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NATA

Client:

LumCAT: 2-1284-N

Luminaire: 92.70.064.00

Report No: nt0100

Test No: GC20191225121

LampCAT: LUMINUS CXM-9-AC40

Lamp flux(lm): 1100.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 33.6100

Current(A): 0.2970

Power (W): 9.9800

PF: 1.0000

Ballast type: DC

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 891.87, Efficiency(%): 81.08% , Luminous Efficacy(lm/W): 89.37

Central intensity(cd): 2781.844, Maximum intensity(cd): 2781.844

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=24.8

[C90/270]Total=24.8

Field angle(10%Imax): [C0/180]Total=63.4

[C90/270]Total=63.4

Maximum s/h(1/2): C0_180=0.42 C90_270=0.42

Maximum s/h(1/4): C0_180=0.47 C90_270=0.47

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 81.08%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.858%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2781.844	0.000	0	.000%	.000%
1.0	2767.711	2.655	2.655	.241%	.298%
2.0	2730.164	7.891	10.546	.717%	1.183%
3.0	2665.477	12.905	23.451	1.173%	2.629%
4.0	2584.828	17.574	41.025	1.598%	4.600%
5.0	2470.430	21.747	62.773	1.977%	7.038%
6.0	2348.859	25.327	88.1	2.302%	9.878%
7.0	2213.648	28.319	116.419	2.574%	13.053%
8.0	2059.242	30.580	146.999	2.780%	16.482%
9.0	1903.078	32.112	179.112	2.919%	20.083%
10.0	1746.070	33.023	212.135	3.002%	23.785%
11.0	1576.104	33.195	245.33	3.018%	27.507%
12.0	1446.300	33.039	278.37	3.004%	31.212%
13.0	1292.709	32.505	310.875	2.955%	34.856%
14.0	1178.290	31.629	342.503	2.875%	38.403%
15.0	1067.245	30.828	373.331	2.803%	41.859%
16.0	988.678	30.125	403.456	2.739%	45.237%
17.0	898.671	29.391	432.847	2.672%	48.533%
18.0	830.306	28.507	461.354	2.592%	51.729%
19.0	774.738	27.924	489.279	2.539%	54.860%
20.0	718.734	27.335	516.614	2.485%	57.925%
21.0	672.286	26.710	543.324	2.428%	60.920%
22.0	634.500	26.260	569.584	2.387%	63.864%
23.0	595.744	25.814	595.398	2.347%	66.758%
24.0	561.797	25.308	620.706	2.301%	69.596%
25.0	532.484	24.882	645.588	2.262%	72.386%
26.0	502.298	24.426	670.014	2.221%	75.125%
27.0	470.820	23.808	693.821	2.164%	77.794%
28.0	437.407	22.994	716.816	2.090%	80.372%
29.0	398.454	21.868	738.684	1.988%	82.824%
30.0	357.019	20.398	759.082	1.854%	85.111%
31.0	314.114	18.677	777.759	1.698%	87.205%
32.0	264.157	16.567	794.325	1.506%	89.063%
33.0	214.425	14.099	808.425	1.282%	90.644%
34.0	167.288	11.552	819.976	1.050%	91.939%
35.0	127.427	9.153	829.129	.832%	92.965%
36.0	89.557	6.909	836.038	.628%	93.740%
37.0	64.202	5.015	841.053	.456%	94.302%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	44.578	3.631	844.684	.330%	94.709%
39.0	31.451	2.595	847.279	.236%	95.000%
40.0	25.425	1.984	849.262	.180%	95.223%
41.0	21.530	1.672	850.934	.152%	95.410%
42.0	19.329	1.484	852.419	.135%	95.576%
43.0	17.866	1.378	853.797	.125%	95.731%
44.0	16.784	1.308	855.104	.119%	95.878%
45.0	15.813	1.253	856.357	.114%	96.018%
46.0	15.040	1.207	857.564	.110%	96.153%
47.0	14.470	1.174	858.737	.107%	96.285%
48.0	13.992	1.151	859.888	.105%	96.414%
49.0	13.605	1.133	861.021	.103%	96.541%
50.0	13.296	1.122	862.143	.102%	96.667%
51.0	13.057	1.115	863.258	.101%	96.792%
52.0	12.860	1.112	864.37	.101%	96.916%
53.0	12.635	1.109	865.479	.101%	97.041%
54.0	12.340	1.101	866.58	.100%	97.164%
55.0	12.045	1.088	867.668	.099%	97.286%
56.0	11.630	1.070	868.738	.097%	97.406%
57.0	11.236	1.045	869.784	.095%	97.523%
58.0	10.828	1.020	870.804	.093%	97.638%
59.0	10.441	0.994	871.798	.090%	97.749%
60.0	10.005	0.966	872.764	.088%	97.858%
61.0	9.626	0.937	873.701	.085%	97.963%
62.0	9.246	0.909	874.61	.083%	98.065%
63.0	8.895	0.882	875.493	.080%	98.164%
64.0	8.522	0.855	876.347	.078%	98.259%
65.0	8.170	0.826	877.173	.075%	98.352%
66.0	7.875	0.801	877.974	.073%	98.442%
67.0	7.587	0.777	878.751	.071%	98.529%
68.0	7.298	0.754	879.505	.069%	98.614%
69.0	6.891	0.724	880.229	.066%	98.695%
70.0	6.602	0.693	880.922	.063%	98.772%
71.0	6.195	0.661	881.584	.060%	98.847%
72.0	5.885	0.628	882.212	.057%	98.917%
73.0	5.653	0.603	882.815	.055%	98.985%
74.0	5.513	0.587	883.402	.053%	99.050%
75.0	5.407	0.577	883.979	.052%	99.115%

