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NATA

Client:

LumCAT: 1-0919-M

Luminaire: 92.70.124.00

Report No: nt0100

Test No: GC2019122301

LampCAT: LUMINUS CXM-9-AC40

Lamp flux(lm): 1036.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 33.5800

Current(A): 0.2970

Power (W): 9.9700

PF: 1.0000

Ballast type: DC

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 833.96, Efficiency(%): 80.50% , Luminous Efficacy(lm/W): 83.65

Central intensity(cd): 4108.500, Maximum intensity(cd): 4108.500

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=25.4

[C90/270]Total=25.4

Field angle(10%Imax): [C0/180]Total=43.4

[C90/270]Total=43.4

Maximum s/h(1/2): C0_180=0.43 C90_270=0.43

Maximum s/h(1/4): C0_180=0.42 C90_270=0.42

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 80.50%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.503%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4108.500	0.000	0	.000%	.000%
1.0	4094.367	3.925	3.925	.379%	.471%
2.0	4051.125	11.691	15.616	1.128%	1.873%
3.0	3975.117	19.196	34.812	1.853%	4.174%
4.0	3875.977	26.280	61.092	2.537%	7.326%
5.0	3752.227	32.816	93.908	3.168%	11.261%
6.0	3584.813	38.558	132.467	3.722%	15.884%
7.0	3404.391	43.382	175.848	4.187%	21.086%
8.0	3212.859	47.358	223.207	4.571%	26.765%
9.0	2982.586	50.211	273.418	4.847%	32.786%
10.0	2734.453	51.737	325.155	4.994%	38.989%
11.0	2495.250	52.255	377.41	5.044%	45.255%
12.0	2242.406	51.789	429.199	4.999%	51.465%
13.0	1963.898	49.918	479.118	4.818%	57.451%
14.0	1720.617	47.161	526.279	4.552%	63.106%
15.0	1478.095	43.913	570.193	4.239%	68.372%
16.0	1267.566	40.232	610.424	3.883%	73.196%
17.0	1057.099	36.201	646.625	3.494%	77.537%
18.0	905.091	32.352	678.978	3.123%	81.416%
19.0	752.421	28.837	707.815	2.784%	84.874%
20.0	611.114	24.956	732.771	2.409%	87.867%
21.0	478.610	20.925	753.696	2.020%	90.376%
22.0	375.258	17.159	770.855	1.656%	92.433%
23.0	272.461	13.591	784.446	1.312%	94.063%
24.0	181.920	9.934	794.381	.959%	95.254%
25.0	118.624	6.834	801.214	.660%	96.074%
26.0	65.616	4.349	805.563	.420%	96.595%
27.0	34.622	2.452	808.016	.237%	96.889%
28.0	16.819	1.302	809.318	.126%	97.046%
29.0	10.990	0.728	810.045	.070%	97.133%
30.0	8.866	0.536	810.582	.052%	97.197%
31.0	7.777	0.463	811.045	.045%	97.253%
32.0	7.102	0.426	811.471	.041%	97.304%
33.0	6.602	0.404	811.875	.039%	97.352%
34.0	6.152	0.386	812.261	.037%	97.398%
35.0	5.787	0.371	812.631	.036%	97.443%
36.0	5.505	0.360	812.991	.035%	97.486%
37.0	5.266	0.351	813.342	.034%	97.528%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	5.070	0.345	813.687	.033%	97.569%
39.0	4.901	0.340	814.028	.033%	97.610%
40.0	4.760	0.337	814.365	.033%	97.651%
41.0	4.669	0.336	814.7	.032%	97.691%
42.0	4.570	0.336	815.036	.032%	97.731%
43.0	4.486	0.335	815.372	.032%	97.771%
44.0	4.437	0.337	815.708	.033%	97.812%
45.0	4.388	0.339	816.047	.033%	97.852%
46.0	4.338	0.341	816.389	.033%	97.893%
47.0	4.303	0.344	816.732	.033%	97.935%
48.0	4.268	0.346	817.079	.033%	97.976%
49.0	4.233	0.349	817.428	.034%	98.018%
50.0	4.205	0.352	817.78	.034%	98.060%
51.0	4.198	0.355	818.135	.034%	98.103%
52.0	4.177	0.359	818.495	.035%	98.146%
53.0	4.141	0.362	818.856	.035%	98.189%
54.0	4.127	0.364	819.221	.035%	98.233%
55.0	4.106	0.368	819.588	.035%	98.277%
56.0	4.085	0.370	819.958	.036%	98.321%
57.0	4.092	0.374	820.332	.036%	98.366%
58.0	4.071	0.377	820.71	.036%	98.412%
59.0	4.057	0.380	821.09	.037%	98.457%
60.0	4.043	0.383	821.473	.037%	98.503%
61.0	4.043	0.386	821.858	.037%	98.549%
62.0	4.029	0.389	822.247	.038%	98.596%
63.0	4.022	0.392	822.639	.038%	98.643%
64.0	4.015	0.394	823.033	.038%	98.690%
65.0	4.001	0.397	823.43	.038%	98.738%
66.0	4.008	0.400	823.83	.039%	98.786%
67.0	3.980	0.402	824.231	.039%	98.834%
68.0	3.987	0.404	824.635	.039%	98.882%
69.0	3.980	0.406	825.041	.039%	98.931%
70.0	3.980	0.409	825.45	.039%	98.980%
71.0	3.973	0.411	825.861	.040%	99.029%
72.0	3.987	0.414	826.275	.040%	99.079%
73.0	3.973	0.416	826.691	.040%	99.129%
74.0	3.966	0.417	827.108	.040%	99.179%
75.0	3.973	0.419	827.528	.040%	99.229%

