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Nata

Client:

LumCAT: 2-1777-L

Luminaire: 92.70.135.00

Report No: NT2018010901

Test No: GC2018010901

LampCAT: LUMILEDS 1208

Lamp flux(lm): 2981.0

Number of Lamps: 1

Length(mm): 64

Phm Type: C

Voltage(V): 35.0000

Current(A): 0.6400

Power (W): 22.4000

PF: 0.0000

Ballast type: DC

Width(mm): 64

Height(mm): 0

Photometric Results

Lumens(lm): 2918.93, Efficiency(%): 97.92% , Luminous Efficacy(lm/W): 130.31

Central intensity(cd): 15640.150, Maximum intensity(cd): 15640.150

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=18.8

[C90/270]Total=18.8

Field angle(10%Imax): [C0/180]Total=42.0

[C90/270]Total=42.0

Maximum s/h(1/2): C0_180=0.32 C90_270=0.32

Maximum s/h(1/4): C0_180=0.33 C90_270=0.33

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 98.04%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.415%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	15640.147	3.742	3.742	.126%	.128%
1.0	15600.919	29.858	33.6	1.002%	1.151%
2.0	15399.275	58.935	92.534	1.977%	3.170%
3.0	15075.819	86.523	179.058	2.902%	6.134%
4.0	14553.471	111.328	290.385	3.735%	9.948%
5.0	13602.303	130.005	420.39	4.361%	14.402%
6.0	12430.015	142.481	562.871	4.780%	19.283%
7.0	11209.139	149.802	712.674	5.025%	24.416%
8.0	9417.191	143.724	856.397	4.821%	29.339%
9.0	8321.706	142.757	999.154	4.789%	34.230%
10.0	7007.372	133.437	1132.591	4.476%	38.802%
11.0	5830.197	121.993	1254.584	4.092%	42.981%
12.0	4970.079	113.317	1367.901	3.801%	46.863%
13.0	4226.817	104.269	1472.169	3.498%	50.435%
14.0	3561.667	94.489	1566.658	3.170%	53.672%
15.0	3149.983	89.404	1656.062	2.999%	56.735%
16.0	2698.383	81.563	1737.625	2.736%	59.529%
17.0	2391.650	76.680	1814.305	2.572%	62.156%
18.0	2100.815	71.190	1885.496	2.388%	64.595%
19.0	1890.568	67.497	1952.993	2.264%	66.908%
20.0	1709.157	64.104	2017.097	2.150%	69.104%
21.0	1563.051	61.426	2078.523	2.061%	71.208%
22.0	1455.347	59.785	2138.309	2.006%	73.257%
23.0	1359.067	58.233	2196.542	1.953%	75.252%
24.0	1268.603	56.584	2253.126	1.898%	77.190%
25.0	1201.530	55.685	2308.81	1.868%	79.098%
26.0	1149.185	55.244	2364.054	1.853%	80.990%
27.0	1086.387	54.086	2418.14	1.814%	82.843%
28.0	1030.346	53.045	2471.185	1.779%	84.661%
29.0	974.402	51.804	2522.988	1.738%	86.435%
30.0	907.233	49.744	2572.732	1.669%	88.139%
31.0	831.069	46.938	2619.671	1.575%	89.748%
32.0	746.400	43.374	2663.045	1.455%	91.233%
33.0	654.153	39.070	2702.115	1.311%	92.572%
34.0	563.041	34.527	2736.641	1.158%	93.755%
35.0	470.994	29.625	2766.266	.994%	94.770%
36.0	383.358	24.710	2790.976	.829%	95.616%
37.0	292.735	19.319	2810.296	.648%	96.278%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	213.227	14.396	2824.691	.483%	96.771%
39.0	141.784	9.785	2834.476	.328%	97.107%
40.0	104.070	7.336	2841.812	.246%	97.358%
41.0	66.205	4.763	2846.575	.160%	97.521%
42.0	37.824	2.775	2849.35	.093%	97.616%
43.0	27.012	2.020	2851.371	.068%	97.685%
44.0	23.371	1.780	2853.151	.060%	97.746%
45.0	20.921	1.622	2854.773	.054%	97.802%
46.0	19.449	1.534	2856.307	.051%	97.854%
47.0	18.609	1.492	2857.8	.050%	97.906%
48.0	18.017	1.468	2859.268	.049%	97.956%
49.0	17.522	1.450	2860.718	.049%	98.006%
50.0	17.067	1.434	2862.152	.048%	98.055%
51.0	16.655	1.419	2863.571	.048%	98.103%
52.0	16.372	1.415	2864.986	.047%	98.152%
53.0	16.125	1.412	2866.398	.047%	98.200%
54.0	15.877	1.409	2867.807	.047%	98.248%
55.0	15.677	1.408	2869.215	.047%	98.297%
56.0	15.464	1.406	2870.621	.047%	98.345%
57.0	15.271	1.404	2872.026	.047%	98.393%
58.0	15.092	1.404	2873.429	.047%	98.441%
59.0	14.975	1.408	2874.837	.047%	98.489%
60.0	14.810	1.407	2876.243	.047%	98.537%
61.0	14.686	1.409	2877.652	.047%	98.586%
62.0	14.569	1.411	2879.063	.047%	98.634%
63.0	14.466	1.413	2880.476	.047%	98.682%
64.0	14.383	1.418	2881.894	.048%	98.731%
65.0	14.287	1.420	2883.314	.048%	98.780%
66.0	14.205	1.423	2884.737	.048%	98.828%
67.0	14.122	1.426	2886.162	.048%	98.877%
68.0	14.060	1.430	2887.592	.048%	98.926%
69.0	13.977	1.431	2889.023	.048%	98.975%
70.0	13.943	1.437	2890.46	.048%	99.025%
71.0	13.888	1.440	2891.9	.048%	99.074%
72.0	13.847	1.444	2893.344	.048%	99.123%
73.0	13.799	1.447	2894.791	.049%	99.173%
74.0	13.757	1.450	2896.241	.049%	99.223%
75.0	13.716	1.453	2897.694	.049%	99.272%

