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Nata

Client:

LumCAT: 2-1120-A3

Luminaire: TE2213407+92.76.365.00

Report No: nata-0100

Test No: 2017050604

LampCAT: V18B

Lamp flux(lm): 2960.0

Number of Lamps: 1

Length(mm): 70

Phm Type: C

Voltage(V): 34.0000

Current(A): 0.6000

Power (W): 20.4000

PF: 0.0000

Ballast type:

Width(mm): 70

Height(mm): 0

Photometric Results

Lumens(lm): 2718.46, Efficiency(%): 91.84% , Luminous Efficacy(lm/W): 133.26

Central intensity(cd): 11358.140, Maximum intensity(cd): 11358.140

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=21.0

[C90/270]Total=21.0

Field angle(10%Imax): [C0/180]Total=52.2

[C90/270]Total=52.2

Maximum s/h(1/2): C0_180=0.36 C90_270=0.36

Maximum s/h(1/4): C0_180=0.35 C90_270=0.35

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 91.93%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.609%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11358.135	2.717	2.717	.092%	.100%
1.0	11342.995	21.709	24.426	.733%	.899%
2.0	11281.056	43.174	67.6	1.459%	2.487%
3.0	11086.570	63.628	131.228	2.150%	4.827%
4.0	10853.819	83.027	214.255	2.805%	7.881%
5.0	10490.034	100.259	314.514	3.387%	11.570%
6.0	9917.998	113.687	428.201	3.841%	15.752%
7.0	9132.756	122.053	550.254	4.123%	20.241%
8.0	8258.322	126.037	676.291	4.258%	24.878%
9.0	7234.549	124.107	800.398	4.193%	29.443%
10.0	6158.884	117.280	917.678	3.962%	33.757%
11.0	5219.209	109.208	1026.886	3.689%	37.775%
12.0	4388.821	100.064	1126.95	3.381%	41.456%
13.0	3652.579	90.103	1217.053	3.044%	44.770%
14.0	3102.841	82.316	1299.37	2.781%	47.798%
15.0	2729.283	77.463	1376.833	2.617%	50.648%
16.0	2324.619	70.265	1447.099	2.374%	53.232%
17.0	2061.036	66.080	1513.179	2.232%	55.663%
18.0	1840.535	62.370	1575.549	2.107%	57.958%
19.0	1670.136	59.627	1635.177	2.014%	60.151%
20.0	1530.017	57.385	1692.562	1.939%	62.262%
21.0	1420.455	55.822	1748.384	1.886%	64.315%
22.0	1336.632	54.908	1803.293	1.855%	66.335%
23.0	1270.426	54.435	1857.728	1.839%	68.338%
24.0	1218.260	54.338	1912.066	1.836%	70.336%
25.0	1173.390	54.380	1966.446	1.837%	72.337%
26.0	1139.667	54.786	2021.233	1.851%	74.352%
27.0	1096.338	54.581	2075.814	1.844%	76.360%
28.0	1079.092	55.555	2131.368	1.877%	78.404%
29.0	1052.210	55.940	2187.309	1.890%	80.461%
30.0	1025.673	56.238	2243.547	1.900%	82.530%
31.0	981.724	55.447	2298.994	1.873%	84.570%
32.0	921.190	53.532	2352.526	1.809%	86.539%
33.0	853.126	50.953	2403.479	1.721%	88.413%
34.0	769.317	47.176	2450.655	1.594%	90.149%
35.0	688.012	43.275	2493.93	1.462%	91.741%
36.0	597.431	38.509	2532.439	1.301%	93.157%
37.0	509.038	33.594	2566.033	1.135%	94.393%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	418.442	28.251	2594.284	.954%	95.432%
39.0	333.188	22.994	2617.278	.777%	96.278%
40.0	263.362	18.564	2635.842	.627%	96.961%
41.0	182.058	13.098	2648.94	.442%	97.443%
42.0	118.633	8.705	2657.645	.294%	97.763%
43.0	65.421	4.893	2662.538	.165%	97.943%
44.0	34.864	2.656	2665.193	.090%	98.041%
45.0	22.587	1.751	2666.945	.059%	98.105%
46.0	18.403	1.452	2668.396	.049%	98.159%
47.0	15.361	1.232	2669.628	.042%	98.204%
48.0	13.475	1.098	2670.727	.037%	98.244%
49.0	12.622	1.045	2671.771	.035%	98.283%
50.0	12.346	1.037	2672.808	.035%	98.321%
51.0	12.167	1.037	2673.845	.035%	98.359%
52.0	11.933	1.031	2674.876	.035%	98.397%
53.0	11.713	1.026	2675.902	.035%	98.435%
54.0	11.617	1.031	2676.933	.035%	98.473%
55.0	11.493	1.032	2677.965	.035%	98.511%
56.0	11.383	1.035	2679	.035%	98.549%
57.0	11.314	1.041	2680.041	.035%	98.587%
58.0	11.259	1.047	2681.088	.035%	98.625%
59.0	11.259	1.058	2682.146	.036%	98.664%
60.0	11.218	1.065	2683.211	.036%	98.704%
61.0	11.218	1.076	2684.287	.036%	98.743%
62.0	11.232	1.087	2685.375	.037%	98.783%
63.0	11.355	1.110	2686.484	.037%	98.824%
64.0	11.603	1.144	2687.628	.039%	98.866%
65.0	11.810	1.174	2688.802	.040%	98.909%
66.0	11.933	1.195	2689.997	.040%	98.953%
67.0	12.044	1.216	2691.213	.041%	98.998%
68.0	12.030	1.223	2692.436	.041%	99.043%
69.0	12.071	1.236	2693.672	.042%	99.088%
70.0	12.085	1.245	2694.917	.042%	99.134%
71.0	12.016	1.246	2696.163	.042%	99.180%
72.0	12.002	1.252	2697.415	.042%	99.226%
73.0	12.044	1.263	2698.678	.043%	99.272%
74.0	11.947	1.259	2699.937	.043%	99.319%
75.0	11.878	1.258	2701.195	.043%	99.365%

