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Nata

Client:

LumCAT: 4-2412-L

Luminaire: 92.70.131.00

Report No: NT2018011007

Test No: GC2018011007

LampCAT: CITIZEN CLU038

Lamp flux(lm): 2870.0

Number of Lamps: 1

Length(mm): 102

Phm Type: C

Voltage(V): 34.8000

Current(A): 0.6400

Power (W): 22.2720

PF: 0.0000

Ballast type: DC

Width(mm): 102

Height(mm): 0

Photometric Results

Lumens(lm): 2750.94, Efficiency(%): 95.85% , Luminous Efficacy(lm/W): 123.52

Central intensity(cd): 20503.000, Maximum intensity(cd): 20503.000

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=14.4

[C90/270]Total=14.4

Field angle(10%Imax): [C0/180]Total=33.4

[C90/270]Total=33.4

Maximum s/h(1/2): C0_180=0.25 C90_270=0.25

Maximum s/h(1/4): C0_180=0.27 C90_270=0.27

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 96.02%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.268%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	20503.004	4.905	4.905	.171%	.178%
1.0	20244.926	38.746	43.651	1.350%	1.587%
2.0	19434.221	74.377	118.028	2.592%	4.290%
3.0	18111.490	103.946	221.973	3.622%	8.069%
4.0	16462.553	125.931	347.905	4.388%	12.647%
5.0	14578.109	139.331	487.236	4.855%	17.712%
6.0	12631.452	144.790	632.026	5.045%	22.975%
7.0	10523.618	140.641	772.667	4.900%	28.087%
8.0	9166.409	139.896	912.563	4.874%	33.173%
9.0	7572.388	129.902	1042.466	4.526%	37.895%
10.0	6187.445	117.824	1160.29	4.105%	42.178%
11.0	5160.299	107.976	1268.265	3.762%	46.103%
12.0	4280.153	97.587	1365.852	3.400%	49.650%
13.0	3511.979	86.635	1452.486	3.019%	52.800%
14.0	2965.751	78.679	1531.166	2.741%	55.660%
15.0	2531.906	71.861	1603.027	2.504%	58.272%
16.0	2303.422	69.625	1672.652	2.426%	60.803%
17.0	1933.994	62.007	1734.659	2.161%	63.057%
18.0	1725.192	58.462	1793.121	2.037%	65.182%
19.0	1574.131	56.200	1849.321	1.958%	67.225%
20.0	1443.097	54.125	1903.446	1.886%	69.193%
21.0	1341.036	52.701	1956.147	1.836%	71.108%
22.0	1258.507	51.699	2007.846	1.801%	72.988%
23.0	1194.937	51.201	2059.047	1.784%	74.849%
24.0	1134.444	50.600	2109.646	1.763%	76.688%
25.0	1094.748	50.736	2160.382	1.768%	78.533%
26.0	1054.977	50.715	2211.097	1.767%	80.376%
27.0	1022.246	50.893	2261.99	1.773%	82.226%
28.0	990.967	51.018	2313.007	1.778%	84.081%
29.0	961.994	51.144	2364.151	1.782%	85.940%
30.0	936.537	51.351	2415.502	1.789%	87.807%
31.0	898.128	50.726	2466.228	1.767%	89.651%
32.0	834.469	48.492	2514.72	1.690%	91.413%
33.0	746.049	44.558	2559.278	1.553%	93.033%
34.0	620.775	38.067	2597.345	1.326%	94.417%
35.0	475.928	29.935	2627.281	1.043%	95.505%
36.0	338.328	21.808	2649.088	.760%	96.298%
37.0	234.816	15.497	2664.585	.540%	96.861%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	110.113	7.434	2672.019	.259%	97.131%
39.0	67.389	4.651	2676.67	.162%	97.300%
40.0	35.202	2.481	2679.151	.086%	97.391%
41.0	25.464	1.832	2680.983	.064%	97.457%
42.0	22.367	1.641	2682.624	.057%	97.517%
43.0	19.868	1.486	2684.11	.052%	97.571%
44.0	18.499	1.409	2685.519	.049%	97.622%
45.0	17.494	1.357	2686.876	.047%	97.671%
46.0	16.909	1.334	2688.21	.046%	97.720%
47.0	16.544	1.327	2689.537	.046%	97.768%
48.0	16.331	1.331	2690.868	.046%	97.816%
49.0	16.145	1.336	2692.204	.047%	97.865%
50.0	16.028	1.346	2693.55	.047%	97.914%
51.0	15.973	1.361	2694.912	.047%	97.963%
52.0	15.939	1.377	2696.289	.048%	98.014%
53.0	15.932	1.395	2697.684	.049%	98.064%
54.0	15.939	1.414	2699.098	.049%	98.116%
55.0	15.987	1.436	2700.534	.050%	98.168%
56.0	16.035	1.458	2701.992	.051%	98.221%
57.0	16.076	1.479	2703.471	.052%	98.275%
58.0	16.125	1.500	2704.97	.052%	98.329%
59.0	16.118	1.515	2706.485	.053%	98.384%
60.0	16.159	1.535	2708.02	.053%	98.440%
61.0	16.111	1.545	2709.565	.054%	98.496%
62.0	16.056	1.555	2711.12	.054%	98.553%
63.0	15.918	1.555	2712.675	.054%	98.609%
64.0	15.719	1.549	2714.224	.054%	98.666%
65.0	15.505	1.541	2715.765	.054%	98.722%
66.0	15.292	1.532	2717.297	.053%	98.777%
67.0	15.092	1.523	2718.821	.053%	98.833%
68.0	14.872	1.512	2720.333	.053%	98.888%
69.0	14.604	1.495	2721.828	.052%	98.942%
70.0	14.356	1.479	2723.307	.052%	98.996%
71.0	14.039	1.456	2724.763	.051%	99.049%
72.0	13.771	1.436	2726.199	.050%	99.101%
73.0	13.530	1.419	2727.618	.049%	99.152%
74.0	13.365	1.409	2729.027	.049%	99.204%
75.0	13.282	1.407	2730.434	.049%	99.255%