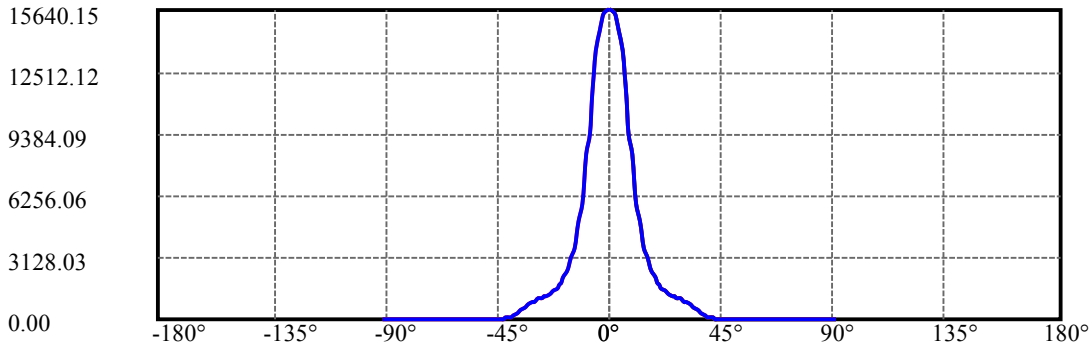
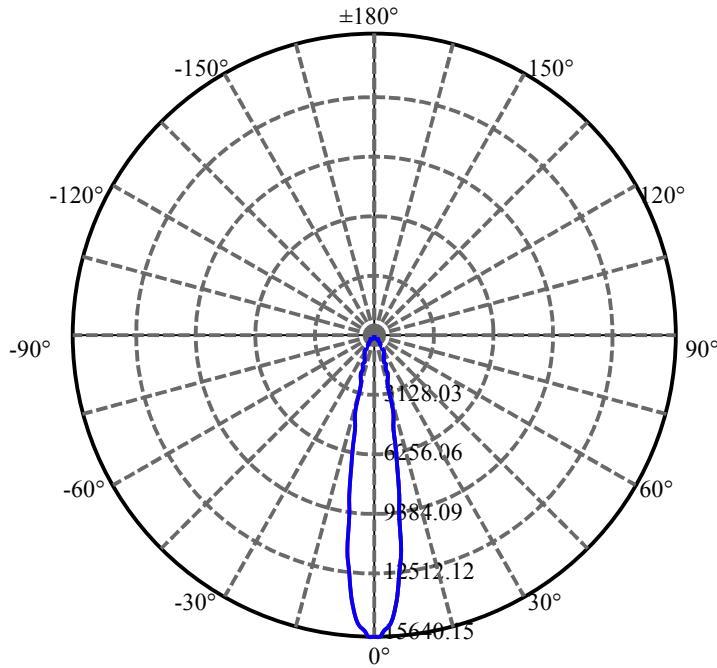
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.668	1.454	2899.148	.049%	99.322%
77.0	13.647	1.458	2900.606	.049%	99.372%
78.0	13.592	1.458	2902.064	.049%	99.422%
79.0	13.578	1.462	2903.526	.049%	99.472%
80.0	13.558	1.464	2904.99	.049%	99.522%
81.0	13.537	1.466	2906.456	.049%	99.573%
82.0	13.516	1.468	2907.924	.049%	99.623%
83.0	13.503	1.470	2909.394	.049%	99.673%
84.0	13.482	1.470	2910.864	.049%	99.724%
85.0	13.468	1.471	2912.335	.049%	99.774%
86.0	13.441	1.470	2913.806	.049%	99.824%
87.0	13.399	1.467	2915.273	.049%	99.875%
88.0	13.372	1.465	2916.738	.049%	99.925%
89.0	13.358	1.465	2918.203	.049%	99.975%
90.0	13.324	0.731	2918.934	.025%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2572.73	86.30%	88.14%
0-40	2841.81	95.33%	97.36%
0-60	2876.24	96.49%	98.54%
0-90	2918.20	97.89%	99.97%
0-120	2918.20	97.89%	99.97%
0-180	2918.93	97.92%	100.00%
60-90	43.37	1.45%	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%
0-25.48	2335.15	78.33%	80.00%

ZONAL LUMEN SUMMARY

0-10	1132.59
10-20	884.51
20-30	555.64
30-40	269.08
40-50	20.34
50-60	14.09
60-70	14.22
70-80	14.53
80-90	13.21
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



