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## Nata

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### Client:

LumCAT: 2-1682-M

Luminaire: 92.70.127.00

Report No: nt0100

Test No: NATA07

LampCAT: LUMINUS CLM-9-AA40

Lamp flux(lm): 1234.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 220.5000

Current(A): 0.1010

Power (W): 12.1600

PF: 0.5450

Ballast type: AC

Width(mm): 0

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1083.17, Efficiency(%): 87.78% , Luminous Efficacy(lm/W): 89.08

Central intensity(cd): 2112.326, Maximum intensity(cd): 2112.326

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=39.6

[C90/270]Total=39.6

Field angle(10%Imax): [C0/180]Total=71.4

[C90/270]Total=71.4

Maximum s/h(1/2): C0\_180=0.64 C90\_270=0.64

Maximum s/h(1/4): C0\_180=0.66 C90\_270=0.66

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 87.78%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 99.578%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2112.327	0.000	0	.000%	.000%
1.0	2109.136	2.020	2.02	.164%	.186%
2.0	2098.696	6.039	8.059	.489%	.744%
3.0	2081.758	9.998	18.058	.810%	1.667%
4.0	2058.557	13.859	31.917	1.123%	2.947%
5.0	2027.002	17.576	49.492	1.424%	4.569%
6.0	1991.388	21.118	70.61	1.711%	6.519%
7.0	1948.465	24.455	95.065	1.982%	8.777%
8.0	1898.175	27.530	122.594	2.231%	11.318%
9.0	1846.899	30.352	152.946	2.460%	14.120%
10.0	1787.445	32.889	185.836	2.665%	17.157%
11.0	1722.771	35.074	220.91	2.842%	20.395%
12.0	1653.108	36.903	257.813	2.991%	23.802%
13.0	1578.630	38.353	296.166	3.108%	27.342%
14.0	1510.881	39.545	335.711	3.205%	30.993%
15.0	1418.945	40.222	375.933	3.259%	34.707%
16.0	1342.043	40.456	416.389	3.278%	38.442%
17.0	1281.510	40.856	457.245	3.311%	42.213%
18.0	1200.785	40.928	498.173	3.317%	45.992%
19.0	1117.068	40.326	538.499	3.268%	49.715%
20.0	1044.191	39.557	578.056	3.206%	53.367%
21.0	953.084	38.352	616.407	3.108%	56.908%
22.0	884.396	36.925	653.332	2.992%	60.317%
23.0	834.402	36.065	689.397	2.923%	63.646%
24.0	757.865	34.813	724.21	2.821%	66.860%
25.0	708.643	33.345	757.555	2.702%	69.939%
26.0	657.825	32.256	789.811	2.614%	72.916%
27.0	603.922	30.869	820.68	2.502%	75.766%
28.0	557.507	29.405	850.085	2.383%	78.481%
29.0	501.156	27.698	877.782	2.245%	81.038%
30.0	457.027	25.871	903.653	2.096%	83.426%
31.0	411.412	24.167	927.82	1.958%	85.658%
32.0	369.800	22.381	950.201	1.814%	87.724%
33.0	323.988	20.439	970.64	1.656%	89.611%
34.0	284.795	18.424	989.064	1.493%	91.312%
35.0	246.541	16.501	1005.565	1.337%	92.835%
36.0	197.307	14.132	1019.698	1.145%	94.140%
37.0	163.572	11.770	1031.467	.954%	95.226%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	132.186	9.872	1041.339	.800%	96.138%
39.0	103.079	8.030	1049.37	.651%	96.879%
40.0	78.729	6.341	1055.71	.514%	97.465%
41.0	66.658	5.177	1060.888	.420%	97.943%
42.0	41.775	3.940	1064.827	.319%	98.306%
43.0	31.137	2.701	1067.528	.219%	98.556%
44.0	22.419	2.021	1069.549	.164%	98.742%
45.0	15.452	1.455	1071.005	.118%	98.877%
46.0	11.241	1.044	1072.049	.085%	98.973%
47.0	9.107	0.809	1072.858	.066%	99.048%
48.0	7.778	0.683	1073.541	.055%	99.111%
49.0	6.891	0.602	1074.143	.049%	99.166%
50.0	6.230	0.547	1074.69	.044%	99.217%
51.0	5.725	0.506	1075.196	.041%	99.264%
52.0	5.325	0.474	1075.67	.038%	99.307%
53.0	4.959	0.447	1076.117	.036%	99.349%
54.0	4.669	0.424	1076.542	.034%	99.388%
55.0	4.350	0.403	1076.944	.033%	99.425%
56.0	3.996	0.377	1077.321	.031%	99.460%
57.0	3.701	0.352	1077.673	.029%	99.492%
58.0	3.434	0.330	1078.003	.027%	99.523%
59.0	3.150	0.308	1078.311	.025%	99.551%
60.0	2.906	0.286	1078.597	.023%	99.578%
61.0	2.686	0.267	1078.864	.022%	99.602%
62.0	2.488	0.249	1079.113	.020%	99.625%
63.0	2.314	0.234	1079.347	.019%	99.647%
64.0	2.129	0.218	1079.565	.018%	99.667%
65.0	1.990	0.204	1079.769	.017%	99.686%
66.0	1.845	0.191	1079.96	.016%	99.703%
67.0	1.740	0.180	1080.14	.015%	99.720%
68.0	1.636	0.171	1080.311	.014%	99.736%
69.0	1.520	0.161	1080.472	.013%	99.751%
70.0	1.462	0.153	1080.625	.012%	99.765%
71.0	1.380	0.147	1080.772	.012%	99.778%
72.0	1.328	0.141	1080.913	.011%	99.791%
73.0	1.270	0.136	1081.049	.011%	99.804%
74.0	1.218	0.131	1081.18	.011%	99.816%
75.0	1.201	0.128	1081.308	.010%	99.828%