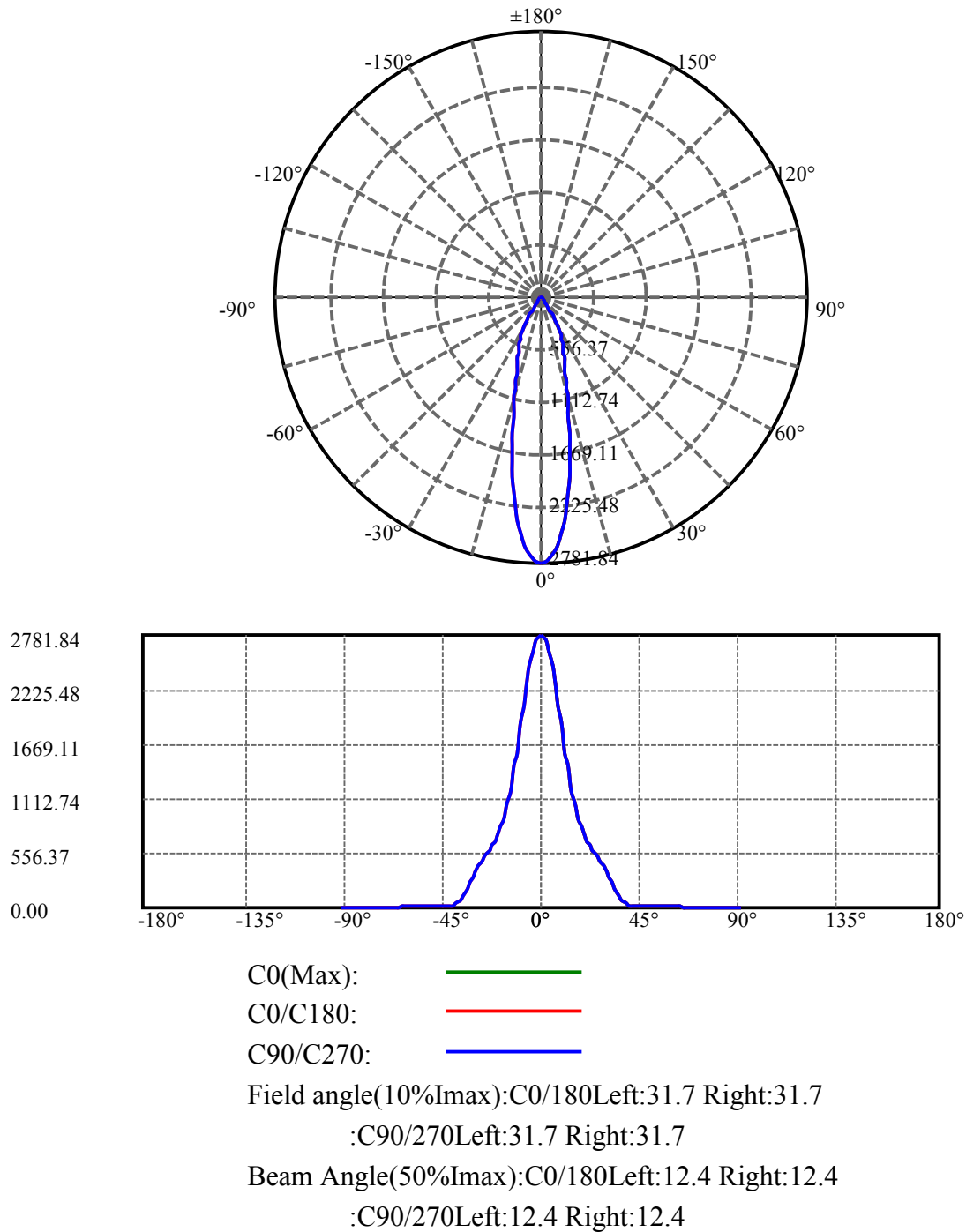
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.337	0.570	884.549	.052%	99.179%
77.0	5.273	0.566	885.115	.051%	99.243%
78.0	5.203	0.561	885.676	.051%	99.305%
79.0	5.126	0.555	886.231	.050%	99.368%
80.0	5.077	0.550	886.781	.050%	99.429%
81.0	5.020	0.546	887.327	.050%	99.491%
82.0	4.971	0.542	887.869	.049%	99.551%
83.0	4.887	0.536	888.405	.049%	99.611%
84.0	4.788	0.527	888.932	.048%	99.670%
85.0	4.711	0.518	889.45	.047%	99.729%
86.0	4.627	0.510	889.961	.046%	99.786%
87.0	4.479	0.498	890.459	.045%	99.842%
88.0	4.310	0.481	890.94	.044%	99.896%
89.0	4.240	0.469	891.409	.043%	99.948%
90.0	4.184	0.462	891.871	.042%	100.000%

