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Nata

Client:

LumCAT: 3-2328-M

Luminaire: 92.70.131.00

Report No: GC2019091909

Test No: NATA07

LampCAT: OSRAM OPTO SOLERIQ S13

Lamp flux(lm): 1204.0

Number of Lamps: 1

Length(mm): 78

Phm Type: C

Voltage(V): 220.5000

Current(A): 0.0720

Power (W): 14.6500

PF: 0.9220

Ballast type: AC

Width(mm): 78

Height(mm): 0

Photometric Results

Lumens(lm): 1041.70, Efficiency(%): 86.52% , Luminous Efficacy(lm/W): 71.11

Central intensity(cd): 1319.873, Maximum intensity(cd): 1319.873

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=57.2

[C90/270]Total=57.2

Field angle(10%Imax): [C0/180]Total=77.4

[C90/270]Total=77.4

Maximum s/h(1/2): C0_180=0.89 C90_270=0.89

Maximum s/h(1/4): C0_180=0.86 C90_270=0.86

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 86.52%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 99.609%

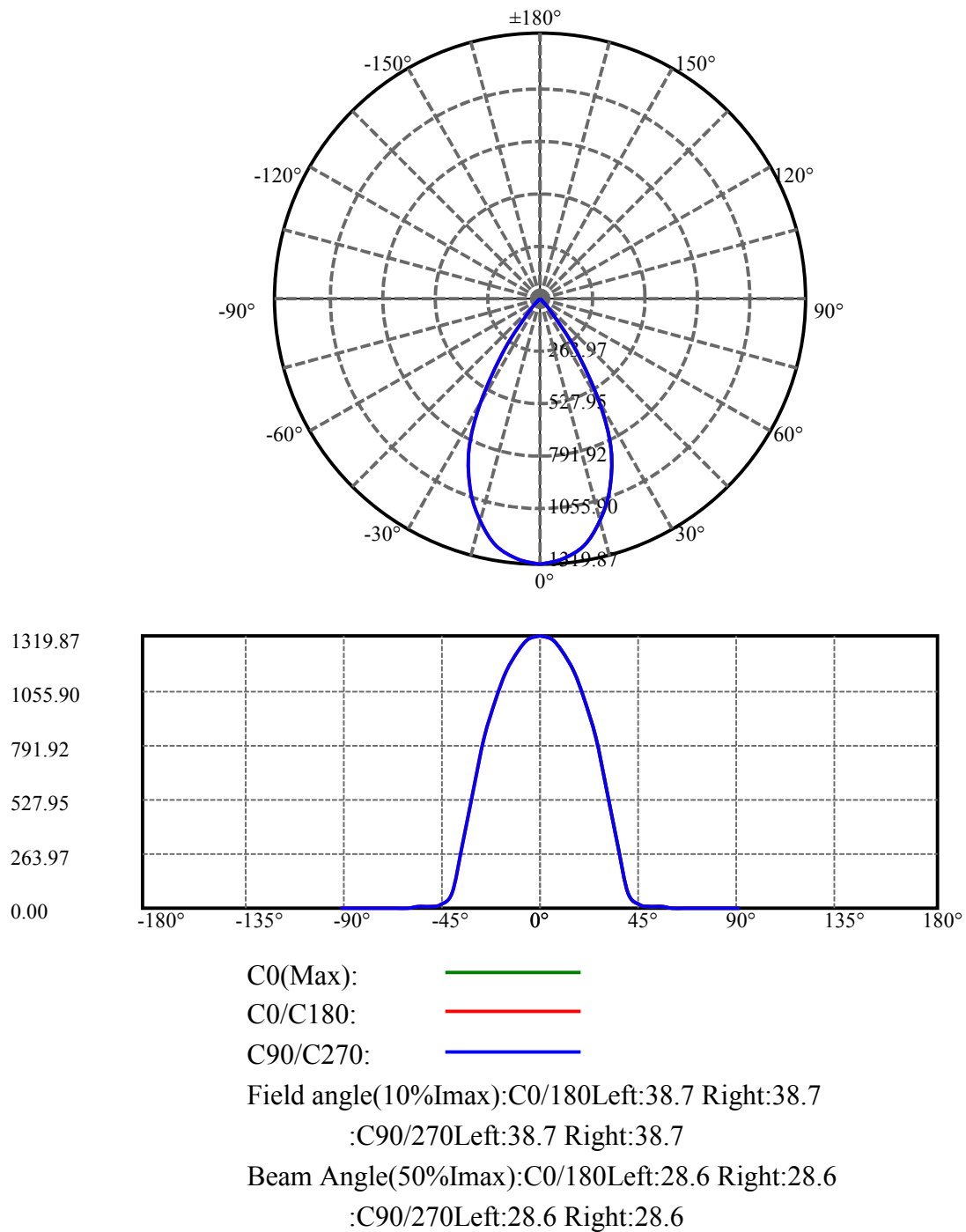
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1319.874	0.000	0	.000%	.000%
5.0	1301.486	31.338	31.338	2.603%	3.008%
10.0	1242.728	91.015	122.352	7.559%	11.745%
15.0	1150.849	141.985	264.338	11.793%	25.376%
20.0	1016.019	178.580	442.918	14.832%	42.519%
25.0	827.401	193.341	636.258	16.058%	61.079%
30.0	593.574	179.826	816.084	14.936%	78.341%
35.0	303.571	132.111	948.195	10.973%	91.024%
40.0	74.153	63.020	1011.215	5.234%	97.073%
45.0	17.465	16.964	1028.179	1.409%	98.702%
50.0	8.387	5.224	1033.403	.434%	99.203%
55.0	4.258	2.749	1036.152	.228%	99.467%
60.0	2.117	1.473	1037.626	.122%	99.609%
65.0	1.322	0.836	1038.462	.069%	99.689%
70.0	1.218	0.643	1039.105	.053%	99.751%
75.0	1.241	0.643	1039.748	.053%	99.812%
80.0	1.172	0.646	1040.394	.054%	99.874%
85.0	1.183	0.640	1041.033	.053%	99.936%
90.0	1.259	0.669	1041.702	.056%	100.000%