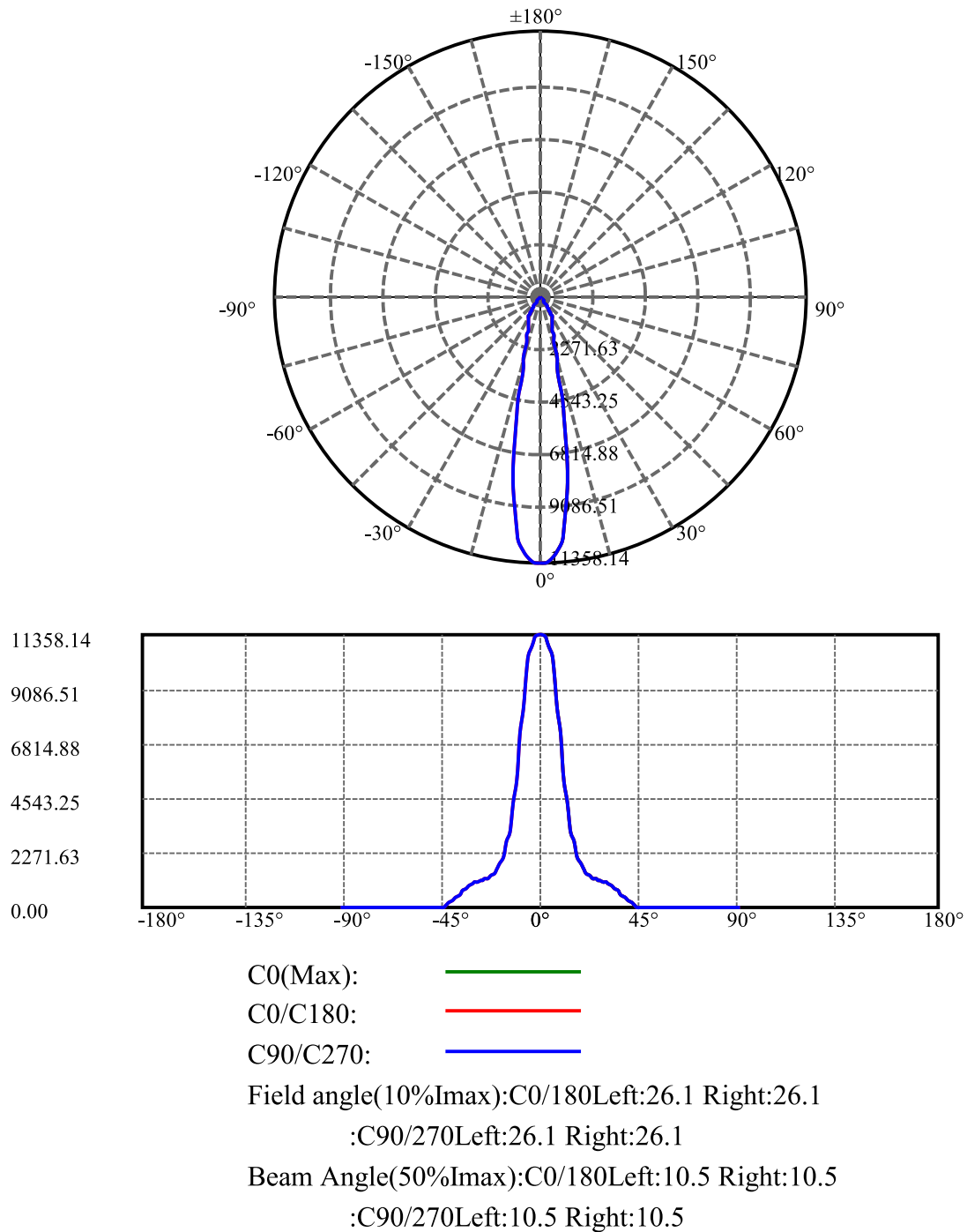
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	11.851	1.261	2702.456	.043%	99.411%
77.0	11.768	1.257	2703.714	.042%	99.458%
78.0	11.589	1.243	2704.957	.042%	99.503%
79.0	11.465	1.234	2706.191	.042%	99.549%
80.0	11.410	1.232	2707.424	.042%	99.594%
81.0	11.232	1.216	2708.64	.041%	99.639%
82.0	11.066	1.202	2709.842	.041%	99.683%
83.0	10.846	1.181	2711.022	.040%	99.727%
84.0	10.681	1.165	2712.187	.039%	99.769%
85.0	10.626	1.161	2713.348	.039%	99.812%
86.0	10.474	1.146	2714.494	.039%	99.854%
87.0	10.364	1.135	2715.629	.038%	99.896%
88.0	10.309	1.130	2716.759	.038%	99.938%
89.0	10.323	1.132	2717.891	.038%	99.979%
90.0	10.309	0.565	2718.456	.019%	100.000%