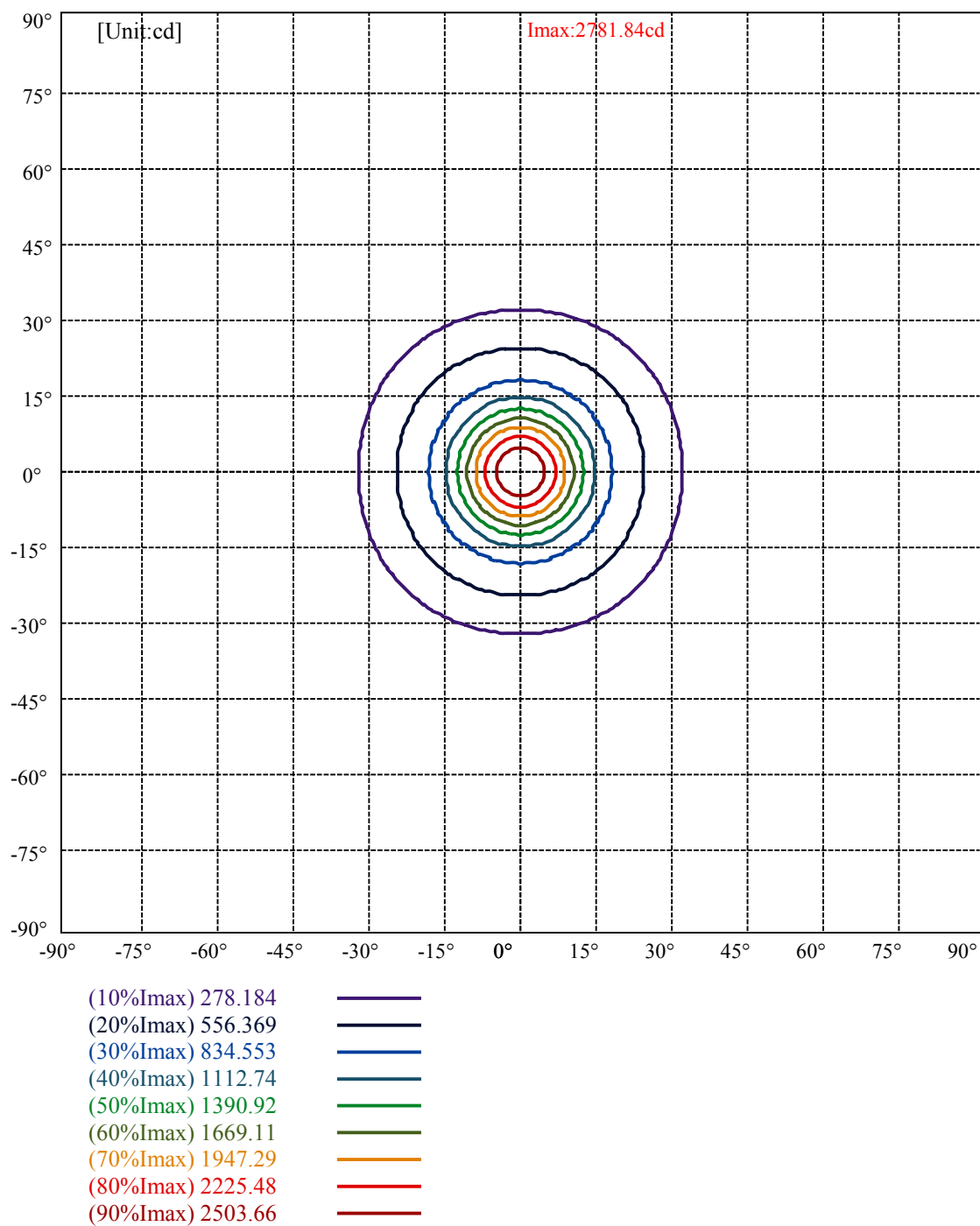
ZONAL LUMEN SUMMARY

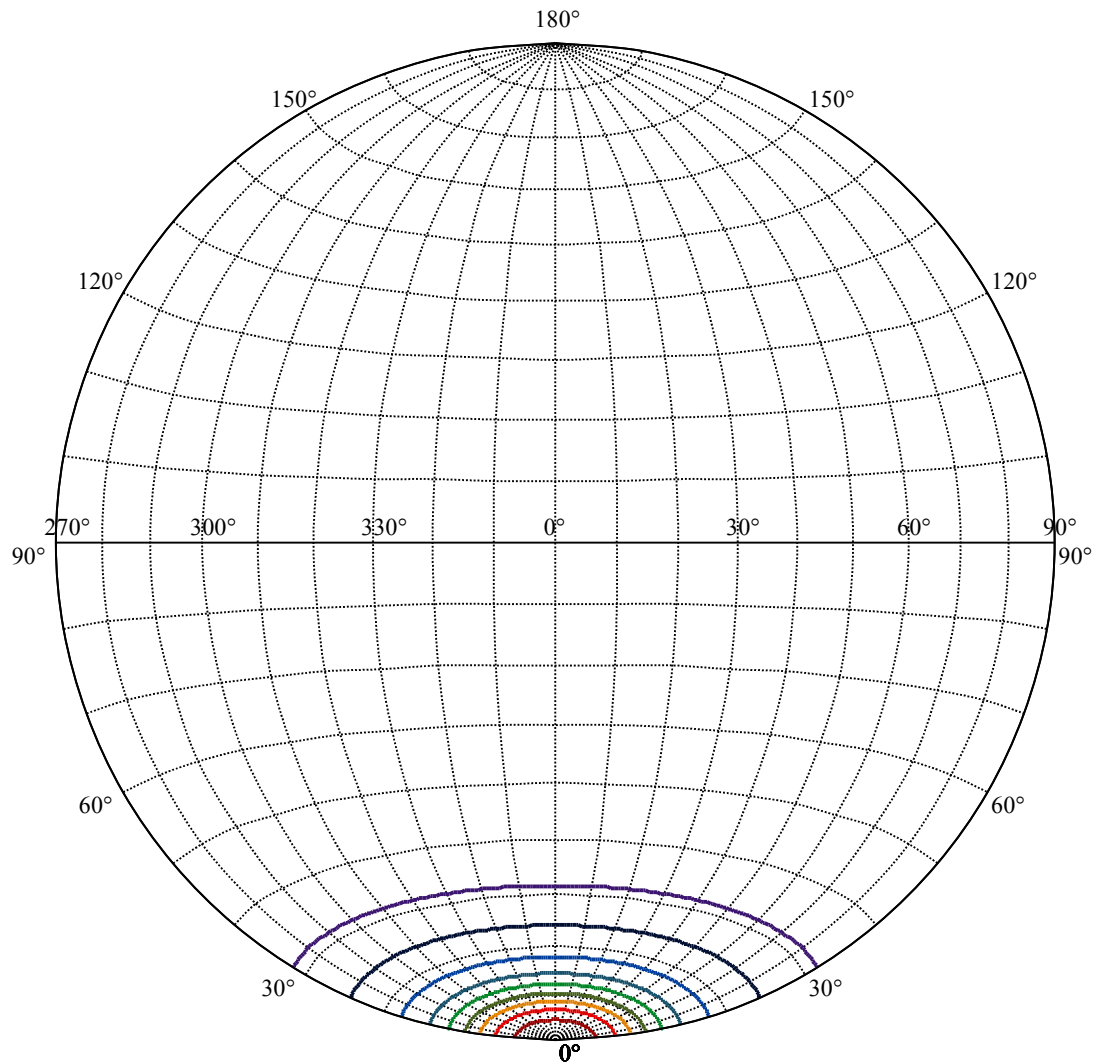
Zone	Lumens	%Lamp	%Fixt
0-30	759.08	69.01%	85.11%
0-40	849.26	77.21%	95.22%
0-60	872.76	79.34%	97.86%
0-90	891.41	81.04%	99.95%
0-120	891.41	81.04%	99.95%
0-180	891.87	81.08%	100.00%
60-90	19.61	1.78%	2.20%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.86	713.50	64.86%	80.00%

ZONAL LUMEN SUMMARY

0-10	212.14
10-20	304.48
20-30	242.47
30-40	90.18
40-50	12.88
50-60	10.62
60-70	8.16
70-80	5.86
80-90	4.63
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:2781.84