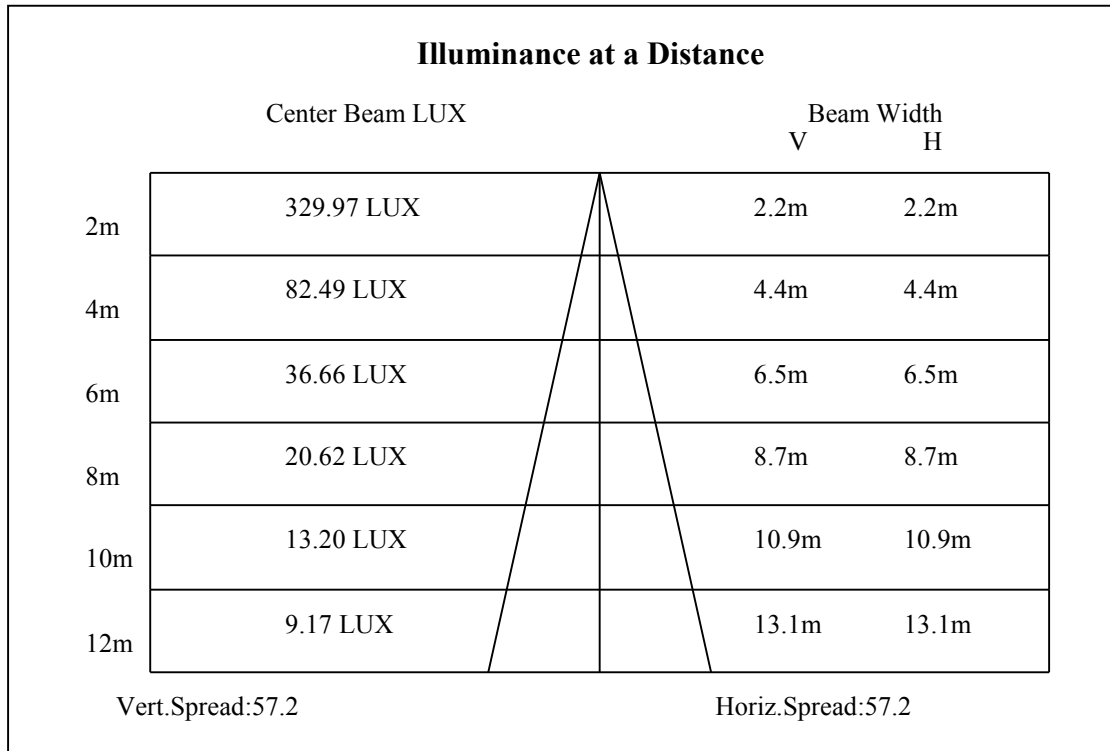
ZONAL LUMEN SUMMARY

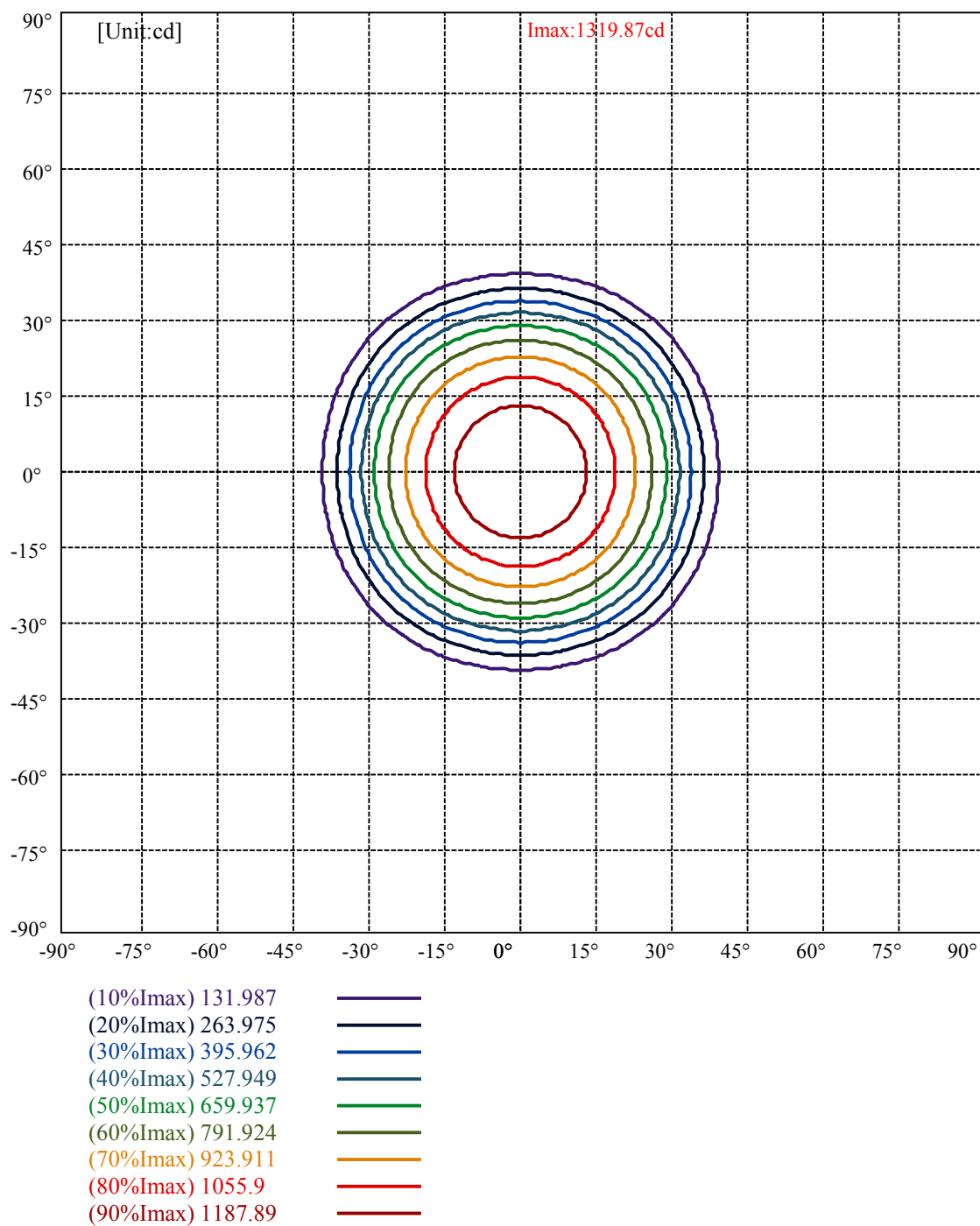
Zone	Lumens	%Lamp	%Fixt
0-30	816.08	67.78%	78.34%
0-40	1011.22	83.99%	97.07%
0-60	1037.63	86.18%	99.61%
0-90	1041.03	86.46%	99.94%
0-120	1041.03	86.46%	99.94%
0-180	1041.70	86.52%	100.00%