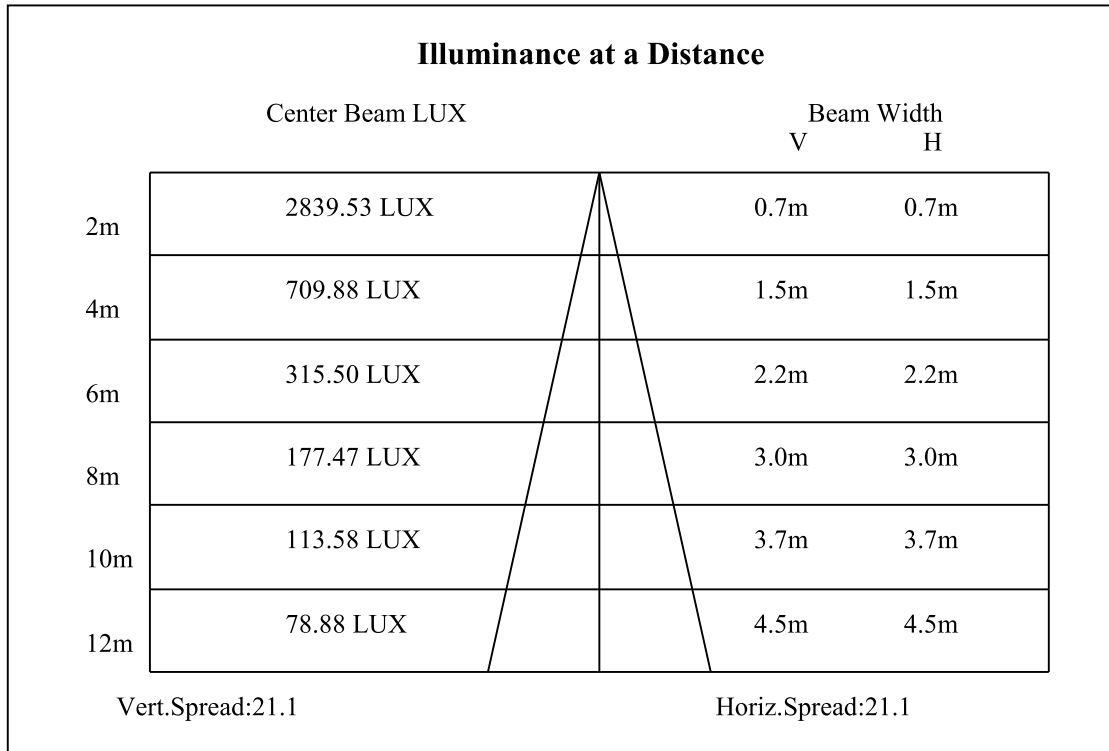
ZONAL LUMEN SUMMARY

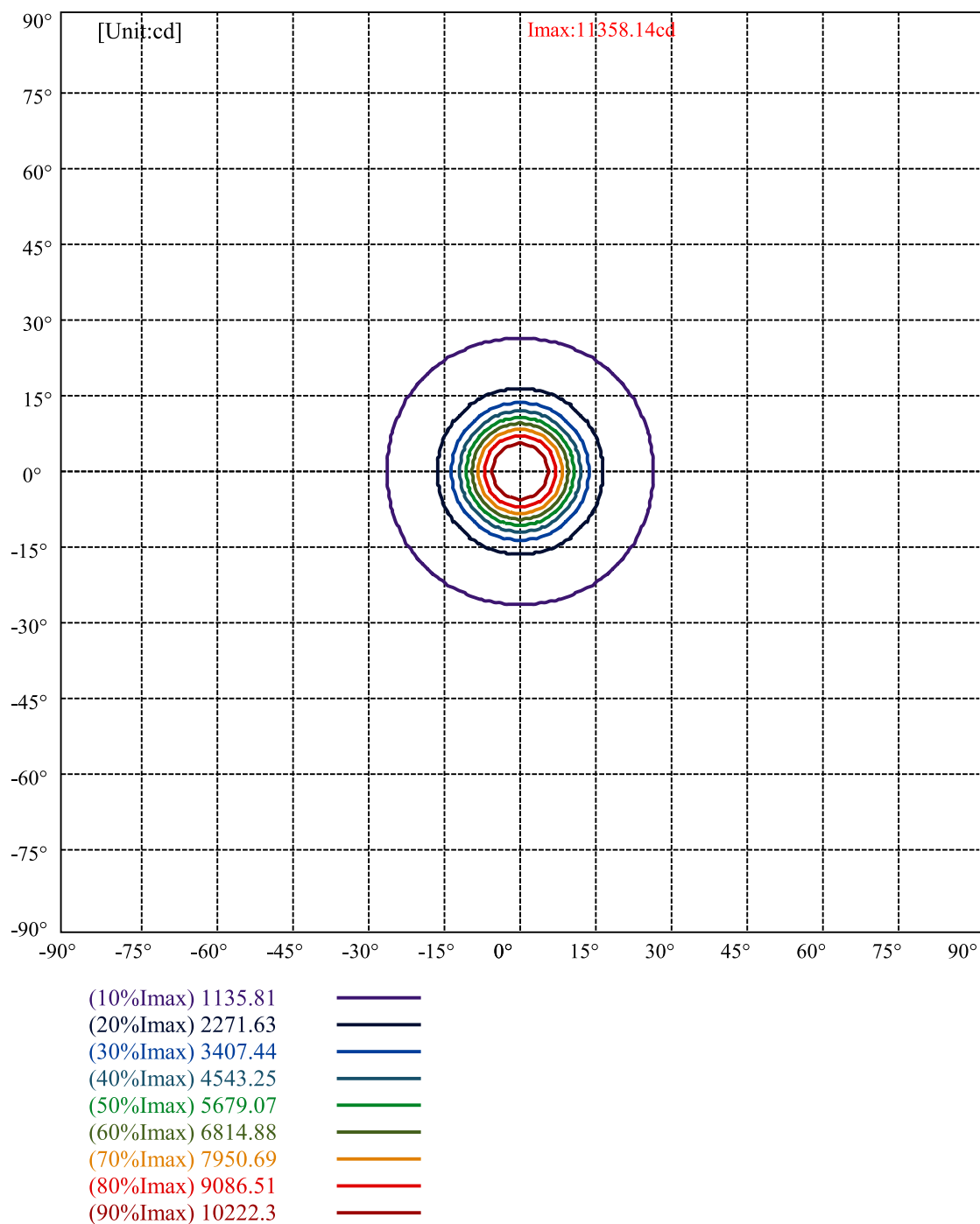
Zone	Lumens	%Lamp	%Fixt
0-30	2243.55	75.80%	82.53%
0-40	2635.84	89.05%	96.96%
0-60	2683.21	90.65%	98.70%
0-90	2717.89	91.82%	99.98%
0-120	2717.89	91.82%	99.98%
0-180	2718.46	91.84%	100.00%
60-90	35.74	1.21%	1.31%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.78	2174.77	73.47%	80.00%