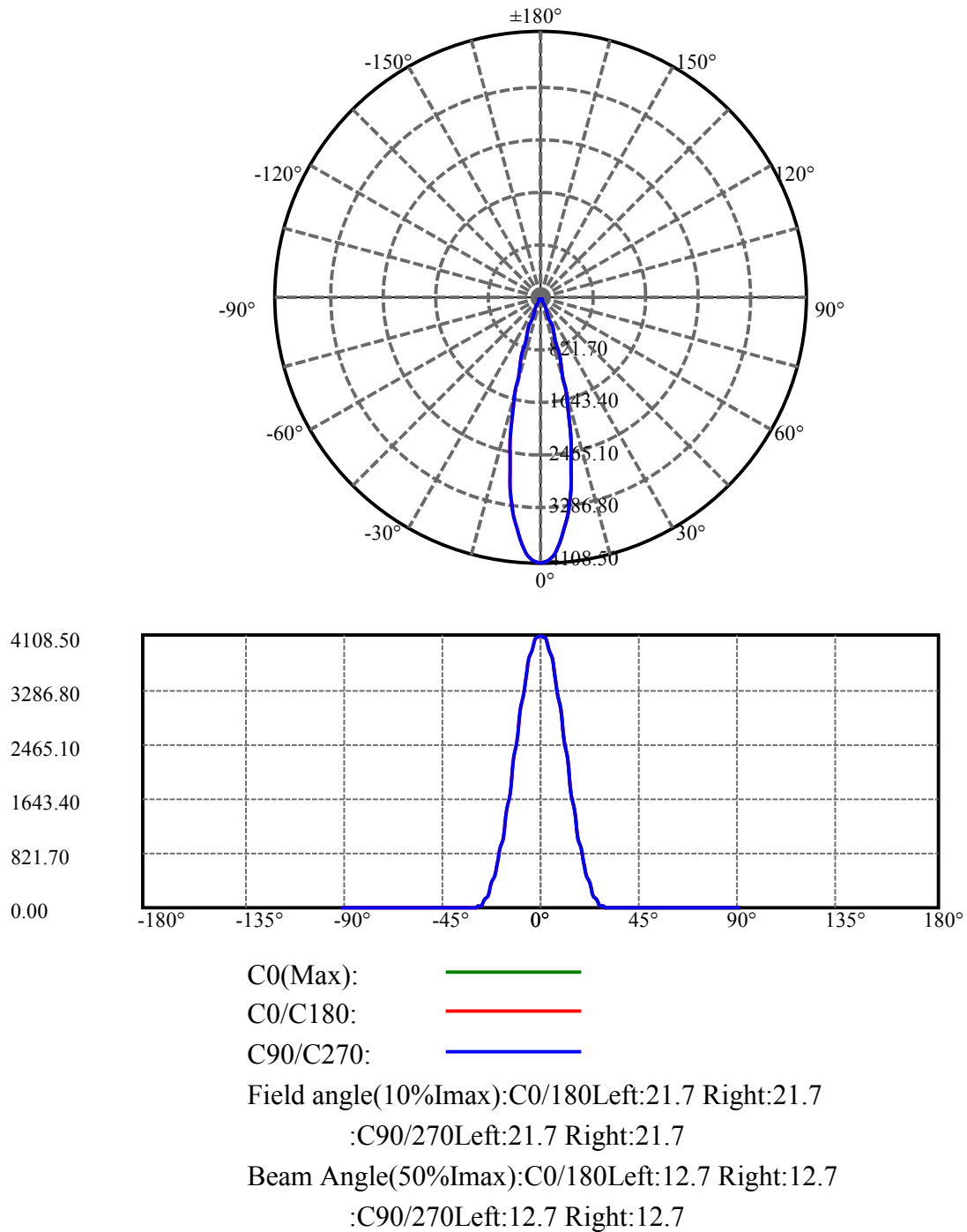
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	3.966	0.421	827.949	.041%	99.280%
77.0	3.966	0.423	828.372	.041%	99.330%
78.0	3.966	0.425	828.797	.041%	99.381%
79.0	3.959	0.426	829.222	.041%	99.432%
80.0	3.959	0.427	829.649	.041%	99.483%
81.0	3.959	0.428	830.077	.041%	99.535%
82.0	3.959	0.429	830.507	.041%	99.586%
83.0	3.959	0.430	830.937	.042%	99.638%
84.0	3.980	0.432	831.37	.042%	99.690%
85.0	3.952	0.433	831.802	.042%	99.742%
86.0	3.930	0.431	832.233	.042%	99.793%
87.0	3.930	0.430	832.663	.042%	99.845%
88.0	3.930	0.431	833.094	.042%	99.897%
89.0	3.938	0.431	833.525	.042%	99.948%
90.0	3.930	0.431	833.957	.042%	100.000%