60-90	4.88	0.41%	0.47%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-30.65	833.36	69.22%	80.00%

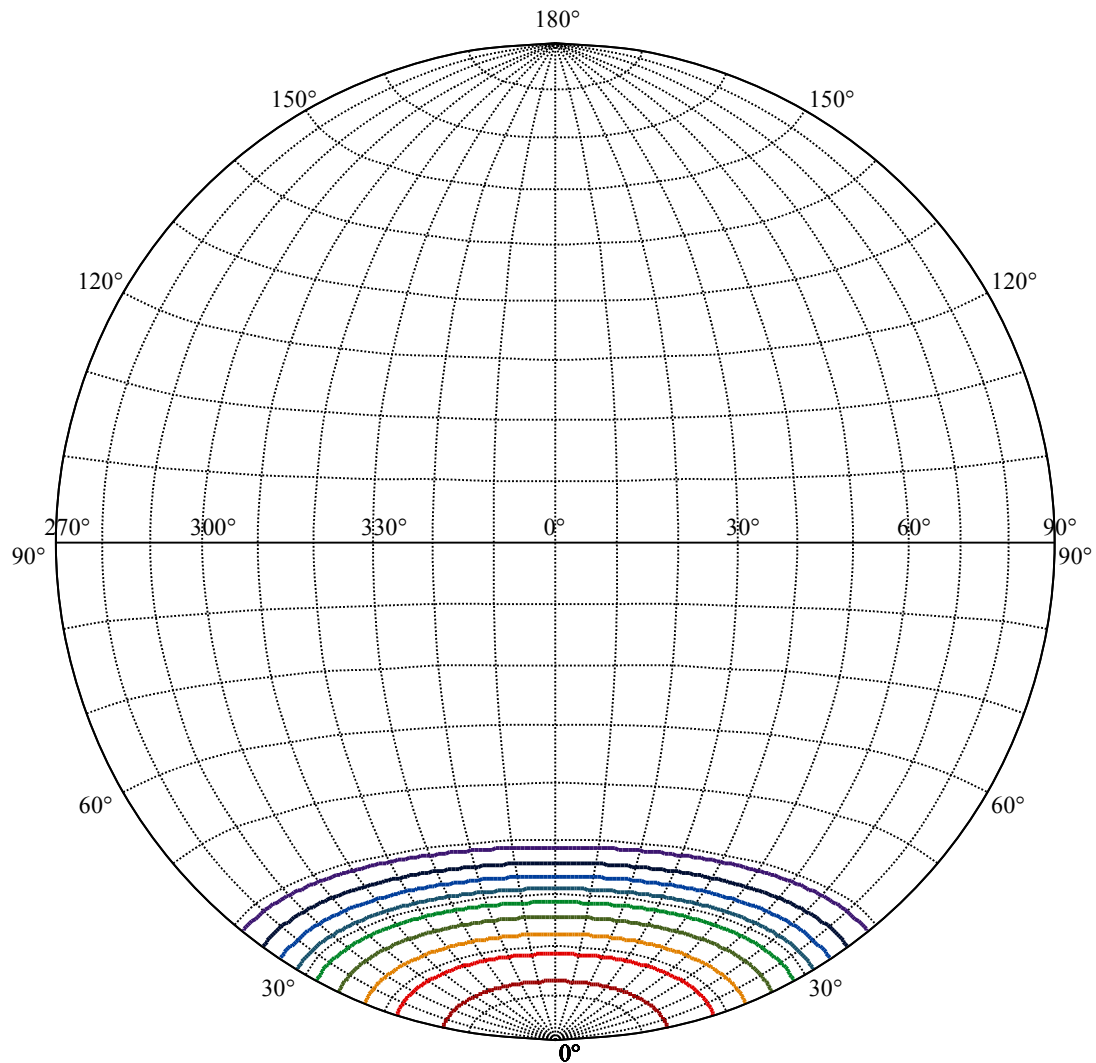
ZONAL LUMEN SUMMARY

0-10	122.35
10-20	320.57
20-30	373.17
30-40	195.13
40-50	22.19
50-60	4.22
60-70	1.48
70-80	1.29
80-90	0.64
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