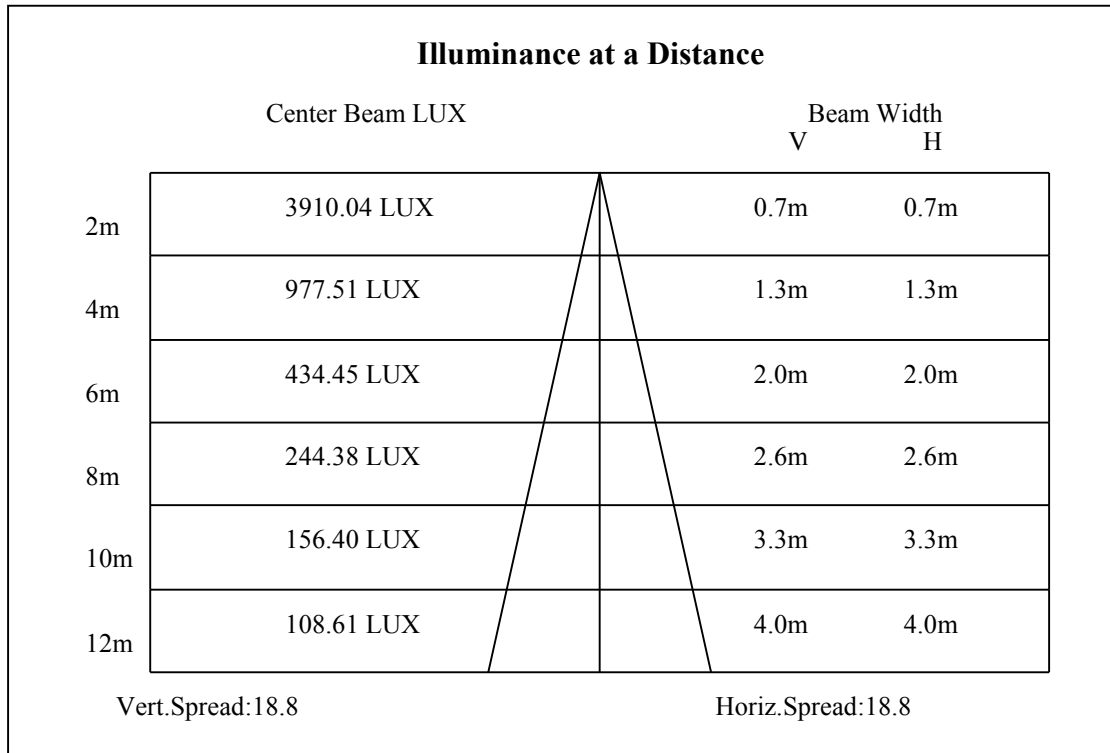
C0(Max): —————

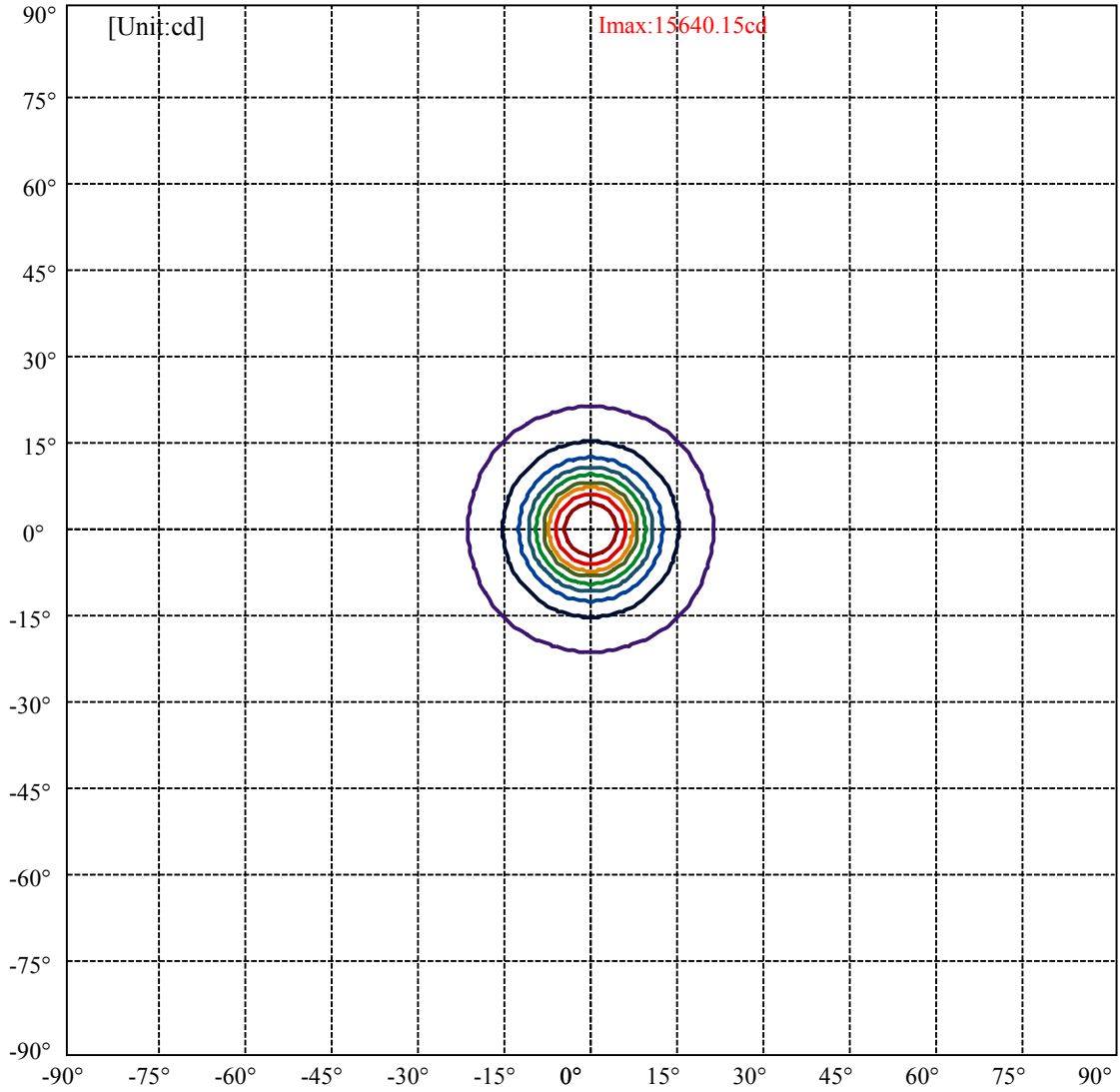
C0/C180: —————

C90/C270: —————

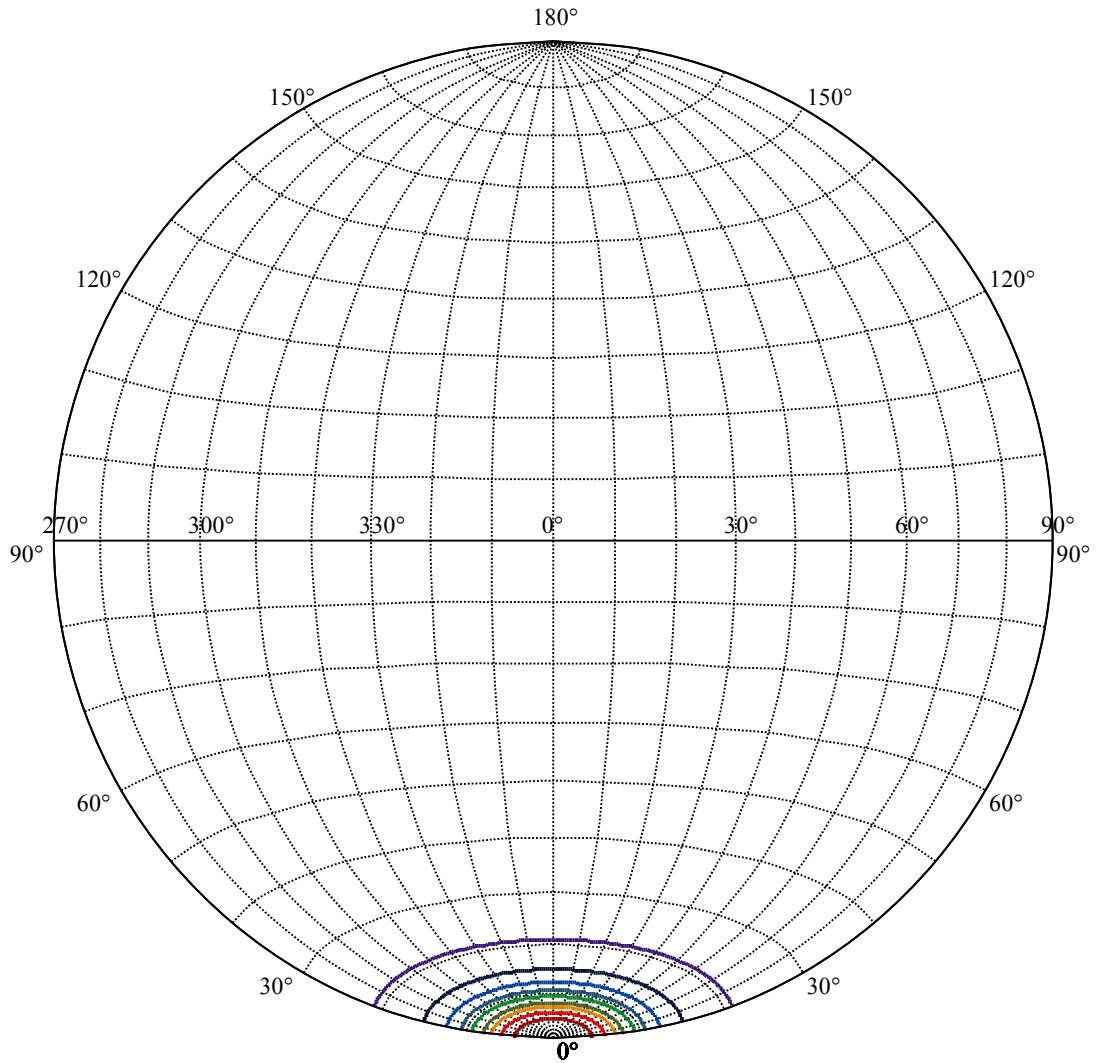
Field angle(10%Imax):C0/180Left:21.0 Right:21.0
:C90/270Left:21.0 Right:21.0