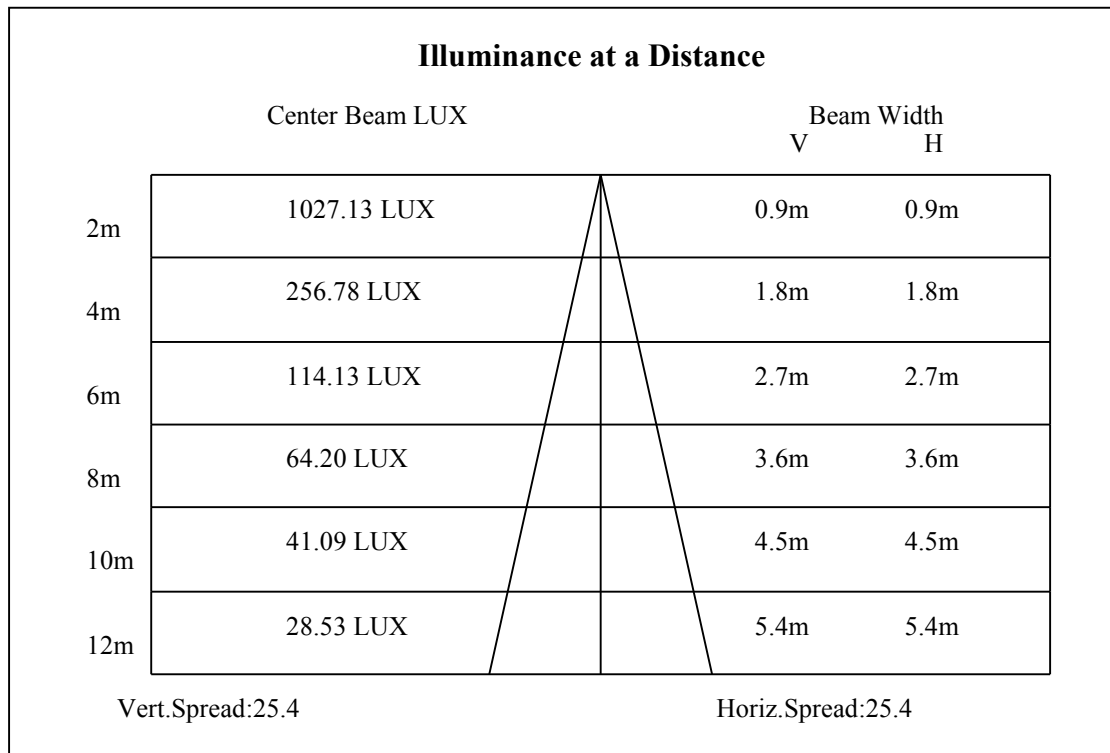
ZONAL LUMEN SUMMARY

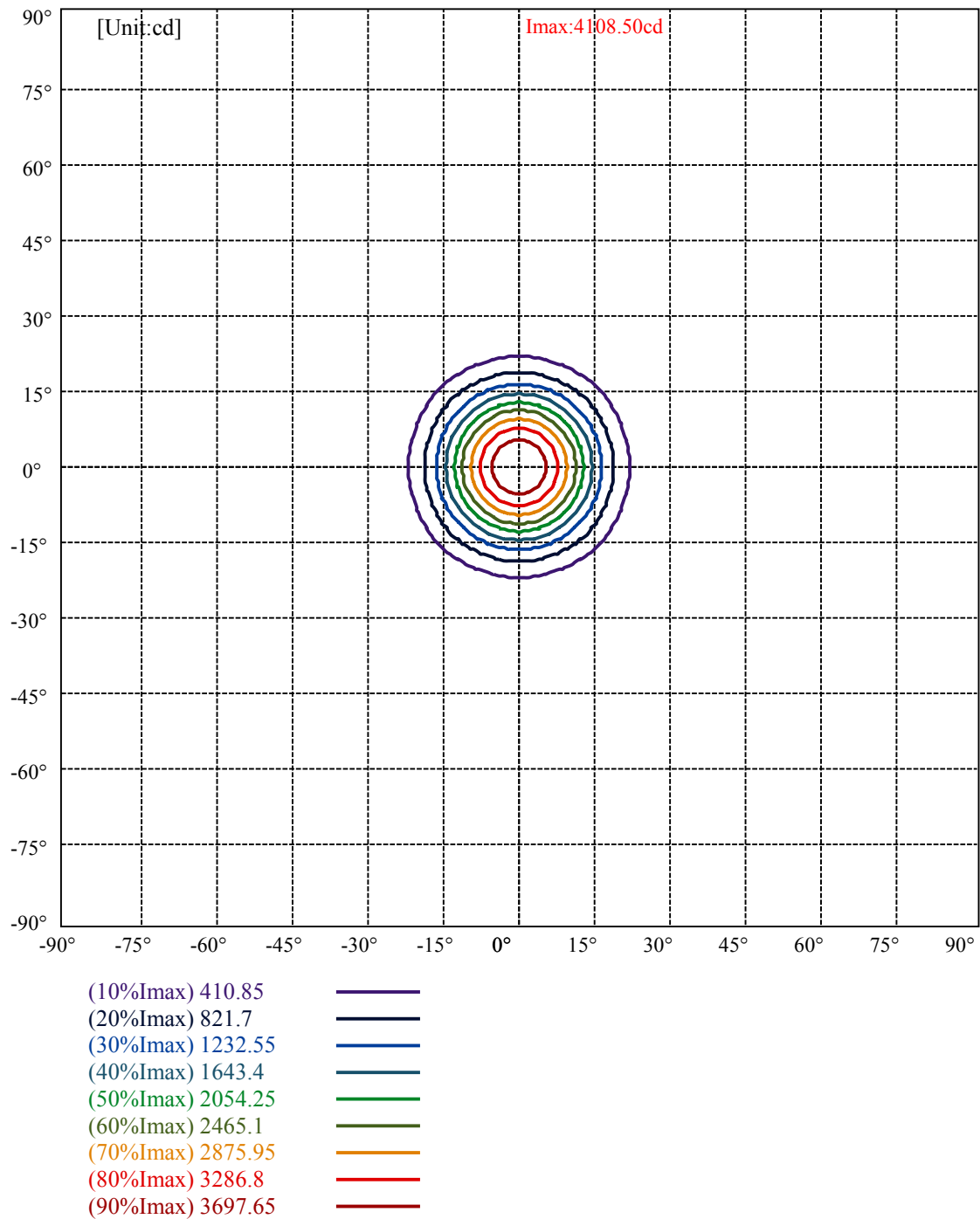
Zone	Lumens	%Lamp	%Fixt
0-30	810.58	78.24%	97.20%
0-40	814.36	78.61%	97.65%
0-60	821.47	79.29%	98.50%
0-90	833.53	80.46%	99.95%
0-120	833.53	80.46%	99.95%
0-180	833.96	80.50%	100.00%
60-90	12.44	1.20%	1.49%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-17.63	667.17	64.40%	80.00%