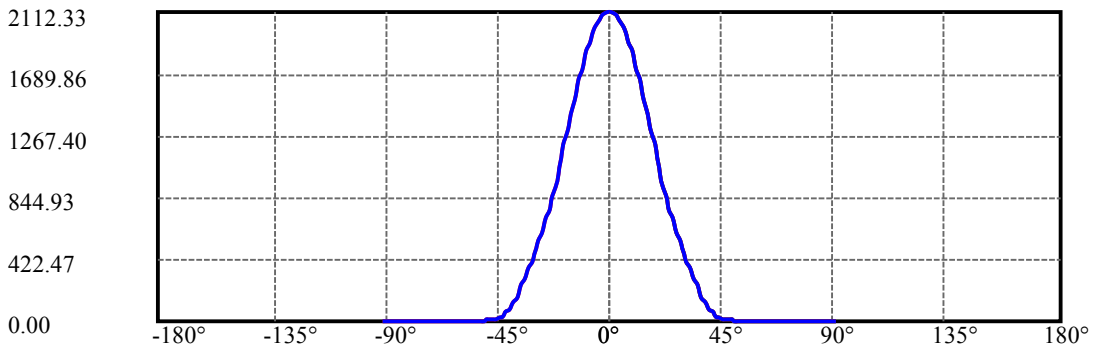
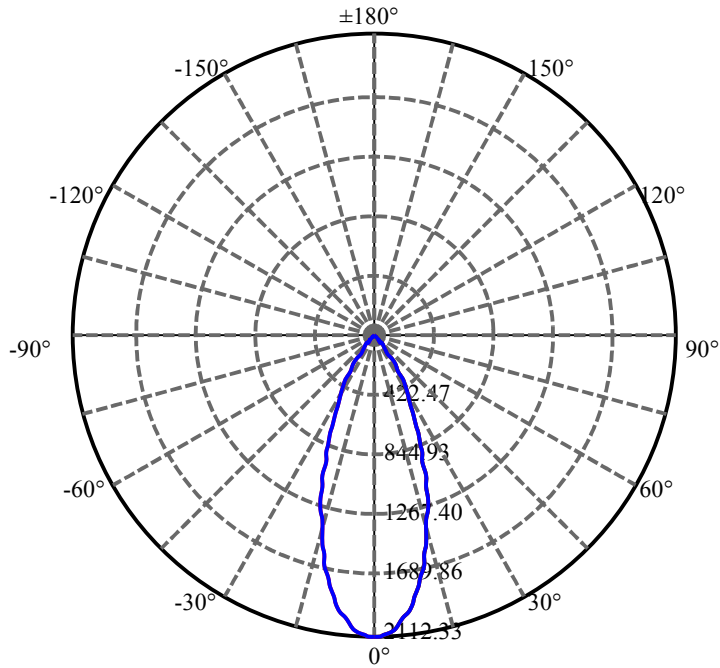
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.183	0.127	1081.434	.010%	99.839%
77.0	1.166	0.125	1081.559	.010%	99.851%
78.0	1.131	0.123	1081.682	.010%	99.862%
79.0	1.148	0.122	1081.805	.010%	99.874%
80.0	1.137	0.123	1081.928	.010%	99.885%
81.0	1.119	0.122	1082.05	.010%	99.896%
82.0	1.137	0.122	1082.172	.010%	99.908%
83.0	1.143	0.124	1082.296	.010%	99.919%
84.0	1.143	0.125	1082.421	.010%	99.931%
85.0	1.143	0.125	1082.546	.010%	99.942%
86.0	1.148	0.125	1082.671	.010%	99.954%
87.0	1.148	0.126	1082.797	.010%	99.965%
88.0	1.143	0.126	1082.922	.010%	99.977%
89.0	1.143	0.125	1083.047	.010%	99.988%
90.0	1.148	0.126	1083.173	.010%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	903.65	73.23%	83.43%
0-40	1055.71	85.55%	97.46%
0-60	1078.60	87.41%	99.58%
0-90	1083.05	87.77%	99.99%
0-120	1083.05	87.77%	99.99%
0-180	1083.17	87.78%	100.00%
60-90	4.74	0.38%	0.44%
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%
0-28.59	866.54	70.22%	80.00%

ZONAL LUMEN SUMMARY

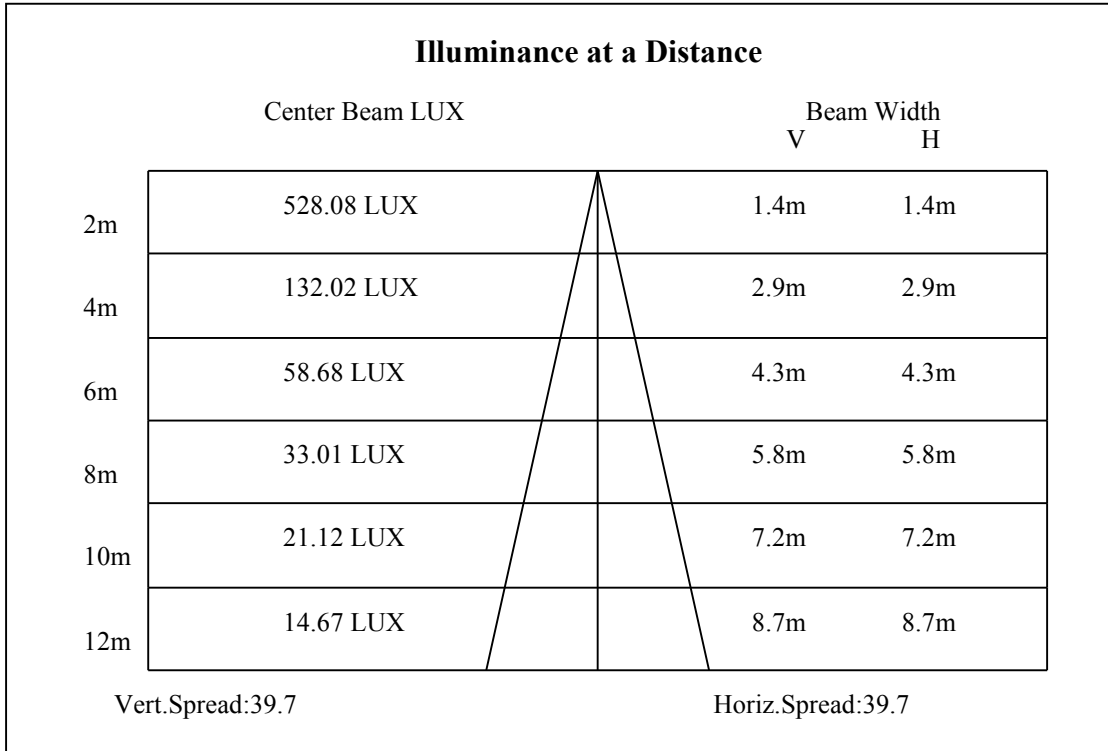
0-10	185.84
10-20	392.22
20-30	325.60
30-40	152.06
40-50	18.98
50-60	3.91
60-70	2.03
70-80	1.30
80-90	1.12
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