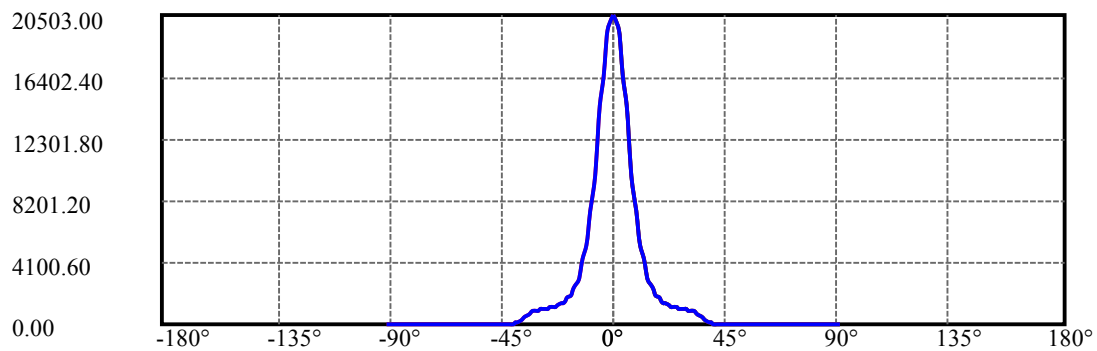
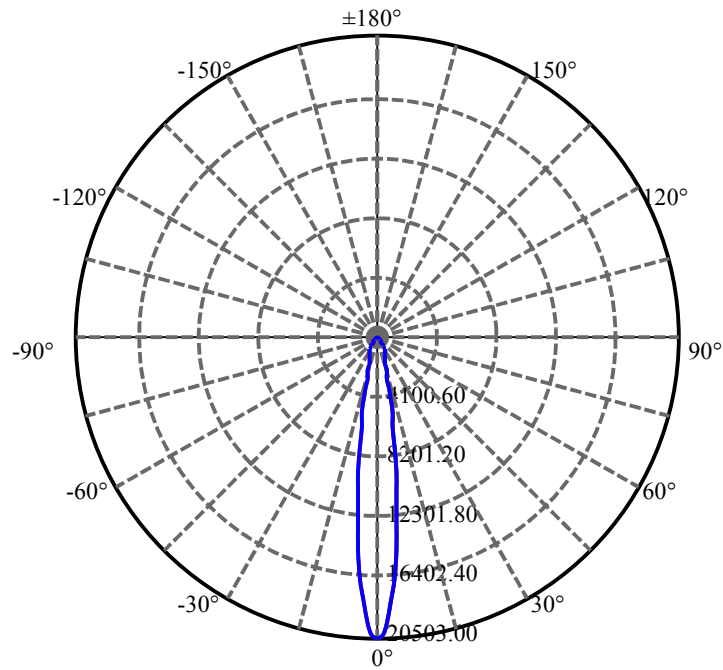
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.227	1.407	2731.841	.049%	99.306%
77.0	13.193	1.410	2733.251	.049%	99.357%
78.0	13.145	1.410	2734.661	.049%	99.408%
79.0	13.124	1.413	2736.074	.049%	99.460%
80.0	13.090	1.414	2737.487	.049%	99.511%
81.0	13.069	1.416	2738.903	.049%	99.563%
82.0	13.069	1.419	2740.322	.049%	99.614%
83.0	13.035	1.419	2741.741	.049%	99.666%
84.0	13.028	1.421	2743.162	.050%	99.717%
85.0	13.028	1.423	2744.585	.050%	99.769%
86.0	12.973	1.419	2746.004	.049%	99.821%
87.0	12.904	1.413	2747.417	.049%	99.872%
88.0	12.856	1.409	2748.826	.049%	99.923%
89.0	12.835	1.407	2750.233	.049%	99.974%
90.0	12.807	0.702	2750.935	.024%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2415.50	84.16%	87.81%
0-40	2679.15	93.35%	97.39%
0-60	2708.02	94.36%	98.44%
0-90	2750.23	95.83%	99.97%
0-120	2750.23	95.83%	99.97%
0-180	2750.94	95.85%	100.00%
60-90	43.75	1.52%	1.59%
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%
0-25.80	2200.75	76.68%	80.00%

ZONAL LUMEN SUMMARY

0-10	1160.29
10-20	743.16
20-30	512.06
30-40	263.65
40-50	14.40
50-60	14.47
60-70	15.29
70-80	14.18
80-90	12.75
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:

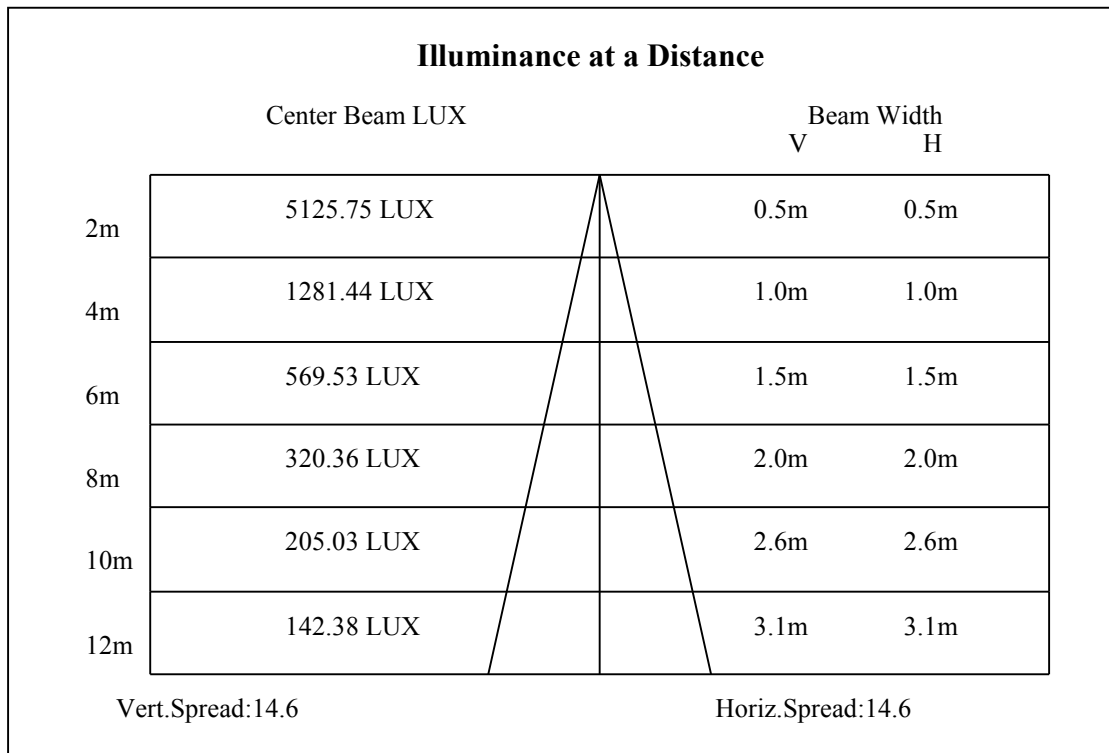
C90/C270:

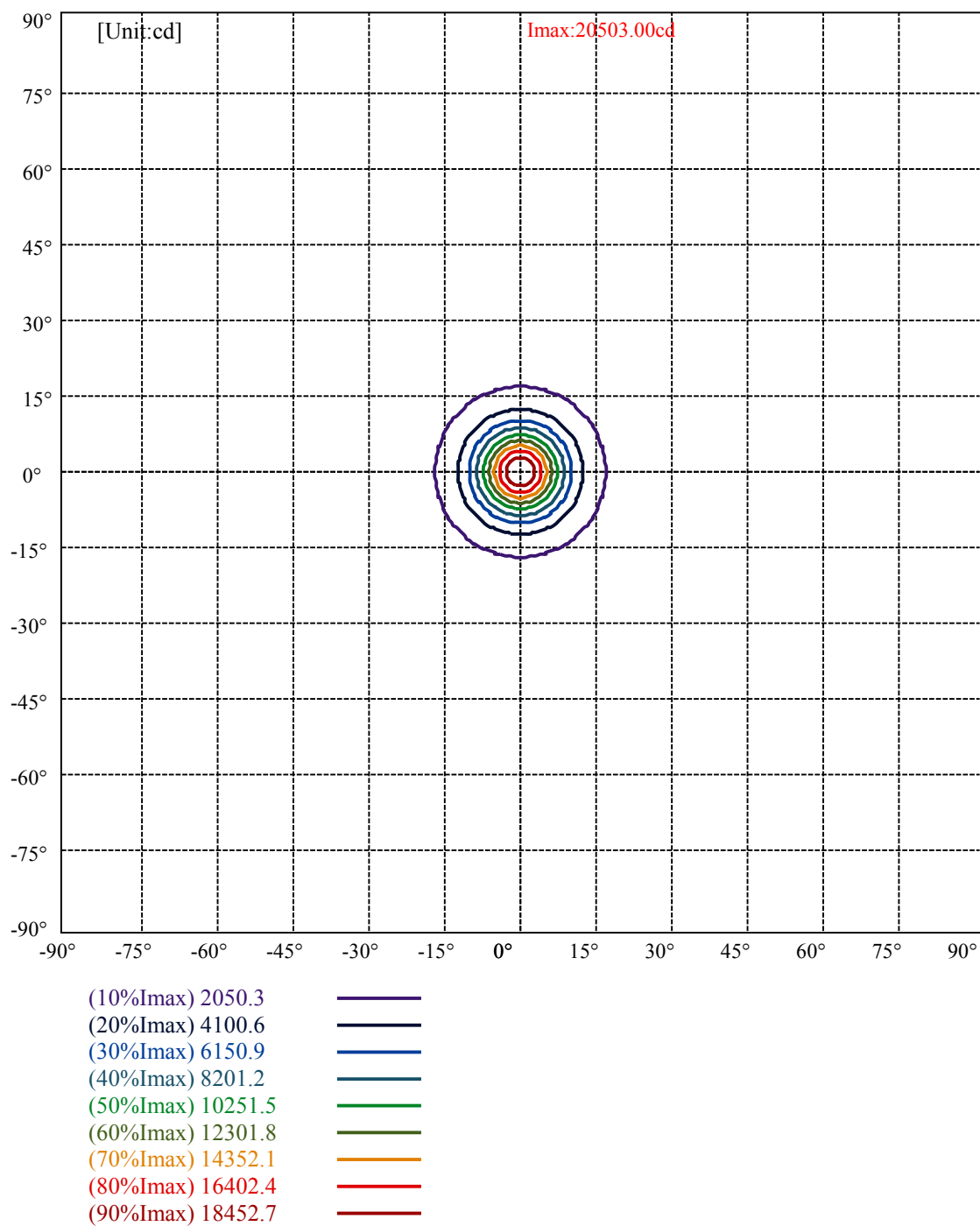
Field angle(10%Imax):C0/180Left:16.7 Right:16.7