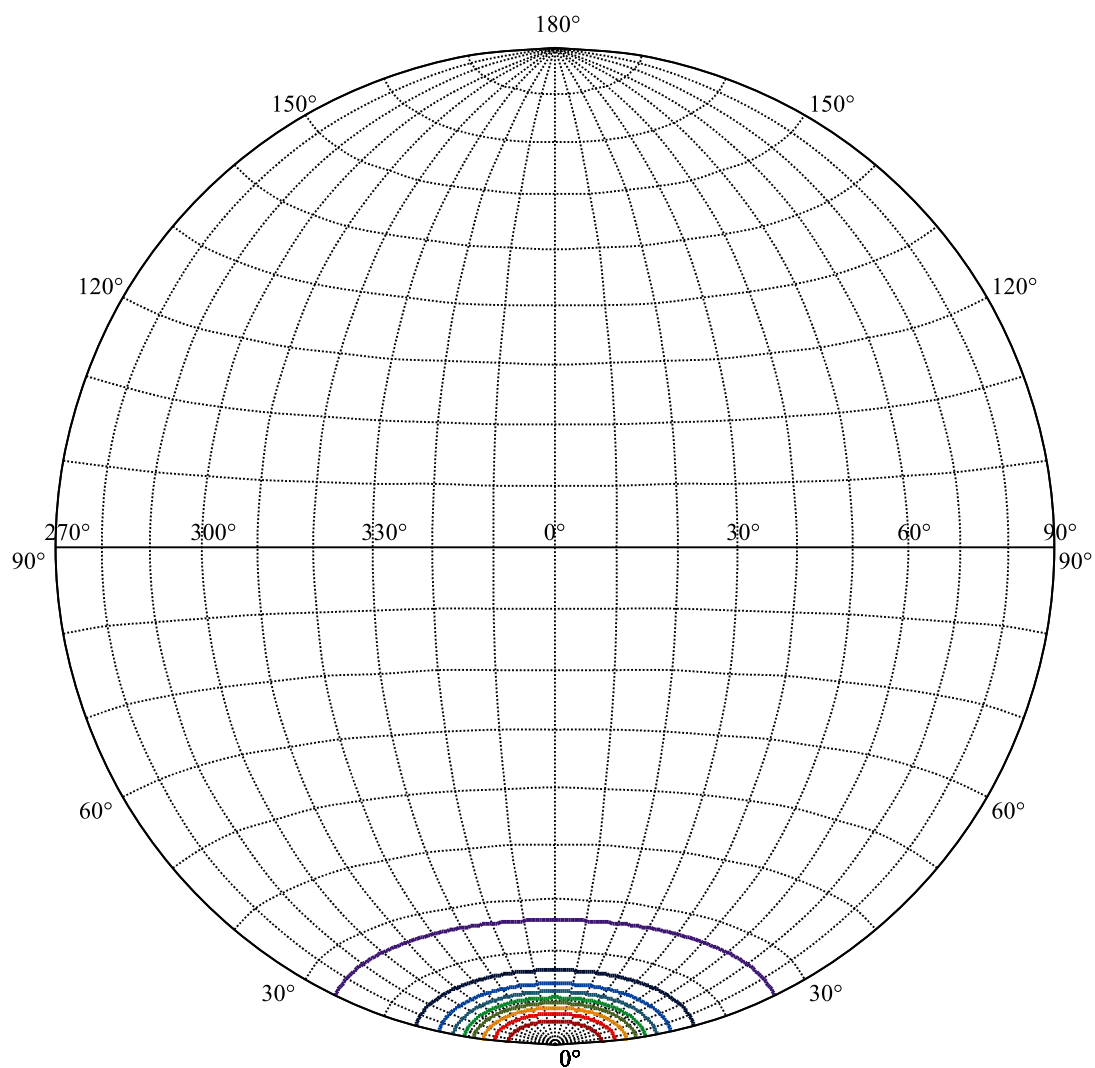
ZONAL LUMEN SUMMARY

0-10	917.68
10-20	774.88
20-30	550.98
30-40	392.29
40-50	36.97
50-60	10.40
60-70	11.71
70-80	12.51
80-90	10.47
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









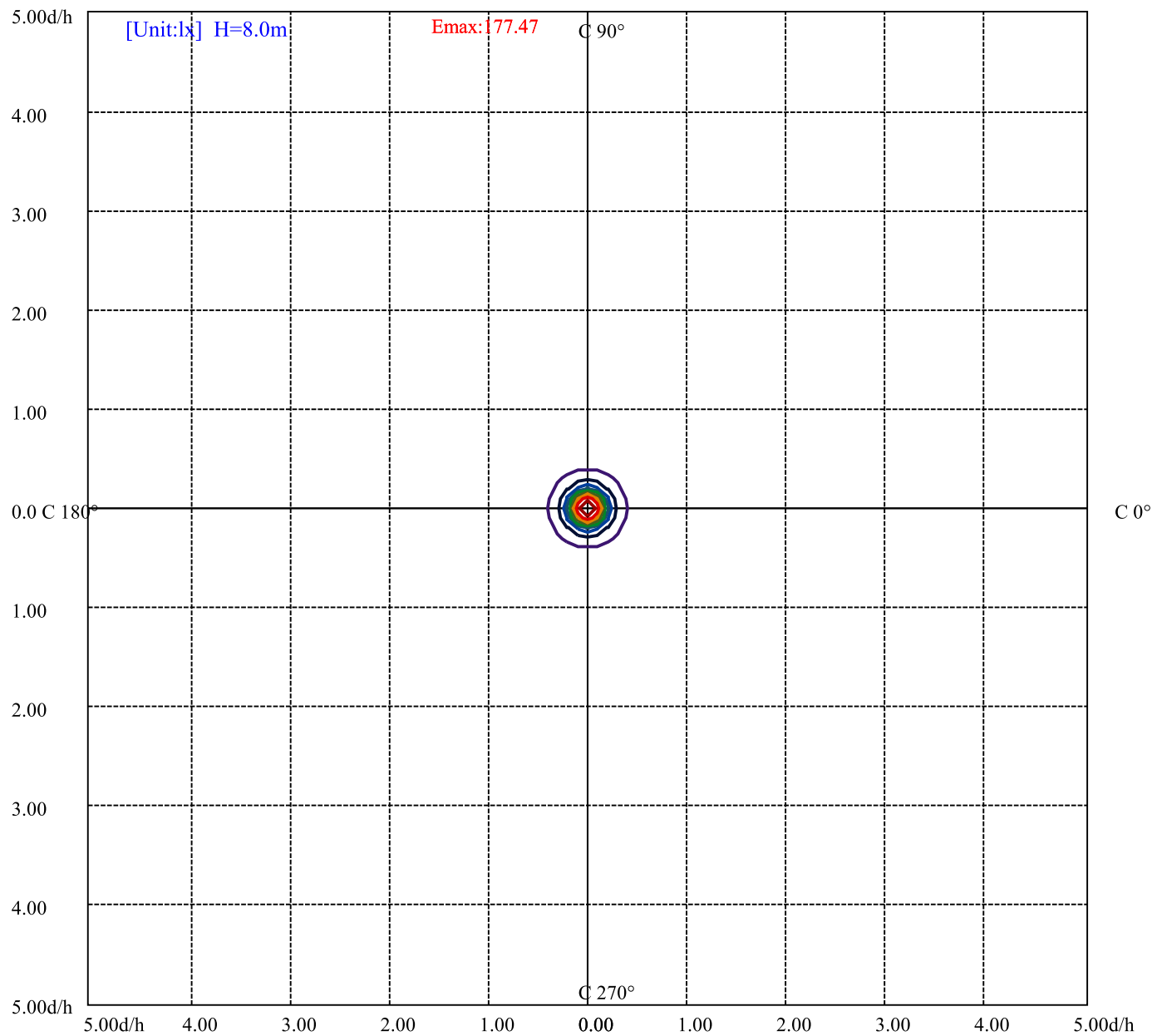
House

[Unit:cd]

