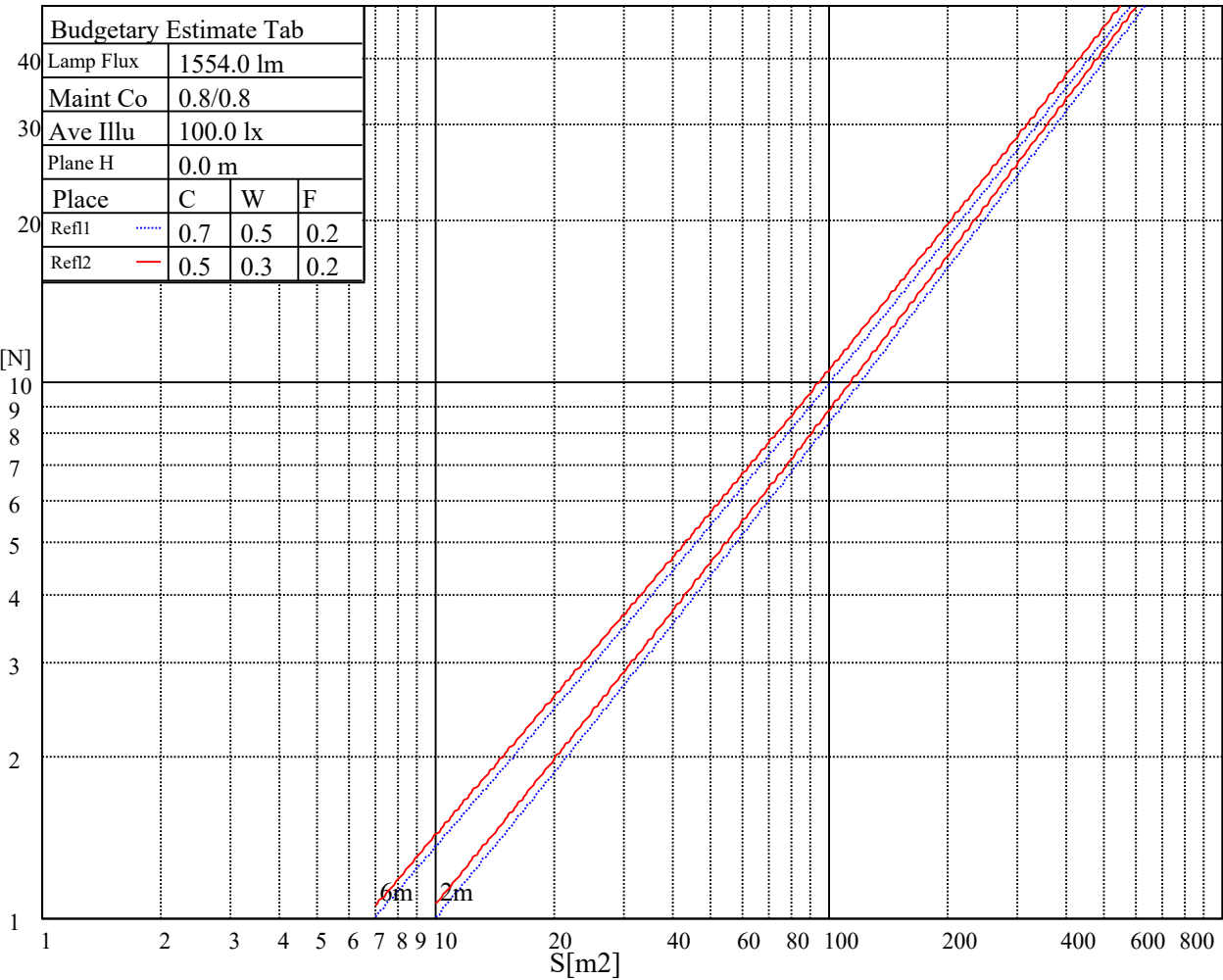
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2278	2278	2278	3635	3635	3635	10683	10683	10683