Beam Angle(50%Imax):C0/180Left:9.4 Right:9.4
:C90/270Left:9.4 Right:9.4





(10%Imax) 1564.01	—
(20%Imax) 3128.03	—
(30%Imax) 4692.04	—
(40%Imax) 6256.06	—
(50%Imax) 7820.07	—
(60%Imax) 9384.09	—
(70%Imax) 10948.1	—
(80%Imax) 12512.1	—
(90%Imax) 14076.1	—



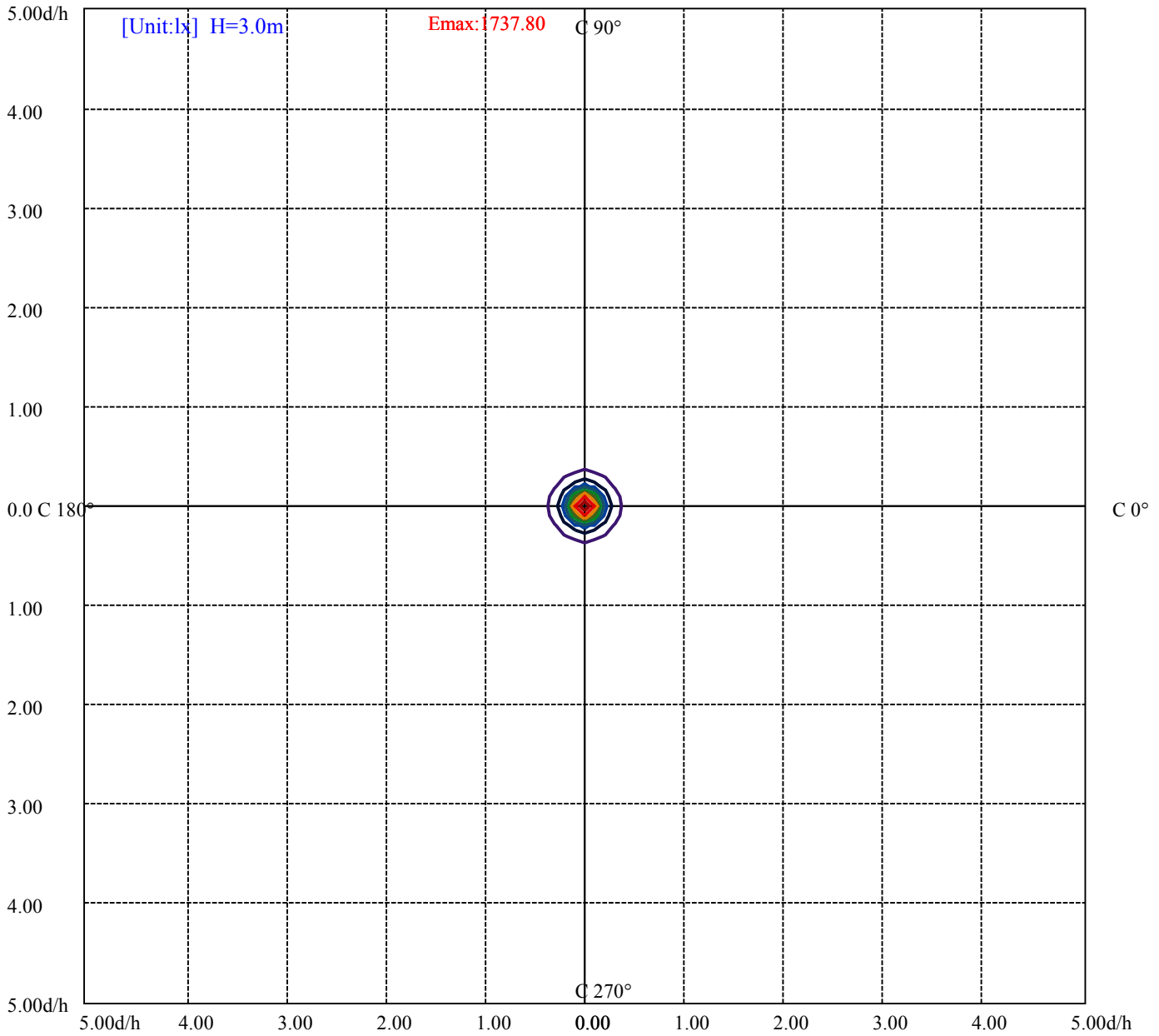
House

[Unit:cd]