(10%Imax) 278.184

(20%Imax) 556.369

(30%Imax) 834.553

(40%Imax) 1112.74

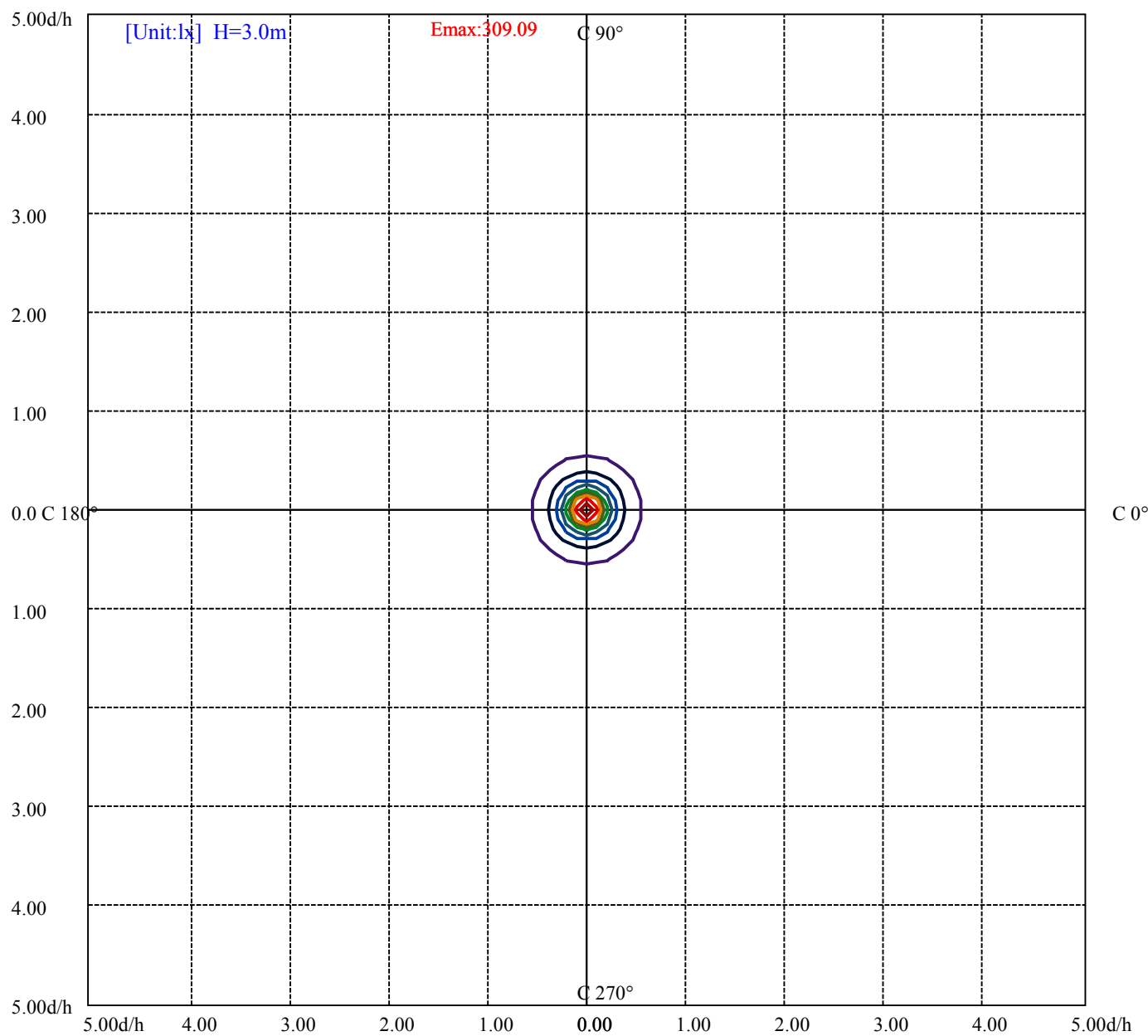
(50%Imax) 1390.92

(60%Imax) 1669.11

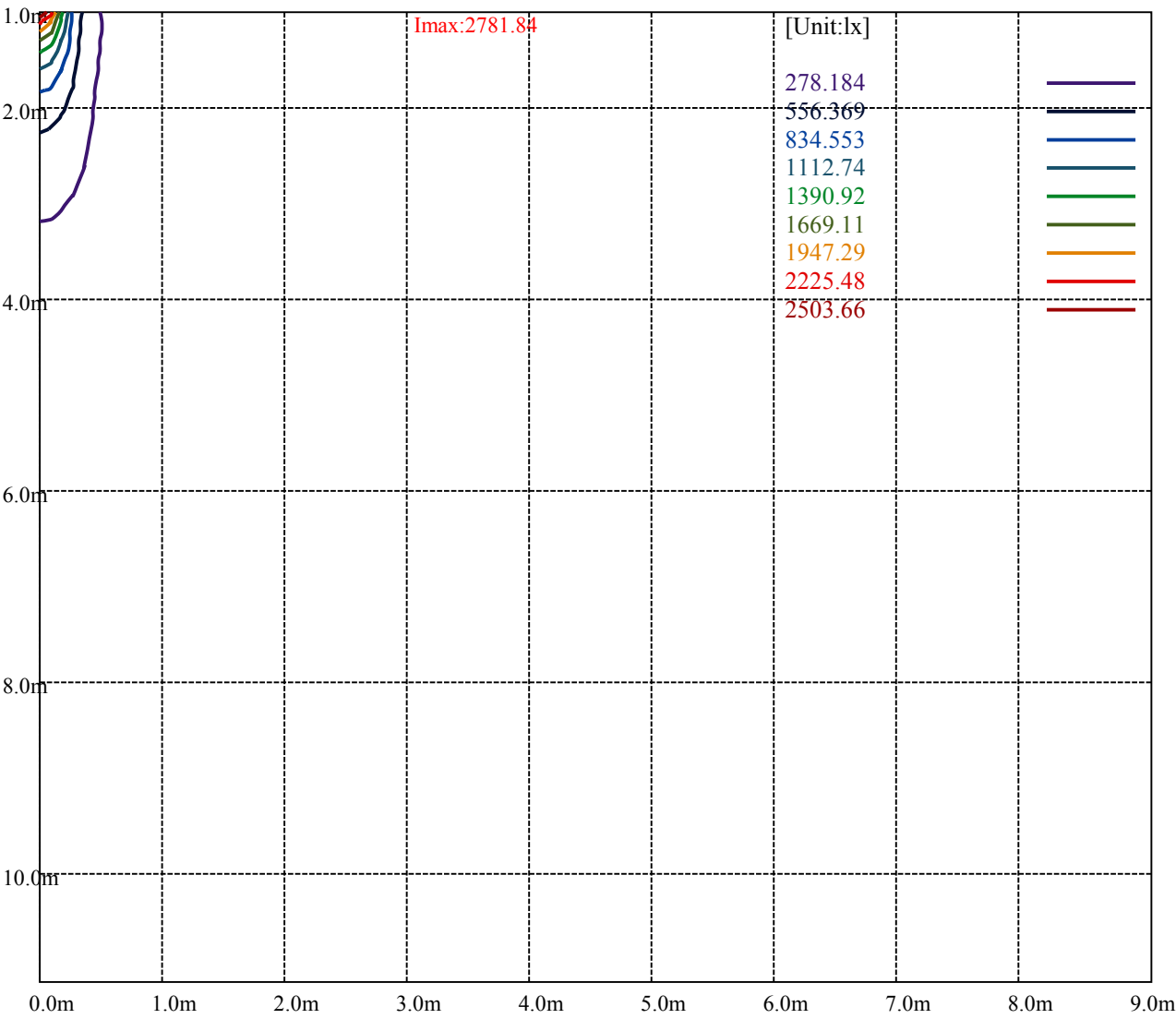
(70%Imax) 1947.29

(80%Imax) 2225.48

(90%Imax) 2503.66



(10%Emax)	30.90933	
(20%Emax)	61.81866	