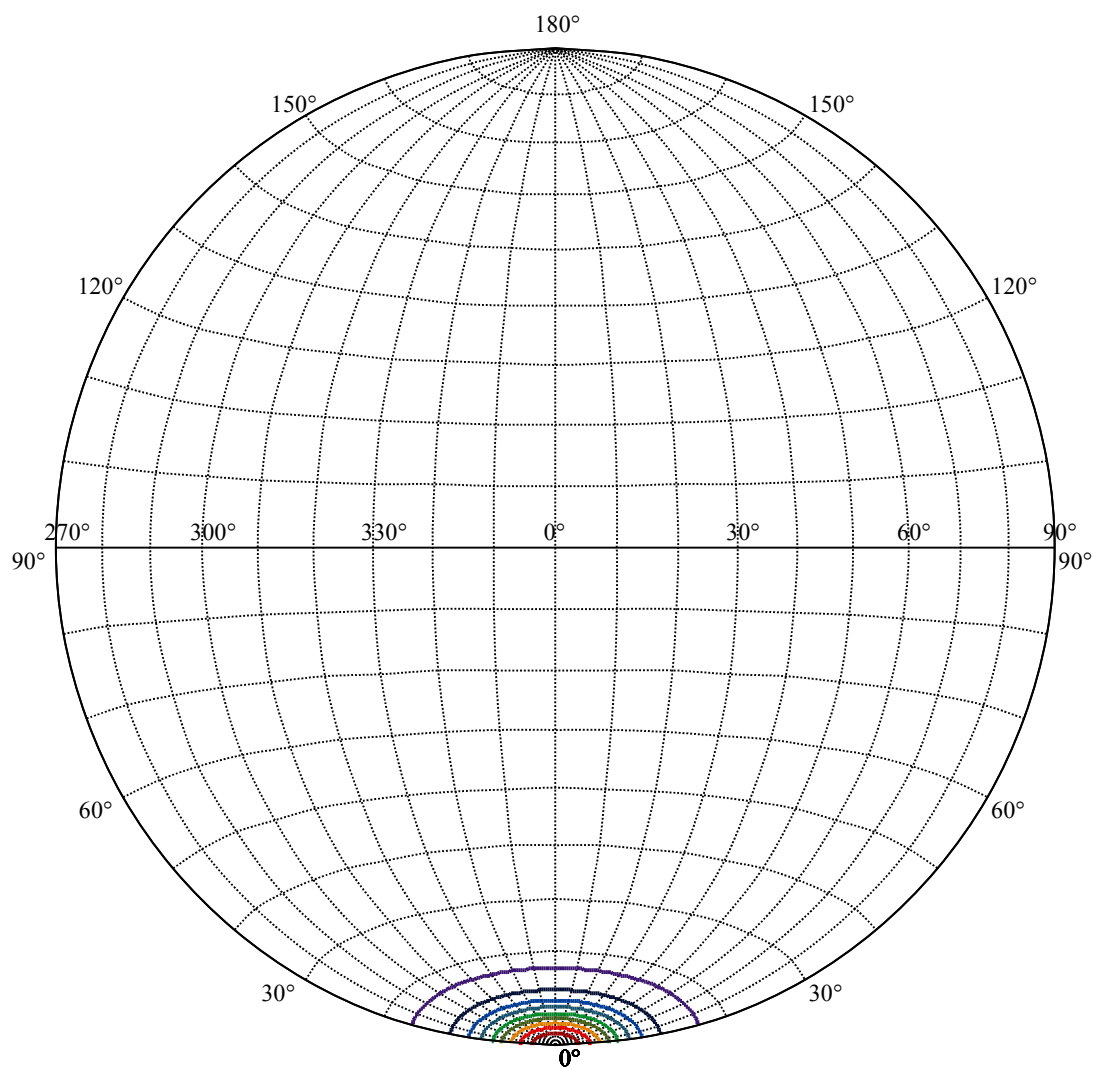
:C90/270Left:16.7 Right:16.7

Beam Angle(50%Imax):C0/180Left:7.2 Right:7.2

:C90/270Left:7.2 Right:7.2







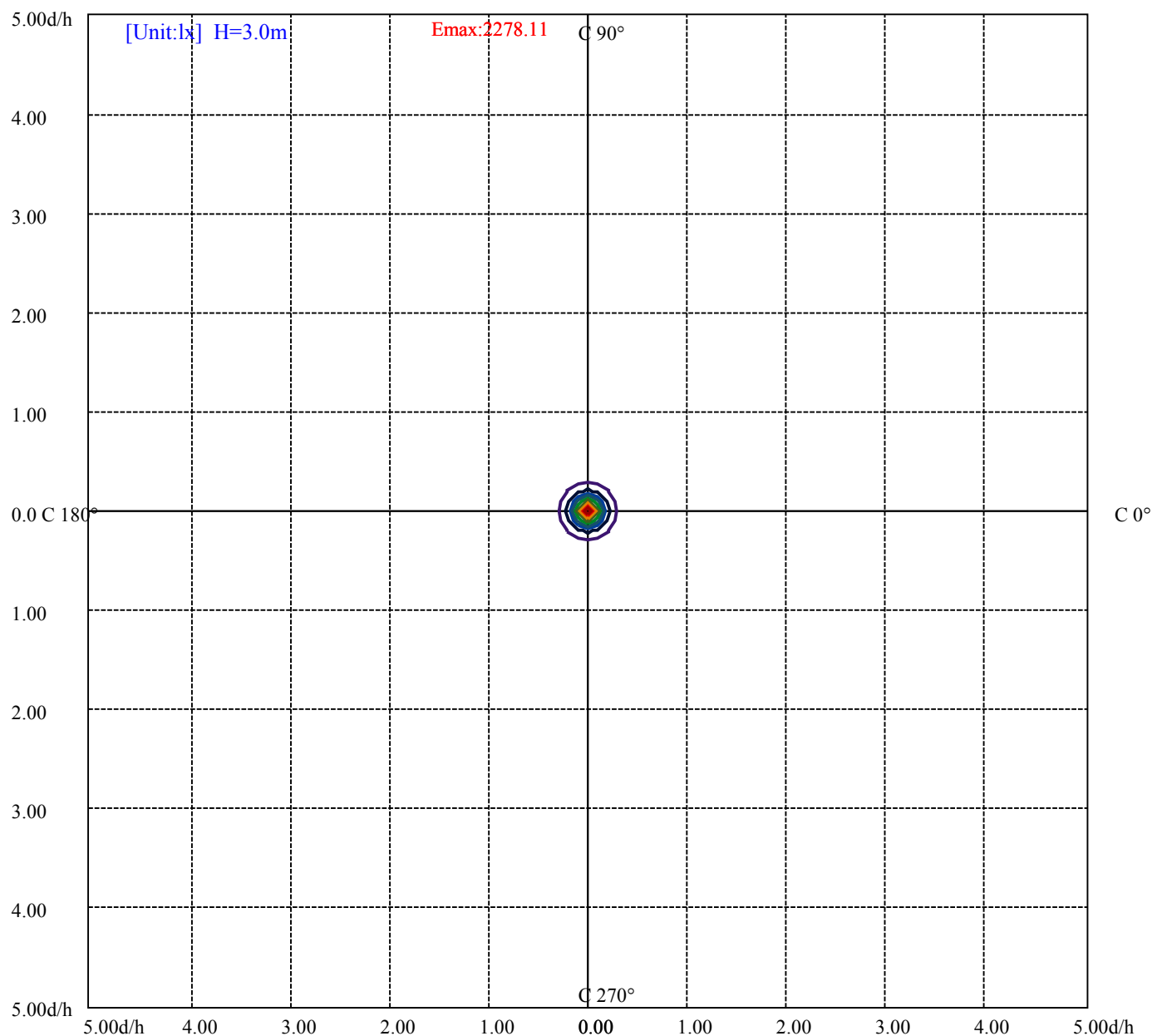
House

[Unit:cd]