Glare Table

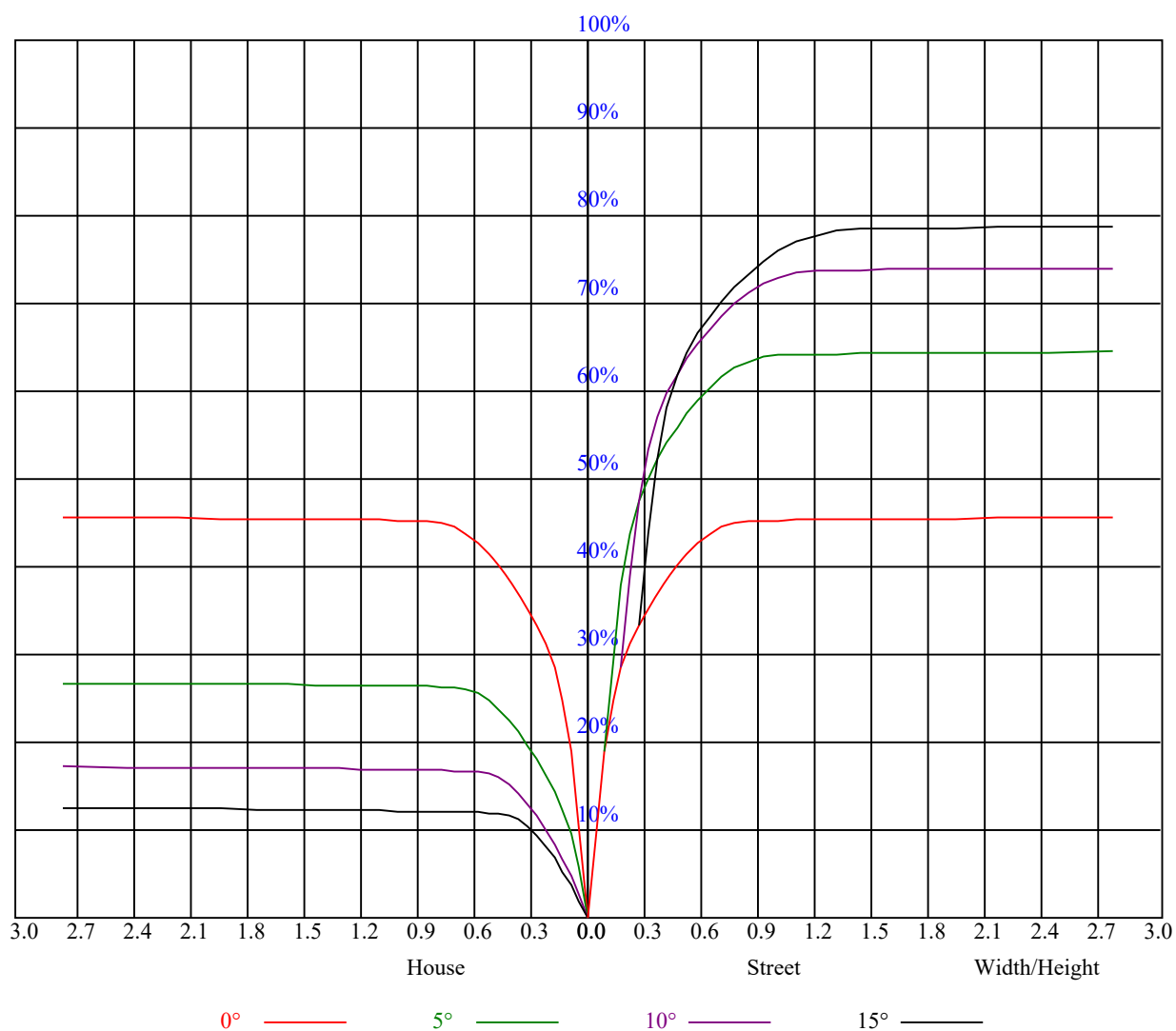
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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	1.10	1.10	1.10	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.94	0.94	0.94	0.92
1	1.03	1.02	1.00	1.01	1.00	0.98	0.98	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.90	0.88
2	0.98	0.95	0.93	0.97	0.94	0.92	0.94	0.92	0.90	0.91	0.89	0.88	0.89	0.87	0.86	0.85
3	0.94	0.90	0.87	0.92	0.89	0.86	0.90	0.87	0.85	0.88	0.86	0.84	0.86	0.84	0.83	0.81
4	0.90	0.86	0.83	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.78
5	0.86	0.82	0.79	0.85	0.81	0.79	0.84	0.80	0.78	0.82	0.79	0.77	0.81	0.79	0.77	0.76
6	0.83	0.79	0.76	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.73
7	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.74	0.72	0.71
8	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.72	0.70	0.69
9	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67
10	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.71	0.68	0.66	0.65



