
Nata

LumCAT: 4-2273-M	
Luminaire: 92.70.131.00	
Report No: GC2017061903	Voltage(V): 220.1000
Test No: NT-0010	Current(A): 0.1300
LampCAT: BMTC MA-1919 20W	Power (W): 26.9000
Lamp flux(lm): 2561.0	PF: 0.9410
Number of Lamps: 1	Ballast type: DC
Length(mm): 100	Width(mm): 100
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2406.56
Efficiency(%): 93.97%
Lumens(lm)/Power(W): 89.46
Central intensity(cd): 26844.120
Maximum intensity(cd): 26844.120
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=12.2
[C90/270]Total=12.2
Field angle(10%Imax): [C0/180]Total=24.2
[C90/270]Total=24.2
Maximum s/h(1/2): C0_180=0.21 C90_270=0.21
Maximum s/h(1/4): C0_180=0.21 C90_270=0.21
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 93.97%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.861%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	26844.123	0.000	0	.000%	.000%
1.0	26428.447	25.490	25.49	.995%	1.059%
2.0	24852.459	73.603	99.093	2.874%	4.118%
3.0	22605.471	113.504	212.597	4.432%	8.834%
4.0	19507.789	140.967	353.563	5.504%	14.692%
5.0	16892.197	156.591	510.154	6.114%	21.198%
6.0	13627.422	160.389	670.543	6.263%	27.863%
7.0	10894.216	152.205	822.748	5.943%	34.188%
8.0	8065.763	135.693	958.441	5.298%	39.826%
9.0	6226.672	115.832	1074.274	4.523%	44.639%
10.0	4683.786	98.736	1173.009	3.855%	48.742%
11.0	3526.913	82.042	1255.051	3.204%	52.151%
12.0	2750.687	68.623	1323.674	2.680%	55.003%
13.0	2131.096	57.934	1381.609	2.262%	57.410%
14.0	1783.525	50.107	1431.716	1.957%	59.492%
15.0	1458.644	44.510	1476.226	1.738%	61.342%
16.0	1266.703	39.934	1516.16	1.559%	63.001%
17.0	1128.381	37.298	1553.457	1.456%	64.551%
18.0	1044.379	35.824	1589.281	1.399%	66.040%
19.0	999.583	35.561	1624.842	1.389%	67.517%
20.0	957.486	35.820	1660.662	1.399%	69.006%
21.0	927.143	36.189	1696.851	1.413%	70.509%
22.0	904.742	36.812	1733.663	1.437%	72.039%
23.0	885.596	37.566	1771.229	1.467%	73.600%
24.0	867.262	38.324	1809.553	1.496%	75.192%
25.0	852.459	39.103	1848.656	1.527%	76.817%
26.0	838.234	39.909	1888.565	1.558%	78.476%
27.0	825.805	40.711	1929.276	1.590%	80.167%
28.0	811.614	41.456	1970.732	1.619%	81.890%
29.0	801.050	42.192	2012.924	1.647%	83.643%
30.0	788.270	42.911	2055.835	1.676%	85.426%
31.0	768.374	43.319	2099.154	1.691%	87.226%
32.0	725.664	42.802	2141.957	1.671%	89.005%
33.0	669.293	41.096	2183.053	1.605%	90.713%
34.0	609.578	38.702	2221.755	1.511%	92.321%
35.0	521.102	35.115	2256.87	1.371%	93.780%
36.0	437.347	30.517	2287.387	1.192%	95.048%
37.0	324.537	24.848	2312.235	.970%	96.080%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	236.137	18.715	2330.95	.731%	96.858%
39.0	160.400	13.535	2344.485	.529%	97.421%
40.0	121.516	9.832	2354.317	.384%	97.829%
41.0	55.848	6.316	2360.633	.247%	98.092%
42.0	23.406	2.879	2363.512	.112%	98.211%
43.0	15.299	1.434	2364.946	.056%	98.271%
44.0	13.427	1.084	2366.03	.042%	98.316%
45.0	12.223	0.986	2367.016	.038%	98.357%
46.0	10.419	0.885	2367.901	.035%	98.394%
47.0	9.724	0.801	2368.703	.031%	98.427%
48.0	9.607	0.781	2369.484	.031%	98.459%
49.0	9.477	0.784	2370.268	.031%	98.492%
50.0	9.373	0.786	2371.054	.031%	98.525%
51.0	9.284	0.789	2371.843	.031%	98.557%
52.0	9.201	0.793	2372.636	.031%	98.590%
53.0	9.126	0.797	2373.433	.031%	98.623%
54.0	9.043	0.801	2374.234	.031%	98.657%
55.0	9.002	0.805	2375.04	.031%	98.690%
56.0	8.940	0.811	2375.85	.032%	98.724%
57.0	8.898	0.816	2376.666	.032%	98.758%
58.0	8.850	0.821	2377.487	.032%	98.792%
59.0	8.816	0.826	2378.313	.032%	98.826%
60.0	8.781	0.831	2379.144	.032%	98.861%
61.0	8.740	0.836	2379.98	.033%	98.895%
62.0	8.726	0.842	2380.822	.033%	98.930%
63.0	8.699	0.847	2381.669	.033%	98.966%
64.0	8.692	0.853	2382.523	.033%	99.001%
65.0	8.692	0.860	2383.383	.034%	99.037%
66.0	8.678	0.867	2384.25	.034%	99.073%
67.0	8.671	0.872	2385.122	.034%	99.109%
68.0	8.692	0.880	2386.002	.034%	99.146%
69.0	8.733	0.889	2386.891	.035%	99.183%
70.0	8.747	0.898	2387.788	.035%	99.220%
71.0	8.768	0.905	2388.694	.035%	99.258%
72.0	8.781	0.913	2389.606	.036%	99.295%
73.0	8.788	0.919	2390.525	.036%	99.334%
74.0	8.809	0.925	2391.45	.036%	99.372%
75.0	8.816	0.931	2392.381	.036%	99.411%