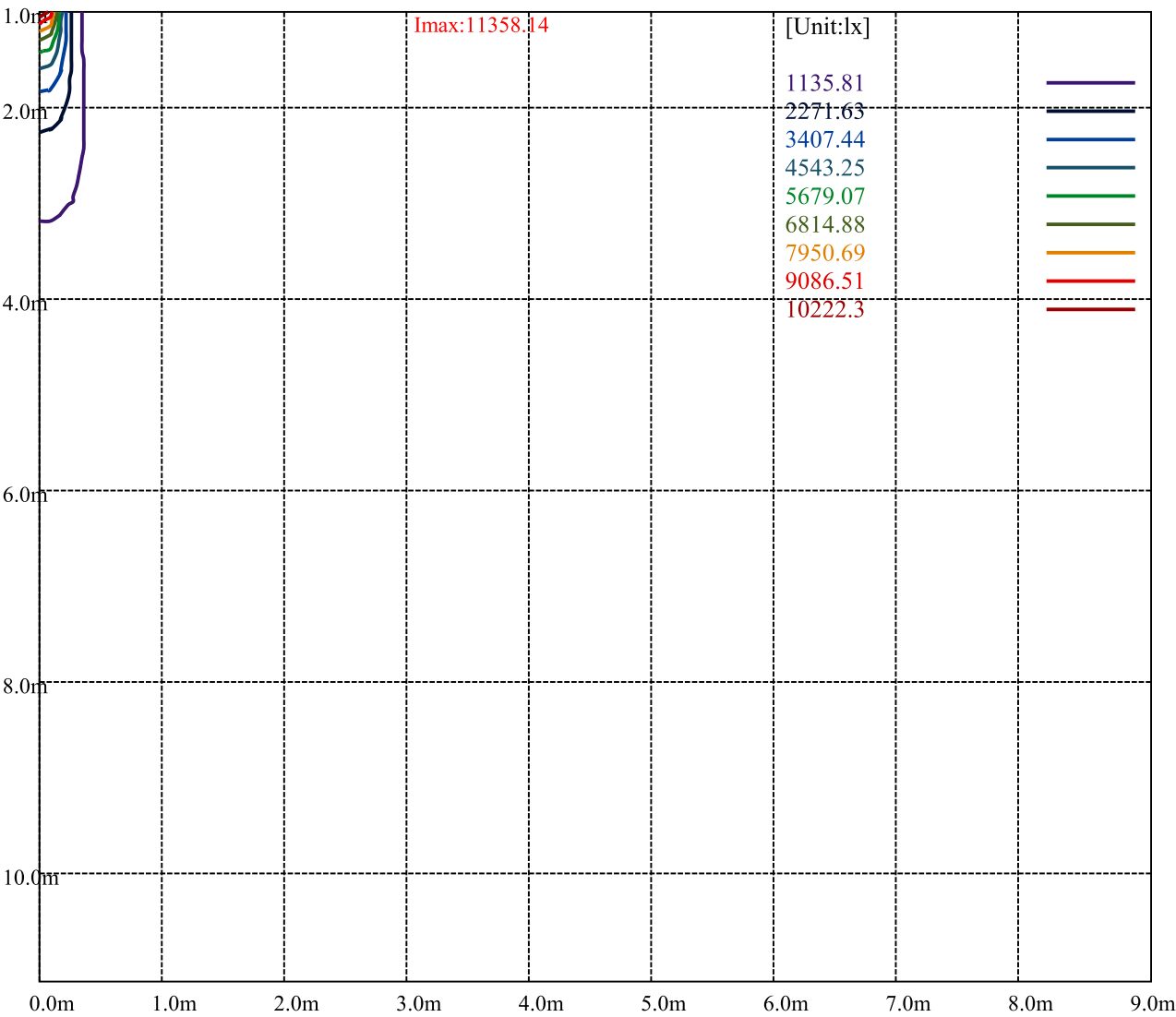
Road

Imax:11358.14

(10%Imax)	1135.81	—
(20%Imax)	2271.63	—
(30%Imax)	3407.44	—
(40%Imax)	4543.25	—
(50%Imax)	5679.07	—
(60%Imax)	6814.88	—
(70%Imax)	7950.69	—
(80%Imax)	9086.51	—
(90%Imax)	10222.3	—



(10%Emax)	17.74703	
(20%Emax)	35.49422	
(30%Emax)	53.24125	
(40%Emax)	70.98828	
(50%Emax)	88.73547	
(60%Emax)	106.4825	
(70%Emax)	124.2295	
(80%Emax)	141.9767	
(90%Emax)	159.7234	



Luminance Table

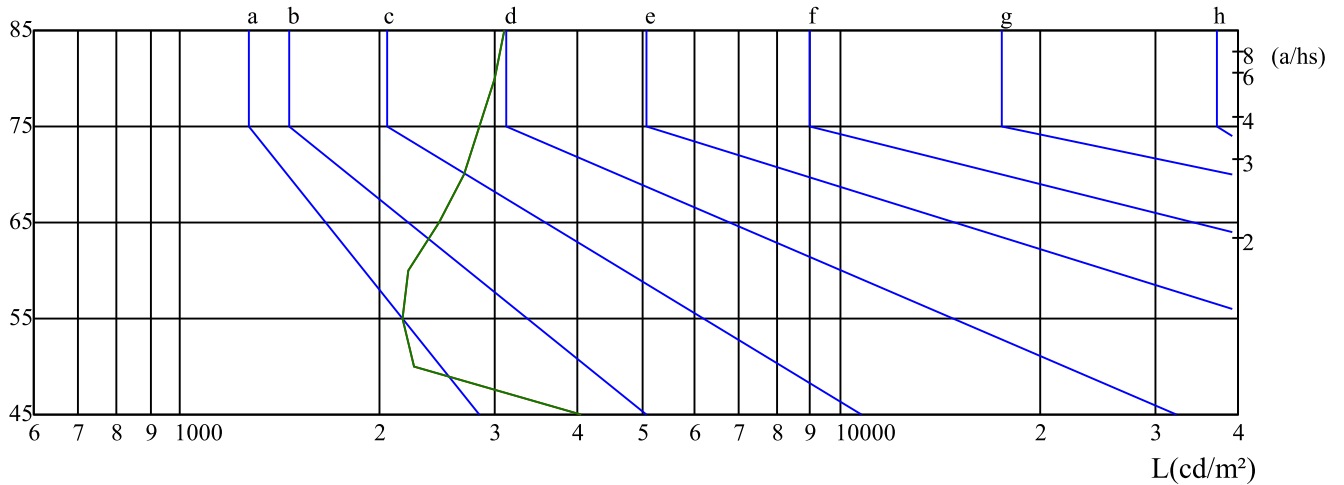
γ	45	50	55	60	65	70	75	80	85
C0	4038	2263	2178	2218	2461	2683	2845	2991	3102
C45	0	0	0	0	0	0	0	0	0
C90	4038	2263	2178	2218	2461	2683	2845	2991	3102