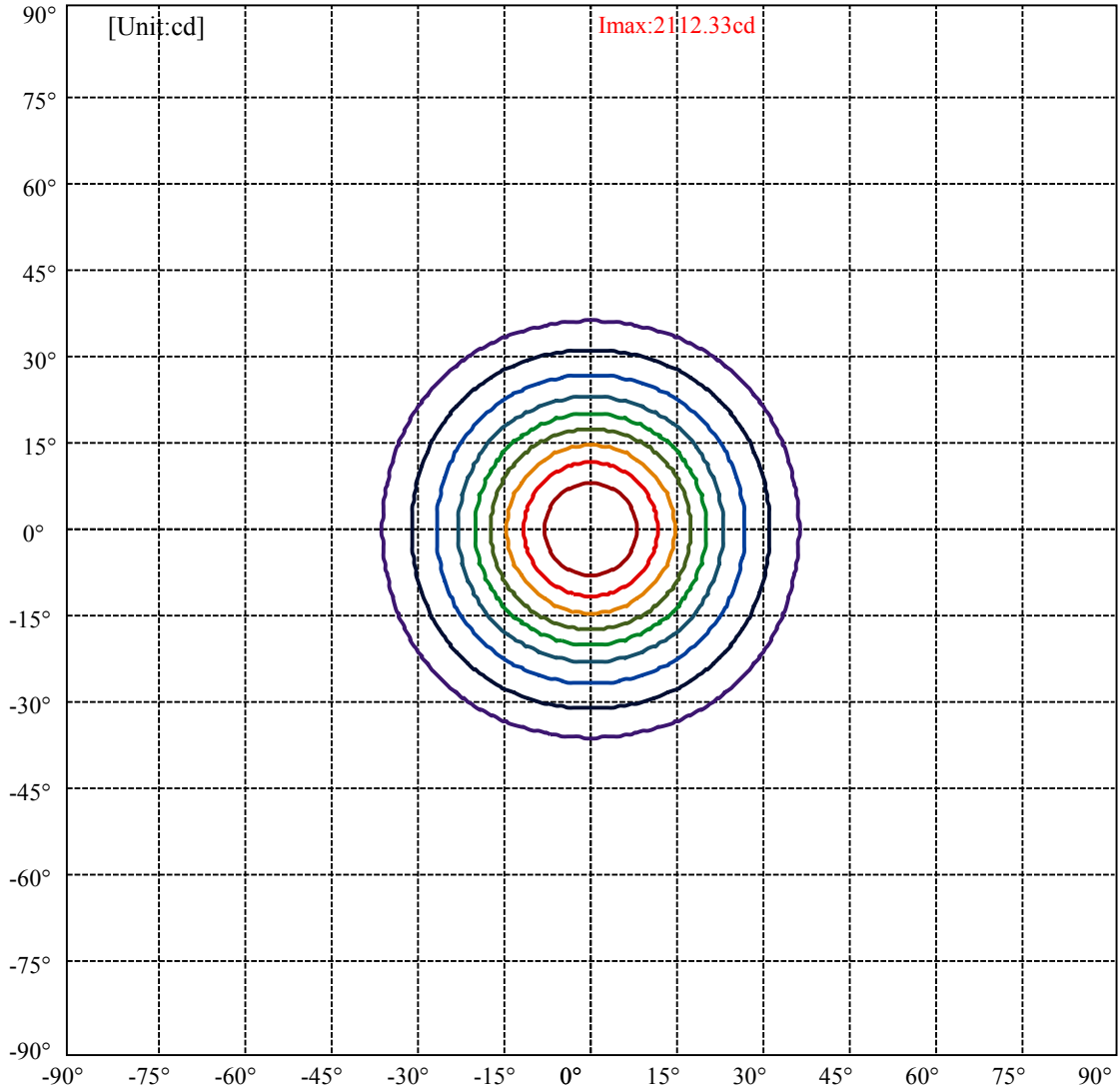


C0(Max): ———  
C0/C180: ———  
C90/C270: ———

Field angle(10%Imax):C0/180Left:35.7 Right:35.7  
:C90/270Left:35.7 Right:35.7

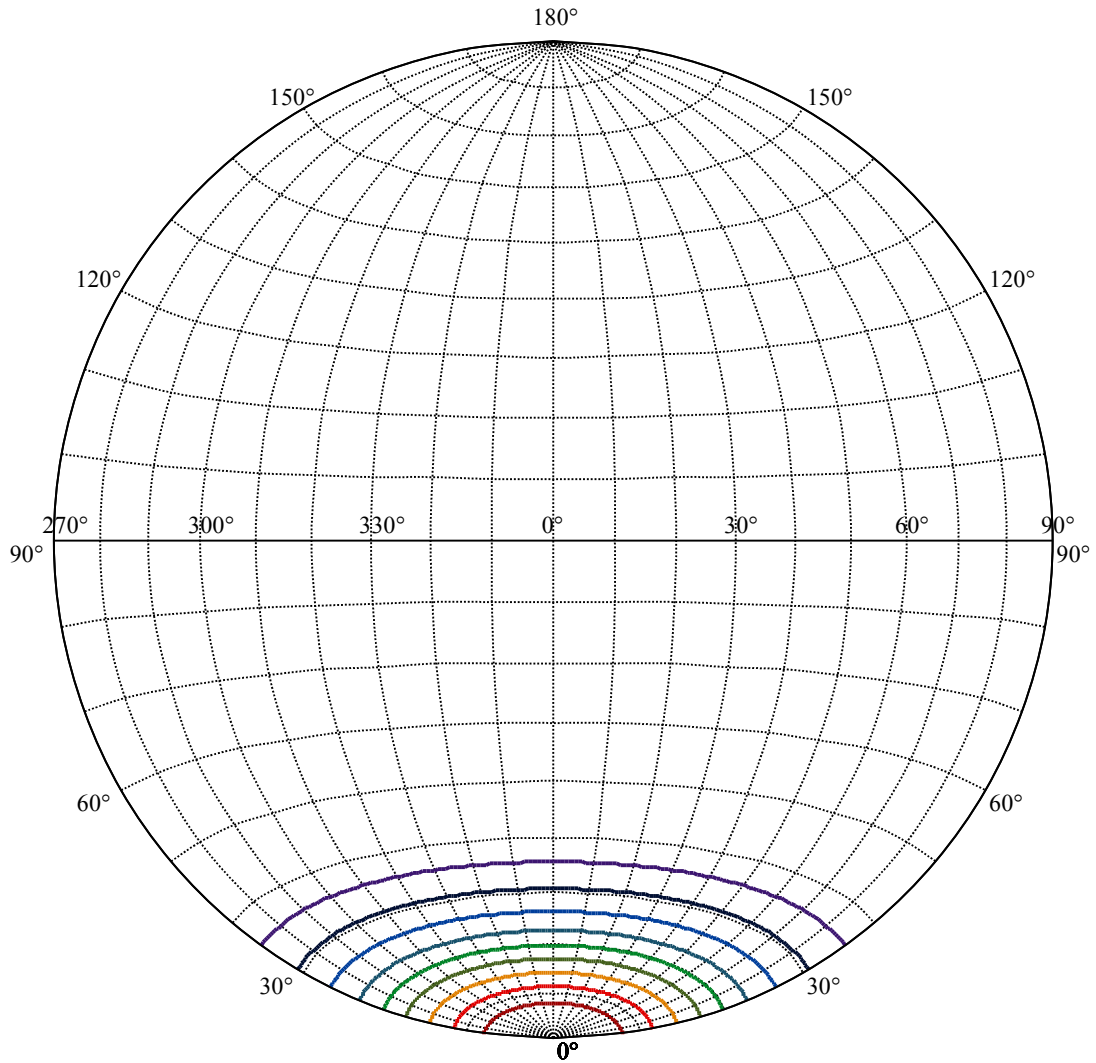
Beam Angle(50%Imax):C0/180Left:19.8 Right:19.8  