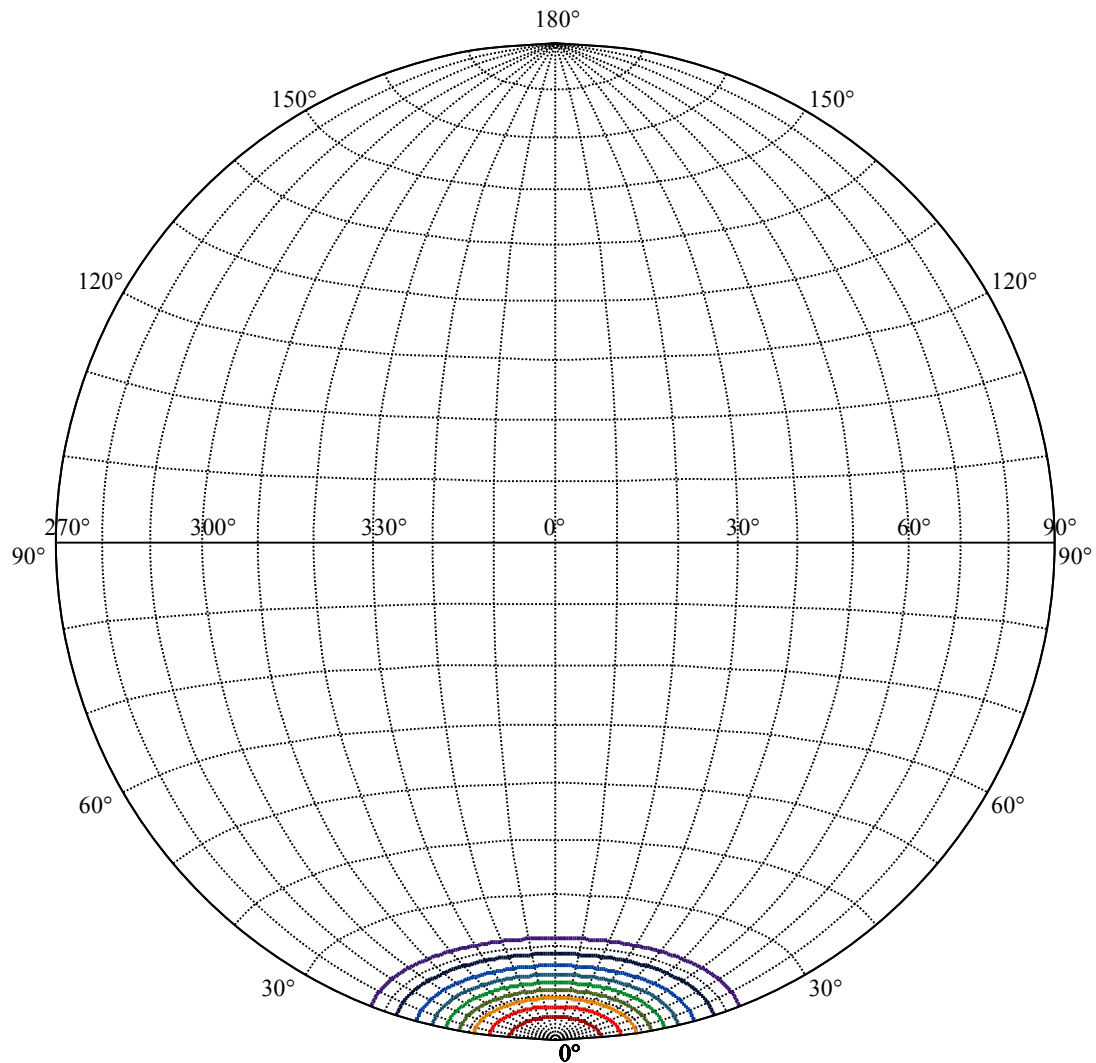
ZONAL LUMEN SUMMARY

0-10	325.15
10-20	407.62
20-30	77.81
30-40	3.78
40-50	3.42
50-60	3.69
60-70	3.98
70-80	4.20
80-90	3.88
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









House

[Unit:cd]