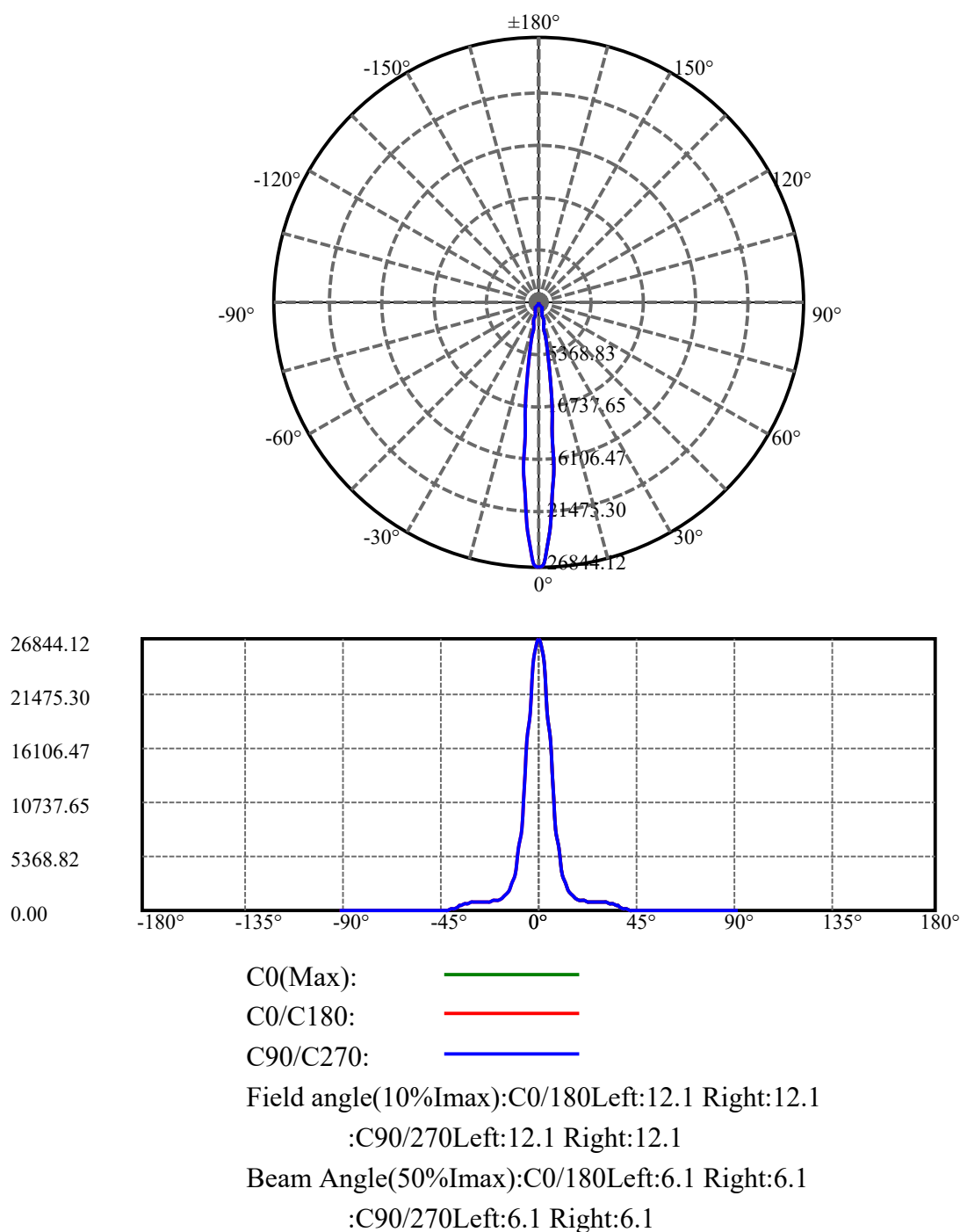
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.809	0.936	2393.317	.037%	99.450%
77.0	8.809	0.939	2394.256	.037%	99.489%
78.0	8.816	0.943	2395.2	.037%	99.528%
79.0	8.885	0.951	2396.151	.037%	99.567%
80.0	8.898	0.959	2397.11	.037%	99.607%
81.0	8.816	0.958	2398.067	.037%	99.647%
82.0	8.795	0.955	2399.023	.037%	99.687%
83.0	8.740	0.953	2399.976	.037%	99.726%
84.0	8.692	0.950	2400.925	.037%	99.766%
85.0	8.616	0.945	2401.87	.037%	99.805%
86.0	8.575	0.940	2402.81	.037%	99.844%
87.0	8.575	0.939	2403.748	.037%	99.883%
88.0	8.554	0.938	2404.687	.037%	99.922%
89.0	8.548	0.937	2405.624	.037%	99.961%
90.0	8.541	0.937	2406.561	.037%	100.000%