:C90/270Left:19.8 Right:19.8





(10%Imax) 211.233	—
(20%Imax) 422.465	—
(30%Imax) 633.698	—
(40%Imax) 844.931	—
(50%Imax) 1056.16	—
(60%Imax) 1267.4	—
(70%Imax) 1478.63	—
(80%Imax) 1689.86	—
(90%Imax) 1901.09	—





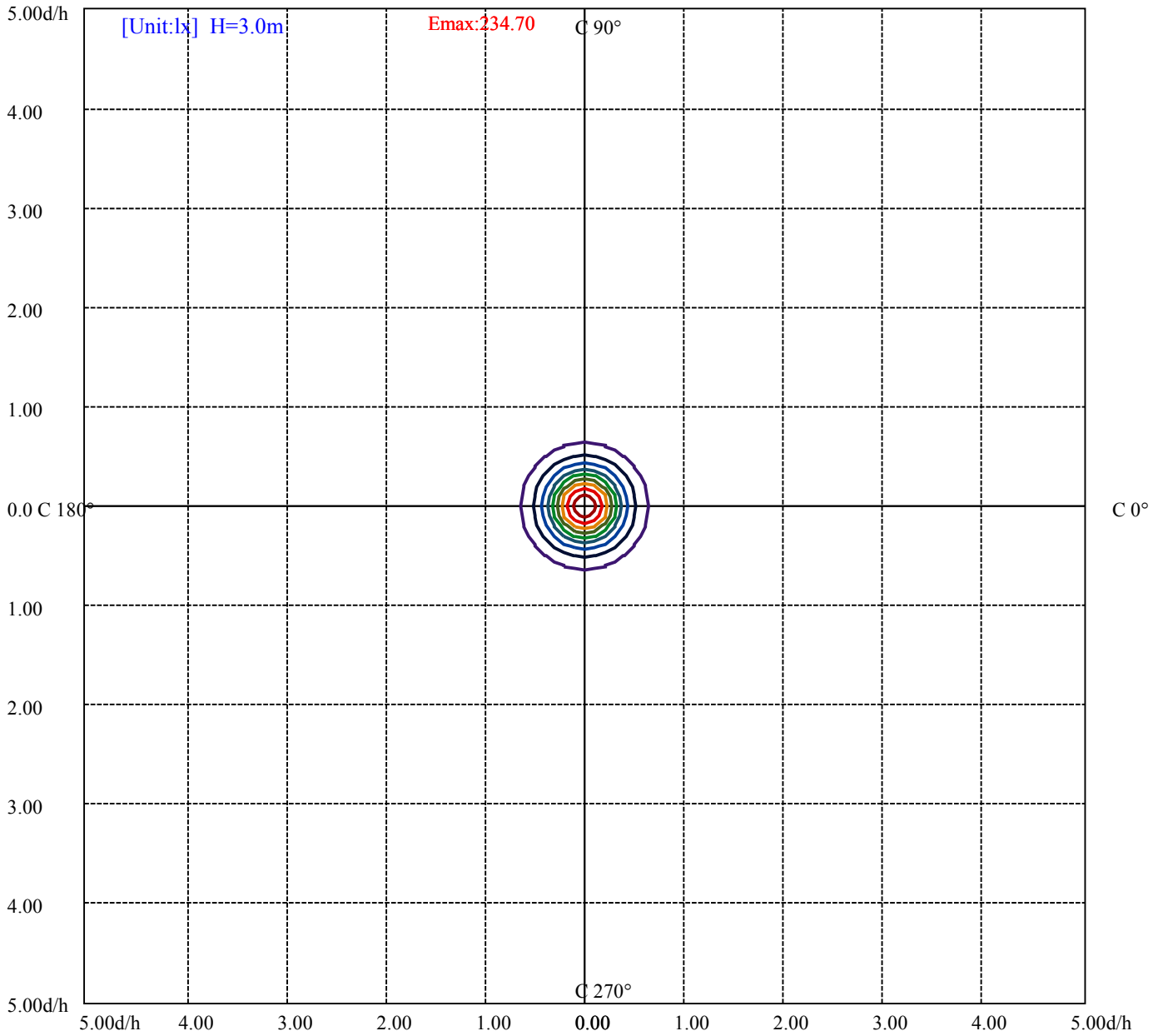
House

[Unit:cd]