Road

Imax:4108.50

(10%Imax) 410.85

(20%Imax) 821.7

(30%Imax) 1232.55

(40%Imax) 1643.4

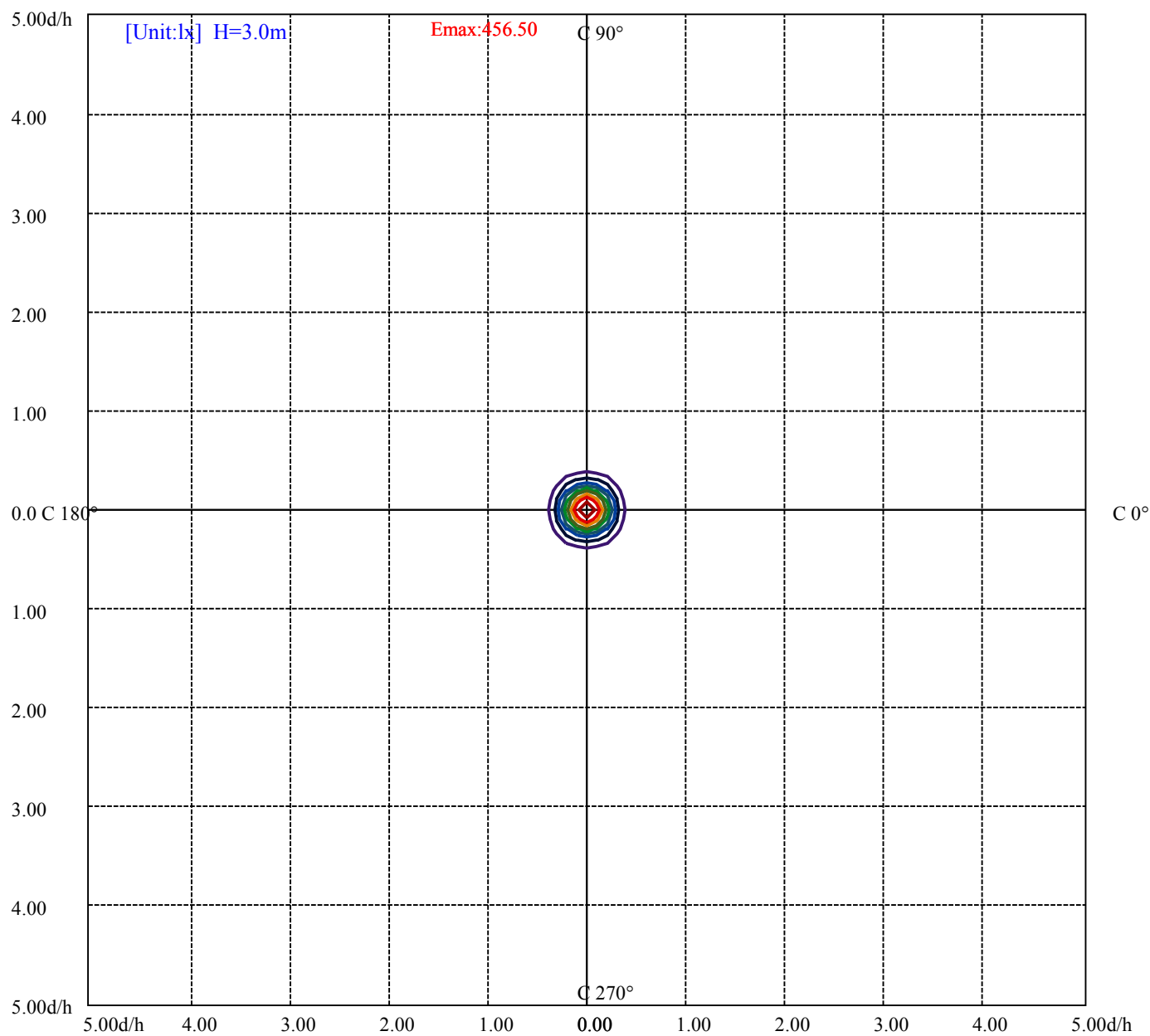
(50%Imax) 2054.25

(60%Imax) 2465.1

(70%Imax) 2875.95

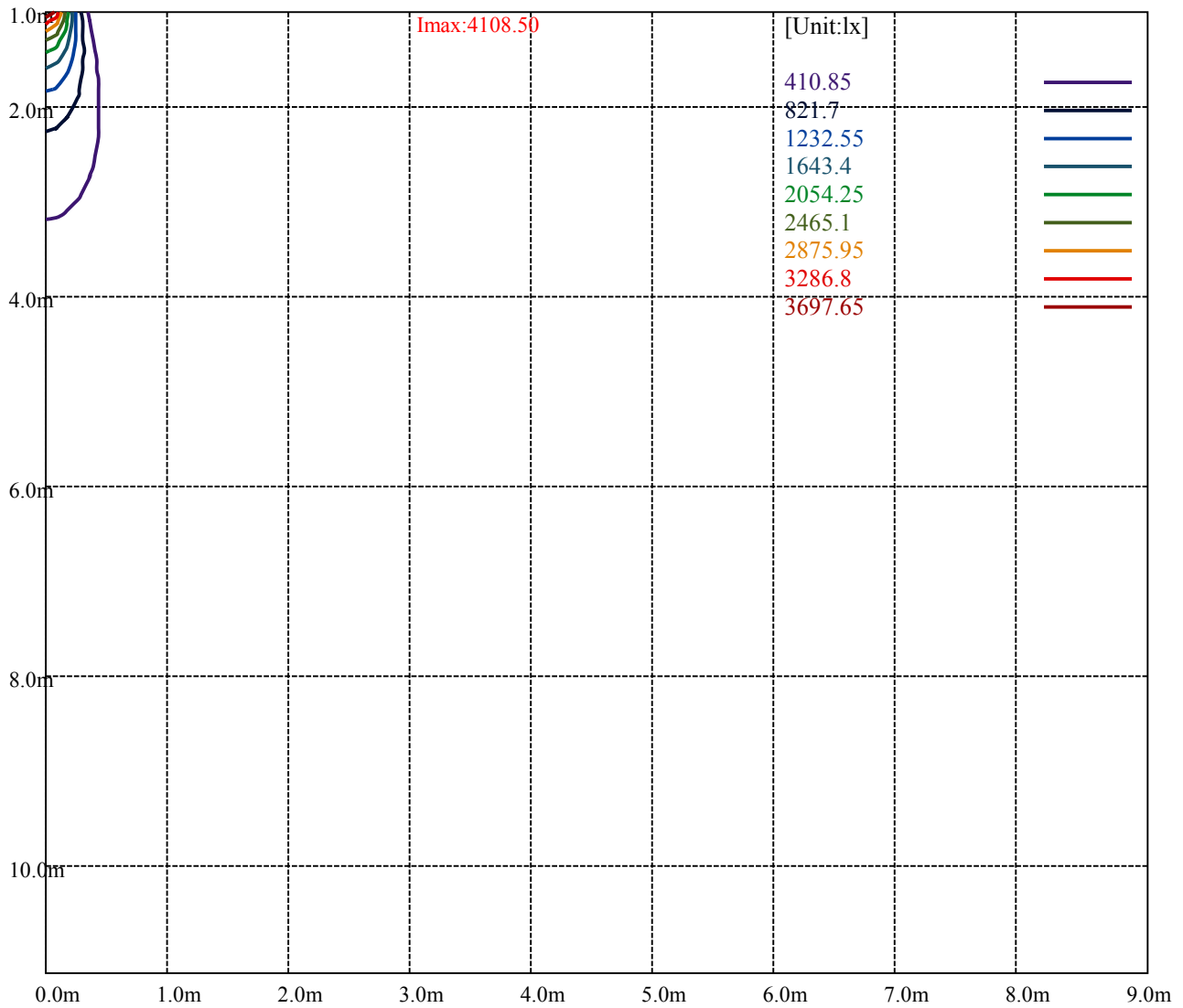
(80%Imax) 3286.8

(90%Imax) 3697.65



(10%E_{max}) 45.65
(20%E_{max}) 91.3
(30%E_{max}) 136.95
(40%E_{max}) 182.6
(50%E_{max}) 228.25
(60%E_{max}) 273.9
(70%E_{max}) 319.55
(80%E_{max}) 365.2
(90%E_{max}) 410.85





Luminance Table

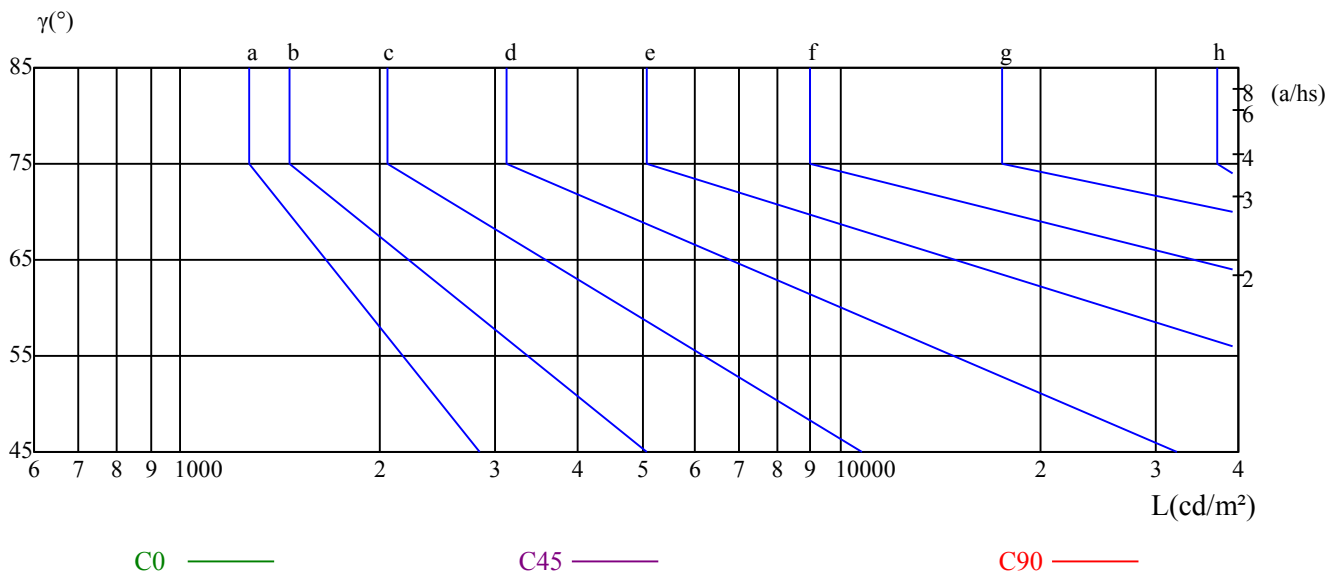
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