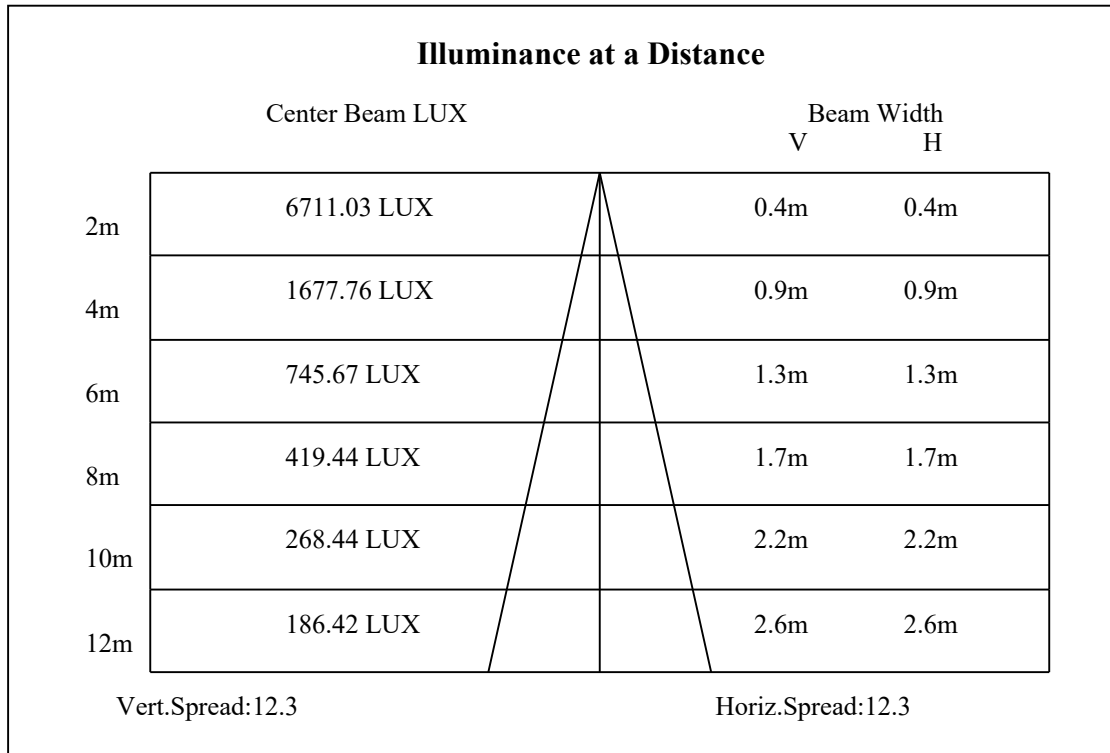
ZONAL LUMEN SUMMARY

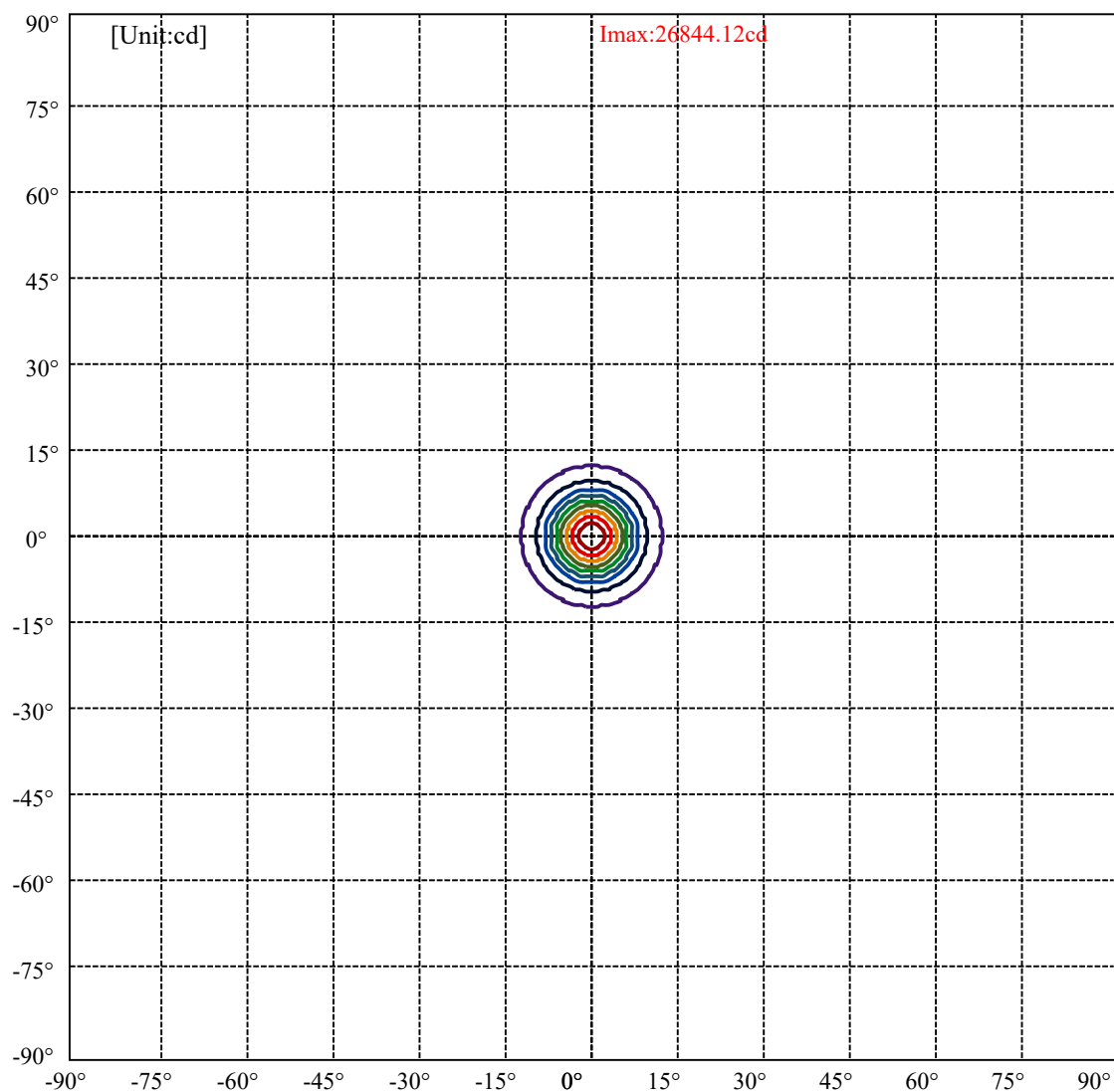
Zone	Lumens	%Lamp	%Fixt
0-30	2055.84	80.27%	85.43%
0-40	2354.32	91.93%	97.83%
0-60	2379.14	92.90%	98.86%
0-90	2405.62	93.93%	99.96%
0-120	2405.62	93.93%	99.96%
0-180	2406.56	93.97%	100.00%
60-90	27.31	1.07%	1.13%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.90	1925.25	75.18%	80.00%