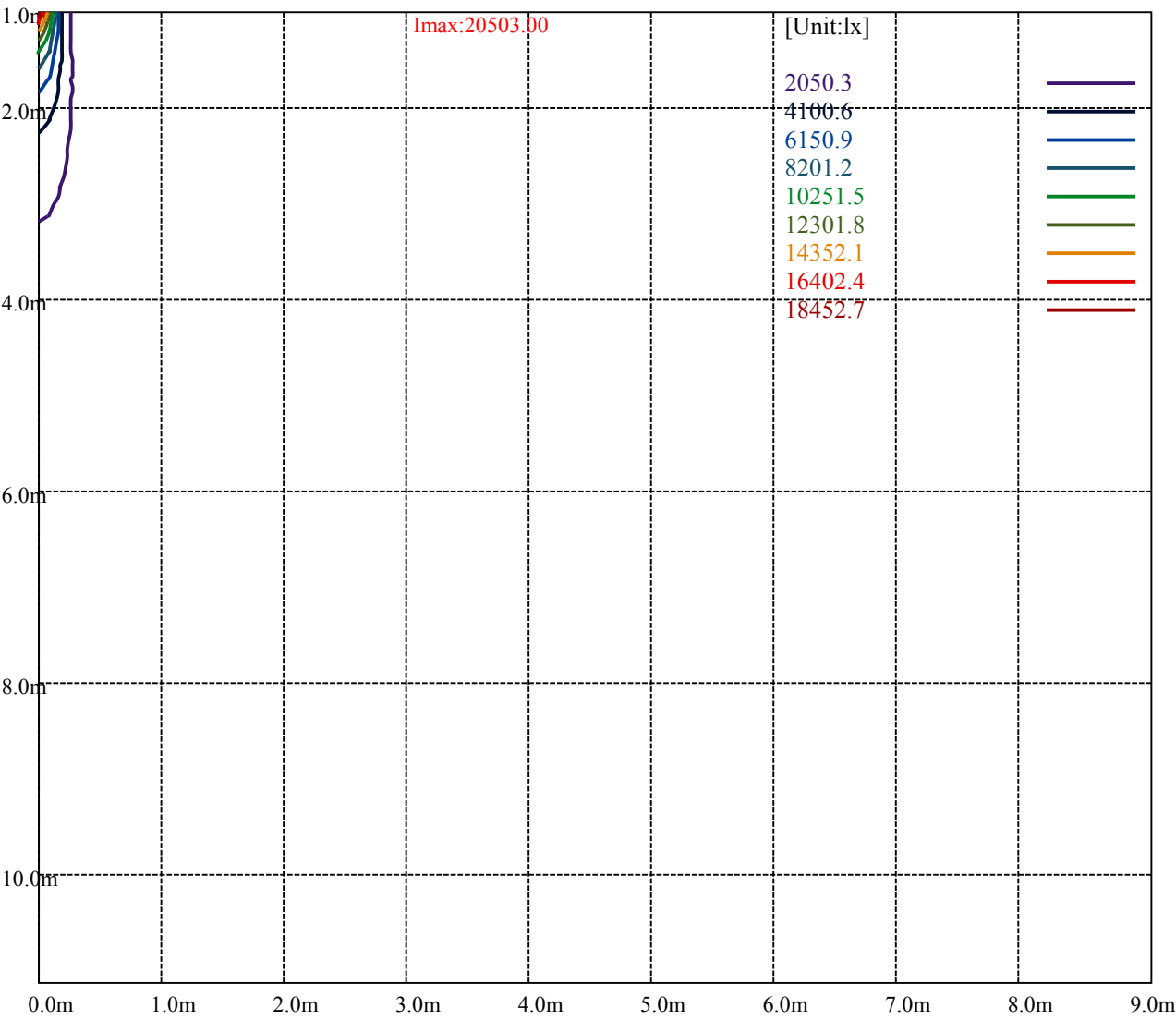
Road

Imax:20503.00

(10%Imax)	2050.3	—
(20%Imax)	4100.6	—
(30%Imax)	6150.9	—
(40%Imax)	8201.2	—
(50%Imax)	10251.5	—
(60%Imax)	12301.8	—
(70%Imax)	14352.1	—
(80%Imax)	16402.4	—
(90%Imax)	18452.7	—



(10%Emax) 227.8111	—
(20%Emax) 455.6211	—
(30%Emax) 683.4323	—
(40%Emax) 911.2434	—
(50%Emax) 1139.056	—
(60%Emax) 1366.867	—
(70%Emax) 1594.678	—
(80%Emax) 1822.489	—
(90%Emax) 2050.3	—



Luminance Table

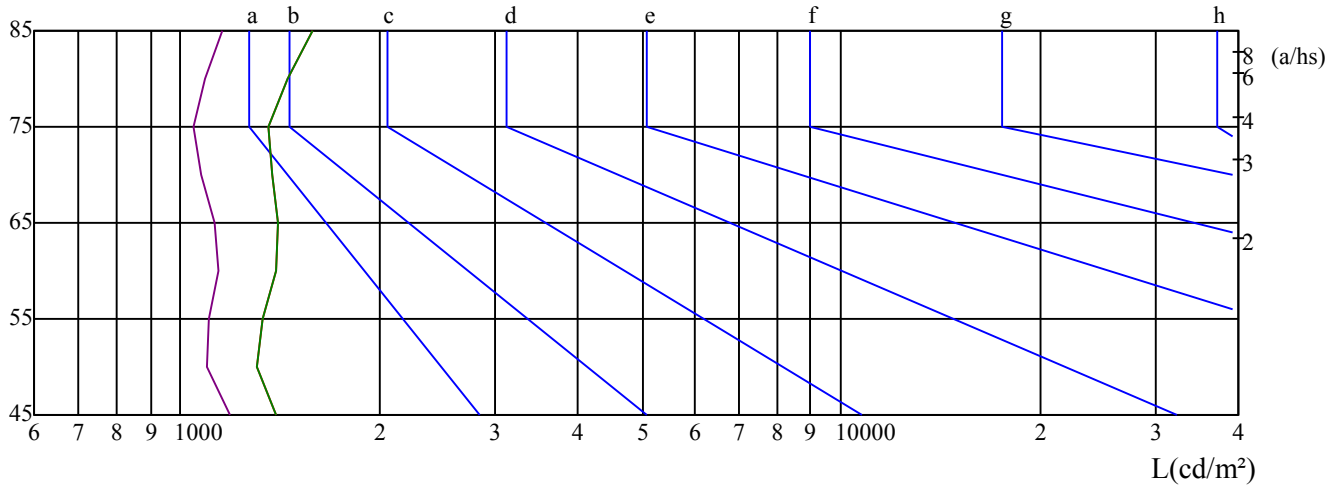
γ	45	50	55	60	65	70	75	80	85
C0	1394	1302	1334	1398	1403	1373	1357	1448	1584
C45	1190	1095	1104	1138	1123	1078	1044	1088	1158
C90	1394	1302	1334	1398	1403	1373	1357	1448	1584

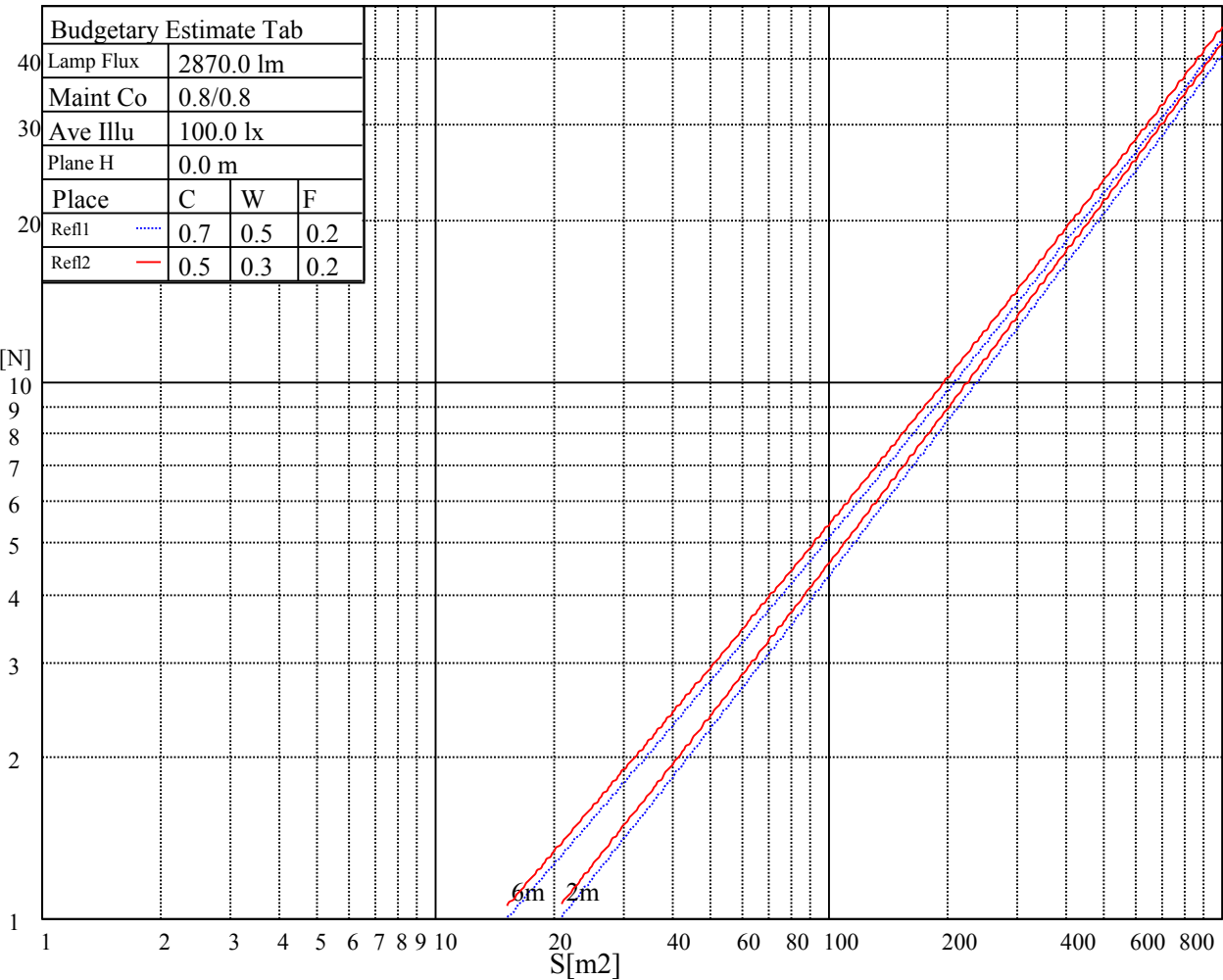
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3526	3526	3526	4933	4933	4933	14367	14367	14367