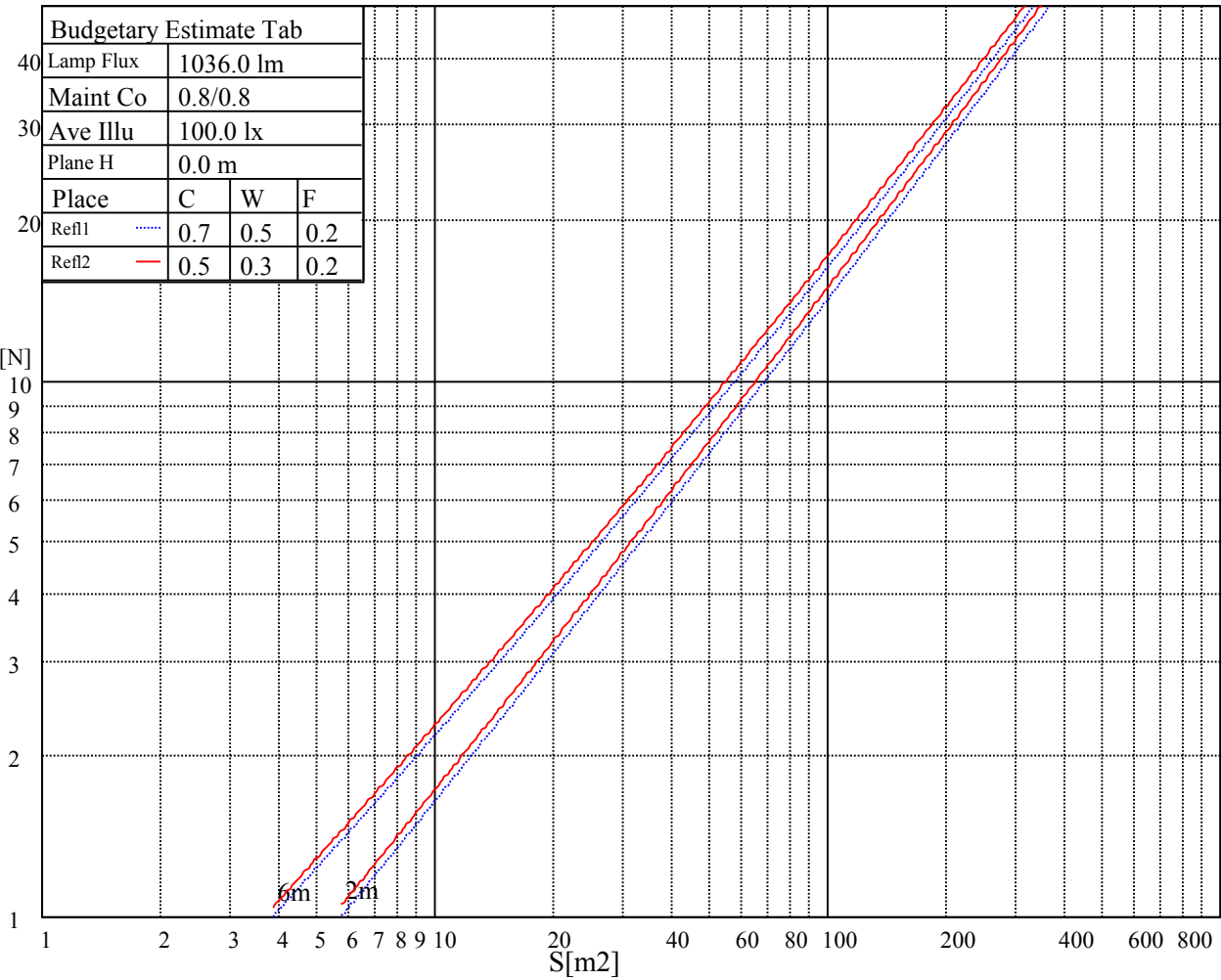
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

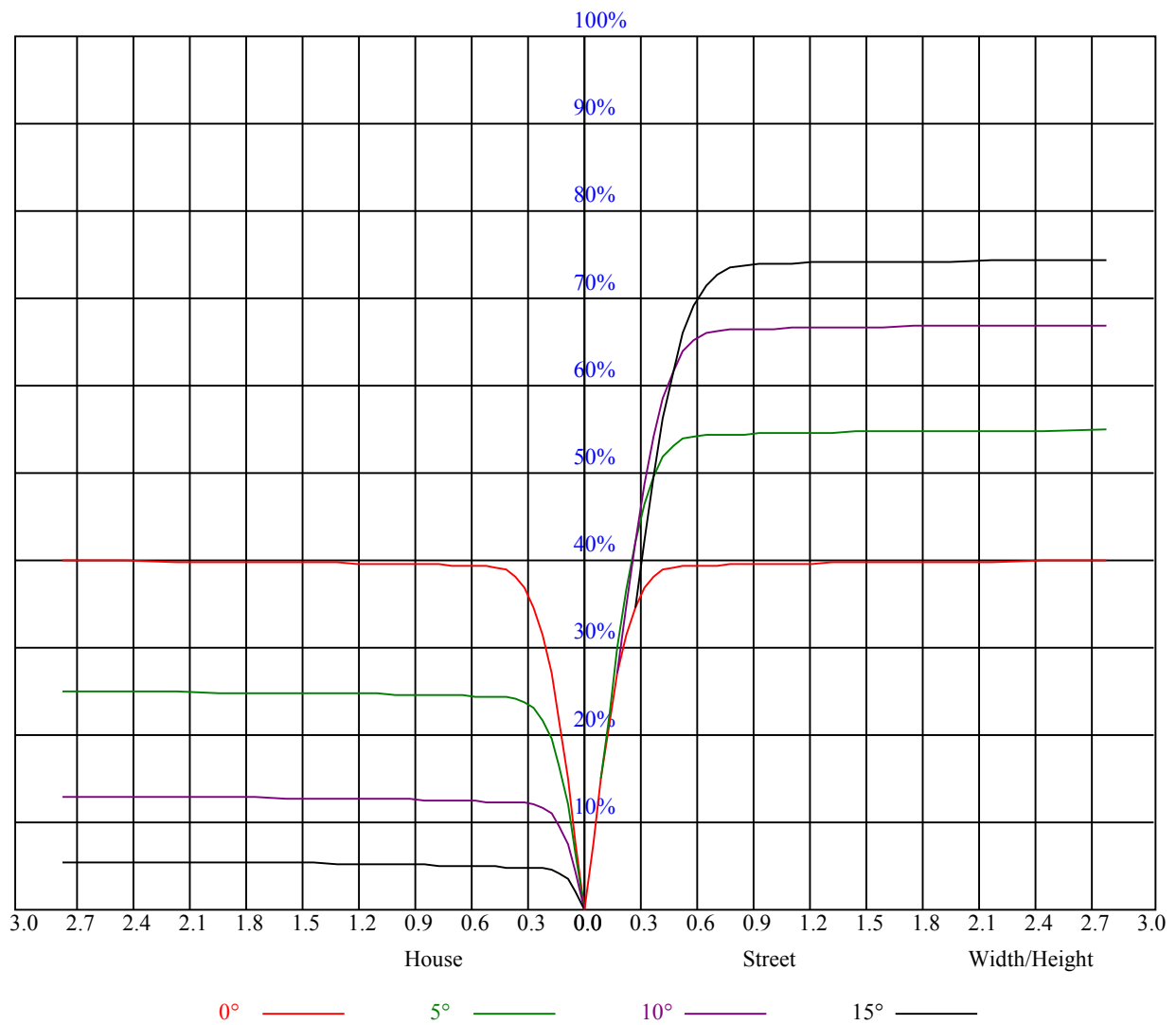
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