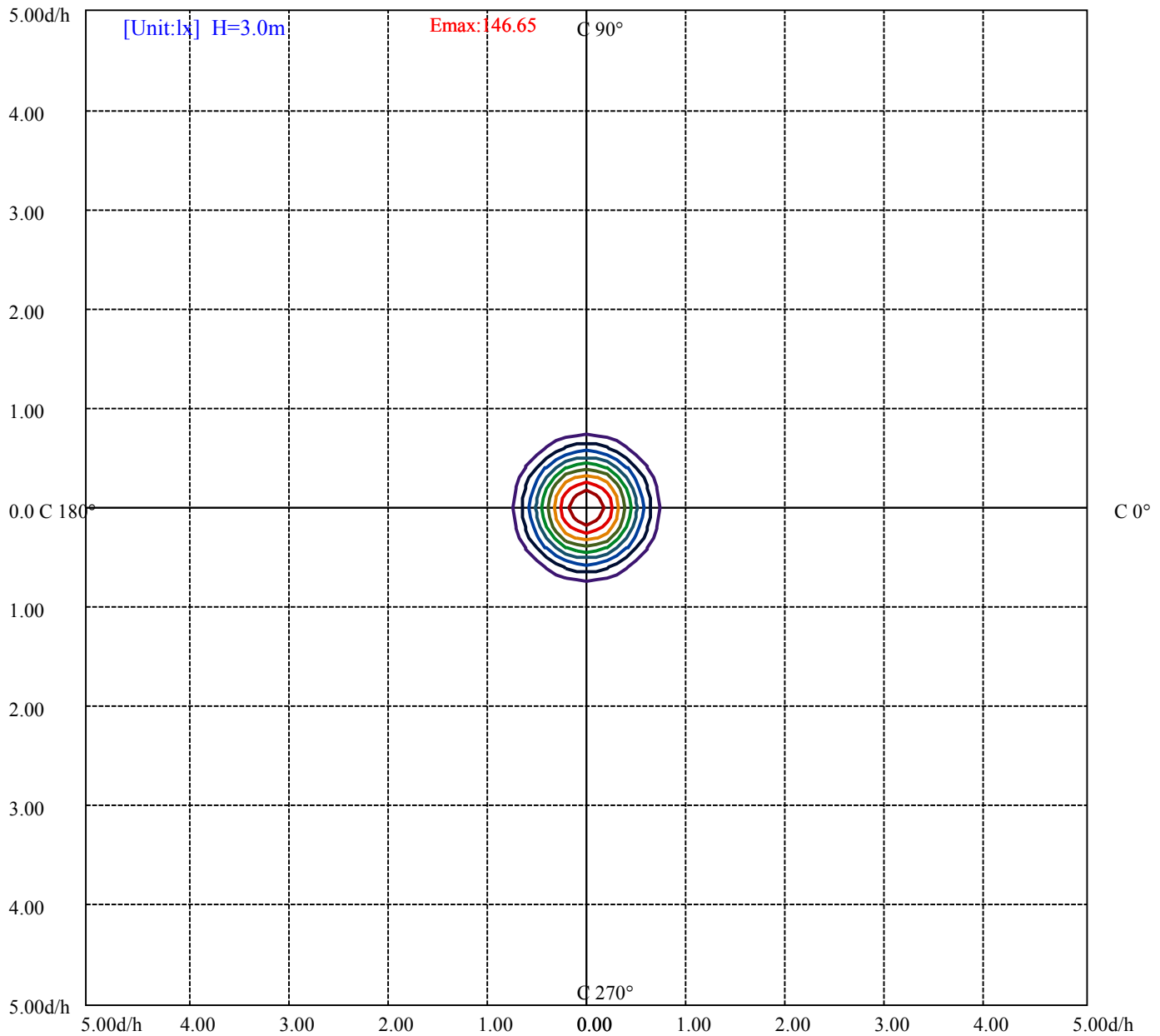
House

[Unit:cd]

