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NATA

Client:

LumCAT: 1-1426-L

Luminaire: 92.70.427.00

Report No: 20231012-B001

Ballast type: AC

Test No: 20231012-C001

LampCAT: CITIZEN CLU028

Lamp flux(lm): 973.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 34.180

Current(A): 0.225

Power (W): 7.690

PF: 0.000

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 871.18, Efficiency(%): 89.53% , Luminous Efficacy(lm/W): 113.29

Central intensity(cd): 1065.183, Maximum intensity(cd): 1066.954

Angle of maximum intensity: C=0.0 γ =1.0

Beam Angle(50%Imax): [C0/180]Total=58.6

[C90/270]Total=58.6

Field angle(10%Imax): [C0/180]Total=74.0

[C90/270]Total=74.0

Maximum s/h(1/2): C0_180=0.96 C90_270=0.96

Maximum s/h(1/4): C0_180=0.85 C90_270=0.85

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 89.53%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.719%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1065.183	0.000	0	0.00%	0.00%
1.0	1066.954	1.020	1.02	0.10%	0.12%
2.0	1065.668	3.061	4.081	0.31%	0.47%
3.0	1064.747	5.095	9.176	0.52%	1.05%
4.0	1062.575	7.121	16.297	0.73%	1.87%
5.0	1059.136	9.127	25.425	0.94%	2.92%
6.0	1056.167	11.116	36.541	1.14%	4.19%
7.0	1052.078	13.086	49.627	1.34%	5.70%
8.0	1048.051	15.030	64.657	1.54%	7.42%
9.0	1044.979	16.963	81.62	1.74%	9.37%
10.0	1039.617	18.865	100.485	1.94%	11.53%
11.0	1034.766	20.727	121.212	2.13%	13.91%
12.0	1028.954	22.559	143.772	2.32%	16.50%
13.0	1020.935	24.327	168.099	2.50%	19.30%
14.0	1013.089	26.035	194.134	2.68%	22.28%
15.0	1001.734	27.660	221.794	2.84%	25.46%
16.0	985.204	29.114	250.909	2.99%	28.80%
17.0	969.477	30.440	281.348	3.13%	32.30%
18.0	948.705	31.627	312.975	3.25%	35.93%
19.0	927.969	32.650	345.625	3.36%	39.67%
20.0	904.478	33.539	379.164	3.45%	43.52%
21.0	880.371	34.273	413.437	3.52%	47.46%
22.0	855.137	34.876	448.313	3.58%	51.46%
23.0	826.249	35.280	483.593	3.63%	55.51%
24.0	792.767	35.398	518.99	3.64%	59.57%
25.0	757.645	35.253	554.243	3.62%	63.62%
26.0	714.096	34.741	588.984	3.57%	67.61%
27.0	664.444	33.726	622.71	3.47%	71.48%
28.0	610.952	32.290	655	3.32%	75.19%
29.0	554.041	30.479	685.48	3.13%	78.68%
30.0	494.709	28.316	713.796	2.91%	81.93%
31.0	433.827	25.840	739.636	2.66%	84.90%
32.0	369.153	23.004	762.64	2.36%	87.54%
33.0	306.493	19.905	782.545	2.05%	89.83%
34.0	251.236	16.879	799.423	1.73%	91.76%
35.0	191.752	13.758	813.181	1.41%	93.34%
36.0	144.653	10.711	823.892	1.10%	94.57%
37.0	104.791	8.135	832.028	0.84%	95.51%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	76.478	6.051	838.078	0.62%	96.20%
39.0	56.966	4.555	842.633	0.47%	96.72%
40.0	41.031	3.418	846.051	0.35%	97.12%
41.0	29.884	2.525	848.576	0.26%	97.41%
42.0	22.280	1.895	850.471	0.19%	97.62%
43.0	16.468	1.435	851.906	0.15%	97.79%
44.0	12.676	1.100	853.006	0.11%	97.91%
45.0	9.860	0.866	853.873	0.09%	98.01%
46.0	8.006	0.699	854.571	0.07%	98.09%
47.0	6.663	0.583	855.155	0.06%	98.16%
48.0	5.646	0.498	855.652	0.05%	98.22%
49.0	5.037	0.439	856.091	0.05%	98.27%
50.0	4.670	0.405	856.496	0.04%	98.31%
51.0	4.366	0.382	856.878	0.04%	98.36%
52.0	4.186	0.367	857.245	0.04%	98.40%
53.0	4.055	0.358	857.603	0.04%	98.44%
54.0	3.951	0.353	857.956	0.04%	98.48%
55.0	3.854	0.348	858.305	0.04%	98.52%
56.0	3.785	0.345	858.65	0.04%	98.56%
57.0	3.716	0.343	858.993	0.04%	98.60%
58.0	3.674	0.342	859.335	0.04%	98.64%
59.0	3.633	0.342	859.676	0.04%	98.68%
60.0	3.612	0.342	860.018	0.04%	98.72%
61.0	3.605	0.344	860.363	0.04%	98.76%
62.0	3.584	0.346	860.709	0.04%	98.80%
63.0	3.591	0.349	861.058	0.04%	98.84%
64.0	3.570	0.351	861.41	0.04%	98.88%
65.0	3.563	0.353	861.763	0.04%	98.92%
66.0	3.543	0.355	862.117	0.04%	98.96%
67.0	3.556	0.357	862.474	0.04%	99.00%
68.0	3.556	0.360	862.834	0.04%	99.04%
69.0	3.543	0.362	863.197	0.04%	99.08%
70.0	3.550	0.364	863.561	0.04%	99.13%
71.0	3.550	0.367	863.928	0.04%	99.17%
72.0	3.556	0.369	864.297	0.04%	99.21%
73.0	3.550	0.372	864.669	0.04%	99.25%
74.0	3.543	0.373	865.042	0.04%	99.30%
75.0	3.543	0.374	865.416	0.04%	99.34%