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5703	5703	0	9366	9366	0	24881	24881	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

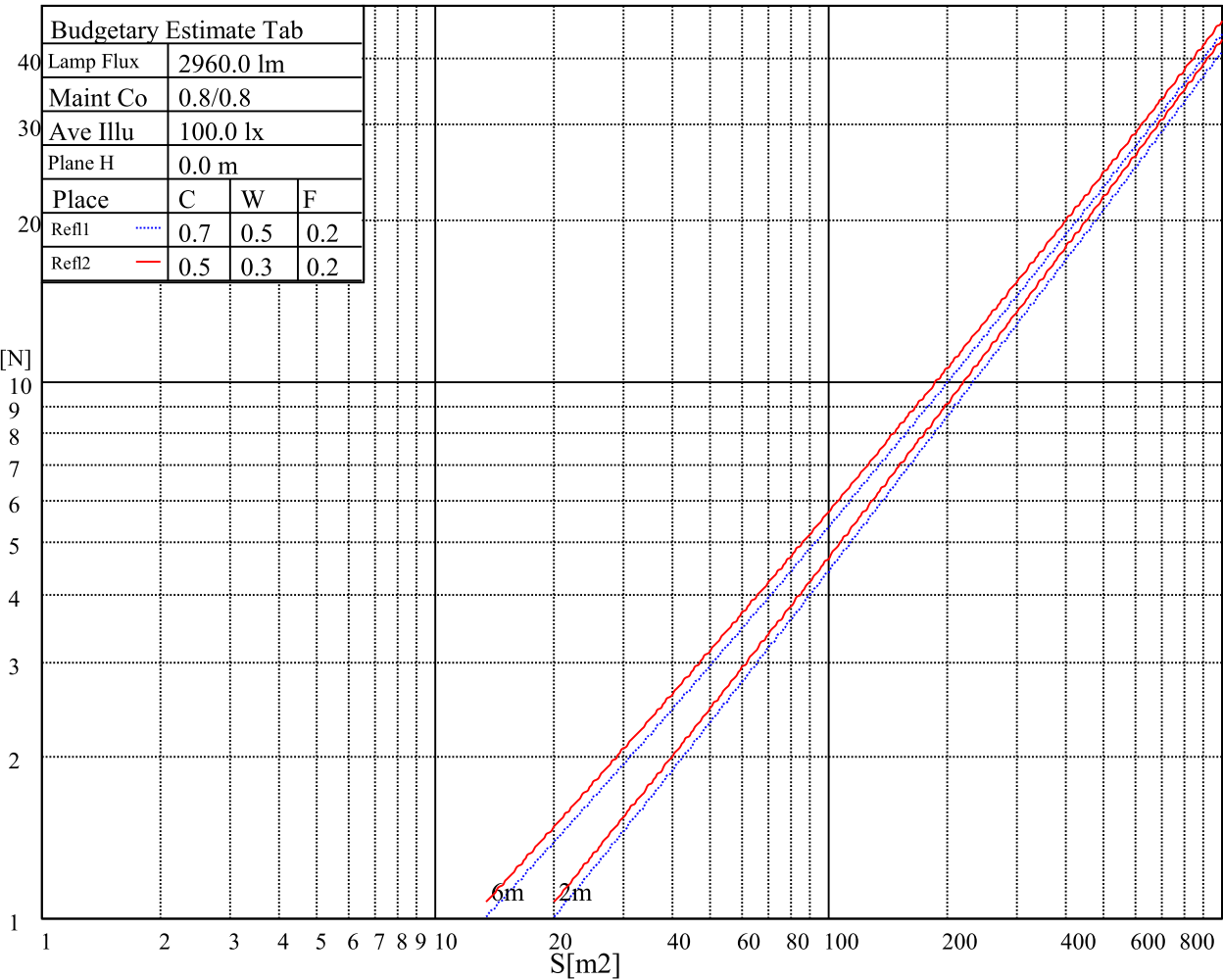
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