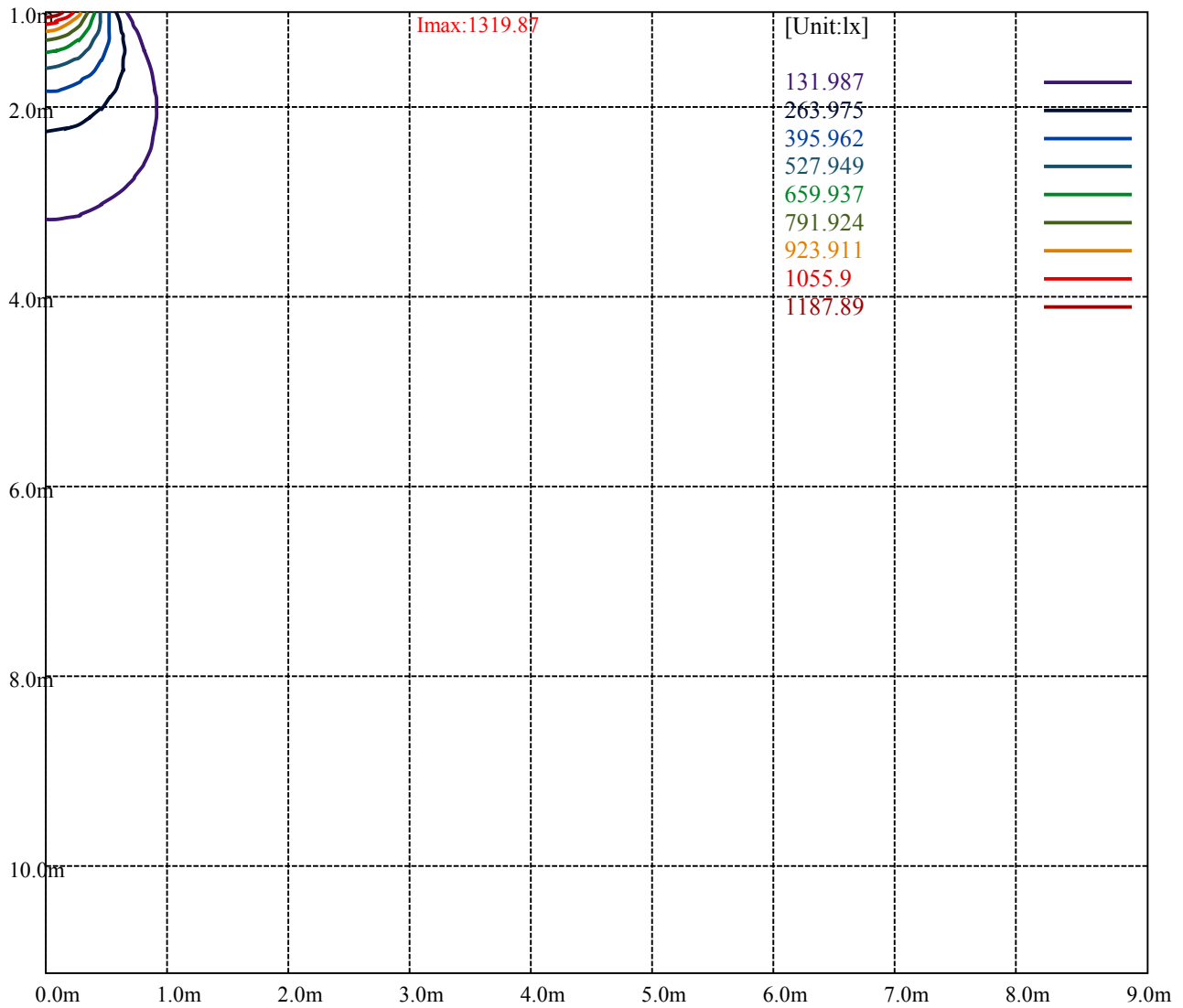
Road

Imax:1319.87

(10%Imax)	131.987	—
(20%Imax)	263.975	—
(30%Imax)	395.962	—
(40%Imax)	527.949	—
(50%Imax)	659.937	—
(60%Imax)	791.924	—
(70%Imax)	923.911	—
(80%Imax)	1055.9	—
(90%Imax)	1187.89	—



(10%Emax)	14.66522	—
(20%Emax)	29.33056	—
(30%Emax)	43.99578	—
(40%Emax)	58.661	—
(50%Emax)	73.32622	—
(60%Emax)	87.99155	—
(70%Emax)	102.6568	—
(80%Emax)	117.3222	—
(90%Emax)	131.9878	—



Luminance Table

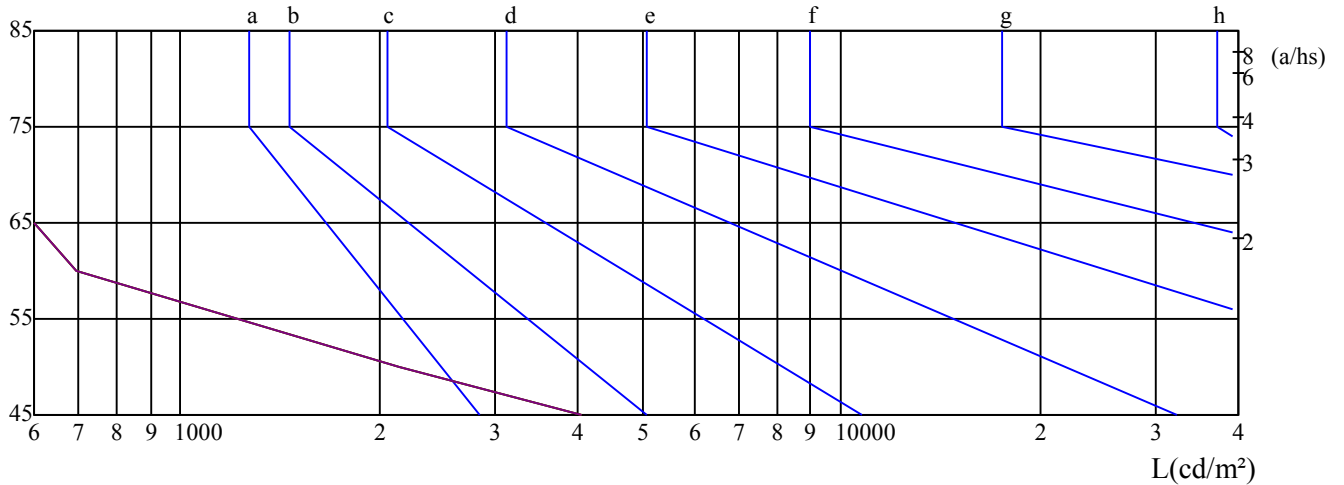
γ	45	50	55	60	65	70	75	80	85
C0	4060	2145	1220	696	514	585	788	1109	2232
C45	4060	2145	1220	696	514	585	788	1109	2232
C90	4060	2145	1220	696	514	585	788	1109	2232