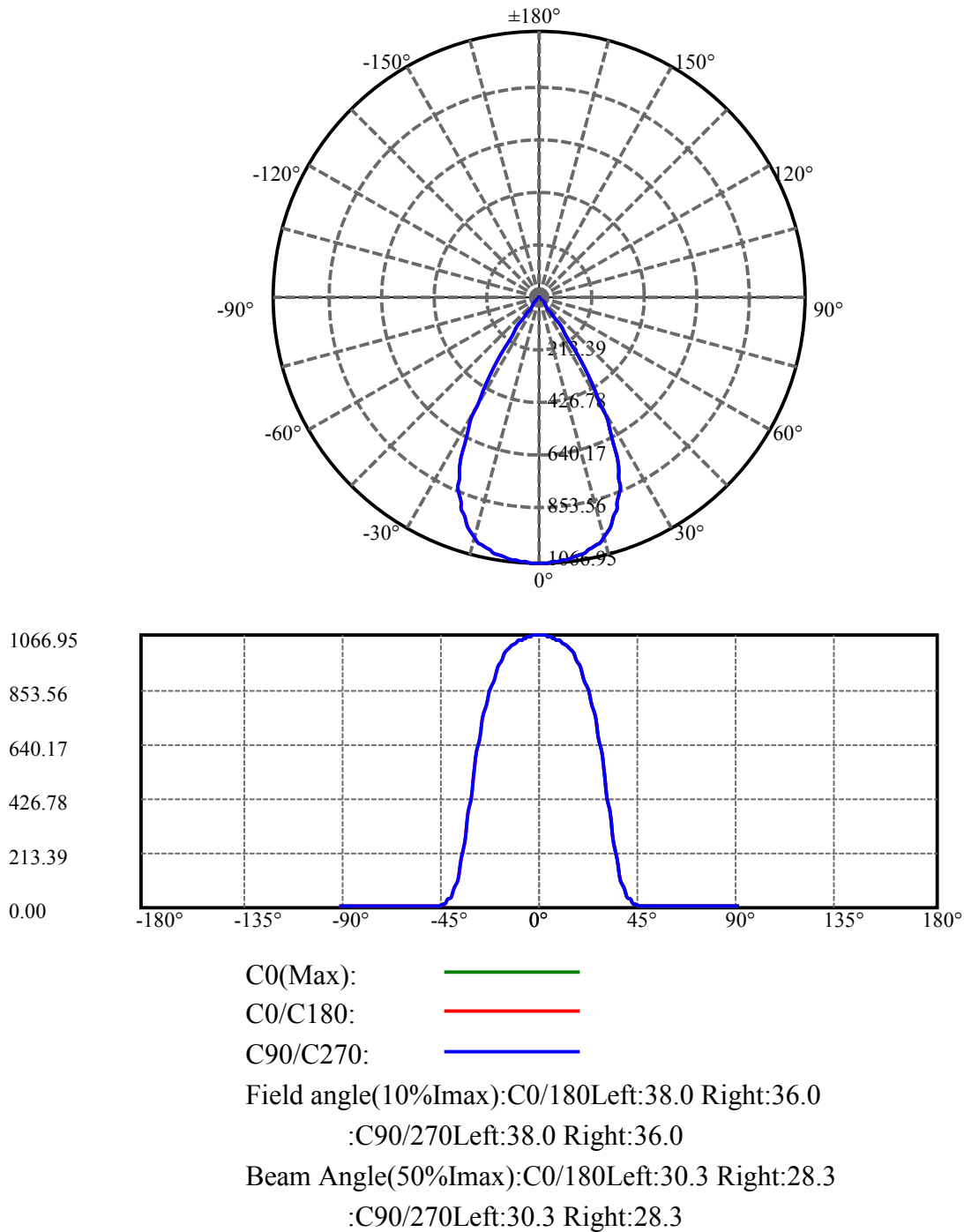
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	3.556	0.377	865.793	0.04%	99.38%
77.0	3.543	0.378	866.171	0.04%	99.42%
78.0	3.550	0.380	866.551	0.04%	99.47%
79.0	3.543	0.381	866.932	0.04%	99.51%
80.0	3.543	0.382	867.314	0.04%	99.56%
81.0	3.543	0.383	867.697	0.04%	99.60%
82.0	3.543	0.384	868.081	0.04%	99.64%
83.0	3.543	0.385	868.467	0.04%	99.69%
84.0	3.543	0.386	868.853	0.04%	99.73%
85.0	3.543	0.387	869.239	0.04%	99.78%
86.0	3.556	0.388	869.627	0.04%	99.82%
87.0	3.543	0.389	870.016	0.04%	99.87%
88.0	3.543	0.388	870.404	0.04%	99.91%
89.0	3.550	0.389	870.793	0.04%	99.96%
90.0	3.543	0.389	871.182	0.04%	100.00%