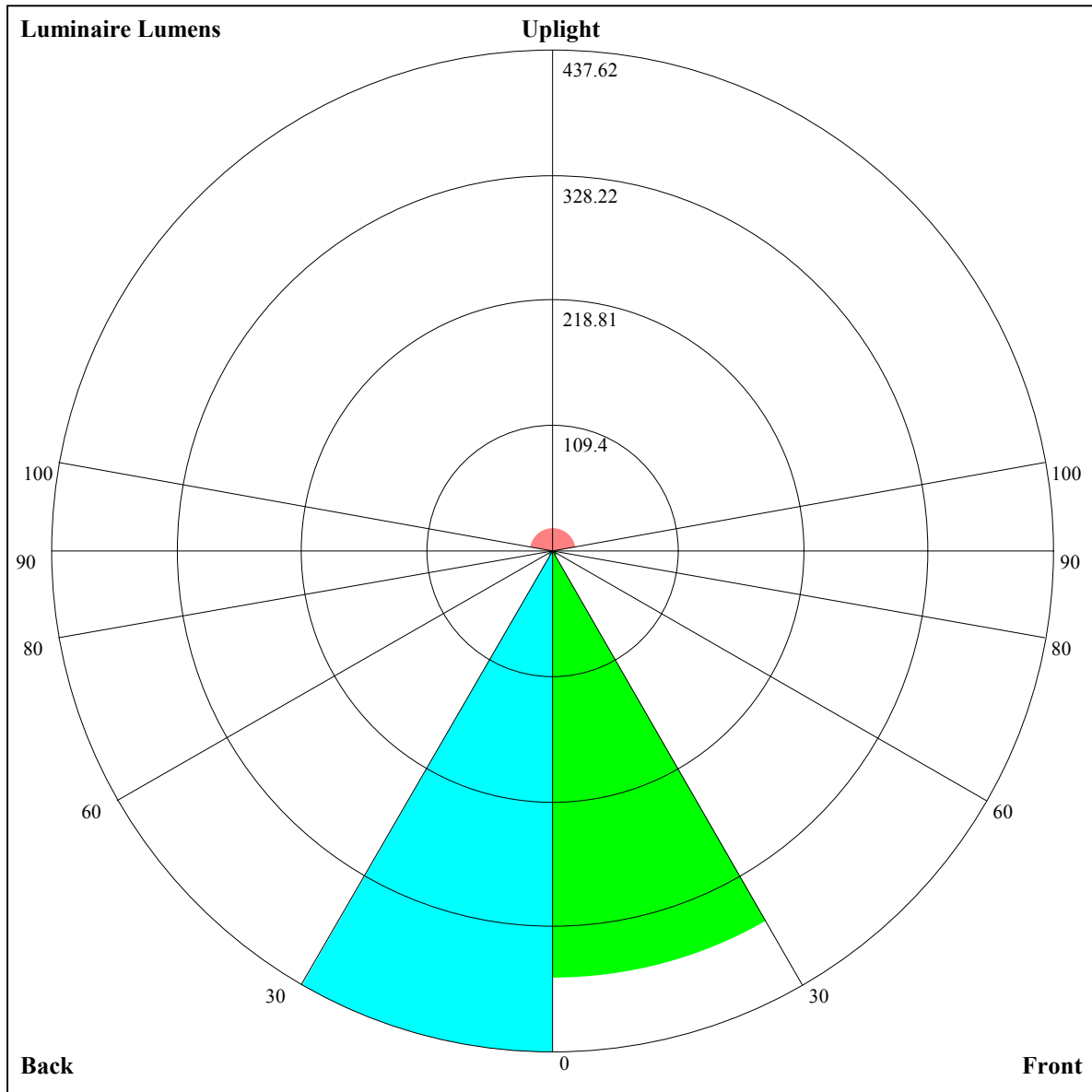
Luminance Limiting Curve





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	0.96	0.96	0.96	0.94	0.94	0.94	0.89	0.89	0.89	0.86	0.86	0.86	0.82	0.82	0.82	0.80
1	0.91	0.89	0.88	0.89	0.88	0.86	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.80	0.79	0.78
2	0.87	0.84	0.82	0.85	0.83	0.81	0.83	0.81	0.80	0.81	0.79	0.78	0.78	0.77	0.76	0.75
3	0.83	0.80	0.78	0.82	0.80	0.78	0.80	0.78	0.76	0.78	0.77	0.75	0.77	0.75	0.74	0.73
4	0.80	0.77	0.75	0.79	0.77	0.74	0.78	0.76	0.74	0.76	0.74	0.73	0.75	0.73	0.72	0.71
5	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.75	0.72	0.71	0.73	0.72	0.70	0.69
6	0.75	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.73	0.70	0.69	0.72	0.70	0.68	0.68
7	0.73	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.67	0.66
8	0.71	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.66	0.69	0.67	0.65	0.69	0.67	0.65	0.64
9	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.66	0.64	0.67	0.65	0.64	0.63
10	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.64	0.63	0.66	0.64	0.62	0.66	0.64	0.62	0.62





Luminaire Lumens:

FL=373.02,FM=5.37,FH=4.1,FVH=2.16

BL=437.62,BM=5.57,BH=4.11,BVH=2.16

UL=4.29,UH=20.41

BUG Rating:B1-U2-G0

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Intensity data(cd)