Glare Table

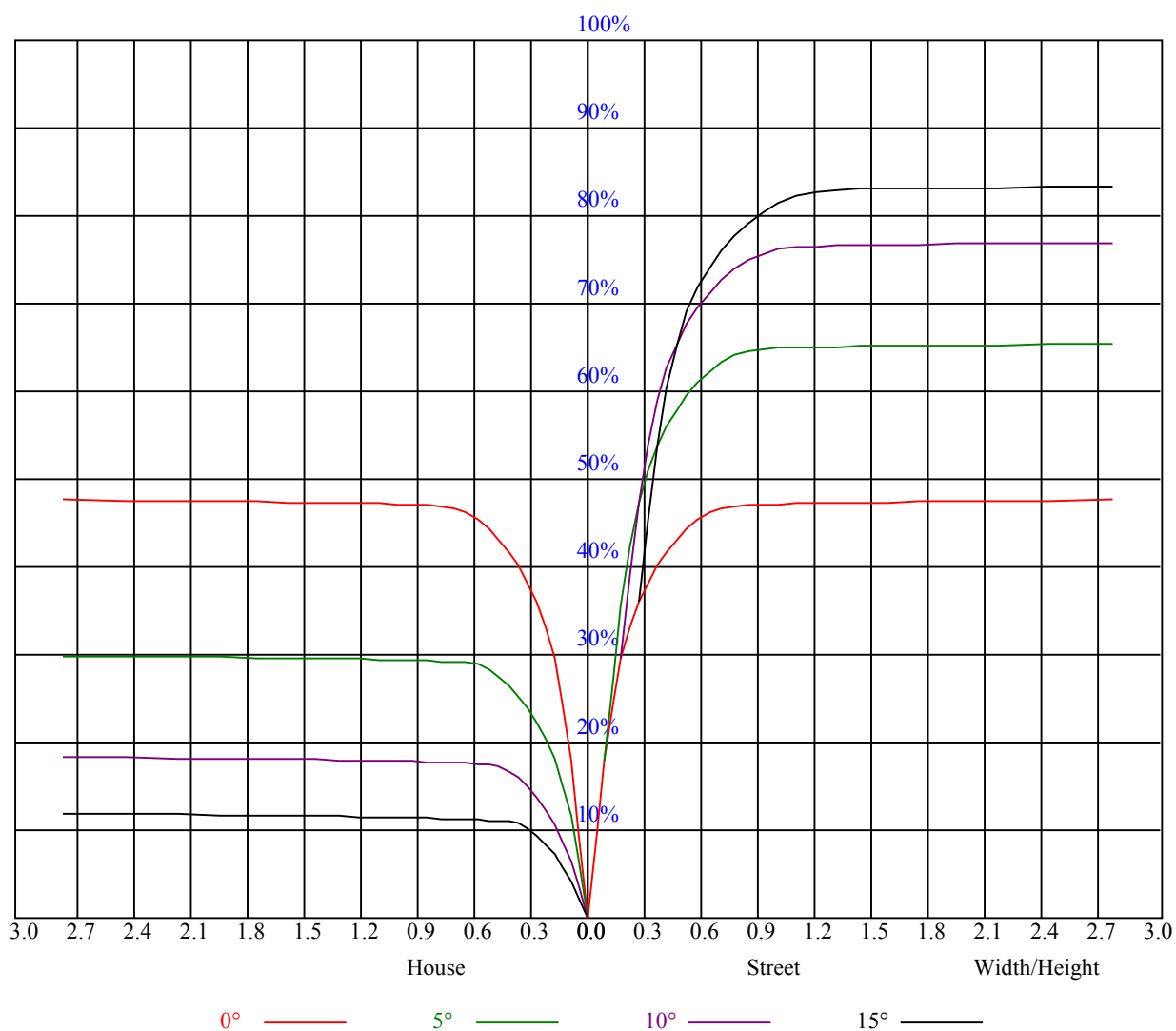
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