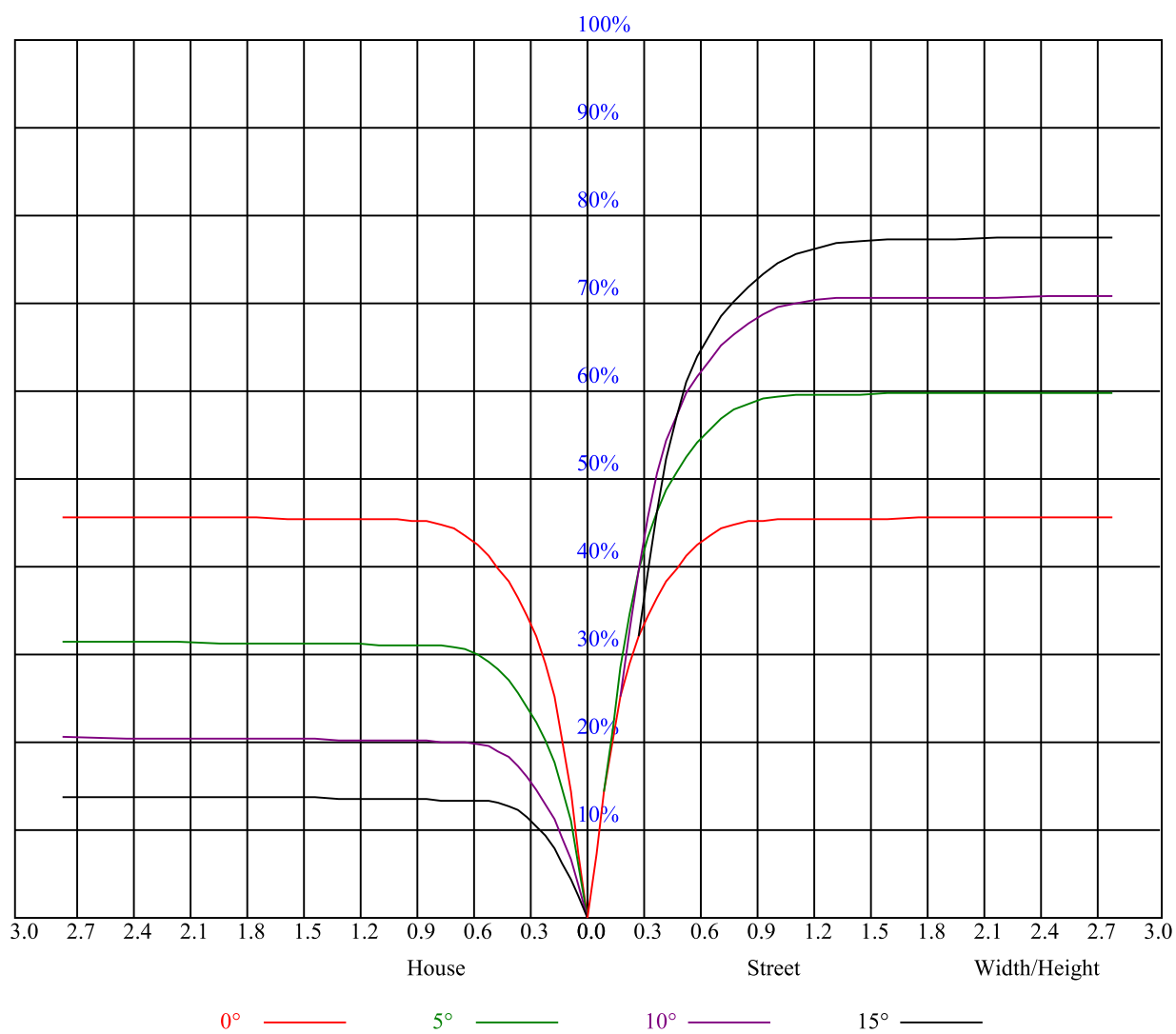
C0 ———

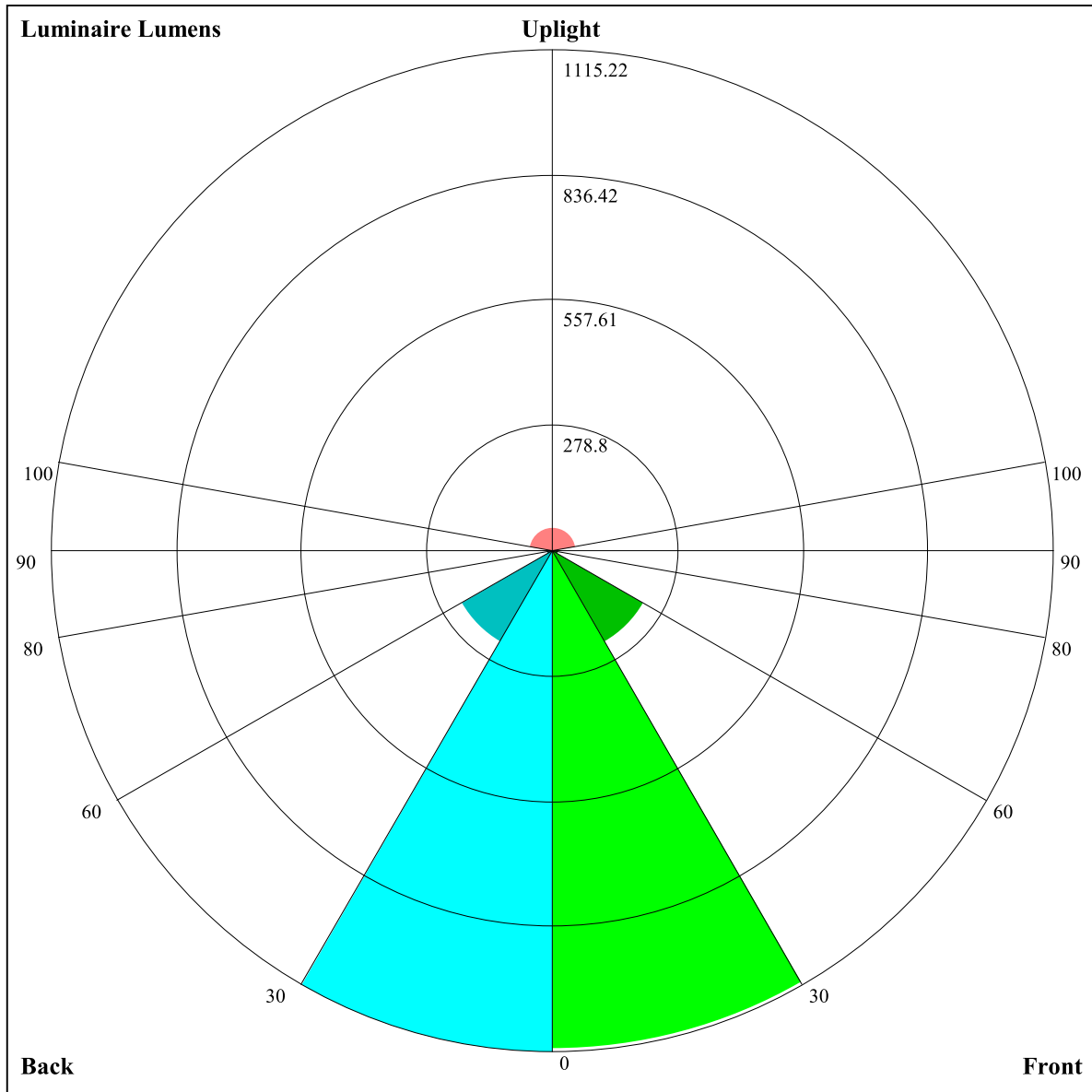
C45 ———

C90 ———



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	1.09	1.09	1.09	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	1.01	0.99	1.01	0.99	0.97	0.97	0.96	0.94	0.94	0.93	0.92	0.91	0.90	0.89	0.87
2	0.97	0.94	0.91	0.96	0.93	0.90	0.93	0.90	0.88	0.90	0.88	0.86	0.87	0.86	0.85	0.83
3	0.92	0.88	0.85	0.91	0.87	0.85	0.89	0.86	0.83	0.86	0.84	0.82	0.84	0.83	0.81	0.80
4	0.88	0.84	0.80	0.87	0.83	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.76
5	0.84	0.80	0.76	0.83	0.79	0.76	0.82	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.73
6	0.80	0.76	0.73	0.80	0.76	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.70
7	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.67
8	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.65
9	0.72	0.67	0.65	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.63
10	0.69	0.65	0.62	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.61