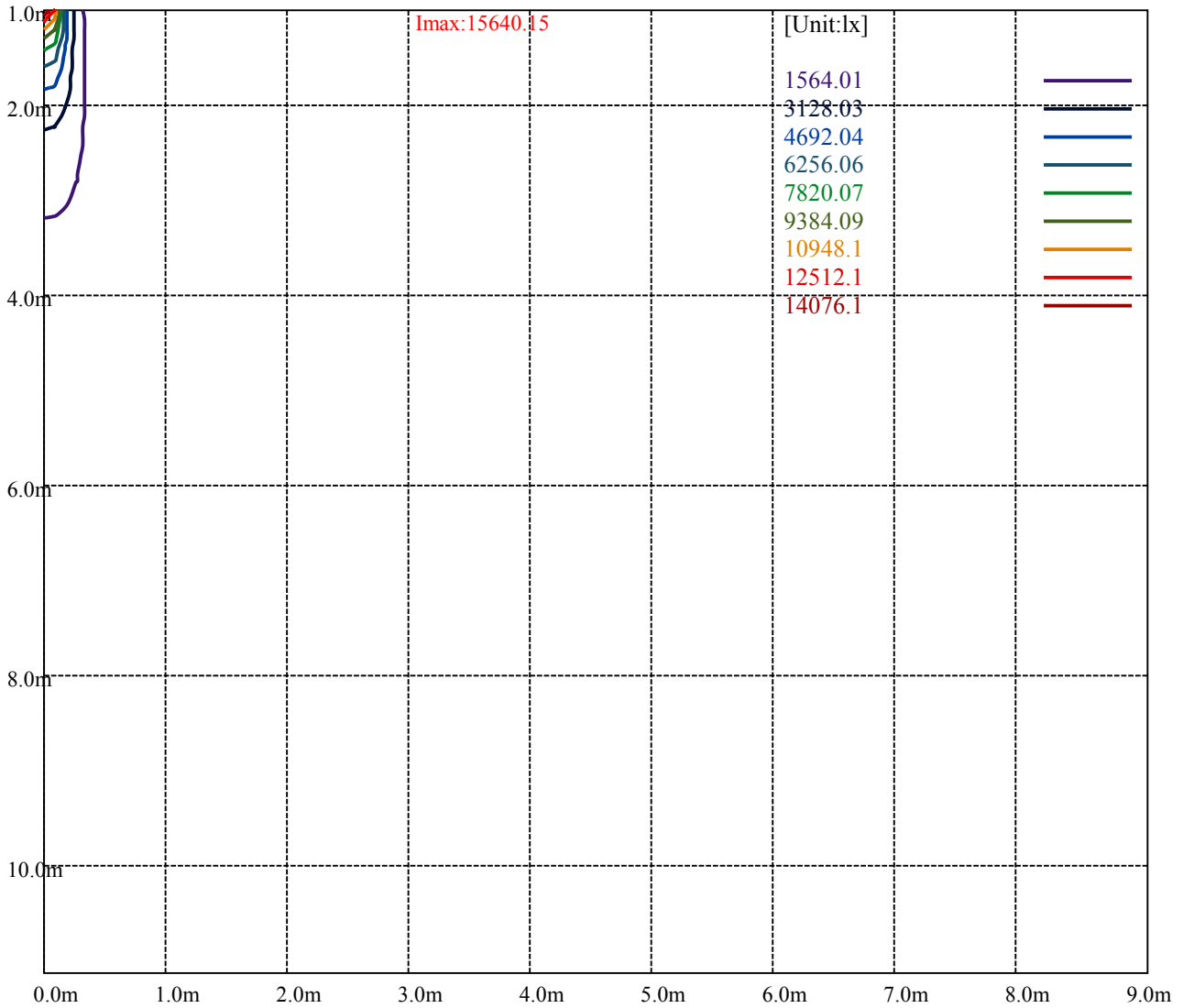
Road

Imax:15640.15

(10%Imax)	1564.01	—
(20%Imax)	3128.03	—
(30%Imax)	4692.04	—
(40%Imax)	6256.06	—
(50%Imax)	7820.07	—
(60%Imax)	9384.09	—
(70%Imax)	10948.1	—
(80%Imax)	12512.1	—
(90%Imax)	14076.1	—



- (10%Emax) 173.7789 ———
- (20%Emax) 347.5589 ———
- (30%Emax) 521.3378 ———
- (40%Emax) 695.1178 ———
- (50%Emax) 868.8967 ———
- (60%Emax) 1042.676 ———
- (70%Emax) 1216.456 ———
- (80%Emax) 1390.233 ———
- (90%Emax) 1564.011 ———



Luminance Table

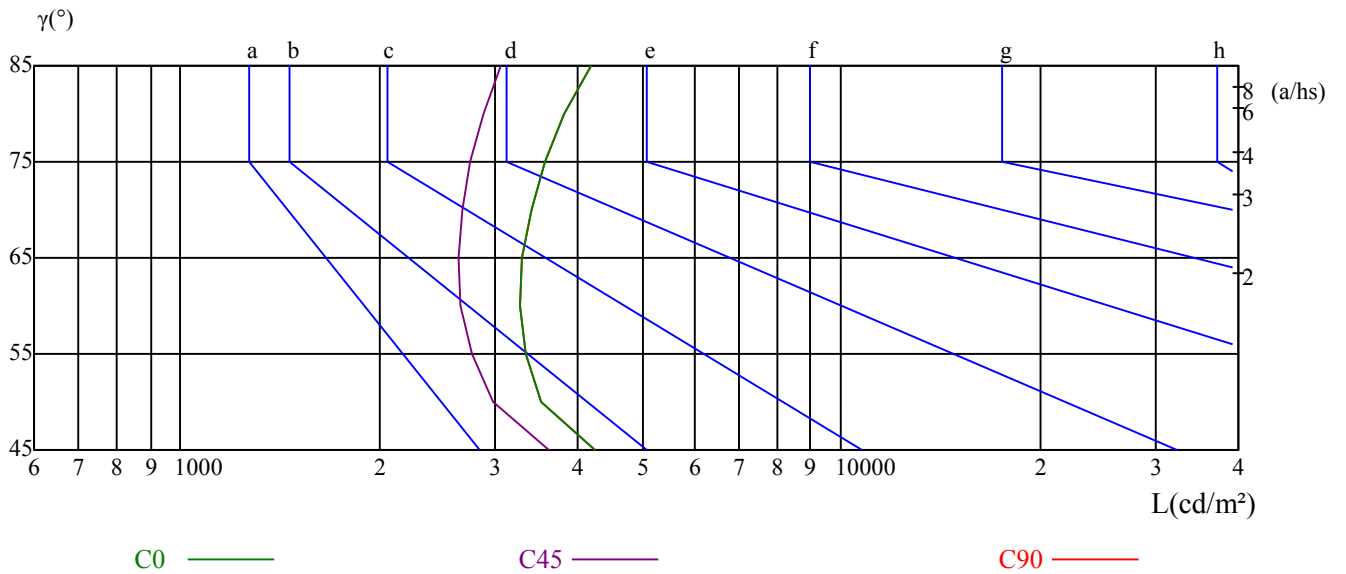
γ	45	50	55	60	65	70	75	80	85
C0	4241	3527	3330	3261	3291	3395	3570	3822	4175
C45	3622	2967	2757	2656	2635	2667	2746	2871	3051
C90	4241	3527	3330	3261	3291	3395	3570	3822	4175

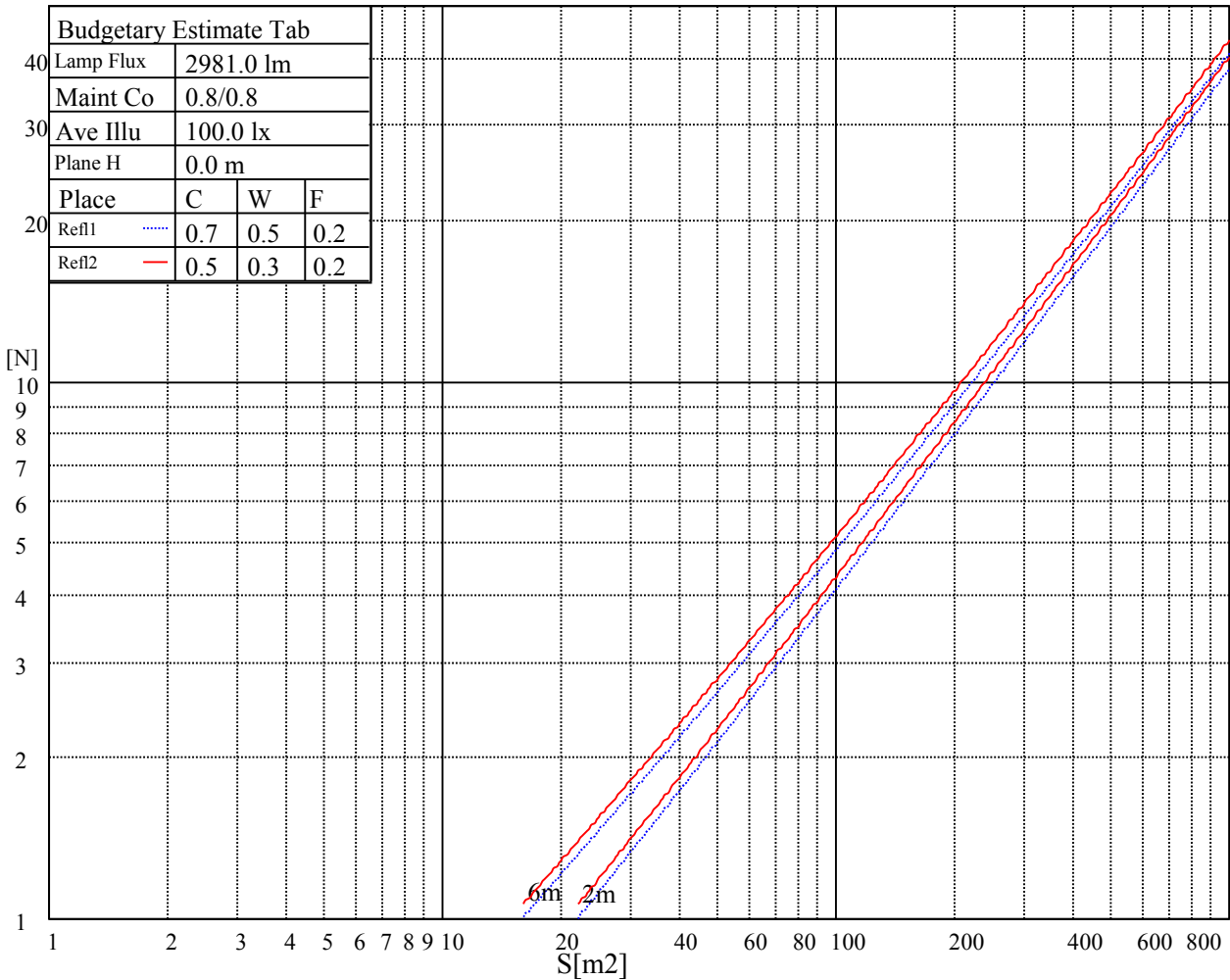
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8253	8253	8253	12938	12938	12938	37727	37727	37727