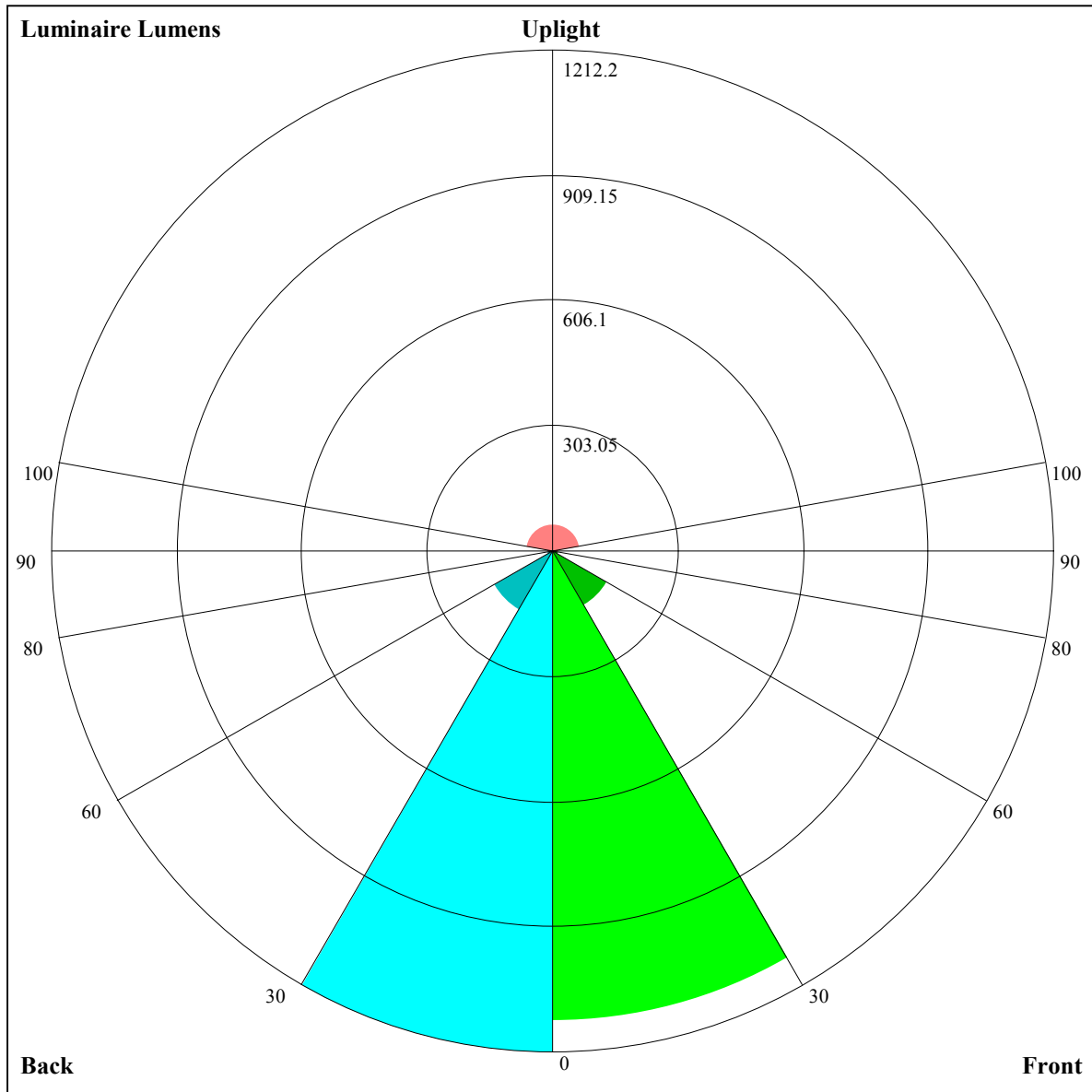
Luminance Limiting Curve

 $\gamma(^{\circ})$ 



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	1.14	1.14	1.14	1.12	1.12	1.12	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.96
1	1.08	1.06	1.04	1.06	1.04	1.02	1.02	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.93	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	0.98	0.94	0.91	0.96	0.93	0.90	0.94	0.91	0.89	0.92	0.89	0.87	0.90	0.88	0.86	0.85
4	0.93	0.89	0.86	0.92	0.89	0.86	0.91	0.87	0.85	0.89	0.86	0.84	0.87	0.85	0.83	0.82
5	0.90	0.86	0.83	0.89	0.85	0.82	0.87	0.84	0.82	0.86	0.83	0.81	0.85	0.82	0.80	0.79
6	0.87	0.82	0.79	0.86	0.82	0.79	0.85	0.81	0.79	0.84	0.80	0.78	0.82	0.80	0.78	0.77
7	0.84	0.80	0.77	0.83	0.79	0.76	0.82	0.79	0.76	0.81	0.78	0.76	0.80	0.77	0.75	0.74
8	0.81	0.77	0.74	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.72
9	0.79	0.75	0.72	0.78	0.74	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
10	0.77	0.73	0.70	0.76	0.72	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.68





Luminaire Lumens:

FL=1138.14,FM=153.53,FH=14.87,FVH=7.09

BL=1212.2,BM=166.18,BH=14.67,BVH=7.08

UL=13.97,UH=66.5

BUG Rating:B3-U2-G0

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	20447.95	20035.02	19088.05	18025.47	16181.08	14336.69	12662.97	10879.14	9409.14
45.0	20348.85	20348.85	19704.69	18834.79	17166.59	15575.46	13852.19	11677.46	10075.32
90.0	20849.86	21064.58	20706.71	19511.99	18058.50	16263.66	13995.34	10950.17	9795.08
135.0	20365.36	21097.61	21136.15	20607.61	19423.90	17728.16	16142.54	13681.52	11771.06
180.0	20447.95	20348.85	19820.30	18625.58	17331.75	15823.21	13956.80	10846.11	10456.86
225.0	20348.85	19902.89	18961.42	17293.22	15707.59	13967.81	10919.89	10105.60	8584.94
270.0	20849.86	19957.95	18416.37	16632.54	14375.23	12073.87	10157.91	8214.41	6727.89
315.0	20365.36	19203.67	17640.07	15360.74	13455.78	10856.02	9363.99	7834.53	6510.97
360.0	20447.95	20035.02	19088.05	18025.47	16181.08	14336.69	12662.97	10879.14	9409.14
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7933.63	6628.79	5632.27	4800.92	3942.04	3385.97	2929.00	2785.85	2204.46
45.0	8610.82	6981.15	5869.01	4955.08	4013.61	3413.50	2912.48	2807.88	2167.02
90.0	7906.10	6323.78	5173.65	4143.54	3420.10	2797.97	2335.49	2029.93	1793.19
135.0	9778.02	7972.17	6590.25	5450.58	4288.89	3567.65	2984.06	2802.37	2148.30
180.0	8786.45	7317.55	6196.05	5136.76	4348.91	3626.57	3052.88	2648.21	2316.77
225.0	7068.14	5767.71	4801.47	4013.06	3241.72	2768.79	2400.46	2077.83	1831.18
270.0	5356.99	4255.86	3485.07	2890.46	2354.76	2040.39	1806.95	1596.09	1472.76
315.0	5138.96	4252.56	3534.62	2850.82	2485.80	2125.18	1833.93	1679.22	1538.28
360.0	7933.63	6628.79	5632.27	4800.92	3942.04	3385.97	2929.00	2785.85	2204.46
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1977.08	1814.11	1608.75	1488.73	1398.98	1285.57	1220.05	1171.05	1112.14
45.0	1926.97	1710.05	1545.98	1433.12	1321.90	1250.88	1174.35	1118.75	1073.05
90.0	1576.82	1451.29	1354.94	1261.89	1202.98	1153.98	1097.82	1062.26	1030.77
135.0	1891.19	1691.88	1511.30	1406.69	1310.89	1223.35	1168.85	1123.70	1078.55
180.0	1991.94	1792.09	1632.42	1471.66	1370.35	1287.77	1204.63	1150.68	1095.46
225.0	1666.01	1517.90	1412.75	1316.95	1237.67	1180.41	1094.58	1080.92	1047.45
270.0	1378.06	1294.93	1227.21	1176.56	1127.56	1089.02	1059.84	1030.66	1006.98
315.0	1393.48	1320.80	1251.43	1172.70	1097.71	1088.52	1055.43	1019.97	995.42
360.0	1977.08	1814.11	1608.75	1488.73	1398.98	1285.57	1220.05	1171.05	1112.14
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1066.99	1036.71	994.32	964.04	934.86	869.34	765.83	633.15	447.61
45.0	1036.16	997.07	966.24	938.71	903.48	868.24	786.76	660.68	507.07
90.0	1003.51	976.09	950.93	928.20	902.81	879.75	856.90	782.41	666.95
135.0	1041.12	1008.63	983.86	961.28	931.55	908.98	888.61	836.86	723.44
180.0	1056.86	1022.73	983.69	951.65	923.57	859.38	740.29	605.84	460.44
225.0	1018.43	983.86	956.72	934.09	902.92	825.02	715.29	558.33	390.07
270.0	982.76	957.98	938.71	919.44	869.89	777.95	658.47	490.00	349.06
315.0	972.13	944.66	921.48	894.89	815.94	687.10	556.23	398.94	262.78
360.0	1066.99	1036.71	994.32	964.04	934.86	869.34	765.83	633.15	447.61
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	301.71	283.54	61.11	35.18	29.68	24.22	22.19	20.70	19.49
45.0	349.61	298.41	95.58	41.18	29.62	23.78	21.03	19.71	18.72
90.0	519.84	366.90	237.40	127.29	44.65	29.51	23.23	19.32	18.61
135.0	584.15	472.93	282.44	207.67	71.13	34.13	27.31	21.80	19.66
180.0	283.98	165.55	79.45	38.65	32.81	27.31	24.89	22.13	19.71
225.0	250.40	123.71	55.50	34.63	28.13	24.00	22.13	19.60	17.78
270.0	284.64	117.71	38.87	29.40	24.45	20.92	19.55	18.28	17.40
315.0	132.30	49.77	30.56	25.11	21.14	19.82	18.61	17.40	16.63
360.0	301.71	283.54	61.11	35.18	29.68	24.22	22.19	20.70	19.49