Appendix Page: 17 Total:19

C/ γ (°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	4109.06	4057.88	3972.38	3858.19	3733.31	3566.25	3372.75	3182.63	2950.31
45.0	4116.94	4079.81	4008.38	3911.06	3801.94	3650.63	3467.81	3279.94	3078.00
90.0	4110.19	4091.06	4045.50	3964.50	3853.13	3729.38	3559.50	3359.25	3161.25
135.0	4097.81	4127.06	4127.63	4092.75	4032.00	3956.63	3797.44	3650.63	3508.88
180.0	4109.06	4134.94	4131.00	4095.56	4029.75	3924.56	3785.63	3636.56	3448.69
225.0	4116.94	4128.75	4109.63	4052.81	3962.81	3857.63	3732.75	3545.44	3372.75
270.0	4110.19	4100.06	4058.44	3984.75	3893.06	3781.13	3607.31	3443.63	3259.13
315.0	4097.81	4035.38	3956.06	3841.31	3701.81	3551.63	3355.31	3137.06	2923.88
360.0	4109.06	4057.88	3972.38	3858.19	3733.31	3566.25	3372.75	3182.63	2950.31
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2730.38	2468.81	2196.56	1953.00	1718.44	1442.81	1242.00	1058.06	854.44
45.0	2810.81	2579.06	2336.06	2088.00	1787.06	1562.63	1329.75	1121.63	948.94
90.0	2948.63	2664.00	2425.50	2183.63	1883.25	1656.56	1447.31	1116.79	1032.98
135.0	3259.13	3054.38	2859.19	2565.00	2293.31	2076.19	1779.19	1562.63	1351.69
180.0	3237.19	3029.06	2779.88	2546.44	2274.75	1997.44	1760.63	1543.50	1225.69
225.0	3174.75	2903.63	2671.31	2427.75	2144.81	1868.63	1641.38	1403.44	1116.51
270.0	3003.19	2779.31	2543.63	2269.13	1991.81	1751.63	1504.13	1299.94	1091.25
315.0	2696.63	2397.38	2149.88	1906.31	1617.75	1409.06	1120.39	1034.55	835.31
360.0	2730.38	2468.81	2196.56	1953.00	1718.44	1442.81	1242.00	1058.06	854.44
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	709.88	580.50	449.44	333.56	284.63	153.17	94.56	47.70	24.08
45.0	804.38	641.81	510.19	387.00	285.19	194.63	120.77	64.69	32.12
90.0	874.69	715.39	588.38	460.24	343.86	252.34	164.53	101.87	50.85
135.0	1125.56	958.50	809.44	632.81	516.38	411.75	284.06	231.58	127.35
180.0	1108.58	945.23	763.03	632.48	511.88	387.90	275.96	193.05	115.65
225.0	1012.84	842.85	705.43	564.02	436.84	335.53	245.59	149.23	88.59
270.0	908.44	764.44	619.88	489.94	384.75	290.81	182.93	115.93	65.19
315.0	696.38	570.66	443.14	328.84	238.56	153.56	86.96	44.94	21.09
360.0	709.88	580.50	449.44	333.56	284.63	153.17	94.56	47.70	24.08
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	13.73	9.90	8.61	7.71	7.09	6.53	6.08	5.74	5.46
45.0	15.86	10.41	8.61	7.82	6.98	6.53	6.19	5.74	5.51
90.0	23.79	12.21	9.28	8.10	7.37	6.75	6.30	5.96	5.63
135.0	67.39	29.59	15.36	10.18	8.44	7.65	6.98	6.47	6.08
180.0	65.98	29.76	14.46	10.35	8.49	7.59	7.03	6.53	6.02
225.0	45.68	18.34	12.43	10.01	8.66	7.88	7.26	6.64	6.24
270.0	31.16	14.57	10.74	9.11	8.10	7.43	6.92	6.41	5.96
315.0	13.39	9.79	8.44	7.65	7.09	6.47	6.08	5.74	5.40
360.0	13.73	9.90	8.61	7.71	7.09	6.53	6.08	5.74	5.46
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	5.12	4.95	4.84	4.67	4.56	4.50	4.39	4.33	4.33
45.0	5.29	5.12	4.89	4.84	4.67	4.61	4.56	4.50	4.44
90.0	5.40	5.18	5.01	4.89	4.78	4.67	4.56	4.50	4.44
135.0	5.74	5.46	5.23	5.01	4.89	4.78	4.67	4.56	4.44
180.0	5.74	5.46	5.23	5.01	4.84	4.73	4.61	4.50	4.44
225.0	5.85	5.57	5.34	5.06	4.89	4.84	4.73	4.56	4.56
270.0	5.68	5.40	5.18	5.01	4.84	4.73	4.61	4.56	4.50
315.0	5.23	5.01	4.84	4.73	4.61	4.50	4.44	4.39	4.33
360.0	5.12	4.95	4.84	4.67	4.56	4.50	4.39	4.33	4.33

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Intensity data(cd)										Appendix Page: 18 Total:19	
C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0		
0.0	4.28	4.22	4.22	4.16	4.11	4.11	4.11	4.05	4.05		
45.0	4.39	4.33	4.33	4.28	4.28	4.22	4.22	4.22	4.16		
90.0	4.39	4.39	4.33	4.28	4.28	4.22	4.22	4.22	4.22		
135.0	4.44	4.39	4.39	4.33	4.28	4.22	4.22	4.22	4.16		
180.0	4.39	4.33	4.28	4.22	4.22	4.16	4.16	4.16	4.11		
225.0	4.50	4.39	4.33	4.33	4.28	4.28	4.28	4.22	4.16		
270.0	4.44	4.39	4.33	4.33	4.28	4.28	4.22	4.22	4.16		
315.0	4.28	4.28	4.22	4.22	4.16	4.16	4.16	4.11	4.11		
360.0	4.28	4.22	4.22	4.16	4.11	4.11	4.11	4.05	4.05		
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	4.05	3.99	3.99	3.99	3.99	3.99	3.94	3.99	3.94		
45.0	4.16	4.16	4.11	4.11	4.11	4.11	4.11	4.05	4.05		
90.0	4.16	4.16	4.11	4.16	4.11	4.11	4.11	4.11	4.11		
135.0	4.16	4.16	4.11	4.11	4.11	4.05	4.05	4.05	4.05		
180.0	4.05	4.05	3.99	4.05	3.99	3.99	3.99	3.99	3.99		
225.0	4.16	4.11	4.16	4.16	4.11	4.05	4.05	4.05	4.05		
270.0	4.16	4.16	4.16	4.11	4.11	4.11	4.11	4.11	4.05		
315.0	4.11	4.05	4.05	4.05	4.05	4.05	3.99	3.99	3.99		
360.0	4.05	3.99	3.99	3.99	3.99	3.99	3.94	3.99	3.94		
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	3.94	3.94	3.94	3.94	3.88	3.88	3.88	3.88	3.88		
45.0	4.05	4.05	3.99	4.05	4.05	4.05	3.99	4.05	3.99		
90.0	4.11	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05		
135.0	4.05	4.05	4.05	3.99	3.99	3.99	3.99	3.99	3.99		
180.0	3.94	3.94	3.94	3.94	3.88	3.94	3.94	3.88	3.88		
225.0	4.05	4.05	3.99	4.05	3.99	3.99	3.99	3.99	3.99		
270.0	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05		
315.0	3.99	3.99	3.99	3.99	3.94	3.94	3.94	3.94	3.94		
360.0	3.94	3.94	3.94	3.94	3.88	3.88	3.88	3.88	3.88		
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	3.94	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88		
45.0	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.94	3.94		
90.0	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05		
135.0	3.99	3.99	3.94	3.99	3.94	3.94	3.94	3.94	3.99		
180.0	3.94	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88		
225.0	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.99	3.94		
270.0	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05	4.05		
315.0	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94		
360.0	3.94	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88		
45.0	3.99	3.94	3.99	3.99	3.94	3.94	3.94	3.94	3.99		
90.0	4.05	4.05	4.11	4.11	4.05	3.99	3.99	3.94	3.94		
135.0	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94		
180.0	3.88	3.88	3.83	3.88	3.83	3.83	3.83	3.88	3.88		
225.0	3.94	3.99	3.94	3.99	3.99	3.94	3.99	3.94	3.94		
270.0	4.05	4.05	4.05	4.11	4.11	4.05	3.94	3.99	3.99		
315.0	3.94	3.94	3.94	3.94	3.88	3.88	3.94	3.94	3.94		
360.0	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88	3.88		

Intensity data(cd)

Appendix Page: 19 Total:19

C/ γ (°)	90.0
0.0	3.88
45.0	3.94
90.0	3.94
135.0	3.94
180.0	3.88
225.0	3.94
270.0	3.99
315.0	3.94
360.0	3.88