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	16555.46	15366.24	13230.05	11214.99	9034.76	6573.73	4894.51	3584.17	2934.51		
45.0	16533.44	17188.61	17012.43	16164.56	14804.67	12492.30	10389.14	8285.99	6089.24		
90.0	16819.73	17221.64	16863.78	15773.66	14259.61	10930.35	9817.66	7444.73	5151.63		
135.0	15999.39	16962.88	17177.60	16599.50	15476.35	13296.12	11192.97	8996.22	6683.85		
180.0	16555.46	17172.09	17056.47	16192.09	14804.67	10914.38	10361.61	7911.05	5757.25		
225.0	16533.44	15371.75	13356.68	10878.59	8601.46	6349.65	4712.83	3275.31	2258.41		
270.0	16819.73	15773.66	13698.03	11578.36	9321.05	6749.91	5043.17	3688.78	2796.87		
315.0	15999.39	14600.96	10932.55	10114.96	7987.58	5875.62	4337.34	3034.71	2135.64		
360.0	16555.46	15366.24	13230.05	11214.99	9034.76	6573.73	4894.51	3584.17	2934.51		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	1816.31	1432.02	1199.68	989.36	867.14	801.07	736.10	695.36	674.44		
45.0	4310.92	3154.73	2917.99	1697.94	1309.24	1076.90	938.71	832.45	765.28		
90.0	3904.05	2706.57	1835.58	1464.50	1090.78	976.98	865.87	791.88	727.52		
135.0	4784.40	3490.58	2967.54	1765.66	1321.90	1088.47	926.60	818.69	747.67		
180.0	4217.32	2900.92	2002.95	1501.39	1095.95	981.11	871.43	796.01	728.18		
225.0	1670.41	1091.16	1069.09	928.69	843.57	774.53	721.24	688.70	663.98		
270.0	1871.37	1456.79	1161.14	998.17	879.25	801.07	748.77	704.72	677.74		
315.0	1637.93	1091.33	1032.58	918.84	828.65	755.65	709.29	678.46	656.82		
360.0	1816.31	1432.02	1199.68	989.36	867.14	801.07	736.10	695.36	674.44		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	648.01	630.95	617.73	602.87	592.41	578.09	567.63	557.17	546.71		
45.0	720.69	687.10	657.92	638.10	623.24	608.37	597.36	585.80	573.14		
90.0	684.30	657.43	635.74	615.53	604.02	592.85	581.29	568.68	557.78		
135.0	703.07	671.14	645.26	625.44	611.68	596.26	583.60	574.24	564.88		
180.0	688.37	660.13	636.34	617.07	604.79	592.85	581.62	570.93	559.48		
225.0	641.46	628.08	615.42	603.42	591.53	579.58	568.24	557.17	547.48		
270.0	654.62	638.10	621.59	610.58	600.11	588.55	575.89	563.78	555.52		
315.0	633.97	620.60	609.03	592.90	582.22	571.43	561.41	550.34	542.14		
360.0	648.01	630.95	617.73	602.87	592.41	578.09	567.63	557.17	546.71		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	536.80	527.44	519.18	510.37	502.66	493.86	476.24	431.09	360.07		
45.0	561.02	550.01	540.65	530.19	518.08	509.27	499.91	491.10	479.54		
90.0	546.38	536.58	527.50	516.65	506.52	496.88	489.40	480.59	464.57		
135.0	550.01	542.31	535.15	524.69	512.58	506.52	495.51	485.60	480.09		
180.0	548.53	538.62	527.99	520.45	510.54	500.68	491.54	483.06	466.05		
225.0	537.68	526.50	517.09	507.79	499.20	485.16	445.02	386.28	317.73		
270.0	543.96	534.60	525.24	516.43	505.97	496.06	472.93	415.68	349.61		
315.0	531.13	521.71	512.52	504.21	497.60	486.75	449.81	391.89	323.51		
360.0	536.80	527.44	519.18	510.37	502.66	493.86	476.24	431.09	360.07		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	278.59	233.00	123.49	60.01	28.63	18.55	11.45	8.37	7.71		
45.0	444.31	388.15	307.77	280.79	164.51	98.72	39.09	20.65	14.37		
90.0	412.37	352.03	286.29	198.75	132.41	74.11	31.27	17.84	12.17		
135.0	442.65	385.39	320.43	279.69	164.51	99.98	40.63	19.88	14.48		
180.0	409.56	347.30	280.79	195.56	130.54	72.89	31.16	17.34	11.78		
225.0	227.38	158.40	94.53	38.87	20.37	14.81	9.30	7.71	7.38		
270.0	286.84	189.67	112.87	53.13	25.66	17.34	10.24	7.21	6.72		
315.0	230.74	159.72	95.74	38.87	20.65	14.98	9.52	7.71	6.61		
360.0	278.59	233.00	123.49	60.01	28.63	18.55	11.45	8.37	7.71		