(30%Emax)	92.728	
(40%Emax)	123.6378	
(50%Emax)	154.5467	
(60%Emax)	185.4556	
(70%Emax)	216.3656	
(80%Emax)	247.2744	
(90%Emax)	278.1844	



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

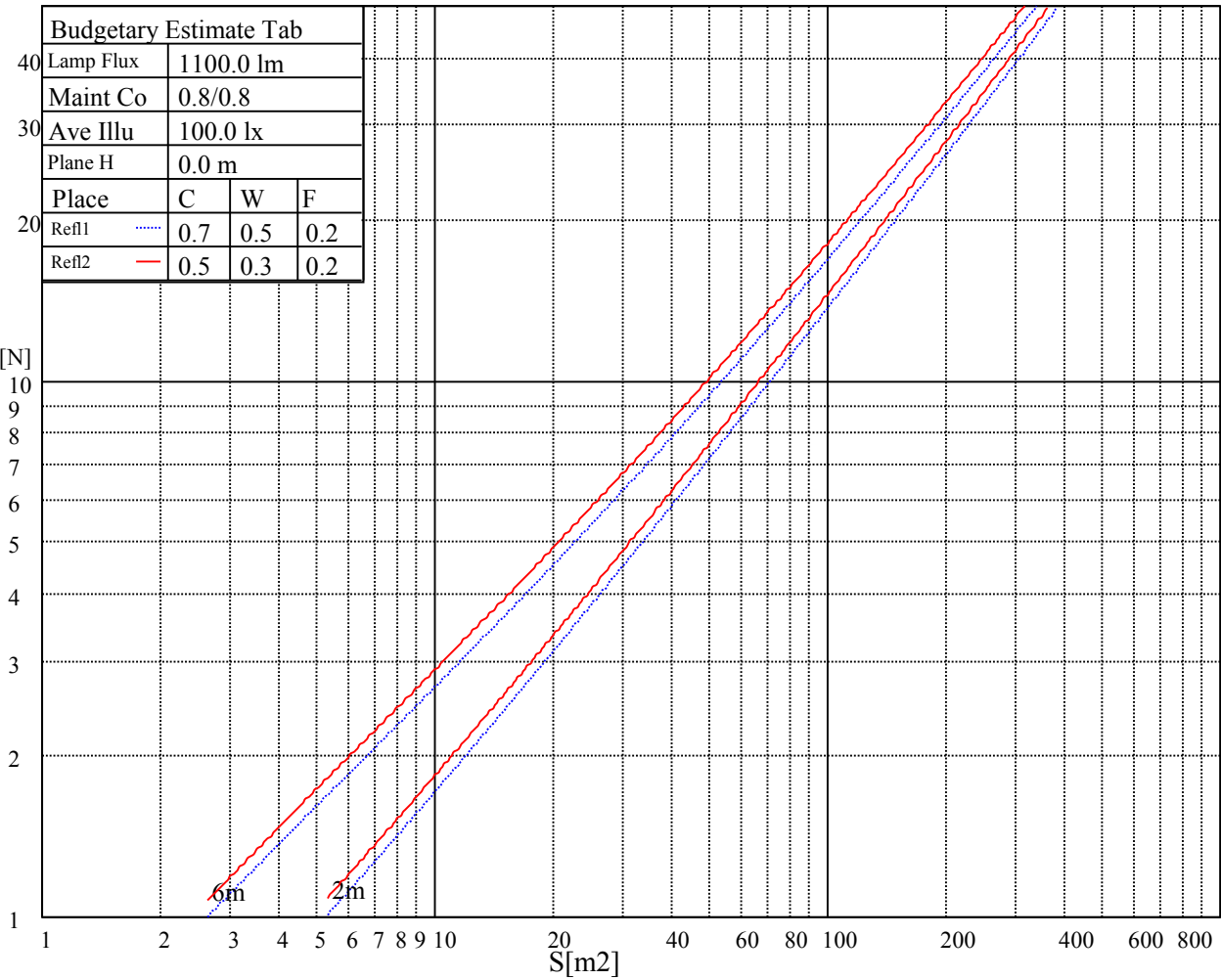
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