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
514	514	514	788	788	788	2232	2232	2232

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

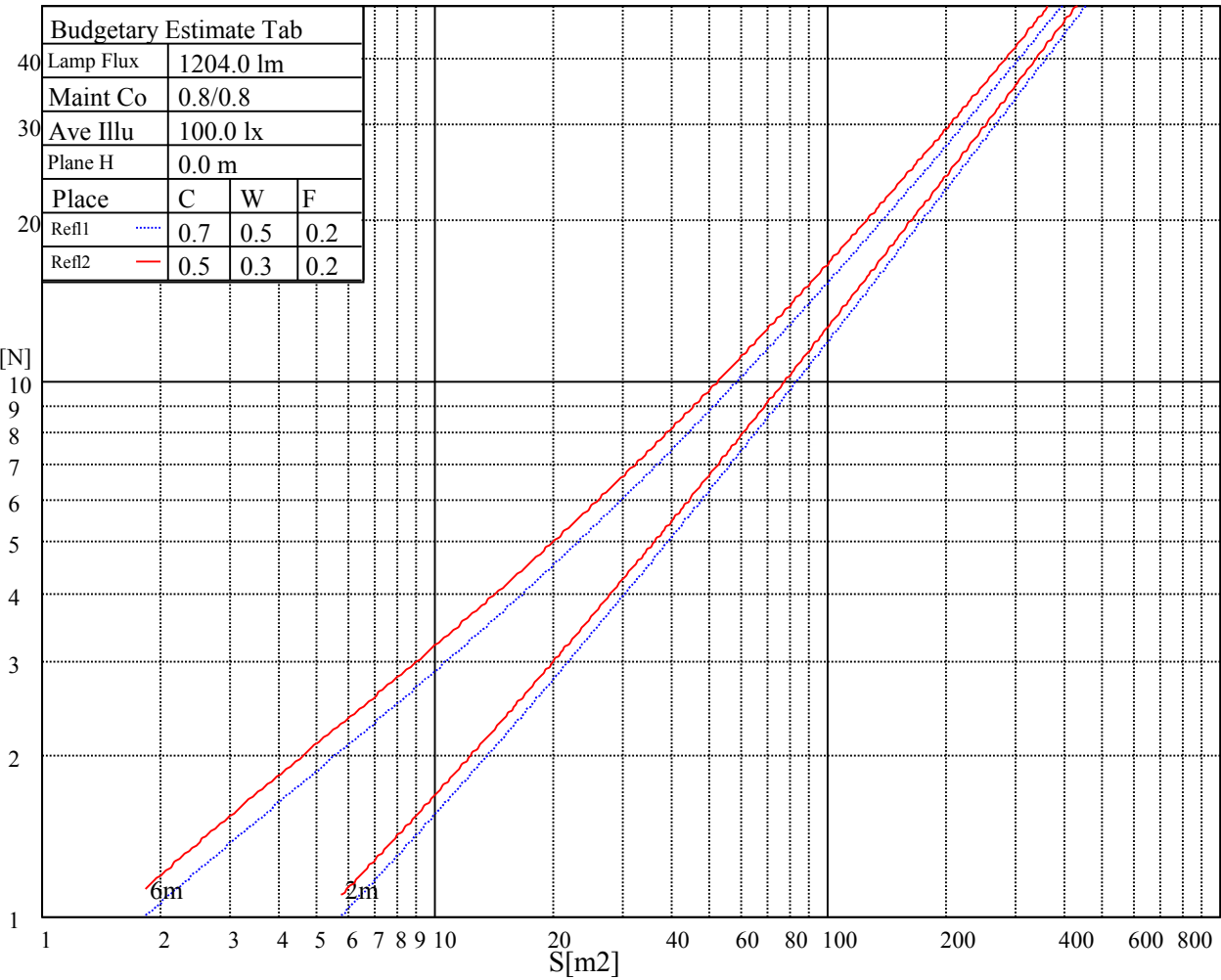
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