Glare Table

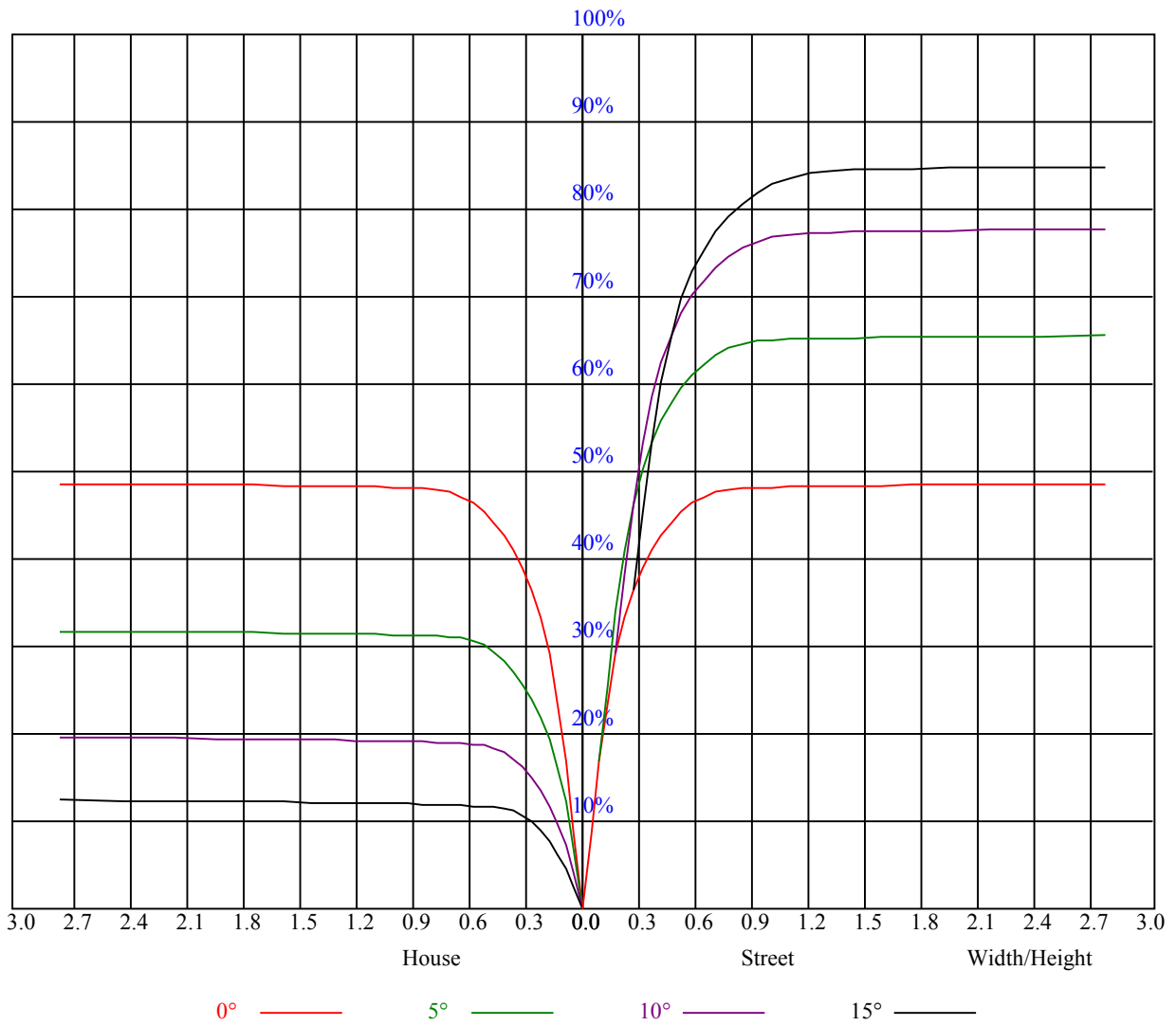
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