ZONAL LUMEN SUMMARY

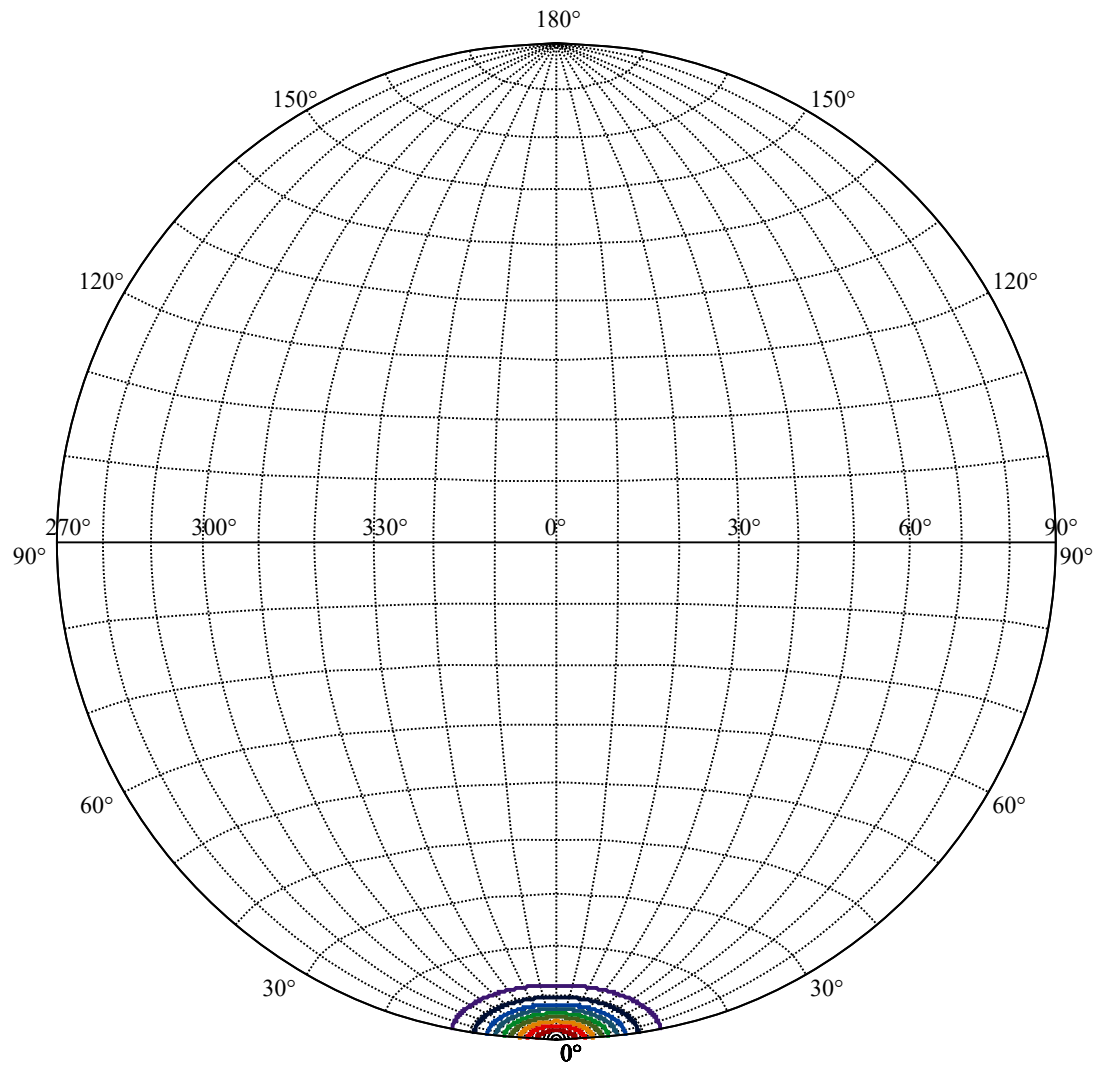
0-10	1173.01
10-20	487.65
20-30	395.17
30-40	298.48
40-50	16.74
50-60	8.09
60-70	8.64
70-80	9.32
80-90	8.51
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00







(10%Imax)	2684.41	—
(20%Imax)	5368.82	—
(30%Imax)	8053.24	—
(40%Imax)	10737.6	—
(50%Imax)	13422.1	—
(60%Imax)	16106.5	—
(70%Imax)	18790.9	—
(80%Imax)	21475.3	—
(90%Imax)	24159.7	—