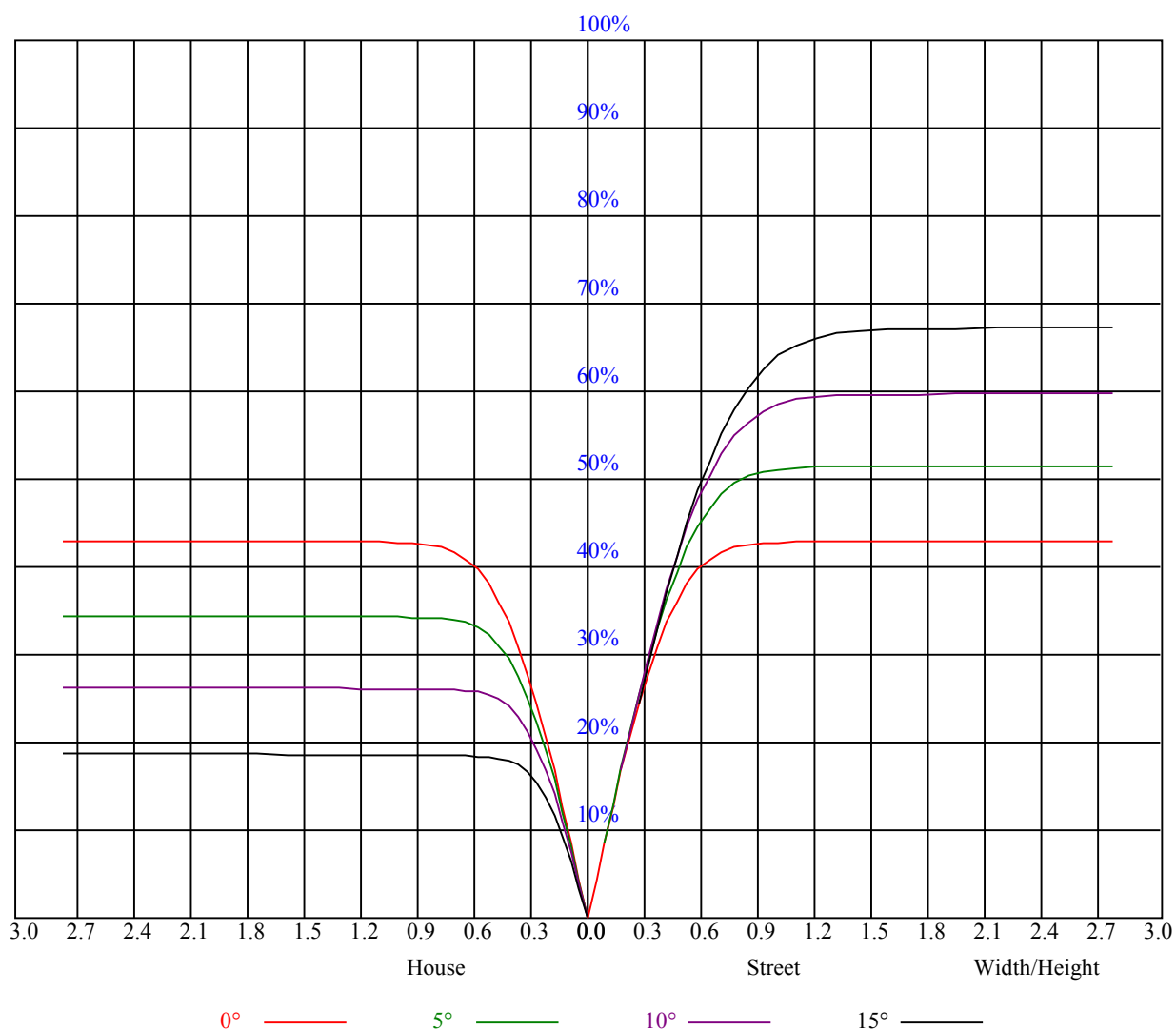
C0 ———

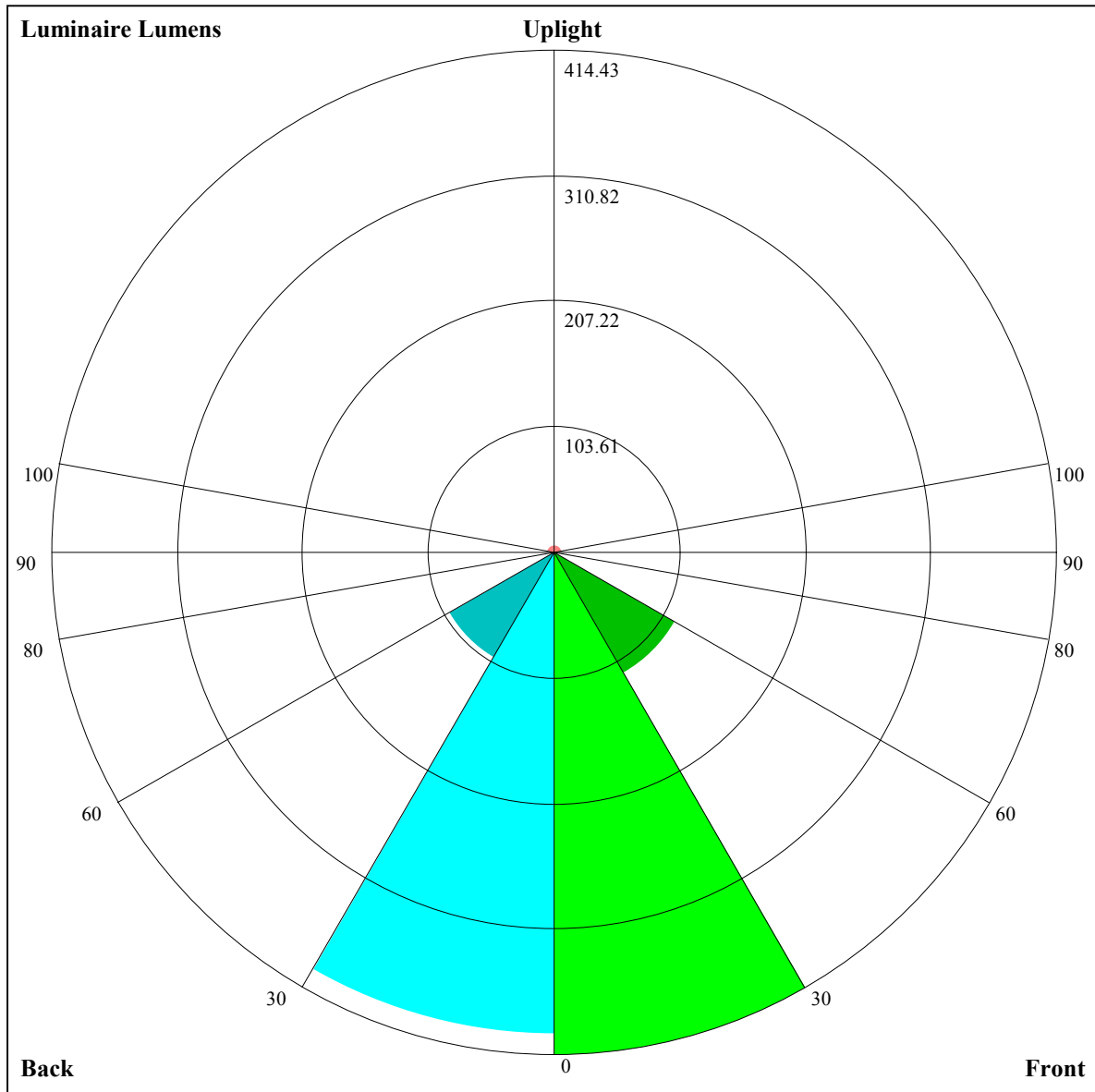
C45 ———

C90 ———



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	1.03	1.03	1.03	1.01	1.01	1.01	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.87
1	0.96	0.94	0.92	0.94	0.92	0.91	0.91	0.89	0.88	0.88	0.86	0.85	0.85	0.84	0.83	0.81
2	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.83	0.81	0.83	0.81	0.79	0.81	0.79	0.78	0.76
3	0.84	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.75	0.79	0.76	0.74	0.77	0.75	0.73	0.71
4	0.79	0.75	0.71	0.78	0.74	0.71	0.76	0.73	0.70	0.75	0.72	0.69	0.73	0.70	0.68	0.67
5	0.74	0.70	0.66	0.74	0.69	0.66	0.72	0.68	0.65	0.71	0.67	0.65	0.69	0.66	0.64	0.63
6	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.59
7	0.66	0.61	0.58	0.66	0.61	0.58	0.65	0.60	0.57	0.64	0.60	0.57	0.63	0.59	0.57	0.56
8	0.63	0.58	0.54	0.62	0.58	0.54	0.61	0.57	0.54	0.60	0.57	0.54	0.60	0.56	0.54	0.52
9	0.59	0.55	0.51	0.59	0.54	0.51	0.58	0.54	0.51	0.57	0.54	0.51	0.57	0.53	0.51	0.50
10	0.56	0.52	0.48	0.56	0.51	0.48	0.55	0.51	0.48	0.55	0.51	0.48	0.54	0.51	0.48	0.47





Luminaire Lumens:

FL=414.43,FM=115.64,FH=1.41,FVH=0.66

BL=398.15,BM=99.99,BH=1.36,BVH=0.66

UL=1.37,UH=6.54

BUG Rating:B1-U1-G0

Intensity data(cd)										Appendix Page: 15 Total:15	
C/ γ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	1325.79	1332.75	1286.35	1204.21	1085.42	825.28	577.63	328.72	49.47		