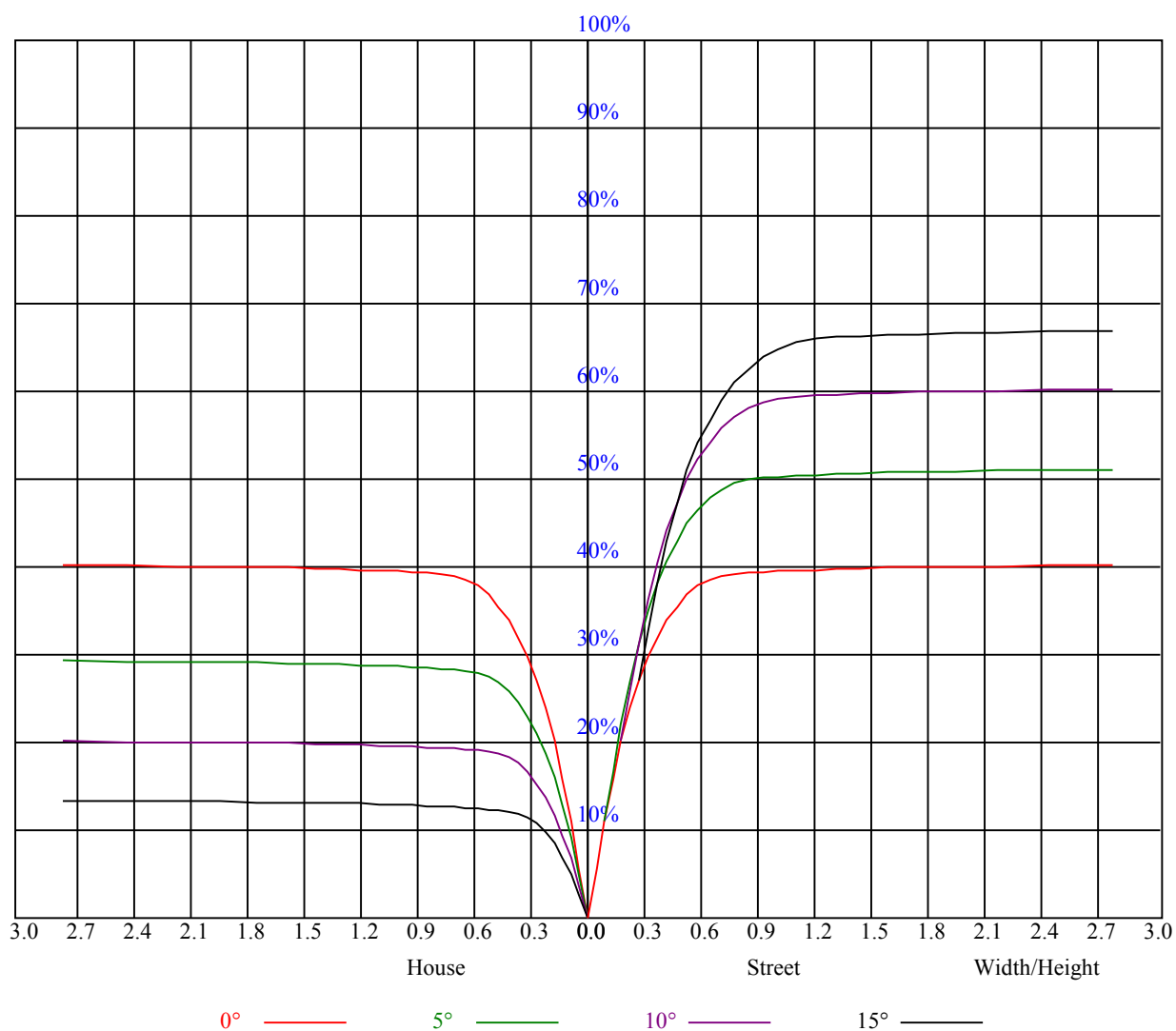
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