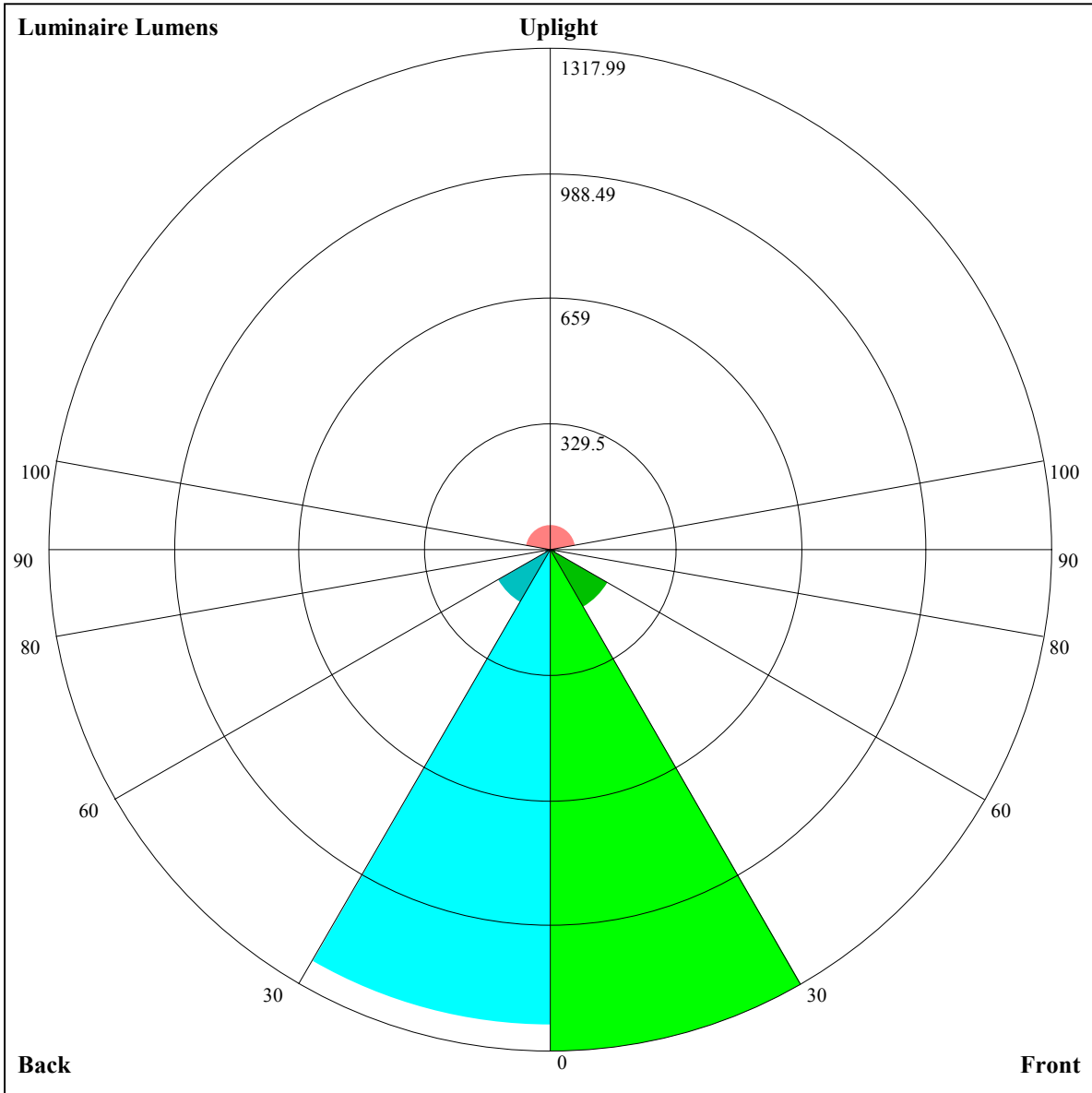
Luminance Limiting Curve





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	1.17	1.17	1.17	1.14	1.14	1.14	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.98
1	1.10	1.08	1.06	1.08	1.06	1.04	1.04	1.02	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.94
2	1.04	1.01	0.98	1.03	1.00	0.97	1.00	0.97	0.95	0.97	0.95	0.93	0.94	0.93	0.91	0.90
3	0.99	0.96	0.93	0.98	0.95	0.92	0.96	0.93	0.90	0.93	0.91	0.89	0.91	0.89	0.88	0.86
4	0.95	0.91	0.88	0.94	0.90	0.87	0.92	0.89	0.86	0.90	0.88	0.85	0.89	0.86	0.84	0.83
5	0.91	0.87	0.84	0.91	0.87	0.84	0.89	0.86	0.83	0.87	0.85	0.82	0.86	0.84	0.81	0.80
6	0.88	0.84	0.81	0.87	0.83	0.80	0.86	0.82	0.80	0.85	0.82	0.79	0.84	0.81	0.79	0.78
7	0.85	0.81	0.78	0.84	0.80	0.77	0.83	0.80	0.77	0.82	0.79	0.77	0.81	0.78	0.76	0.75
8	0.82	0.78	0.75	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.73
9	0.80	0.75	0.73	0.79	0.75	0.72	0.78	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.72	0.71
10	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.69





Luminaire Lumens:

FL=1317.99,FM=174.61,FH=14.42,FVH=7.35

BL=1250.99,BM=158.53,BH=14.27,BVH=7.32

UL=14.54,UH=69.18

BUG Rating:B3-U2-G0

Intensity data(cd)

C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0
0.0	15680.06	15691.07	15580.96	15404.78	15123.99	14512.87	13670.50	12448.25	10730.49
45.0	15669.05	15503.88	15074.44	14556.91	13769.61	12283.08	10741.50	9122.85	7570.26
90.0	15531.41	15223.09	14600.96	13775.11	12596.90	10851.07	9182.86	7512.45	6219.17
135.0	15680.06	15481.86	15090.96	14578.93	13725.56	12095.89	10433.19	8753.97	7234.41
180.0	15680.06	15580.96	15349.72	14964.33	14375.23	13235.56	10898.96	9822.06	8050.35
225.0	15669.05	15790.18	15812.20	15735.12	15525.90	15090.96	14562.42	13461.29	10806.47
270.0	15531.41	15746.13	15883.77	15900.29	15812.20	15580.96	15256.13	14744.10	13769.61
315.0	15680.06	15790.18	15801.19	15691.07	15498.38	15168.04	14694.55	13808.15	10956.77
360.0	15680.06	15691.07	15580.96	15404.78	15123.99	14512.87	13670.50	12448.25	10730.49
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	8946.67	7570.26	6320.47	5434.07	4580.69	3892.49	3396.98	2929.00	2791.36
45.0	6320.47	5395.53	4520.13	3897.99	3341.92	2879.45	2796.87	2228.68	1969.37
90.0	5290.92	4446.35	3848.44	3316.05	2922.39	2539.75	2222.63	2000.20	1815.21
135.0	6050.70	5158.78	4332.94	3743.84	3220.80	2791.36	2606.37	2163.17	1917.06
180.0	6759.82	5611.35	4708.97	4064.81	3535.17	3000.02	2643.26	2336.04	2025.52
225.0	10177.18	8361.97	7018.04	5823.32	4950.67	4159.51	3536.27	3077.65	2692.81
270.0	12283.08	10636.90	8748.46	7305.98	6017.66	4993.62	4266.87	3606.19	3083.16
315.0	10744.81	8877.84	7144.12	6174.58	5245.22	4237.14	3730.62	3246.13	2838.71
360.0	8946.67	7570.26	6320.47	5434.07	4580.69	3892.49	3396.98	2929.00	2791.36
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2268.32	2043.69	1841.09	1676.47	1553.14	1461.75	1346.68	1277.86	1223.90
45.0	1797.04	1648.94	1499.74	1400.63	1320.80	1241.52	1175.45	1125.90	1075.25
90.0	1630.77	1509.65	1412.20	1310.89	1244.27	1183.16	1093.14	1071.34	1032.09
135.0	1755.20	1609.30	1465.60	1372.01	1296.58	1221.70	1156.18	1109.39	1065.89
180.0	1831.18	1674.27	1518.46	1413.85	1326.86	1236.57	1183.71	1095.07	1079.49
225.0	2310.17	2072.87	1879.63	1685.28	1556.44	1448.53	1344.48	1261.34	1196.93
270.0	2785.85	2397.16	2094.90	1897.79	1733.73	1584.52	1460.10	1368.15	1281.71
315.0	2427.99	2168.67	1961.66	1747.49	1610.95	1494.78	1389.07	1303.18	1238.22
360.0	2268.32	2043.69	1841.09	1676.47	1553.14	1461.75	1346.68	1277.86	1223.90
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1148.48	1101.13	1065.34	1007.53	928.80	859.43	748.22	647.46	569.83
45.0	1032.86	985.51	904.03	826.40	724.54	632.60	545.06	441.55	340.80
90.0	979.56	895.49	818.25	714.58	625.72	525.57	425.09	338.27	256.89
135.0	1017.99	956.88	883.10	797.77	692.06	597.36	510.37	420.08	319.88
180.0	1034.45	979.67	913.39	824.74	739.13	639.87	542.58	457.74	373.72
225.0	1096.01	1080.15	1040.84	998.94	939.81	858.77	766.99	677.58	588.61
270.0	1206.84	1150.68	1098.38	1057.08	1015.79	957.43	883.10	804.92	690.41
315.0	1174.90	1093.25	1071.89	1030.82	982.70	900.17	811.81	716.72	627.81
360.0	1148.48	1101.13	1065.34	1007.53	928.80	859.43	748.22	647.46	569.83
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	458.62	368.88	282.44	180.09	114.30	64.53	34.13	29.57	25.44
45.0	284.64	179.98	99.49	52.74	29.18	25.44	21.64	18.83	18.00
90.0	166.33	103.01	53.68	28.19	25.33	21.86	18.72	17.84	17.34
135.0	284.09	153.94	86.16	43.60	32.21	28.79	24.06	21.69	21.03
180.0	272.31	196.00	127.84	62.60	35.79	30.39	25.60	21.58	20.04
225.0	480.26	394.75	310.46	210.87	141.77	82.91	39.26	27.91	24.28
270.0	603.42	516.43	404.11	317.12	286.29	169.85	86.16	44.65	30.28
315.0	517.20	428.89	341.62	239.05	167.70	105.87	53.02	34.02	30.56
360.0	458.62	368.88	282.44	180.09	114.30	64.53	34.13	29.57	25.44