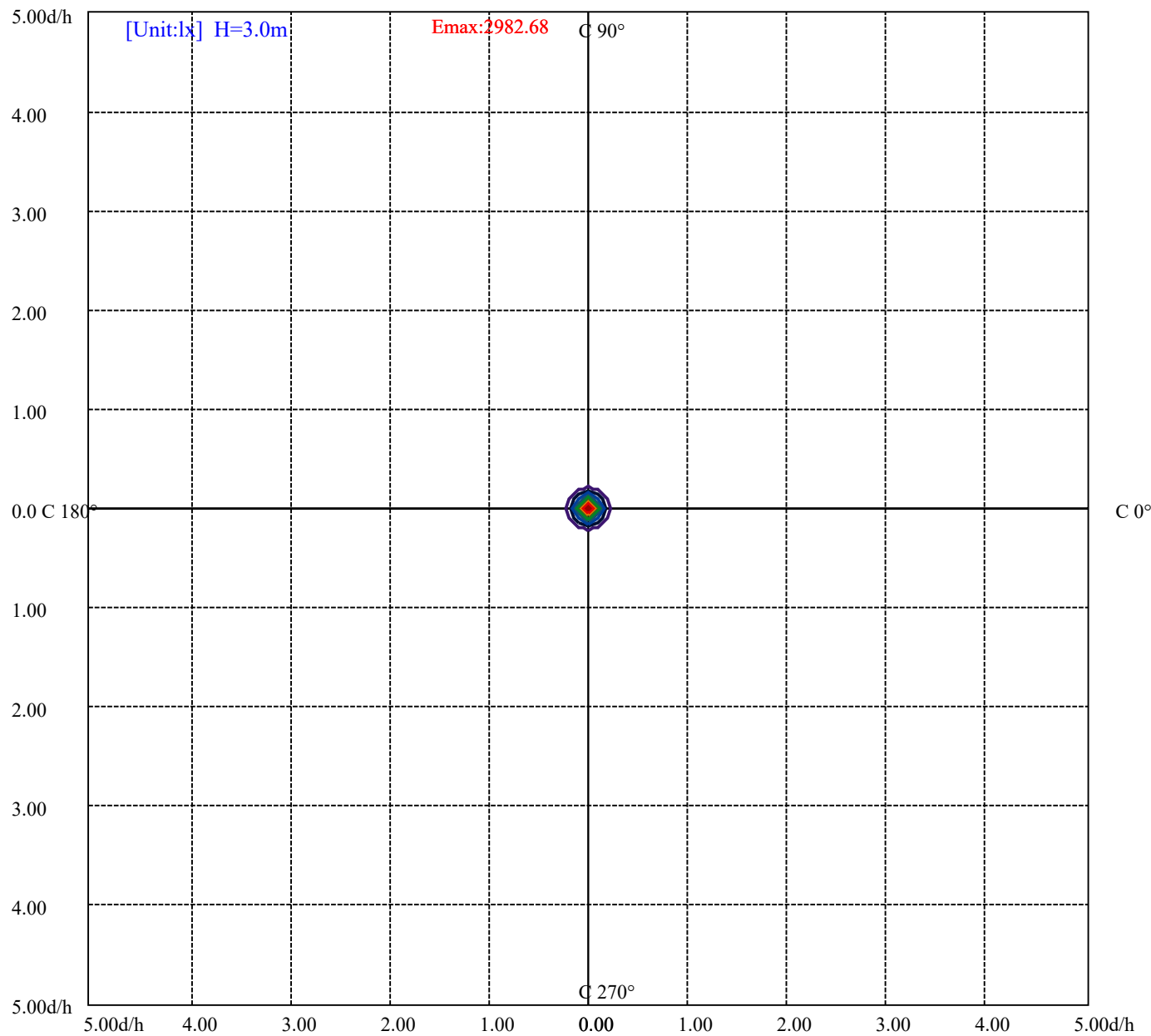


House

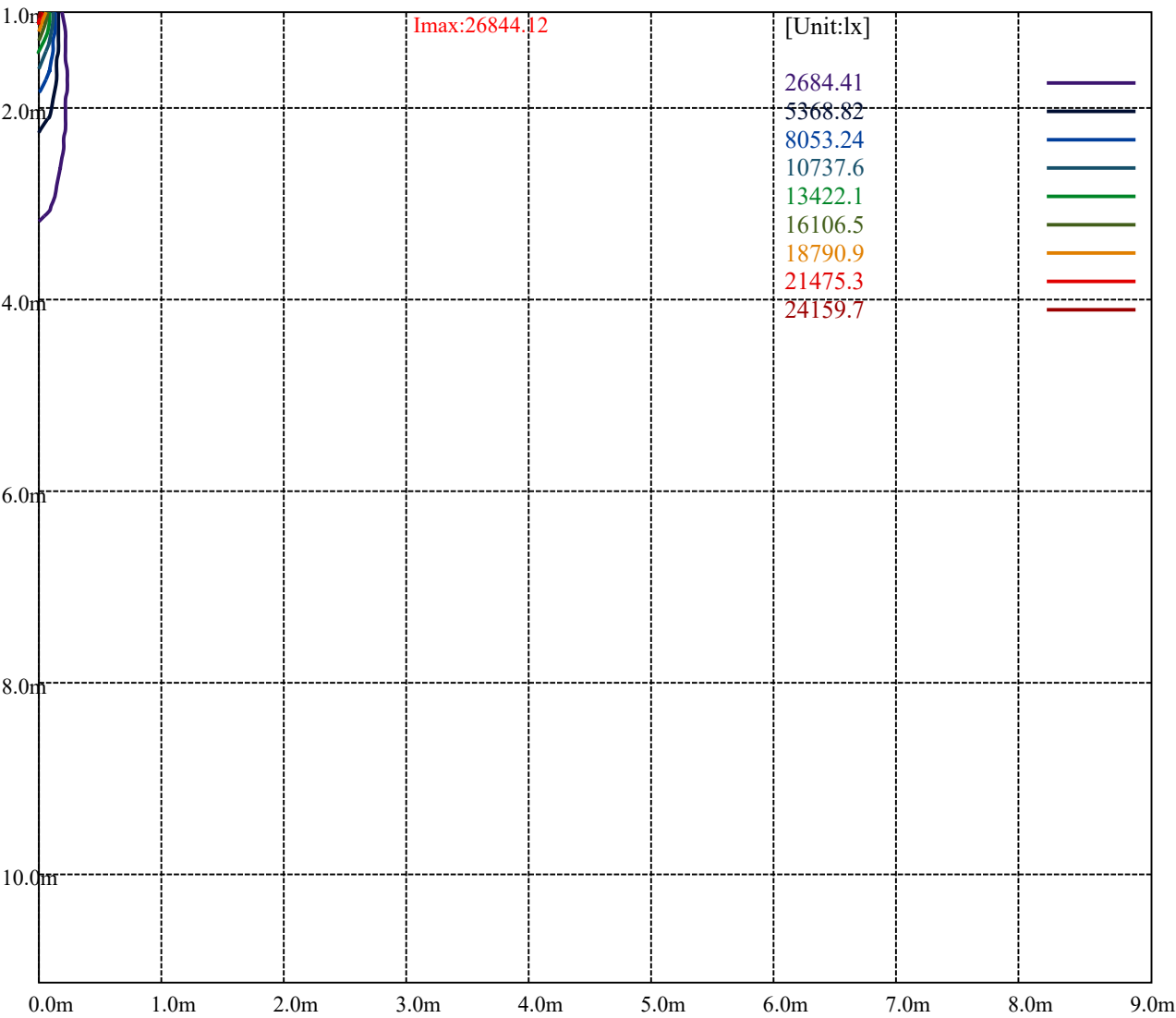
[Unit:cd]

Road

Imax:26844.12	
(10%Imax)	2684.41
(20%Imax)	5368.82
(30%Imax)	8053.24
(40%Imax)	10737.6
(50%Imax)	13422.1
(60%Imax)	16106.5
(70%Imax)	18790.9
(80%Imax)	21475.3
(90%Imax)	24159.7



(10%Emax)	298.2678	
(20%Emax)	596.5344	
(30%Emax)	894.8022	
(40%Emax)	1193.067	
(50%Emax)	1491.333	
(60%Emax)	1789.6	
(70%Emax)	2087.867	
(80%Emax)	2386.133	
(90%Emax)	2684.411	



Luminance Table

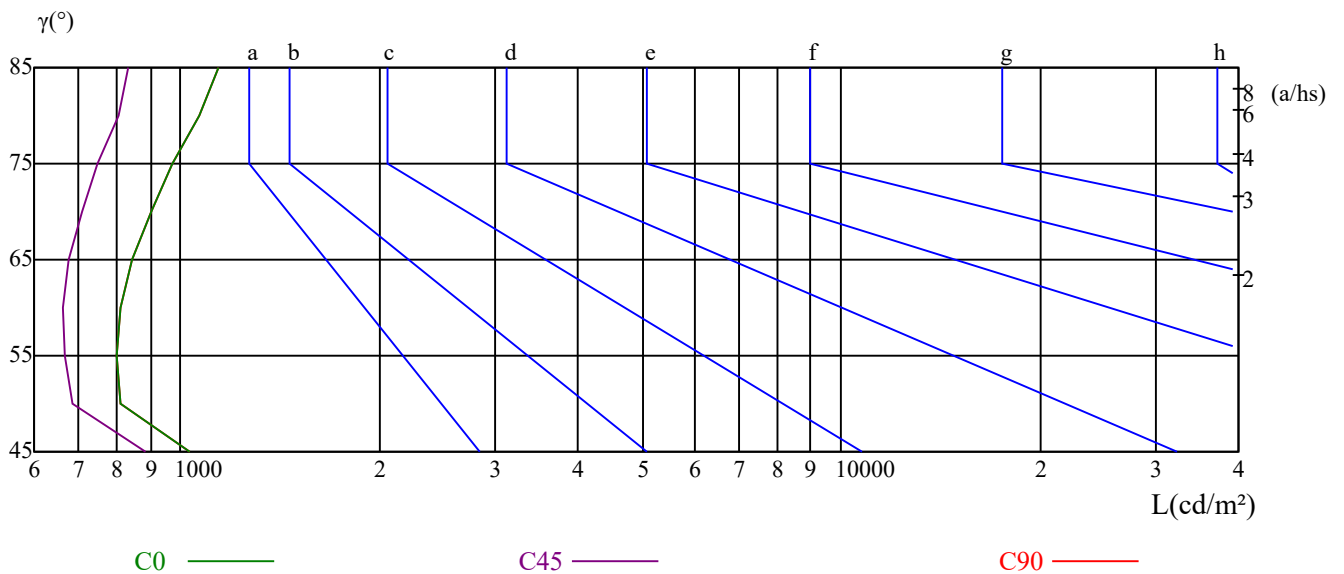
γ	45	50	55	60	65	70	75	80	85
C0	1035	811	802	813	844	900	973	1068	1142
C45	888	685	667	665	678	710	751	804	836
C90	1035	811	802	813	844	900	973	1068	1142