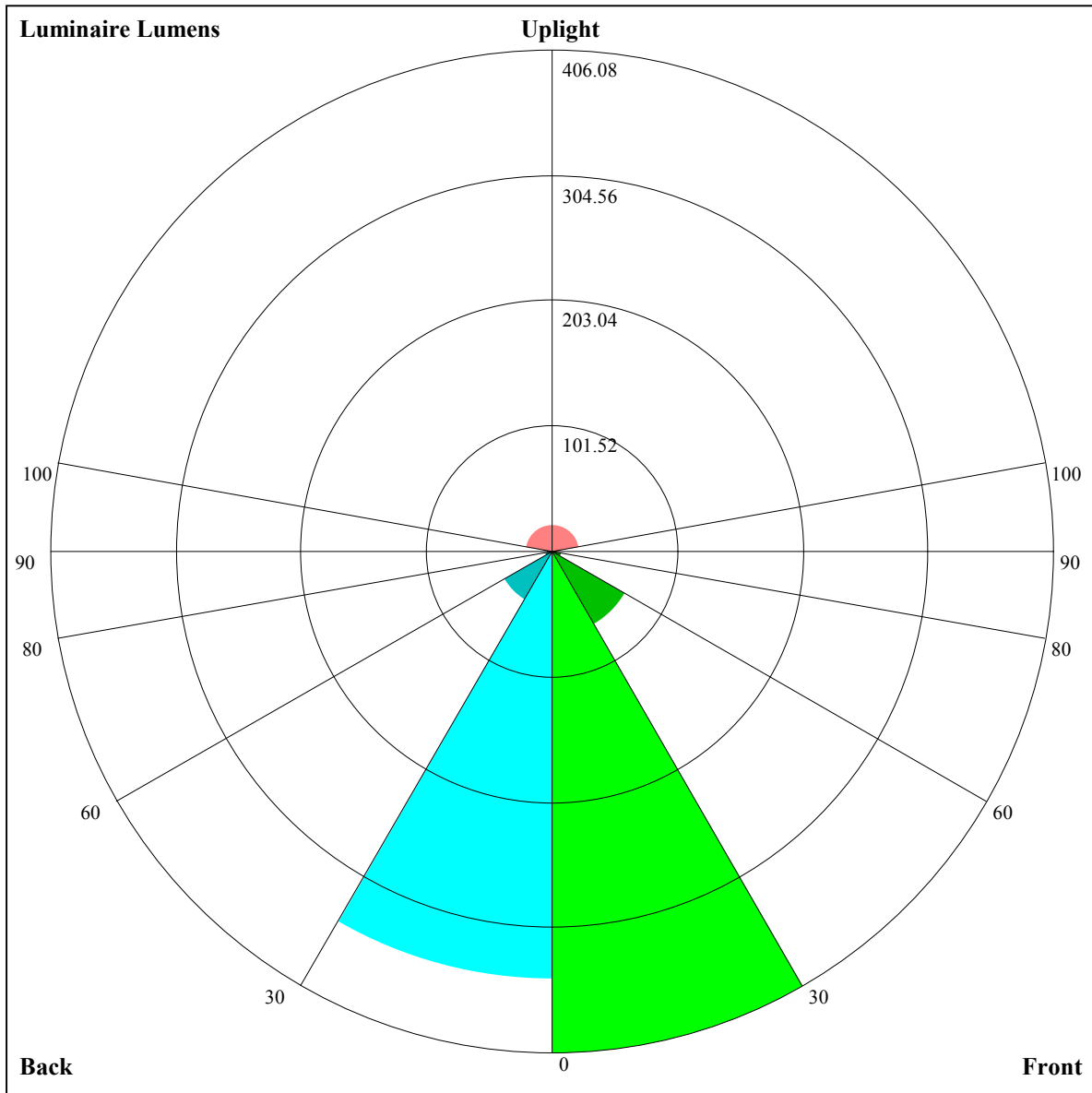
Luminance Limiting Curve





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	0.97	0.97	0.97	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.83	0.83	0.83	0.81
1	0.90	0.88	0.87	0.89	0.87	0.85	0.85	0.84	0.83	0.82	0.81	0.80	0.80	0.79	0.78	0.77
2	0.85	0.82	0.79	0.84	0.81	0.79	0.81	0.79	0.77	0.79	0.77	0.75	0.76	0.75	0.74	0.72
3	0.80	0.77	0.74	0.79	0.76	0.73	0.77	0.74	0.72	0.75	0.73	0.71	0.73	0.72	0.70	0.69
4	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.70	0.68	0.72	0.69	0.67	0.71	0.68	0.66	0.65
5	0.72	0.68	0.65	0.72	0.68	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.68	0.65	0.63	0.62
6	0.69	0.65	0.62	0.68	0.65	0.62	0.67	0.64	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.60
7	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.63	0.60	0.58	0.57
8	0.63	0.59	0.56	0.63	0.59	0.56	0.62	0.59	0.56	0.61	0.58	0.56	0.61	0.58	0.56	0.55
9	0.61	0.57	0.54	0.60	0.56	0.54	0.60	0.56	0.54	0.59	0.56	0.54	0.58	0.55	0.53	0.52
10	0.58	0.54	0.52	0.58	0.54	0.52	0.57	0.54	0.52	0.57	0.54	0.51	0.56	0.53	0.51	0.50





Luminaire Lumens:

FL=406.08,FM=68.56,FH=7.22,FVH=2.57

BL=346.85,BM=45.42,BH=6.82,BVH=2.52

UL=4.56,UH=21.72

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	2718.00	2769.19	2823.75	2835.00	2818.13	2774.81	2716.88	2630.25	2518.88		
45.0	2820.38	2833.88	2817.56	2774.81	2716.88	2604.94	2501.44	2378.25	2244.38		
90.0	2804.63	2781.56	2723.63	2644.31	2543.06	2421.56	2273.63	2132.44	1960.31		
135.0	2784.38	2739.94	2646.00	2558.25	2462.06	2319.19	2162.25	2010.94	1835.44		
180.0	2718.00	2629.69	2540.25	2400.19	2265.19	2098.13	1944.56	1769.63	1604.81		
225.0	2820.38	2786.06	2725.31	2619.00	2523.94	2394.00	2261.81	2093.06	1916.44		
270.0	2804.63	2801.81	2769.75	2723.06	2632.50	2532.94	2409.19	2280.94	2121.19		
315.0	2784.38	2799.56	2795.06	2769.19	2716.88	2617.88	2521.13	2413.69	2272.50		
360.0	2718.00	2769.19	2823.75	2835.00	2818.13	2774.81	2716.88	2630.25	2518.88		
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	2386.69	2274.75	2090.25	1937.81	1782.56	1597.50	1454.63	1324.69	1177.88		
45.0	2054.81	1894.50	1736.44	1569.38	1410.19	1281.94	1152.00	1044.56	963.00		
90.0	1796.06	1625.06	1461.38	1326.94	1114.26	1048.28	967.22	888.41	795.99		
135.0	1688.06	1521.00	1370.25	1247.06	1123.31	1015.88	938.81	873.56	800.44		
180.0	1464.19	1315.69	1120.89	1083.71	998.04	913.16	845.04	787.22	735.81		
225.0	1760.63	1593.56	1433.25	1303.31	1121.63	1063.63	978.86	908.10	839.25		
270.0	1947.38	1790.44	1618.88	1474.31	1324.69	1188.00	1080.56	987.75	892.13		
315.0	2126.81	1953.56	1777.50	1627.88	1467.00	1317.94	1120.84	1095.13	984.88		
360.0	2386.69	2274.75	2090.25	1937.81	1782.56	1597.50	1454.63	1324.69	1177.88		
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	1073.25	987.75	899.44	838.69	784.69	722.81	678.94	641.25	601.88		
45.0	884.25	824.63	764.44	712.13	671.06	625.50	591.75	564.75	541.13		
90.0	747.39	696.94	647.16	602.78	569.87	535.39	505.29	480.43	452.14		
135.0	747.56	698.06	645.75	609.75	579.94	549.56	519.75	494.44	462.94		
180.0	676.69	637.20	602.10	564.02	536.23	509.34	478.63	446.85	416.36		
225.0	780.02	734.63	689.06	648.17	615.04	580.50	553.05	521.61	490.16		
270.0	824.06	768.94	707.06	663.75	625.50	588.38	554.63	527.63	498.38		
315.0	909.23	849.77	794.87	739.01	693.68	654.47	612.34	582.92	555.41		
360.0	1073.25	987.75	899.44	838.69	784.69	722.81	678.94	641.25	601.88		
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	567.56	540.00	509.63	482.06	451.13	412.88	371.81	317.25	284.63		
45.0	505.69	479.25	454.50	414.56	370.69	329.63	285.75	207.28	160.03		
90.0	425.93	394.71	357.41	319.89	276.81	222.53	178.31	138.60	95.57		
135.0	435.38	393.75	342.56	292.50	254.48	178.82	134.78	96.08	60.02		
180.0	373.16	326.87	270.51	214.43	167.01	118.63	79.31	54.23	37.35		
225.0	462.77	429.47	379.13	332.10	281.59	218.08	169.54	125.16	83.53		
270.0	470.81	439.88	405.56	367.88	318.94	294.19	214.88	170.44	124.76		
315.0	525.26	495.34	468.34	432.73	392.29	338.51	281.03	229.28	173.53		
360.0	567.56	540.00	509.63	482.06	451.13	412.88	371.81	317.25	284.63		
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	204.41	155.48	101.64	68.06	45.68	30.26	25.09	21.88	19.74		
45.0	112.67	77.01	50.18	33.19	25.59	22.67	19.80	18.51	17.38		
90.0	67.05	47.64	35.04	26.72	24.13	21.77	20.25	18.79	17.78		
135.0	42.08	30.26	24.58	21.38	19.46	18.17	16.76	15.75	14.85		
180.0	25.93	22.28	19.58	17.49	16.20	15.13	14.12	13.44	12.88		
225.0	53.83	36.17	27.06	22.84	20.31	18.45	17.33	16.14	15.41		
270.0	86.46	59.06	41.57	28.86	25.14	22.78	20.64	19.46	18.39		
315.0	124.03	85.73	56.98	33.08	26.89	23.01	20.64	18.96	17.83		
360.0	204.41	155.48	101.64	68.06	45.68	30.26	25.09	21.88	19.74		