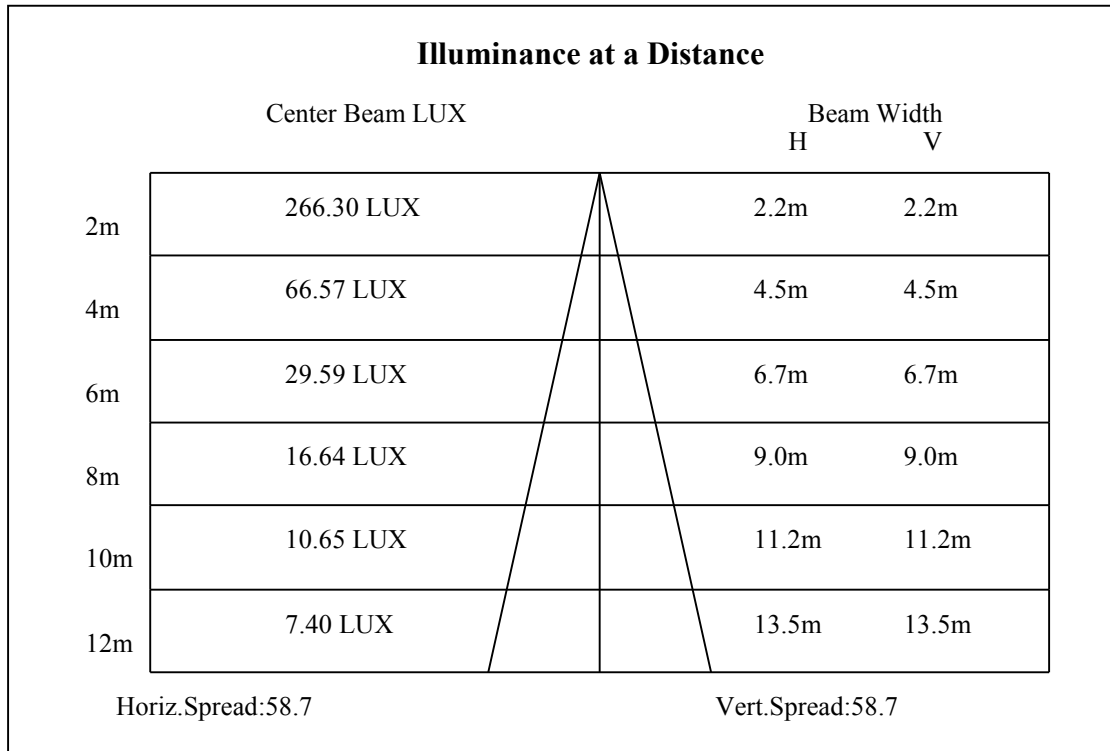
ZONAL LUMEN SUMMARY

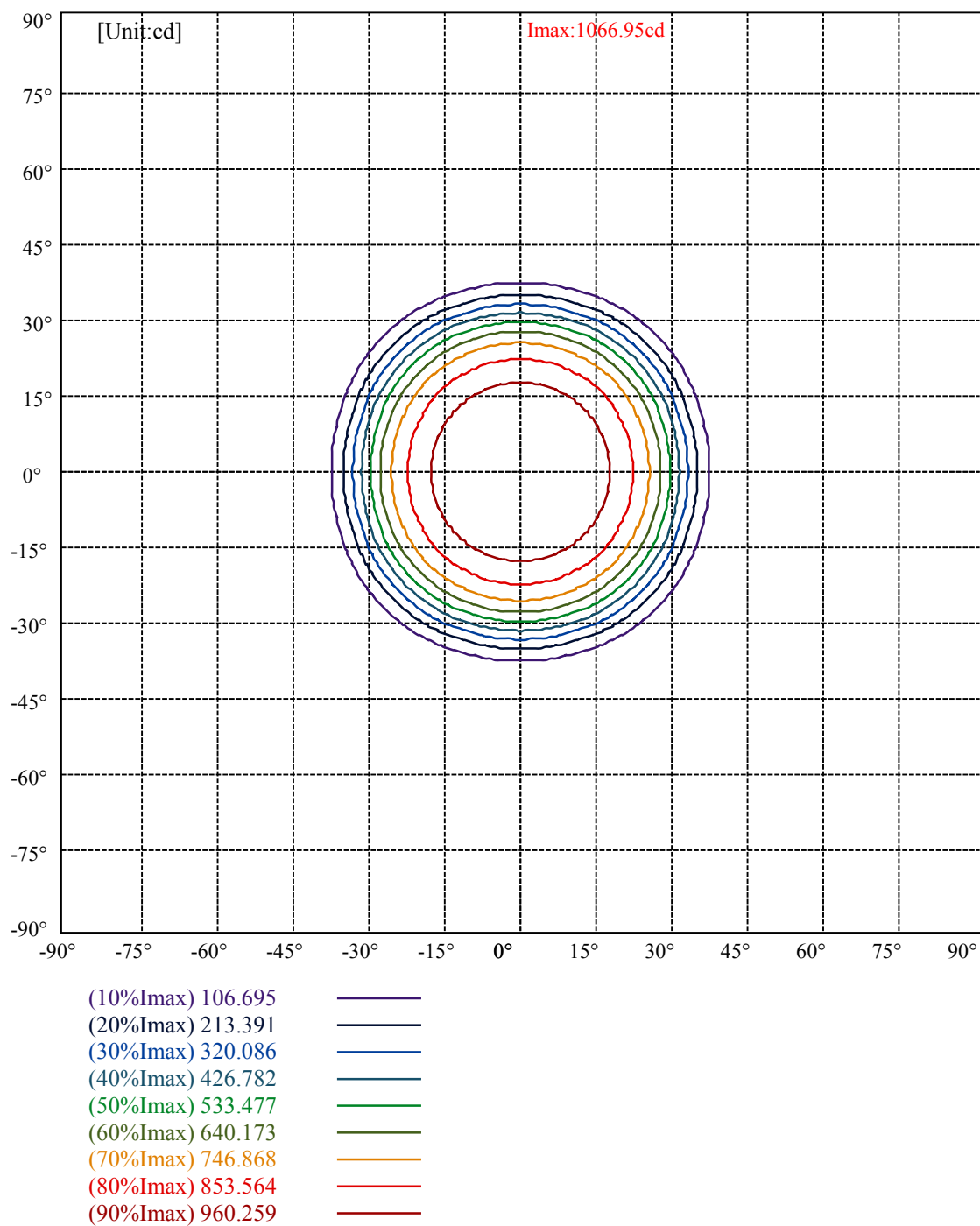
Zone	Lumens	%Lamp	%Fixt
0-30	713.80	73.36%	81.93%
0-40	846.05	86.95%	97.12%
0-60	860.02	88.39%	98.72%
0-90	870.79	89.49%	99.96%
0-120	870.79	89.49%	99.96%
0-180	871.18	89.53%	100.00%
60-90	10.77	1.11%	1.24%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.40	696.95	71.63%	80.00%