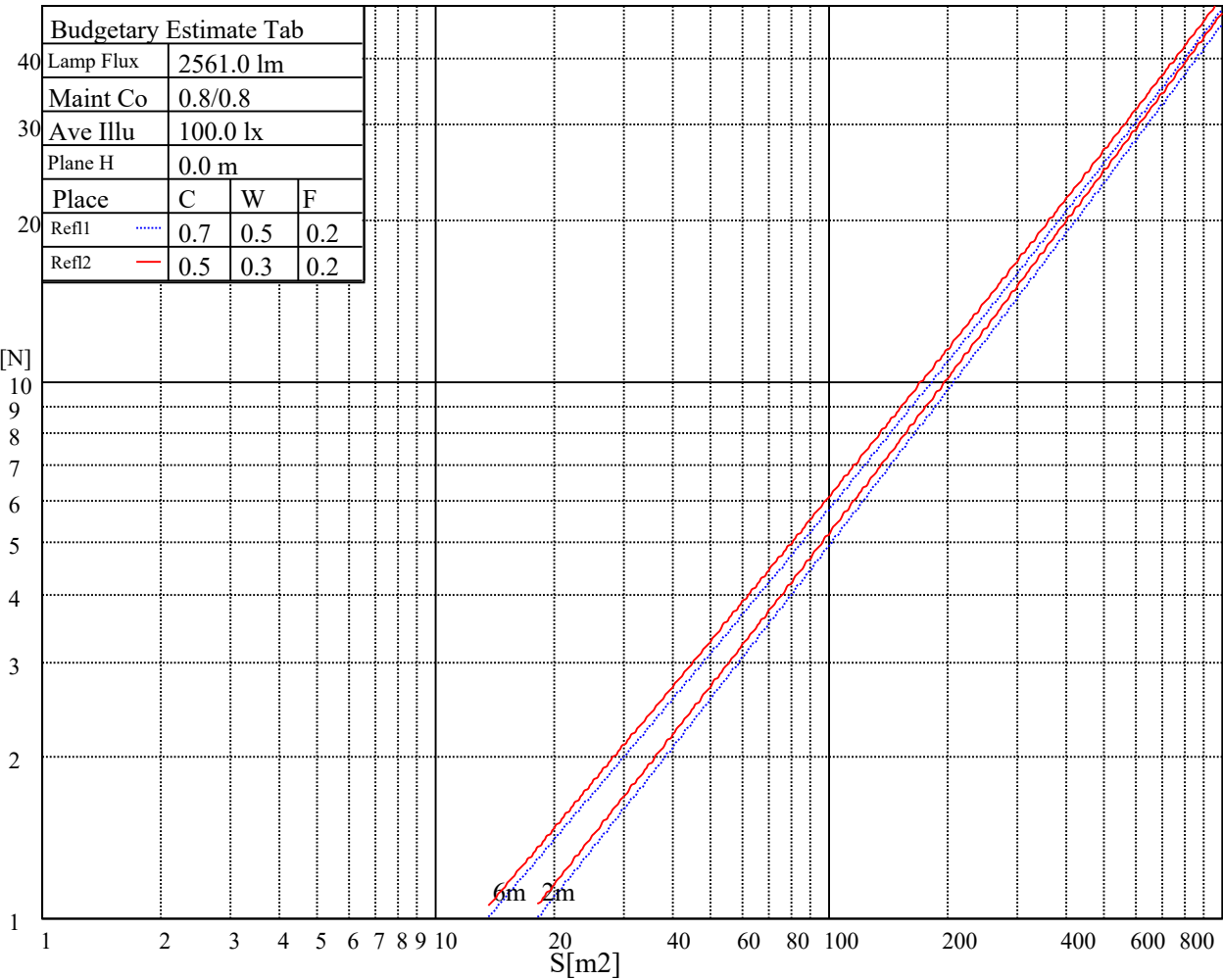
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2057	2057	2057	3406	3406	3406	9886	9886	9886