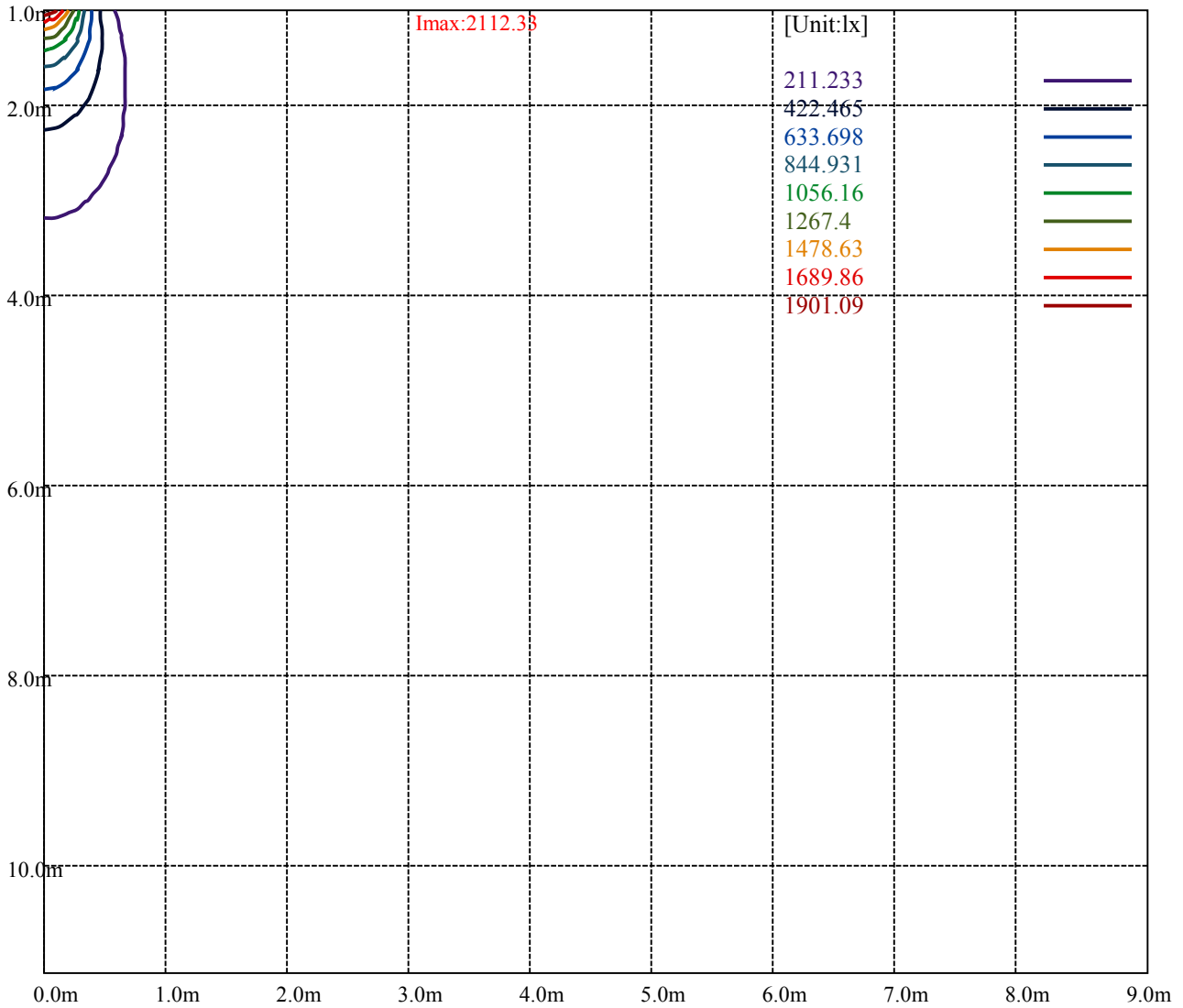
Road

**Imax:2112.33**

(10%Imax) 211.233	—
(20%Imax) 422.465	—
(30%Imax) 633.698	—
(40%Imax) 844.931	—
(50%Imax) 1056.16	—
(60%Imax) 1267.4	—
(70%Imax) 1478.63	—
(80%Imax) 1689.86	—
(90%Imax) 1901.09	—



(10%Emax) 23.47033	—
(20%Emax) 46.94056	—
(30%Emax) 70.41089	—
(40%Emax) 93.88111	—
(50%Emax) 117.3511	—
(60%Emax) 140.8222	—
(70%Emax) 164.2922	—
(80%Emax) 187.7622	—
(90%Emax) 211.2322	—