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	6.55	6.44	6.33	6.22	6.06	6.00	5.89	5.84	5.78
45.0	8.31	6.99	6.61	6.44	6.33	6.22	6.17	6.11	6.00
90.0	7.93	7.32	6.44	6.33	6.22	6.11	5.95	5.89	5.84
135.0	8.81	7.16	6.50	6.33	6.22	6.11	6.06	6.00	5.95
180.0	7.43	6.61	6.39	6.33	6.22	6.06	6.00	5.95	5.89
225.0	6.55	6.39	6.22	6.17	6.06	6.00	5.89	5.84	5.78
270.0	6.55	6.39	6.28	6.17	6.06	6.00	5.95	5.89	5.78
315.0	6.44	6.28	6.22	6.06	6.00	5.84	5.78	5.73	5.67
360.0	6.55	6.44	6.33	6.22	6.06	6.00	5.89	5.84	5.78

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.73	5.67	5.67	5.56	5.56	5.51	5.45	5.40	5.40
45.0	5.89	5.84	5.78	5.78	5.73	5.67	5.56	5.56	5.51
90.0	5.84	5.78	5.73	5.73	5.62	5.56	5.51	5.51	5.51
135.0	5.89	5.84	5.73	5.67	5.62	5.62	5.62	5.56	5.56
180.0	5.84	5.78	5.73	5.67	5.67	5.62	5.62	5.51	5.51
225.0	5.78	5.73	5.67	5.56	5.51	5.51	5.51	5.45	5.45
270.0	5.67	5.62	5.62	5.62	5.56	5.56	5.45	5.45	5.40
315.0	5.67	5.62	5.56	5.51	5.45	5.40	5.40	5.45	5.40
360.0	5.73	5.67	5.67	5.56	5.56	5.51	5.45	5.40	5.40

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.40	5.40	5.40	5.34	5.29	5.34	5.29	5.29	5.29
45.0	5.56	5.51	5.45	5.40	5.45	5.40	5.45	5.40	5.34
90.0	5.51	5.45	5.40	5.34	5.34	5.34	5.40	5.34	5.34
135.0	5.51	5.45	5.45	5.40	5.45	5.45	5.40	5.45	5.40
180.0	5.45	5.45	5.51	5.40	5.40	5.40	5.34	5.34	5.34
225.0	5.40	5.40	5.40	5.40	5.40	5.40	5.34	5.29	5.29
270.0	5.45	5.45	5.40	5.34	5.40	5.34	5.40	5.34	5.34
315.0	5.40	5.34	5.34	5.29	5.29	5.29	5.34	5.34	5.34
360.0	5.40	5.40	5.40	5.34	5.29	5.34	5.29	5.29	5.29

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.34	5.34	5.29	5.23	5.23	5.23	5.29	5.23	5.23
45.0	5.29	5.29	5.29	5.34	5.34	5.34	5.29	5.23	5.29
90.0	5.29	5.29	5.29	5.34	5.34	5.29	5.23	5.29	5.29
135.0	5.34	5.29	5.34	5.34	5.34	5.34	5.29	5.29	5.29
180.0	5.34	5.34	5.34	5.29	5.29	5.29	5.34	5.29	5.23
225.0	5.29	5.29	5.29	5.29	5.29	5.29	5.29	5.23	5.23
270.0	5.29	5.29	5.29	5.29	5.29	5.29	5.29	5.29	5.29
315.0	5.23	5.23	5.23	5.23	5.29	5.29	5.29	5.29	5.23
360.0	5.34	5.34	5.29	5.23	5.23	5.23	5.29	5.23	5.23

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.23	5.18	5.23	5.18	5.18	5.18	5.18	5.23	5.23
45.0	5.29	5.23	5.23	5.23	5.23	5.23	5.29	5.18	5.18
90.0	5.29	5.29	5.23	5.23	5.29	5.29	5.23	5.23	5.23
135.0	5.29	5.34	5.23	5.23	5.29	5.23	5.23	5.23	5.29
180.0	5.23	5.23	5.23	5.29	5.23	5.23	5.18	5.23	5.23
225.0	5.23	5.29	5.23	5.18	5.29	5.23	5.23	5.23	5.18
270.0	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23
315.0	5.18	5.23	5.23	5.29	5.18	5.18	5.18	5.18	5.18
360.0	5.23	5.18	5.23	5.18	5.18	5.18	5.18	5.23	5.23

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	5.23
45.0	5.18
90.0	5.23
135.0	5.23
180.0	5.23
225.0	5.23
270.0	5.23
315.0	5.23
360.0	5.23