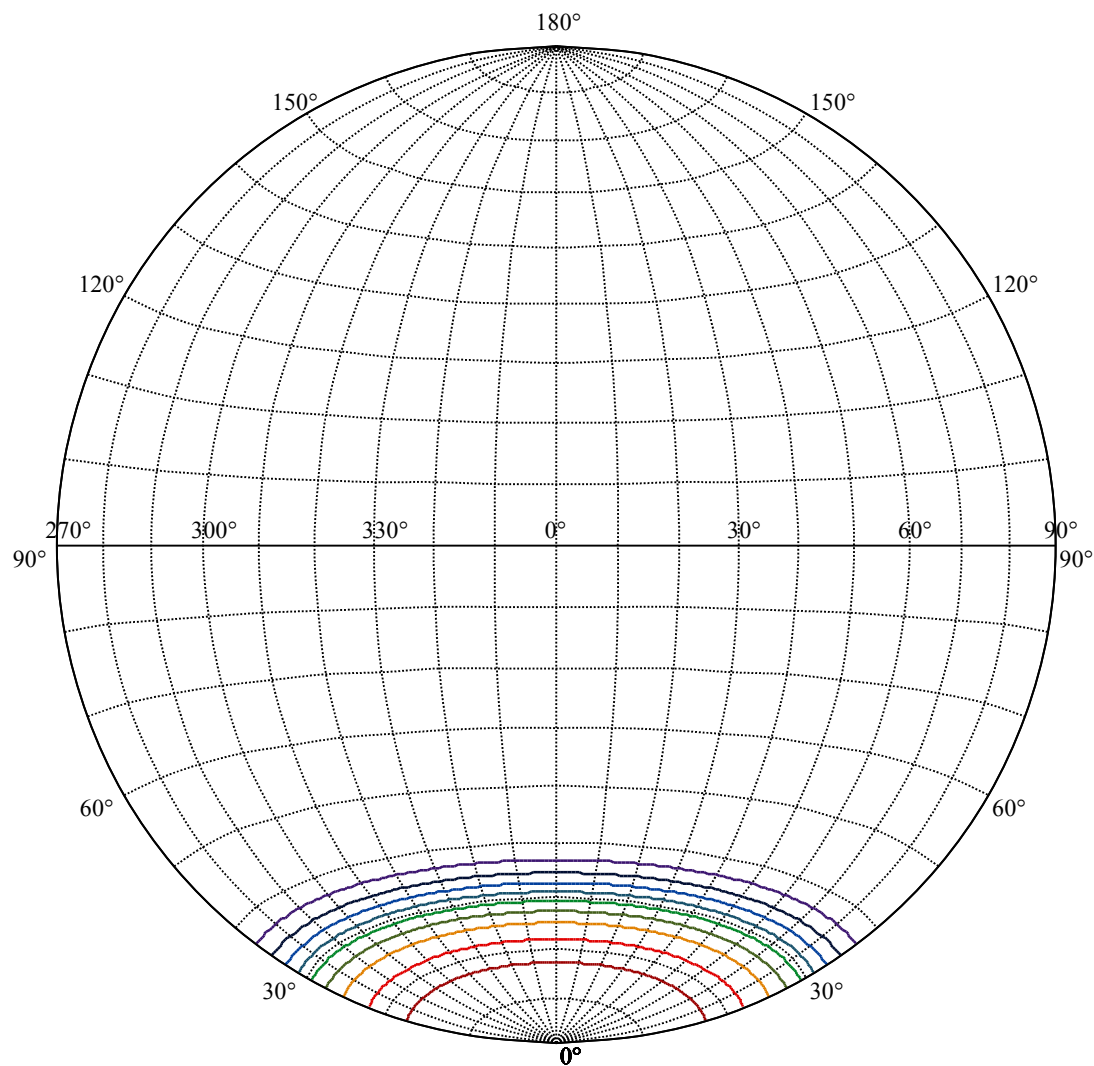
ZONAL LUMEN SUMMARY

0-10	100.48
10-20	278.68
20-30	334.63
30-40	132.25
40-50	10.44
50-60	3.52
60-70	3.54
70-80	3.75
80-90	3.48
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