Luminance Table

$\gamma$	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

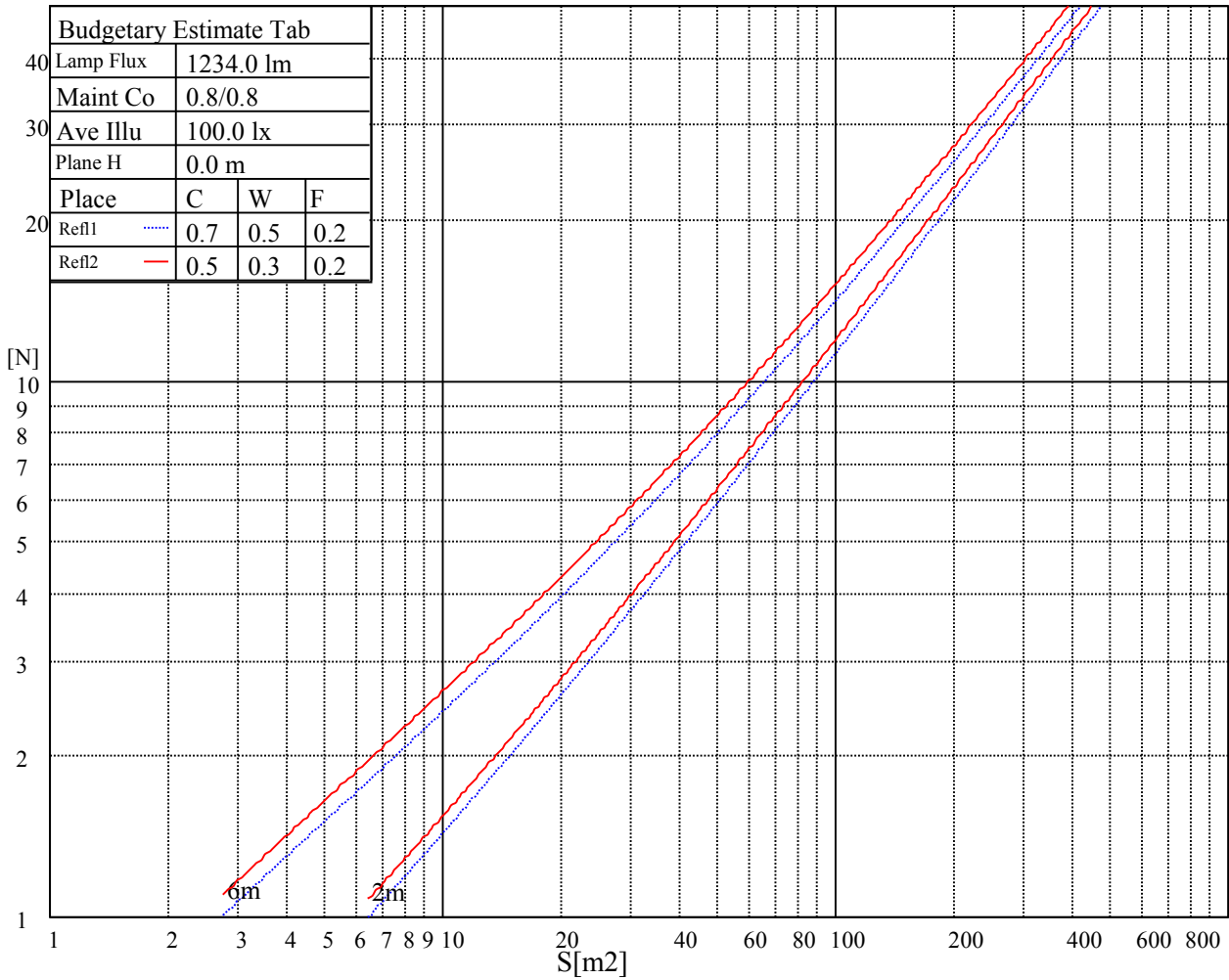
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

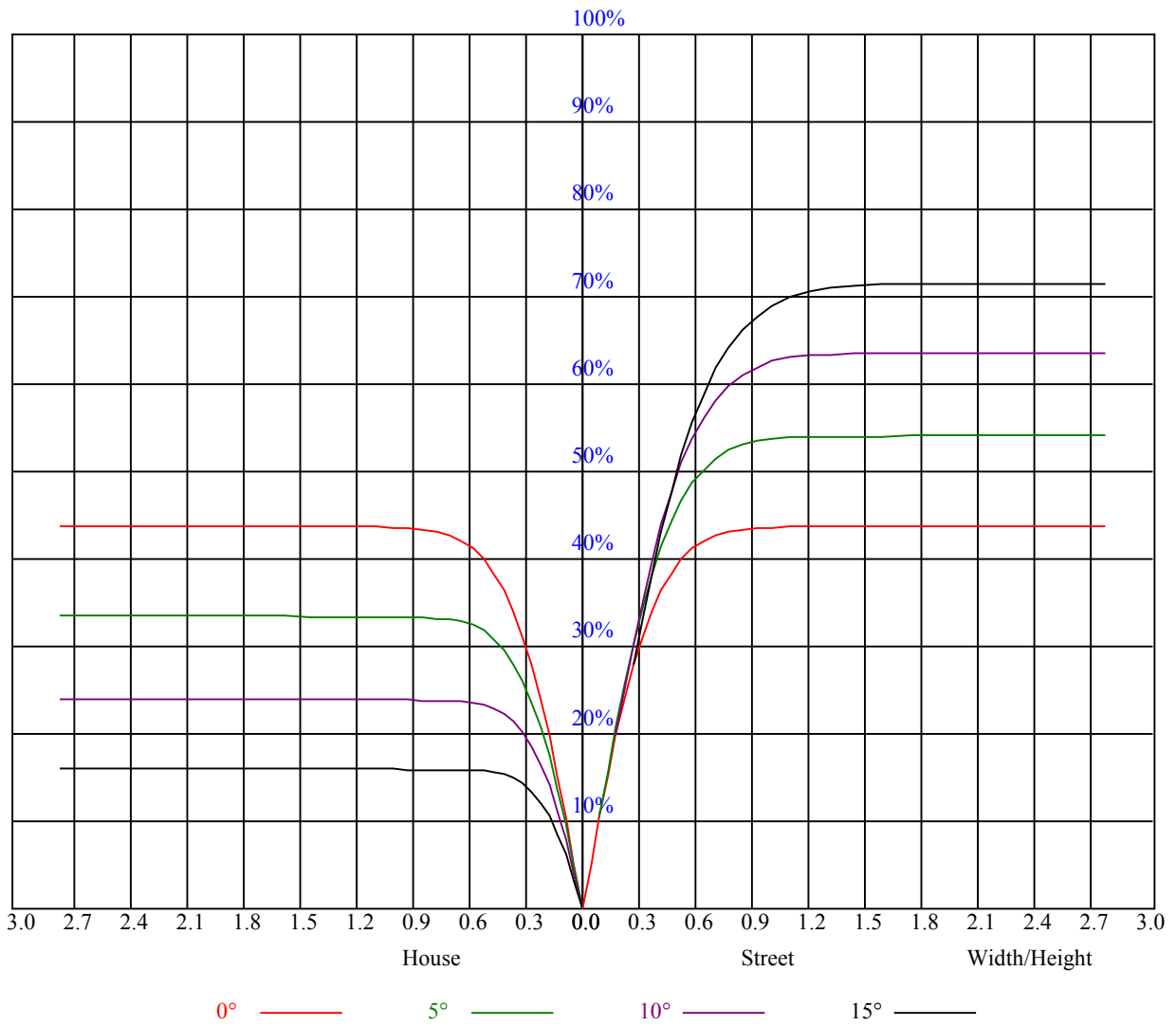
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