45.0	1310.48	1335.53	1317.44	1250.62	1155.49	979.16	725.79	499.35	233.92		
90.0	1323.93	1313.73	1254.79	1167.09	1014.89	829.74	581.90	279.49	37.49		
135.0	1319.29	1306.30	1246.90	1151.31	1044.59	876.14	654.80	359.67	122.83		
180.0	1325.79	1290.06	1224.63	1121.62	1013.96	803.29	591.69	309.09	45.29		
225.0	1310.48	1247.83	1154.10	1041.34	904.35	694.38	490.76	110.53	29.00		
270.0	1323.93	1291.45	1225.56	1131.82	1007.46	830.20	579.62	300.28	42.09		
315.0	1319.29	1294.24	1232.06	1138.78	901.99	781.01	546.40	241.44	33.13		
360.0	1325.79	1332.75	1286.35	1204.21	1085.42	825.28	577.63	328.72	49.47		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	16.94	8.45	4.13	2.04	1.30	1.16	1.16	1.16	1.16		
45.0	27.61	12.39	6.68	3.02	1.62	1.25	1.16	1.16	1.21		
90.0	16.10	7.24	3.94	2.04	1.30	1.25	1.21	1.25	1.25		
135.0	20.05	8.35	4.55	2.37	1.35	1.25	1.25	1.16	1.16		
180.0	16.80	8.35	4.32	2.00	1.25	1.25	1.21	1.16	1.11		
225.0	11.55	6.22	3.11	1.53	1.21	1.16	1.21	1.11	1.16		
270.0	17.12	8.86	4.04	2.18	1.30	1.25	1.21	1.21	1.25		
315.0	13.55	7.24	3.29	1.76	1.25	1.16	1.53	1.16	1.16		
360.0	16.94	8.45	4.13	2.04	1.30	1.16	1.16	1.16	1.16		
C/ γ (°)	90.0										
0.0	1.30										
45.0	1.16										
90.0	1.30										
135.0	1.30										
180.0	1.21										
225.0	1.21										
270.0	1.35										
315.0	1.25										
360.0	1.30										