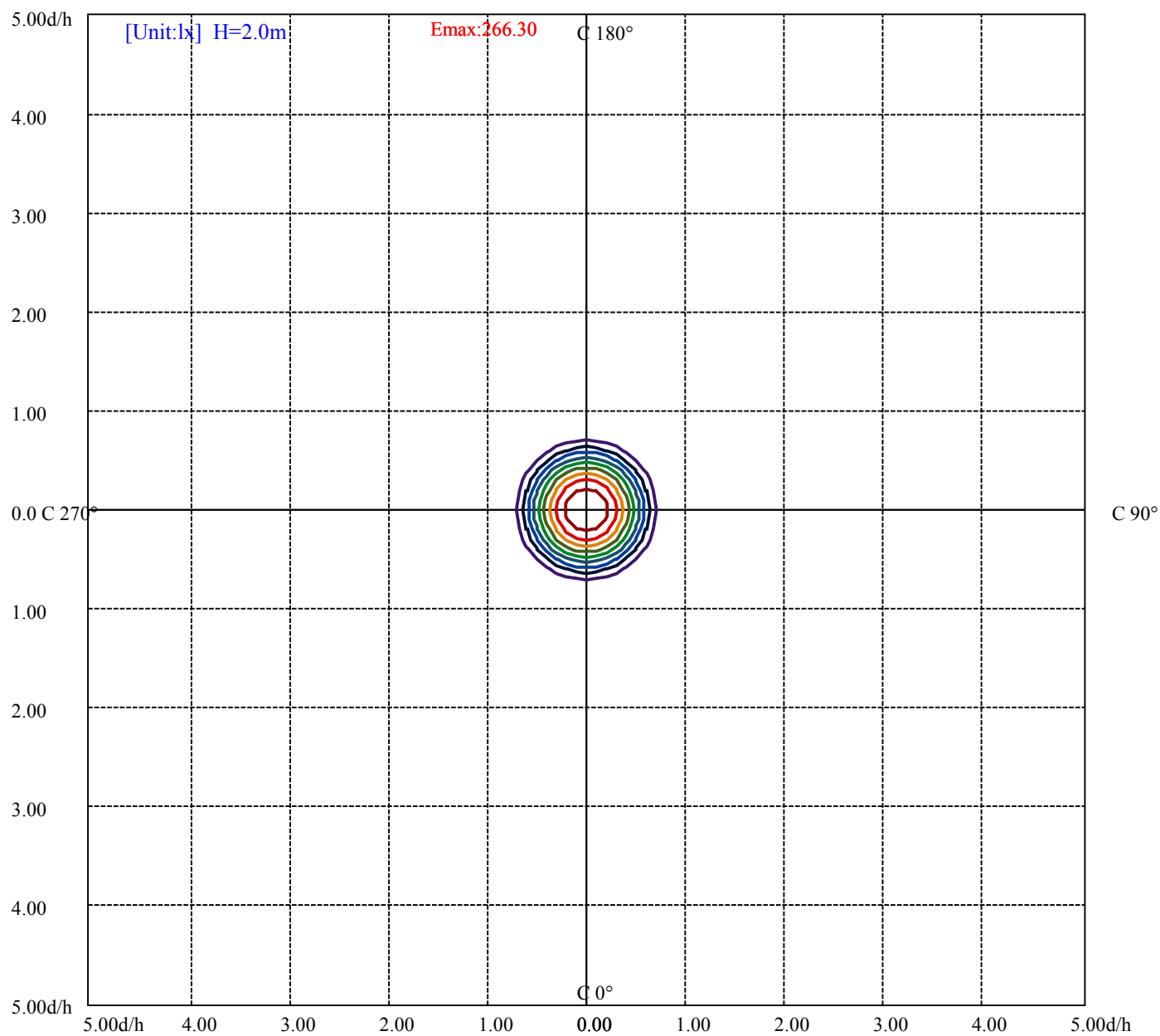


House

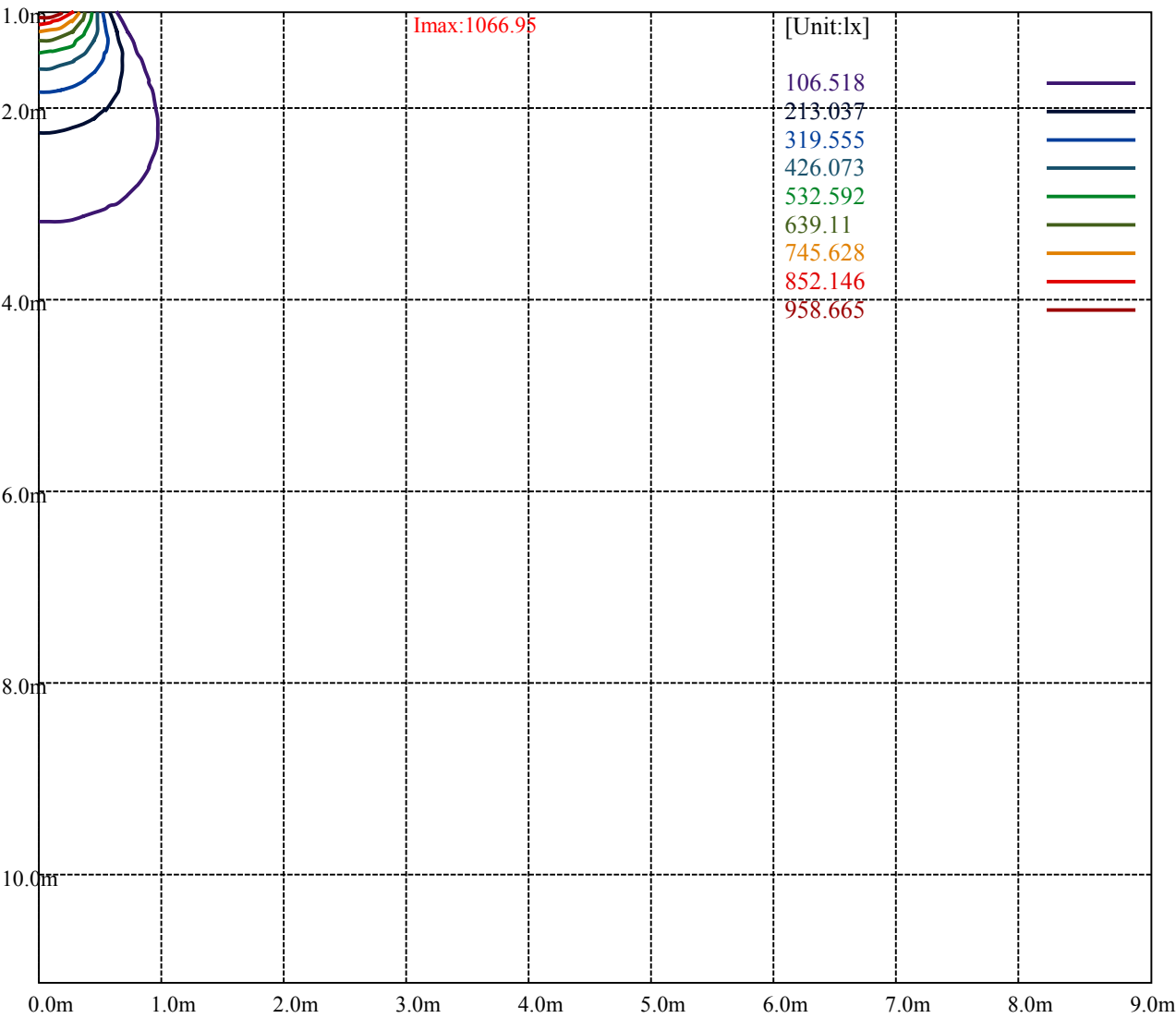
[Unit:cd]

Road

Imax:1066.95	
(10%Imax) 106.695	
(20%Imax) 213.391	
(30%Imax) 320.086	
(40%Imax) 426.782	
(50%Imax) 533.477	
(60%Imax) 640.173	
(70%Imax) 746.868	
(80%Imax) 853.564	
(90%Imax) 960.259	



(10%E _{max}) 26.6295	—
(20%E _{max}) 53.25925	—
(30%E _{max}) 79.88875	—
(40%E _{max}) 106.5182	—
(50%E _{max}) 133.148	—
(60%E _{max}) 159.7775	—
(70%E _{max}) 186.407	—
(80%E _{max}) 213.0367	—
(90%E _{max}) 239.6662	—



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

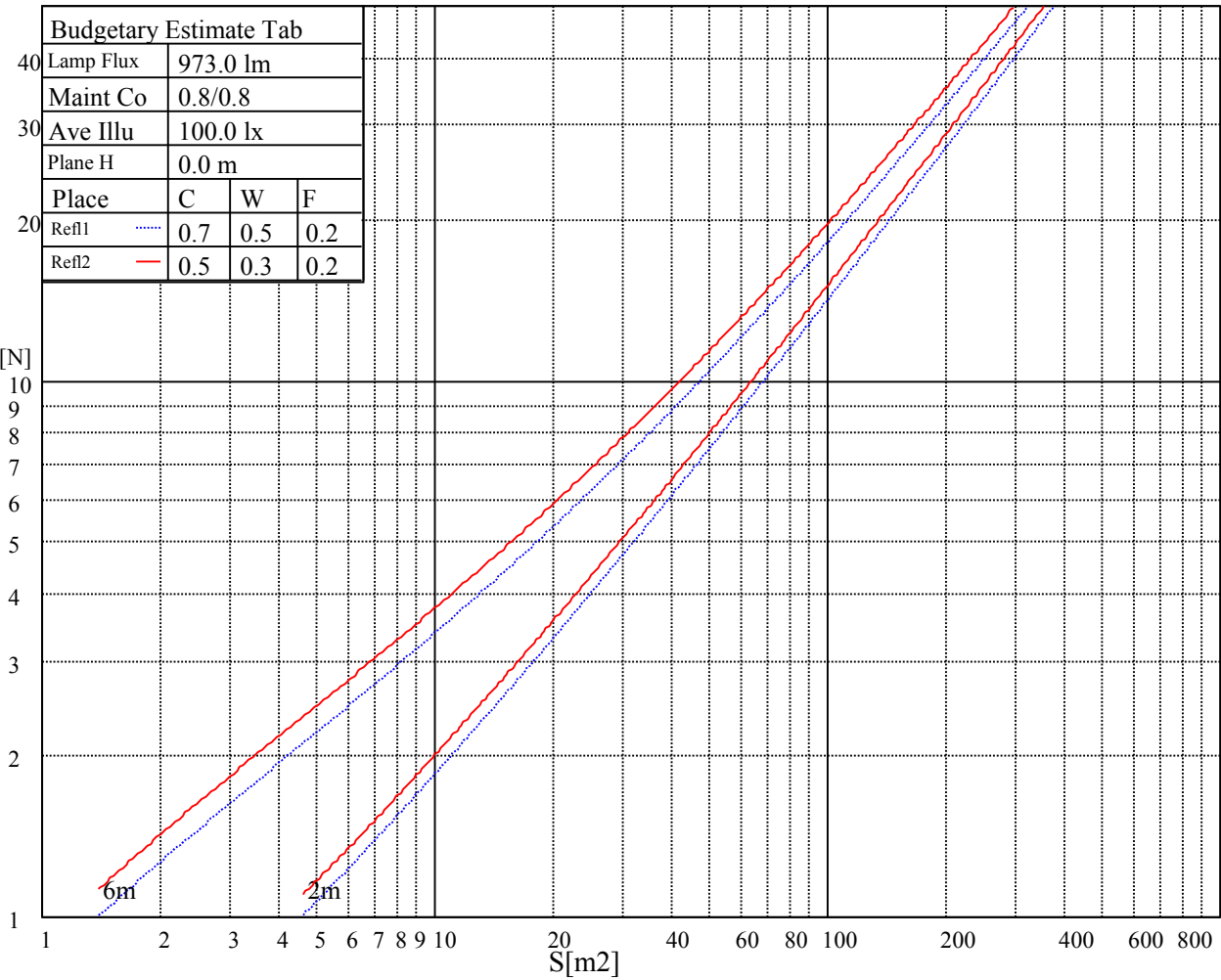
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