Luminaire Lumens:

FL=1110.04,FM=234.67,FH=12.17,FVH=5.86

BL=1115.22,BM=235.45,BH=12.16,BVH=5.85

UL=11.25,UH=53.53

BUG Rating:B3-U2-G0

Intensity data(cd)										Appendix Page: 17 Total:18	
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0		
0.0	11347.12	11308.58	11226.00	11088.36	10840.61	10389.14	9827.57	9018.24	8164.86		
90.0	11369.15	11352.63	11231.51	11016.79	10675.44	10168.92	9359.59	8528.24	7581.27		
180.0	11347.12	11341.62	11308.58	10987.61	10916.58	10533.94	9994.94	9111.83	8248.55		
270.0	11369.15	11369.15	11358.14	11253.53	10982.65	10868.13	10489.90	9872.71	9038.61		
360.0	11347.12	11308.58	11226.00	11088.36	10840.61	10389.14	9827.57	9018.24	8164.86		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	7113.29	6028.68	5125.75	4316.42	3507.09	3017.09	2807.88	2227.58	1980.38		
90.0	6364.52	5434.07	4580.69	3787.88	3176.75	2807.88	2399.36	2103.15	1892.29		
180.0	7292.22	6079.33	5174.75	4383.04	3659.60	3104.63	2717.03	2365.77	2112.51		
270.0	8168.17	7093.47	5995.64	5067.94	4266.87	3481.77	2992.87	2601.97	2258.96		
360.0	7113.29	6028.68	5125.75	4316.42	3507.09	3017.09	2807.88	2227.58	1980.38		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	1783.83	1614.80	1483.77	1392.93	1313.65	1250.88	1204.08	1161.14	1129.76		
90.0	1701.24	1566.91	1446.88	1354.94	1288.87	1235.47	1183.16	1149.03	1122.60		
180.0	1882.38	1694.64	1558.10	1435.87	1343.38	1280.61	1231.06	1180.96	1146.27		
270.0	1994.69	1804.20	1631.32	1498.08	1400.63	1314.75	1254.74	1202.43	1160.04		
360.0	1783.83	1614.80	1483.77	1392.93	1313.65	1250.88	1204.08	1161.14	1129.76		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	1101.68	1075.25	1052.13	1029.00	976.15	917.24	849.52	756.47	677.19		
90.0	1089.57	1063.69	1041.12	1005.33	946.97	882.55	804.92	717.38	636.45		
180.0	1095.68	1083.07	1053.34	1029.77	989.91	928.47	861.80	778.06	699.00		
270.0	1098.43	1094.36	1062.26	1038.58	1013.86	956.49	896.26	825.35	739.41		
360.0	1101.68	1075.25	1052.13	1029.00	976.15	917.24	849.52	756.47	677.19		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	594.06	498.81	404.11	324.28	285.19	171.45	104.39	60.07	30.67		
90.0	539.55	454.22	363.92	285.74	205.25	141.94	80.11	38.43	24.94		
180.0	607.16	514.39	430.05	338.60	253.20	185.60	125.53	63.15	33.20		
270.0	648.95	568.73	475.69	384.13	309.80	229.25	164.51	100.04	50.65		
360.0	594.06	498.81	404.11	324.28	285.19	171.45	104.39	60.07	30.67		
C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0		
0.0	21.80	18.66	15.86	13.71	13.16	12.88	12.72	12.33	11.89		
90.0	20.43	16.57	13.60	12.77	12.44	12.22	12.06	11.89	11.73		
180.0	21.80	18.17	15.20	12.83	12.28	12.06	11.89	11.73	11.62		
270.0	26.32	20.21	16.79	14.59	12.61	12.22	12.00	11.78	11.62		
360.0	21.80	18.66	15.86	13.71	13.16	12.88	12.72	12.33	11.89		
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	11.78	11.67	11.56	11.45	11.40	11.34	11.29	11.40	11.45		
90.0	11.67	11.51	11.45	11.40	11.45	11.56	11.56	11.51	11.45		
180.0	11.51	11.40	11.29	11.23	11.12	11.12	11.07	11.01	11.07		
270.0	11.51	11.40	11.23	11.18	11.07	11.01	10.96	10.96	10.96		
360.0	11.78	11.67	11.56	11.45	11.40	11.34	11.29	11.40	11.45		
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	11.56	11.67	11.78	11.78	11.73	11.73	11.67	11.67	11.62		
90.0	11.67	12.33	12.88	13.27	13.76	13.71	13.87	13.76	13.71		
180.0	11.18	11.34	11.45	11.56	11.56	11.56	11.62	11.84	11.73		
270.0	11.01	11.07	11.12	11.12	11.12	11.12	11.12	11.07	11.01		
360.0	11.56	11.67	11.78	11.78	11.73	11.73	11.67	11.67	11.62		

Intensity data(cd)										Appendix Page: 18 Total:18	
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	11.62	11.56	11.51	11.40	11.40	11.34	11.23	11.07	11.01		
90.0	13.65	13.87	13.65	13.54	13.60	13.43	13.10	12.99	12.88		
180.0	11.73	11.78	11.67	11.67	11.56	11.51	11.23	11.01	10.96		
270.0	11.01	10.96	10.96	10.90	10.85	10.79	10.79	10.79	10.79		
360.0	11.62	11.56	11.51	11.40	11.40	11.34	11.23	11.07	11.01		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	10.90	10.85	10.74	10.68	10.63	10.57	10.46	10.35	10.35		
90.0	12.39	12.00	11.34	10.74	10.68	10.35	10.30	10.30	10.30		
180.0	10.85	10.74	10.63	10.63	10.57	10.41	10.35	10.30	10.35		
270.0	10.79	10.68	10.68	10.68	10.63	10.57	10.35	10.30	10.30		
360.0	10.90	10.85	10.74	10.68	10.63	10.57	10.46	10.35	10.35		
C/ γ (°)	90.0										
0.0	10.35										
90.0	10.30										
180.0	10.30										
270.0	10.30										
360.0	10.35										