Glare Table

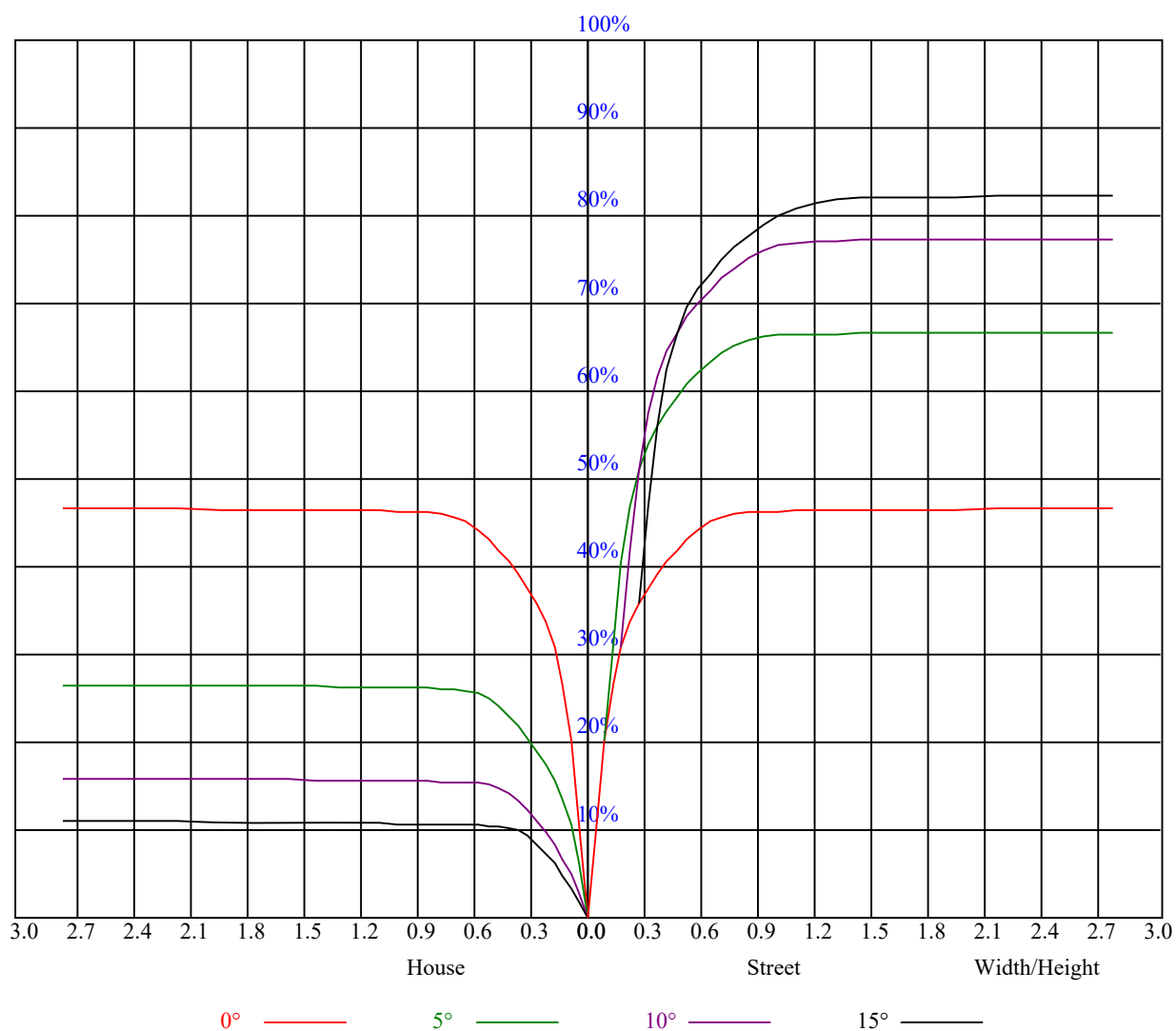
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOC	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	1.12	1.12	1.12	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.06	1.04	1.02	1.04	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.93	0.93	0.92	0.90
2	1.01	0.98	0.95	0.99	0.96	0.94	0.96	0.94	0.92	0.93	0.92	0.90	0.91	0.90	0.88	0.87
3	0.96	0.93	0.90	0.95	0.92	0.89	0.93	0.90	0.88	0.91	0.88	0.87	0.89	0.87	0.85	0.84
4	0.92	0.89	0.86	0.91	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.84	0.82	0.81
5	0.89	0.85	0.82	0.88	0.85	0.82	0.87	0.84	0.81	0.85	0.83	0.80	0.84	0.82	0.80	0.79
6	0.86	0.82	0.79	0.85	0.82	0.79	0.84	0.81	0.78	0.83	0.80	0.78	0.82	0.79	0.77	0.76
7	0.83	0.79	0.77	0.83	0.79	0.76	0.82	0.78	0.76	0.81	0.78	0.76	0.80	0.77	0.75	0.74
8	0.81	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
9	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.71
10	0.77	0.73	0.70	0.76	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.72	0.70	0.69



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	27577.75	25116.73	21196.71	17568.50	13967.81	10444.20	7757.45	5957.10	4476.09		
45.0	26988.65	28976.18	29455.17	28563.26	26316.96	23536.61	19776.26	15707.59	12250.05		
90.0	27296.96	29141.35	29829.56	29020.23	27109.77	24340.43	20007.50	16258.15	10951.82		
135.0	25513.14	28023.71	29757.98	29791.02	28623.82	25992.13	22429.98	18779.74	14534.89		
180.0	27577.75	29102.81	29350.57	28210.90	26080.22	22721.78	18735.69	15063.43	10425.48		
225.0	26988.65	24356.95	20745.25	16616.02	10667.73	9971.26	7134.21	5451.13	4204.11		
270.0	27296.96	24252.34	20420.42	16676.58	12640.95	9689.93	7146.32	5296.43	4096.20		
315.0	25513.14	22457.51	18064.00	14397.25	10655.07	8441.25	6031.98	4640.15	3587.48		
360.0	27577.75	25116.73	21196.71	17568.50	13967.81	10444.20	7757.45	5957.10	4476.09		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	3380.46	2824.39	2068.47	1688.58	1409.99	1230.51	1126.45	1053.78	991.57		
45.0	9001.72	6606.77	5048.67	3881.48	2818.89	2467.63	1847.14	1474.96	1268.50		
90.0	9150.37	6408.01	5039.31	3758.70	2826.05	2232.54	1754.10	1472.76	1265.20		
135.0	10724.99	8093.29	5962.61	4569.68	3413.50	2829.90	2041.49	1653.34	1349.98		
180.0	8466.02	6198.80	4569.68	3534.07	2682.35	2039.29	1661.60	1412.75	1217.30		
225.0	3269.25	2415.32	1913.76	1576.26	1315.30	1188.67	1091.55	1034.01	989.42		
270.0	3094.17	2829.90	1905.50	1575.71	1339.52	1187.02	1096.72	1033.96	983.86		
315.0	2726.39	2093.79	1707.30	1421.01	1243.17	1092.65	1050.09	998.06	961.23		
360.0	3380.46	2824.39	2068.47	1688.58	1409.99	1230.51	1126.45	1053.78	991.57		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	957.43	931.55	905.13	888.06	873.19	858.33	845.67	835.21	824.19		
45.0	1154.53	1065.89	1003.68	964.59	932.66	911.18	890.81	874.30	858.33		
90.0	1093.20	1062.26	1008.91	959.36	932.05	906.83	881.40	865.87	850.35		
135.0	1205.18	1111.59	1032.86	991.57	958.53	927.70	902.37	881.45	859.43		
180.0	1096.39	1045.74	995.64	955.39	929.63	909.26	885.97	867.47	851.45		
225.0	958.97	930.84	908.27	887.34	867.36	855.63	843.30	830.03	820.18		
270.0	956.88	935.96	908.98	892.46	879.25	863.28	850.62	839.06	825.85		
315.0	932.44	912.84	896.43	878.37	865.27	852.55	837.96	826.29	816.10		
360.0	957.43	931.55	905.13	888.06	873.19	858.33	845.67	835.21	824.19		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	814.83	801.62	790.06	779.60	764.18	705.27	616.63	510.92	371.08		
45.0	845.12	828.60	818.69	807.13	791.16	780.70	769.69	755.92	712.98		
90.0	837.68	821.94	811.59	798.92	786.04	773.27	763.80	749.15	713.31		
135.0	847.32	830.80	818.14	806.03	796.12	783.45	771.34	759.78	738.31		
180.0	835.54	822.16	810.10	797.27	784.94	770.95	760.05	747.78	696.13		
225.0	810.43	794.13	784.99	773.65	750.36	680.94	587.12	460.99	330.72		
270.0	815.39	802.72	792.81	780.15	754.27	679.95	590.20	498.26	328.14		
315.0	800.13	790.94	782.02	763.41	719.92	630.78	495.51	393.82	278.14		
360.0	814.83	801.62	790.06	779.60	764.18	705.27	616.63	510.92	371.08		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	287.39	147.66	73.67	22.74	19.05	16.13	13.32	10.13	9.97		
45.0	649.11	535.15	426.14	298.96	285.74	91.17	30.12	19.88	15.58		
90.0	638.38	531.40	419.69	291.69	178.38	94.26	31.11	19.88	16.52		
135.0	684.35	591.31	470.73	352.36	282.44	128.72	51.31	23.07	19.82		
180.0	599.56	493.47	387.38	257.94	155.81	72.95	25.33	19.10	15.91		
225.0	219.90	113.91	46.63	21.09	17.95	15.25	13.65	10.08	9.86		
270.0	282.44	114.02	38.65	20.21	17.29	14.65	12.17	10.24	9.97		
315.0	137.64	69.37	26.21	18.22	15.47	13.65	10.24	10.02	9.80		
360.0	287.39	147.66	73.67	22.74	19.05	16.13	13.32	10.13	9.97		