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	18.33	17.84	17.40	17.23	16.96	16.85	16.79	16.74	16.68
45.0	17.84	17.18	16.96	16.79	16.68	16.68	16.74	16.79	16.96
90.0	17.89	17.23	16.79	16.63	16.52	16.46	16.46	16.57	16.63
135.0	18.39	17.51	16.79	16.52	16.24	16.13	16.08	15.97	15.91
180.0	17.73	16.79	16.41	16.02	15.69	15.47	15.20	14.98	14.87
225.0	16.68	16.19	15.91	15.69	15.47	15.36	15.31	15.31	15.36
270.0	16.79	16.52	16.24	16.02	15.86	15.53	15.42	15.25	15.03
315.0	16.30	16.02	15.86	15.75	15.75	15.75	15.80	15.91	16.02
360.0	18.33	17.84	17.40	17.23	16.96	16.85	16.79	16.74	16.68
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	16.68	16.68	16.79	16.63	16.63	16.52	16.52	16.30	16.13
45.0	17.07	17.18	17.34	17.51	17.56	17.56	17.56	17.45	17.29
90.0	16.74	16.85	16.90	17.01	17.07	17.07	17.07	17.01	17.01
135.0	15.86	15.91	15.91	15.91	15.91	15.97	15.91	15.86	15.80
180.0	14.76	14.70	14.59	14.65	14.70	14.65	14.81	14.92	14.98
225.0	15.42	15.53	15.58	15.75	15.97	16.08	16.24	16.24	16.24
270.0	14.92	14.87	14.81	14.81	14.81	14.76	14.81	14.81	14.81
315.0	16.08	16.19	16.35	16.35	16.35	16.35	16.35	16.30	16.19
360.0	16.68	16.68	16.79	16.63	16.63	16.52	16.52	16.30	16.13
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	15.97	15.58	15.31	14.98	14.92	14.76	14.48	14.31	13.87
45.0	17.01	16.79	16.52	16.24	15.97	15.53	15.20	14.92	14.48
90.0	16.90	16.68	16.52	16.19	15.80	15.58	15.25	14.87	14.59
135.0	15.69	15.58	15.42	15.31	15.14	14.87	14.70	14.53	14.26
180.0	14.81	14.59	14.48	14.48	14.48	14.48	14.26	13.87	13.71
225.0	16.13	15.91	15.64	15.36	15.03	14.76	14.42	14.20	13.98
270.0	14.76	14.76	14.65	14.48	14.42	14.31	14.15	14.04	13.71
315.0	16.08	15.86	15.53	15.31	14.98	14.70	14.37	14.09	13.71
360.0	15.97	15.58	15.31	14.98	14.92	14.76	14.48	14.31	13.87
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	13.71	13.43	13.27	13.21	13.16	13.10	12.99	12.99	12.99
45.0	14.15	13.82	13.54	13.49	13.43	13.38	13.27	13.27	13.27
90.0	14.31	13.87	13.49	13.32	13.27	13.27	13.21	13.16	13.10
135.0	14.04	13.76	13.49	13.27	13.27	13.21	13.21	13.16	13.10
180.0	13.49	13.27	13.21	13.10	13.05	12.99	12.99	12.94	12.88
225.0	13.65	13.43	13.38	13.38	13.27	13.27	13.21	13.21	13.16
270.0	13.43	13.32	13.27	13.27	13.21	13.16	13.16	13.16	13.10
315.0	13.38	13.32	13.27	13.21	13.16	13.16	13.10	13.10	13.10
360.0	13.71	13.43	13.27	13.21	13.16	13.10	12.99	12.99	12.99
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	12.94	12.94	12.88	12.88	12.88	12.83	12.83	12.77	12.72
45.0	13.21	13.21	13.16	13.16	13.16	13.05	13.05	13.05	12.99
90.0	13.05	13.05	13.05	12.99	13.05	12.94	12.94	12.88	12.88
135.0	13.10	13.10	13.10	13.10	13.05	12.88	12.83	12.77	12.72
180.0	12.88	12.88	12.83	12.83	12.83	12.77	12.77	12.72	12.66
225.0	13.16	13.16	13.16	13.10	13.16	13.21	13.10	12.99	12.99
270.0	13.10	13.10	13.05	13.10	13.10	13.21	12.94	12.88	12.94
315.0	13.10	13.10	13.05	13.05	12.99	12.88	12.77	12.77	12.77
360.0	12.94	12.94	12.88	12.88	12.88	12.83	12.83	12.77	12.72

Intensity data(cd)

C/γ(°)	90.0
0.0	12.72
45.0	12.99
90.0	12.83
135.0	12.72
180.0	12.66
225.0	12.94
270.0	12.83
315.0	12.77
360.0	12.72