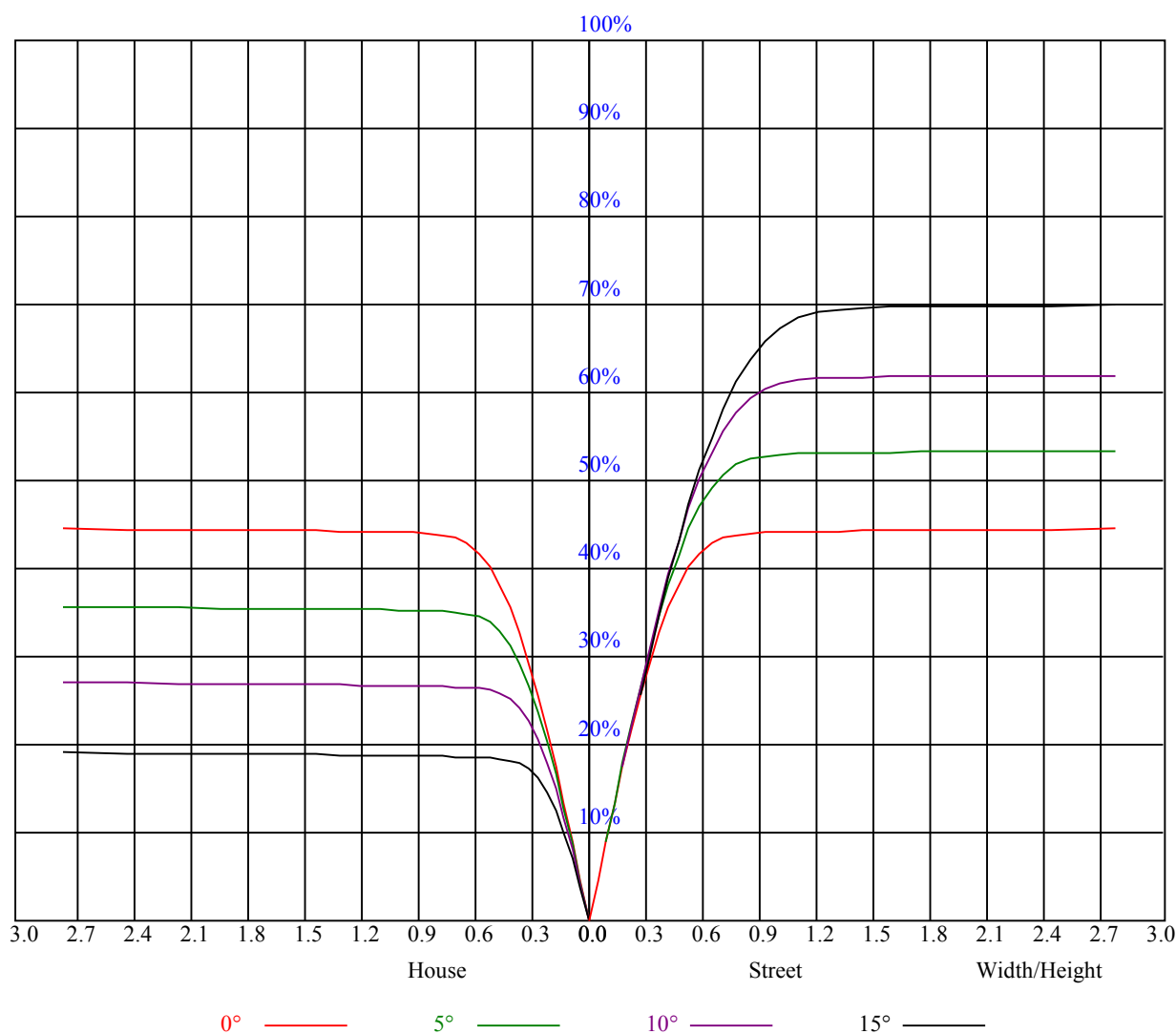
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