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	9.80	9.63	9.47	9.36	9.25	9.14	9.08	9.03	8.92
45.0	13.54	10.35	9.97	9.86	9.69	9.58	9.52	9.41	9.36
90.0	14.53	10.13	9.97	9.80	9.69	9.58	9.47	9.36	9.30
135.0	16.85	14.53	10.24	10.02	9.91	9.80	9.69	9.58	9.41
180.0	13.87	10.02	9.80	9.74	9.58	9.52	9.41	9.30	9.25
225.0	9.74	9.52	9.47	9.36	9.25	9.14	9.03	8.97	8.92
270.0	9.80	9.63	9.52	9.41	9.30	9.19	9.08	9.03	8.97
315.0	9.63	9.52	9.36	9.30	9.14	9.03	8.97	8.92	8.86
360.0	9.80	9.63	9.47	9.36	9.25	9.14	9.08	9.03	8.92
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.81	8.81	8.75	8.70	8.70	8.64	8.64	8.59	8.59
45.0	9.25	9.25	9.14	9.08	9.03	9.03	8.97	8.92	8.86
90.0	9.19	9.14	9.08	9.03	8.97	8.92	8.86	8.81	8.81
135.0	9.36	9.30	9.19	9.14	9.08	9.08	8.97	8.92	8.92
180.0	9.14	9.08	9.03	8.97	8.92	8.86	8.81	8.81	8.75
225.0	8.86	8.81	8.75	8.75	8.70	8.64	8.64	8.64	8.64
270.0	8.92	8.86	8.86	8.81	8.75	8.70	8.70	8.64	8.64
315.0	8.81	8.75	8.70	8.70	8.64	8.64	8.64	8.59	8.59
360.0	8.81	8.81	8.75	8.70	8.70	8.64	8.64	8.59	8.59
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.59	8.59	8.59	8.53	8.59	8.70	8.86	8.92	8.97
45.0	8.86	8.81	8.81	8.75	8.75	8.75	8.75	8.75	8.70
90.0	8.75	8.75	8.75	8.75	8.70	8.64	8.64	8.64	8.64
135.0	8.86	8.86	8.81	8.81	8.75	8.75	8.75	8.70	8.70
180.0	8.75	8.70	8.70	8.70	8.70	8.64	8.64	8.64	8.59
225.0	8.59	8.59	8.59	8.59	8.53	8.53	8.53	8.59	8.59
270.0	8.64	8.64	8.64	8.64	8.59	8.64	8.70	8.70	8.86
315.0	8.53	8.59	8.64	8.64	8.75	8.86	8.97	9.03	9.08
360.0	8.59	8.59	8.59	8.53	8.59	8.70	8.86	8.92	8.97
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.97	9.03	9.08	9.14	9.14	9.14	9.14	9.30	9.47
45.0	8.70	8.70	8.75	8.75	8.81	8.81	8.86	8.81	8.81
90.0	8.64	8.64	8.64	8.59	8.59	8.59	8.59	8.59	8.59
135.0	8.64	8.64	8.64	8.64	8.64	8.64	8.59	8.59	8.59
180.0	8.59	8.59	8.59	8.59	8.53	8.53	8.53	8.59	8.53
225.0	8.59	8.53	8.53	8.59	8.64	8.64	8.59	8.59	8.59
270.0	8.97	9.03	9.08	9.03	8.97	8.92	8.86	8.81	8.81
315.0	9.14	9.14	9.14	9.19	9.14	9.19	9.36	9.80	9.80
360.0	8.97	9.03	9.08	9.14	9.14	9.14	9.14	9.30	9.47
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.30	9.36	9.19	8.92	8.75	8.53	8.53	8.48	8.53
45.0	8.75	8.75	8.75	8.75	8.75	8.75	8.70	8.59	8.59
90.0	8.59	8.59	8.59	8.53	8.59	8.59	8.59	8.59	8.53
135.0	8.59	8.59	8.59	8.59	8.53	8.59	8.59	8.53	8.53
180.0	8.53	8.53	8.53	8.59	8.53	8.53	8.48	8.53	8.48
225.0	8.59	8.59	8.59	8.64	8.64	8.53	8.59	8.59	8.59
270.0	8.75	8.70	8.70	8.70	8.59	8.59	8.59	8.59	8.59
315.0	9.41	9.25	8.97	8.81	8.53	8.48	8.53	8.53	8.53
360.0	9.30	9.36	9.19	8.92	8.75	8.53	8.53	8.48	8.53

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	8.48
45.0	8.59
90.0	8.53
135.0	8.53
180.0	8.53
225.0	8.59
270.0	8.53
315.0	8.53
360.0	8.48