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	21.53	20.37	19.60	18.99	18.33	17.78	17.34	17.12	16.85
45.0	17.34	16.96	16.63	16.19	15.86	15.64	15.53	15.36	15.20
90.0	16.96	16.52	16.19	15.97	15.75	15.53	15.36	15.20	15.03
135.0	20.21	19.55	18.94	18.28	17.84	17.45	17.07	16.74	16.41
180.0	19.32	18.66	17.95	17.34	16.90	16.57	16.24	15.97	15.75
225.0	20.15	18.17	17.56	17.07	16.63	16.08	15.75	15.53	15.31
270.0	25.77	22.19	19.93	19.10	18.39	17.95	17.23	16.85	16.63
315.0	26.10	23.18	22.08	21.20	20.48	19.55	18.72	18.22	17.84
360.0	21.53	20.37	19.60	18.99	18.33	17.78	17.34	17.12	16.85
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	16.63	16.41	16.13	15.91	15.64	15.42	15.31	15.14	14.98
45.0	15.03	14.92	14.65	14.59	14.53	14.48	14.31	14.26	14.26
90.0	14.92	14.76	14.70	14.53	14.48	14.42	14.31	14.26	14.15
135.0	16.13	15.86	15.58	15.42	15.25	15.14	14.92	14.81	14.65
180.0	15.53	15.36	15.25	15.09	14.92	14.87	14.76	14.65	14.53
225.0	15.09	14.98	14.81	14.65	14.48	14.48	14.31	14.20	14.09
270.0	16.41	16.19	15.97	15.69	15.47	15.25	15.03	14.87	14.76
315.0	17.29	16.96	16.63	16.30	15.97	15.75	15.53	15.31	15.14
360.0	16.63	16.41	16.13	15.91	15.64	15.42	15.31	15.14	14.98
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	14.87	14.76	14.70	14.53	14.42	14.37	14.31	14.26	14.26
45.0	14.15	14.09	13.98	13.98	13.87	13.82	13.76	13.76	13.65
90.0	14.15	14.04	13.98	13.93	13.87	13.76	13.71	13.71	13.65
135.0	14.53	14.48	14.31	14.26	14.20	14.09	13.98	13.98	13.93
180.0	14.37	14.31	14.20	14.09	14.04	14.04	13.93	13.87	13.82
225.0	14.09	14.04	13.93	13.87	13.76	13.76	13.65	13.65	13.60
270.0	14.59	14.48	14.48	14.37	14.31	14.20	14.15	14.04	13.98
315.0	14.98	14.87	14.70	14.59	14.48	14.42	14.31	14.26	14.20
360.0	14.87	14.76	14.70	14.53	14.42	14.37	14.31	14.26	14.26
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	14.20	14.15	14.15	14.04	14.04	13.98	13.87	13.87	13.82
45.0	13.65	13.60	13.49	13.49	13.43	13.43	13.32	13.38	13.38
90.0	13.65	13.60	13.60	13.54	13.54	13.49	13.54	13.49	13.49
135.0	13.93	13.87	13.82	13.76	13.65	13.71	13.65	13.65	13.60
180.0	13.87	13.82	13.76	13.71	13.65	13.65	13.65	13.60	13.60
225.0	13.54	13.54	13.43	13.49	13.43	13.43	13.32	13.32	13.32
270.0	13.82	13.76	13.76	13.71	13.71	13.65	13.60	13.54	13.54
315.0	14.09	14.04	14.04	13.98	13.87	13.82	13.76	13.76	13.71
360.0	14.20	14.15	14.15	14.04	14.04	13.98	13.87	13.87	13.82
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	13.76	13.76	13.71	13.65	13.65	13.60	13.60	13.54	13.49
45.0	13.32	13.32	13.32	13.32	13.32	13.43	13.27	13.16	13.21
90.0	13.49	13.49	13.43	13.43	13.49	13.32	13.32	13.32	13.32
135.0	13.60	13.54	13.54	13.54	13.54	13.49	13.38	13.43	13.38
180.0	13.60	13.54	13.54	13.54	13.49	13.43	13.43	13.43	13.38
225.0	13.32	13.27	13.32	13.27	13.27	13.27	13.27	13.21	13.21
270.0	13.54	13.54	13.49	13.49	13.43	13.43	13.38	13.38	13.38
315.0	13.65	13.65	13.65	13.60	13.54	13.54	13.54	13.49	13.49
360.0	13.76	13.76	13.71	13.65	13.65	13.60	13.60	13.54	13.49

Intensity data(cd)

C/ γ ($^{\circ}$)	90.0
0.0	13.43
45.0	13.16
90.0	13.27
135.0	13.38
180.0	13.38
225.0	13.16
270.0	13.38
315.0	13.43
360.0	13.43