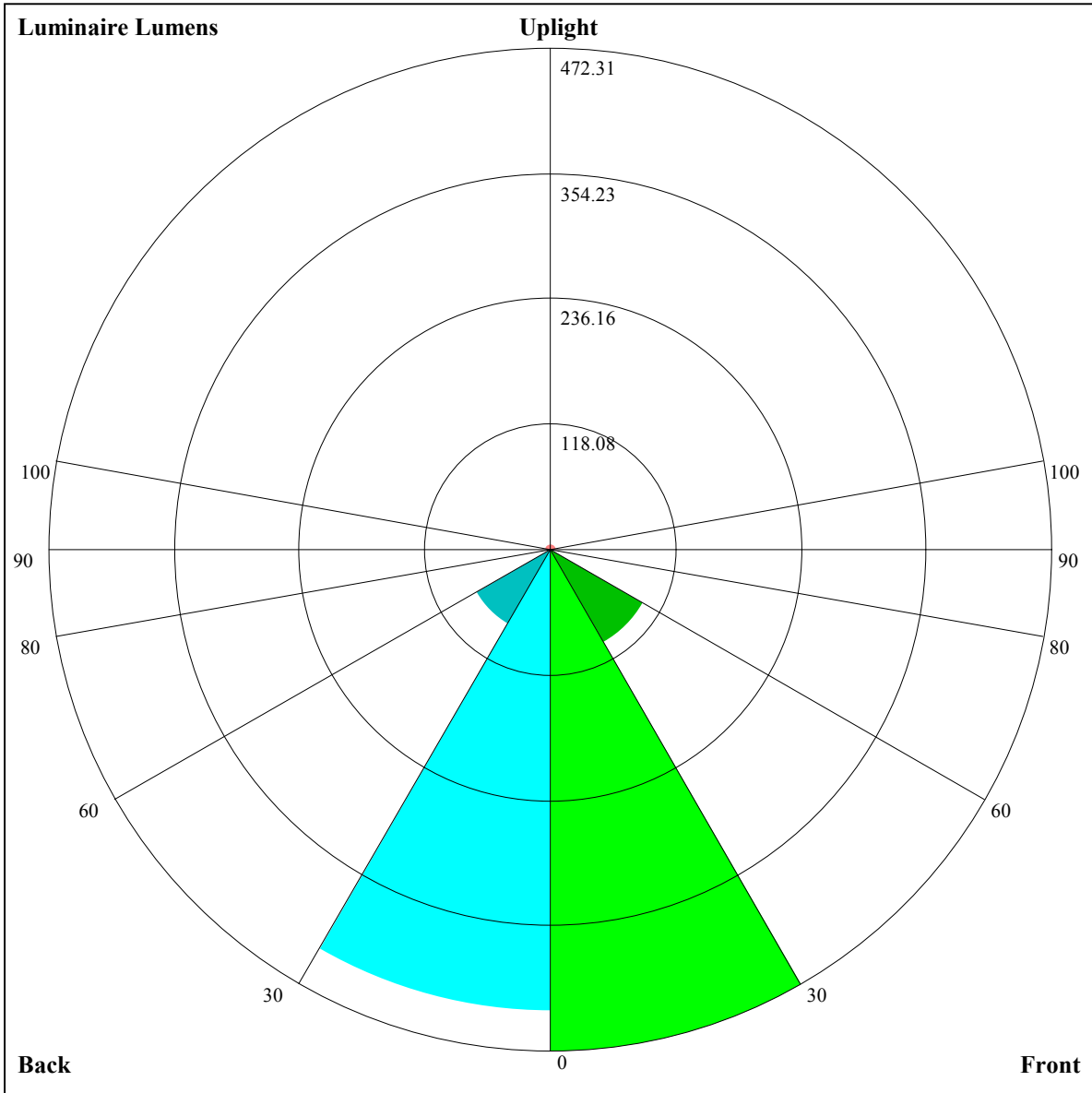
Luminance Limiting Curve





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	1.04	1.04	1.04	1.02	1.02	1.02	0.98	0.98	0.98	0.93	0.93	0.93	0.90	0.90	0.90	0.88
1	0.98	0.96	0.94	0.96	0.94	0.93	0.93	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.85	0.83
2	0.92	0.89	0.86	0.91	0.88	0.85	0.88	0.85	0.83	0.85	0.83	0.82	0.83	0.81	0.80	0.79
3	0.87	0.83	0.80	0.86	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.79	0.77	0.76	0.74
4	0.82	0.78	0.74	0.81	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.72	0.76	0.74	0.72	0.70
5	0.78	0.73	0.70	0.77	0.73	0.70	0.75	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.67
6	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.64	0.63
7	0.70	0.66	0.62	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.60
8	0.67	0.62	0.59	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.57
9	0.64	0.59	0.56	0.63	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.55
10	0.61	0.57	0.54	0.61	0.56	0.54	0.60	0.56	0.53	0.59	0.56	0.53	0.59	0.55	0.53	0.52





Luminaire Lumens:  
FL=472.31,FM=100.33,FH=1.76,FVH=0.62  
BL=434.47,BM=81.48,BH=1.64,BVH=0.62  
UL=1.25,UH=5.96