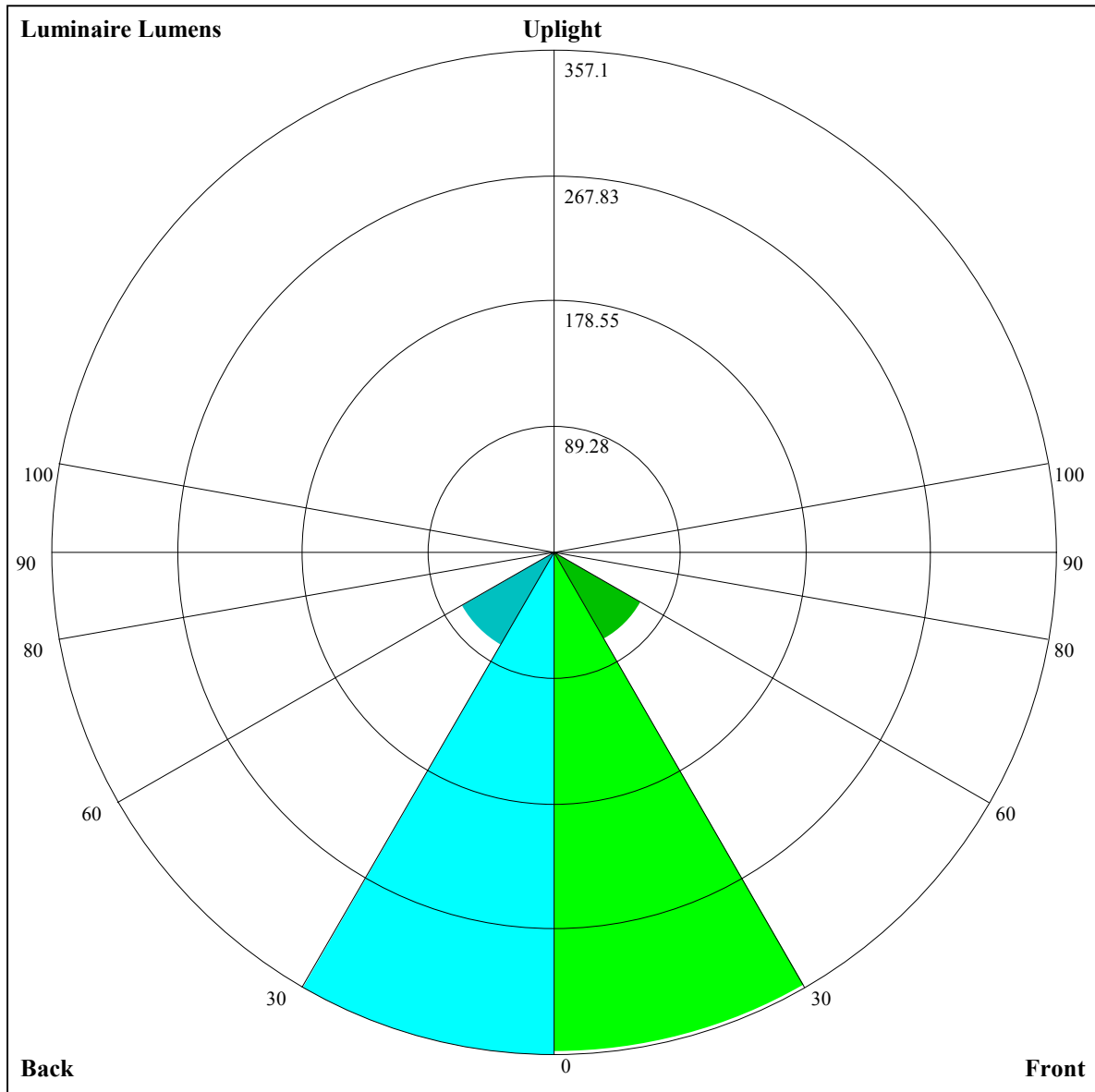
Luminance Limiting Curve





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	1.07	1.07	1.07	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.90
1	0.99	0.97	0.95	0.97	0.95	0.94	0.94	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.86	0.84
2	0.93	0.89	0.86	0.91	0.88	0.86	0.88	0.86	0.84	0.86	0.84	0.82	0.83	0.82	0.80	0.79
3	0.87	0.83	0.80	0.86	0.82	0.79	0.84	0.80	0.78	0.81	0.79	0.76	0.79	0.77	0.75	0.74
4	0.82	0.77	0.74	0.81	0.77	0.73	0.79	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.69
5	0.77	0.72	0.69	0.76	0.72	0.68	0.75	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.65
6	0.73	0.68	0.64	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.63	0.69	0.65	0.63	0.62
7	0.69	0.64	0.60	0.68	0.64	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.59	0.58
8	0.65	0.60	0.57	0.65	0.60	0.57	0.64	0.60	0.56	0.63	0.59	0.56	0.62	0.59	0.56	0.55
9	0.62	0.57	0.54	0.62	0.57	0.54	0.61	0.56	0.53	0.60	0.56	0.53	0.59	0.56	0.53	0.52
10	0.59	0.54	0.51	0.59	0.54	0.51	0.58	0.54	0.51	0.57	0.53	0.50	0.57	0.53	0.50	0.49





Luminaire Lumens:

FL=354.95,FM=71.28,FH=3.65,FVH=1.93

BL=357.1,BM=76.46,BH=3.65,BVH=1.93

UL=0,UH=0

BUG Rating:B1-U0-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	1066.17	1070.76	1071.48	1069.32	1070.54	1066.17	1063.51	1060.46	1056.87		
45.0	1062.07	1069.65	1067.88	1072.75	1070.48	1070.87	1067.11	1065.94	1062.29		
90.0	1067.11	1071.26	1068.88	1067.99	1064.17	1060.74	1058.91	1053.93	1051.05		
135.0	1065.39	1067.44	1068.77	1066.11	1061.74	1057.53	1053.93	1049.06	1044.25		
180.0	1066.17	1064.06	1063.51	1060.96	1057.36	1052.71	1048.29	1042.14	1036.11		
225.0	1062.07	1062.73	1058.14	1055.93	1053.10	1047.23	1043.91	1039.54	1036.22		
270.0	1067.11	1064.51	1061.79	1060.69	1061.07	1056.98	1054.38	1050.61	1047.23		
315.0	1065.39	1065.22	1064.89	1064.23	1062.12	1060.85	1059.30	1054.93	1050.39		
360.0	1066.17	1070.76	1071.48	1069.32	1070.54	1066.17	1063.51	1060.46	1056.87		
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	1051.94	1043.91	1039.04	1031.24	1020.11	1007.66	993.93	970.57	951.47		
45.0	1059.69	1055.54	1049.12	1044.36	1036.00	1029.52	1016.29	996.70	978.49		
90.0	1049.34	1042.25	1039.26	1033.62	1019.95	1008.27	993.10	969.46	948.71		
135.0	1042.97	1036.61	1031.02	1023.05	1015.57	1008.71	994.59	975.50	959.11		
180.0	1033.45	1028.03	1023.99	1019.61	1014.52	1008.16	1000.74	989.00	980.09		
225.0	1031.46	1027.25	1021.83	1017.01	1009.54	1004.34	993.43	982.25	966.25		
270.0	1044.63	1039.87	1035.67	1030.02	1024.82	1020.67	1012.64	1001.46	990.88		
315.0	1046.35	1043.47	1038.21	1032.73	1026.98	1017.40	1009.15	996.70	980.81		
360.0	1051.94	1043.91	1039.04	1031.24	1020.11	1007.66	993.93	970.57	951.47		
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	925.57	905.97	880.79	857.59	831.13	793.55	760.56	721.76	677.20		
45.0	957.78	936.58	910.40	886.43	860.47	826.43	796.54	761.11	708.08		
90.0	923.69	899.33	873.20	849.40	814.20	781.21	742.40	700.00	638.73		
135.0	938.96	918.48	892.52	867.72	845.30	818.40	780.93	743.95	692.47		
180.0	961.71	944.28	920.81	901.60	878.79	855.10	824.93	797.76	763.99		
225.0	950.14	927.06	906.91	880.51	858.04	834.23	798.42	766.37	729.51		
270.0	972.40	953.74	933.54	910.18	888.87	862.58	836.28	800.80	769.97		
315.0	959.39	938.30	917.65	889.53	864.29	838.50	802.07	769.42	732.83		
360.0	925.57	905.97	880.79	857.59	831.13	793.55	760.56	721.76	677.20		
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	615.09	560.01	504.60	431.54	372.92	311.75	240.23	187.65	141.04		
45.0	659.65	592.84	535.71	478.70	421.13	346.29	288.06	232.21	179.84		
90.0	585.92	531.17	472.72	400.21	341.86	284.02	214.88	165.06	110.65		
135.0	641.71	589.18	520.55	464.42	406.07	347.84	277.43	222.80	172.65		
180.0	726.41	669.72	620.79	566.93	508.87	435.02	373.91	313.91	243.28		
225.0	674.71	625.55	573.41	518.05	446.59	387.31	328.97	272.89	205.97		
270.0	733.49	690.31	628.87	578.39	524.42	450.25	393.73	336.55	267.86		
315.0	678.58	628.82	575.68	519.44	448.75	390.74	334.72	278.82	212.72		
360.0	615.09	560.01	504.60	431.54	372.92	311.75	240.23	187.65	141.04		
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	97.53	73.29	56.18	42.18	29.28	21.86	16.50	12.73	9.69		
45.0	122.94	88.46	64.60	47.99	31.55	22.58	16.38	11.73	9.69		
90.0	79.21	57.29	42.12	26.96	18.99	13.95	11.13	8.91	7.53		
135.0	126.87	84.19	61.17	45.50	29.67	21.15	15.61	11.51	9.58		
180.0	191.14	134.79	99.64	73.62	55.63	37.86	26.90	19.32	14.45		
225.0	158.48	118.46	82.20	62.88	44.67	32.71	24.08	17.93	12.95		
270.0	216.16	158.09	118.84	88.90	68.47	50.70	38.53	29.12	21.92		
315.0	164.90	123.77	87.07	67.70	49.98	38.25	29.12	20.48	15.61		
360.0	97.53	73.29	56.18	42.18	29.28	21.86	16.50	12.73	9.69		

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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	7.97	6.37	5.54	4.98	4.54	4.32	4.15	4.04	3.93		
45.0	7.86	6.70	5.76	5.15	4.65	4.48	4.26	4.15	3.99		
90.0	6.31	5.31	4.82	4.59	4.32	4.21	4.04	3.93	3.87		
135.0	7.69	6.37	5.48	4.93	4.65	4.37	4.26	4.10	3.99		
180.0	11.02	9.13	7.53	5.98	5.26	4.82	4.54	4.32	4.21		
225.0	10.41	8.52	7.03	5.76	5.09	4.71	4.43	4.21	4.10		
270.0	15.55	12.07	9.69	7.53	6.31	5.54	4.82	4.48	4.26		
315.0	12.07	9.58	7.47	6.25	5.48	4.93	4.43	4.26	4.10		
360.0	7.97	6.37	5.54	4.98	4.54	4.32	4.15	4.04	3.93		
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	3.82	3.76	3.71	3.65	3.65	3.60	3.60	3.60	3.60		
45.0	3.93	3.82	3.76	3.71	3.65	3.60	3.60	3.60	3.60		
90.0	3.82	3.76	3.71	3.65	3.60	3.60	3.60	3.60	3.54		
135.0	3.93	3.82	3.76	3.71	3.65	3.65	3.60	3.60	3.60		
180.0	4.04	3.93	3.87	3.76	3.71	3.65	3.65	3.60	3.60		
225.0	3.99	3.87	3.82	3.71	3.71	3.65	3.60	3.60	3.54		
270.0	4.10	3.99	3.87	3.82	3.76	3.71	3.65	3.65	3.60		
315.0	3.99	3.87	3.76	3.71	3.65	3.60	3.60	3.60	3.60		
360.0	3.82	3.76	3.71	3.65	3.65	3.60	3.60	3.60	3.60		
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	3.54	3.54	3.60	3.54	3.54	3.54	3.54	3.54	3.54		
45.0	3.60	3.60	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
90.0	3.60	3.54	3.54	3.54	3.60	3.54	3.54	3.54	3.54		
135.0	3.60	3.54	3.54	3.54	3.54	3.60	3.54	3.54	3.54		
180.0	3.60	3.60	3.60	3.54	3.54	3.54	3.54	3.54	3.54		
225.0	3.60	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
270.0	3.60	3.60	3.60	3.54	3.60	3.60	3.54	3.60	3.54		
315.0	3.60	3.60	3.54	3.54	3.54	3.54	3.54	3.54	3.60		
360.0	3.54	3.54	3.60	3.54	3.54	3.54	3.54	3.54	3.54		
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	3.54	3.54	3.54	3.54	3.60	3.54	3.54	3.54	3.54		
45.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
90.0	3.54	3.54	3.54	3.54	3.60	3.54	3.54	3.54	3.54		
135.0	3.54	3.54	3.54	3.54	3.54	3.54	3.60	3.54	3.54		
180.0	3.60	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
225.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
270.0	3.54	3.60	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
315.0	3.60	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
360.0	3.54	3.54	3.54	3.54	3.60	3.54	3.54	3.54	3.54		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
45.0	3.54	3.54	3.54	3.54	3.54	3.60	3.54	3.54	3.60		
90.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
135.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
180.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
225.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
270.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		
315.0	3.54	3.54	3.54	3.54	3.54	3.60	3.54	3.54	3.54		
360.0	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54	3.54		

Intensity data(cd)

Appendix Page: 19 Total:19

C/ $\gamma(^{\circ})$	90.0
0.0	3.54
45.0	3.54
90.0	3.54
135.0	3.54
180.0	3.54
225.0	3.54
270.0	3.54
315.0	3.54
360.0	3.54