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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	18.11	16.76	15.53	14.57	13.67	12.88	12.43	12.21	12.09		
45.0	16.26	15.58	15.08	14.51	14.12	14.12	13.78	13.44	13.28		
90.0	16.88	16.03	15.36	14.79	14.46	14.01	13.50	13.16	12.83		
135.0	14.34	13.84	13.61	13.44	13.28	13.05	12.99	12.83	12.43		
180.0	12.38	12.09	12.04	11.81	11.70	11.59	11.53	11.31	11.03		
225.0	14.79	14.29	13.84	13.84	13.73	13.50	13.50	13.44	13.28		
270.0	17.21	16.20	15.64	14.96	14.34	14.18	13.73	13.73	13.39		
315.0	16.54	15.53	14.68	14.01	13.56	13.05	12.99	12.77	12.77		
360.0	18.11	16.76	15.53	14.57	13.67	12.88	12.43	12.21	12.09		
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	11.93	11.87	11.64	11.48	11.14	10.91	10.46	10.24	9.84		
45.0	12.99	12.60	12.21	11.64	11.19	10.63	10.13	9.73	9.34		
90.0	12.32	11.87	11.42	10.97	10.58	10.13	9.68	9.34	9.00		
135.0	12.04	11.64	11.19	10.74	10.24	9.90	9.45	9.11	8.72		
180.0	10.74	10.46	10.13	9.90	9.62	9.39	9.06	8.66	8.27		
225.0	12.94	12.60	11.98	11.59	11.03	10.46	10.13	9.68	9.17		
270.0	13.11	12.77	12.26	11.70	11.42	10.91	10.52	10.01	9.73		
315.0	12.66	12.54	12.21	11.87	11.42	11.19	10.63	10.24	9.90		
360.0	11.93	11.87	11.64	11.48	11.14	10.91	10.46	10.24	9.84		
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	9.68	9.39	9.06	8.72	8.27	7.99	7.59	7.43	7.20		
45.0	9.00	8.55	8.16	7.71	7.43	7.14	6.92	6.75	6.19		
90.0	8.55	8.16	7.76	7.43	7.20	6.92	6.58	6.08	5.68		
135.0	8.27	7.82	7.48	7.26	7.03	6.98	5.96	5.68	5.51		
180.0	7.93	7.59	7.43	7.20	6.86	6.19	5.91	5.74	5.57		
225.0	8.89	8.49	8.10	7.88	7.65	7.37	6.81	6.36	6.13		
270.0	9.28	9.00	8.55	8.33	8.16	7.82	7.65	6.97	6.36		
315.0	9.56	9.17	8.83	8.49	8.10	7.99	7.71	7.82	6.92		
360.0	9.68	9.39	9.06	8.72	8.27	7.99	7.59	7.43	7.20		
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	7.14	6.30	5.85	5.57	5.46	5.34	5.23	5.18	5.18		
45.0	5.63	5.46	5.23	5.12	5.01	4.95	4.89	4.84	4.78		
90.0	5.46	5.29	5.23	5.12	5.06	4.95	4.89	4.84	4.78		
135.0	5.34	5.23	5.18	5.06	5.06	4.95	4.89	4.78	4.78		
180.0	5.46	5.46	5.34	5.29	5.23	5.18	5.06	5.01	4.95		
225.0	5.91	5.85	5.74	5.74	5.63	5.63	5.57	5.46	5.40		
270.0	5.96	5.79	5.79	5.74	5.68	5.68	5.63	5.57	5.46		
315.0	6.19	5.85	5.74	5.63	5.57	5.51	5.46	5.34	5.29		
360.0	7.14	6.30	5.85	5.57	5.46	5.34	5.23	5.18	5.18		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	5.12	5.01	4.95	4.89	4.84	4.84	4.84	4.73	4.67		
45.0	4.67	4.61	4.56	4.56	4.50	4.44	4.33	4.28	4.22		
90.0	4.67	4.61	4.56	4.50	4.50	4.22	4.16	4.11	4.16		
135.0	4.73	4.67	4.56	4.50	4.39	4.28	4.22	4.16	4.11		
180.0	4.89	4.89	4.78	4.56	4.33	4.28	4.16	4.16	4.11		
225.0	5.34	5.40	5.23	5.06	5.06	5.01	4.28	4.22	4.16		
270.0	5.46	5.34	5.34	5.23	5.12	5.12	5.06	4.22	4.16		
315.0	5.29	5.23	5.12	5.01	4.95	4.84	4.78	4.61	4.33		
360.0	5.12	5.01	4.95	4.89	4.84	4.84	4.84	4.73	4.67		

Intensity data(cd)

Appendix Page: 19 Total:19

C/γ(°)	90.0
0.0	4.50
45.0	4.11
90.0	4.11
135.0	4.11
180.0	4.16
225.0	4.16
270.0	4.16
315.0	4.16
360.0	4.50