BUG Rating:B1-U1-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	2110.47	2111.40	2108.15	2097.94	2082.63	2058.96	2029.73	1992.14	1946.67
45.0	2118.36	2103.05	2082.63	2056.18	2021.84	1980.08	1930.43	1875.21	1815.35
90.0	2090.52	2052.93	2004.21	1947.59	1884.02	1816.27	1742.03	1664.07	1585.18
135.0	2129.96	2108.15	2076.60	2037.15	1988.89	1928.57	1861.28	1787.04	1707.69
180.0	2110.47	2105.37	2094.23	2075.67	2049.22	2013.95	1977.29	1911.86	1863.14
225.0	2118.36	2128.10	2130.89	2128.10	2123.46	2102.12	2077.52	2059.43	2001.42
270.0	2090.52	2120.68	2141.56	2155.48	2162.91	2167.55	2168.47	2164.30	2157.34
315.0	2129.96	2143.42	2151.31	2155.95	2155.48	2148.52	2144.34	2133.67	2108.61
360.0	2110.47	2111.40	2108.15	2097.94	2082.63	2058.96	2029.73	1992.14	1946.67
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1894.23	1839.01	1777.29	1706.76	1633.44	1561.52	1517.90	1410.24	1359.66
45.0	1751.31	1682.17	1607.92	1529.96	1448.76	1400.96	1283.56	1200.96	1151.31
90.0	1505.83	1423.70	1336.93	1248.30	1159.67	1074.75	919.30	888.76	873.64
135.0	1623.70	1538.32	1452.94	1367.55	1279.39	1227.41	1106.77	1024.17	977.30
180.0	1797.25	1726.71	1652.01	1574.98	1495.16	1412.10	1326.25	1238.55	1152.24
225.0	1970.80	1912.79	1850.61	1782.86	1709.08	1632.98	1553.17	1471.96	1386.11
270.0	2139.70	2116.04	2084.48	2045.97	1996.32	1935.07	1871.03	1803.28	1729.96
315.0	2092.37	2060.82	2019.98	1968.48	1907.22	1842.26	1773.58	1698.41	1621.84
360.0	1894.23	1839.01	1777.29	1706.76	1633.44	1561.52	1517.90	1410.24	1359.66
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1273.82	1153.17	1103.52	915.49	885.65	870.67	801.11	737.77	681.39
45.0	1071.04	992.15	915.12	841.34	774.05	712.80	657.12	607.93	565.24
90.0	802.78	738.14	679.95	627.74	582.04	542.32	502.64	459.39	409.70
135.0	900.27	828.35	761.53	699.81	645.05	596.79	555.49	519.30	478.93
180.0	1068.25	986.58	909.55	837.16	770.81	710.48	654.80	606.07	563.85
225.0	1297.02	1208.39	1121.62	1012.57	901.48	801.48	727.65	659.48	608.65
270.0	1650.61	1570.34	1489.13	1404.68	1316.05	1226.02	1137.86	1052.94	969.88
315.0	1542.49	1459.43	1373.12	1285.88	1200.04	1114.65	926.26	926.26	894.98
360.0	1273.82	1153.17	1103.52	915.49	885.65	870.67	801.11	737.77	681.39
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	630.16	585.56	546.54	513.50	456.79	416.75	368.54	310.02	270.30
45.0	525.80	483.57	435.31	384.73	335.08	284.96	247.38	247.38	156.56
90.0	360.83	310.44	256.01	210.02	159.86	118.10	89.47	51.28	34.29
135.0	431.13	381.02	331.83	281.71	243.66	243.66	152.71	97.63	75.92
180.0	527.65	504.91	442.27	395.40	367.10	318.84	270.11	241.81	241.81
225.0	644.31	596.24	554.47	518.70	478.79	433.87	385.43	335.64	289.28
270.0	890.99	845.52	749.92	712.80	657.12	589.83	564.78	526.72	485.43
315.0	820.50	752.80	692.89	639.35	592.90	552.39	513.50	467.88	418.74
360.0	630.16	585.56	546.54	513.50	456.79	416.75	368.54	310.02	270.30
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	222.23	176.75	136.33	99.81	66.87	38.75	20.97	16.29	12.39
45.0	101.11	79.81	48.40	26.96	18.38	14.39	10.90	8.91	8.17
90.0	20.00	15.17	11.37	8.82	7.70	6.96	6.54	6.08	5.71
135.0	44.73	25.75	18.33	13.78	10.35	8.86	8.17	7.61	7.10
180.0	136.52	99.12	65.89	38.28	22.04	16.61	12.30	9.61	8.72
225.0	241.95	197.77	157.03	115.31	78.65	47.56	26.22	18.61	15.82
270.0	443.66	395.40	349.00	298.88	246.91	246.91	151.46	119.49	77.68
315.0	368.26	318.79	271.13	222.78	178.93	153.22	97.63	62.51	43.76
360.0	222.23	176.75	136.33	99.81	66.87	38.75	20.97	16.29	12.39

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	9.28	7.98	7.33	6.96	6.54	6.13	5.71	5.38	5.01
45.0	7.19	6.73	6.36	5.94	5.48	5.15	4.83	4.45	4.13
90.0	5.34	5.01	4.69	4.32	3.99	3.76	3.48	3.20	2.97
135.0	6.68	6.26	5.75	5.34	4.97	4.59	4.41	3.94	3.67
180.0	7.70	7.24	6.77	6.31	5.94	5.48	5.06	4.73	4.41
225.0	11.74	9.14	8.21	7.66	7.15	6.68	6.31	5.94	5.48
270.0	51.55	29.98	19.77	15.08	12.20	9.84	8.77	8.17	7.66
315.0	24.13	17.59	13.97	10.63	8.86	8.21	7.24	6.77	6.36
360.0	9.28	7.98	7.33	6.96	6.54	6.13	5.71	5.38	5.01
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	4.78	4.50	4.04	3.81	3.57	3.34	3.06	2.74	2.46
45.0	4.04	3.67	3.39	3.20	2.92	2.60	2.37	2.23	2.09
90.0	2.74	2.60	2.37	2.13	2.04	1.90	1.81	1.76	1.62
135.0	3.48	3.25	2.88	2.55	2.41	2.23	2.04	1.86	1.81
180.0	4.08	3.76	3.48	3.25	2.97	2.60	2.41	2.27	2.09
225.0	5.06	4.73	4.41	4.08	3.71	3.43	3.20	2.88	2.64
270.0	7.19	6.68	6.22	5.80	5.38	4.92	4.55	4.22	3.90
315.0	5.99	5.61	5.20	4.78	4.45	4.18	3.81	3.53	3.29
360.0	4.78	4.50	4.04	3.81	3.57	3.34	3.06	2.74	2.46
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.32	2.18	2.00	1.81	1.72	1.67	1.53	1.48	1.35
45.0	1.90	1.76	1.62	1.58	1.53	1.39	1.30	1.30	1.25
90.0	1.48	1.44	1.35	1.35	1.25	1.21	1.16	1.16	1.11
135.0	1.72	1.53	1.44	1.39	1.39	1.25	1.16	1.21	1.16
180.0	1.90	1.76	1.72	1.58	1.48	1.48	1.39	1.30	1.30
225.0	2.51	2.27	2.09	2.00	1.86	1.67	1.58	1.53	1.44
270.0	3.57	3.25	3.11	2.69	2.51	2.32	2.13	1.95	1.81
315.0	3.11	2.83	2.60	2.37	2.18	2.09	1.90	1.76	1.62
360.0	2.32	2.18	2.00	1.81	1.72	1.67	1.53	1.48	1.35
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.35	1.30	1.21	1.16	1.16	1.16	1.16	1.21	1.16
45.0	1.16	1.11	1.11	1.16	1.16	1.16	1.07	1.11	1.16
90.0	1.11	1.11	1.07	1.16	1.11	1.11	1.11	1.11	1.16
135.0	1.16	1.11	1.16	1.11	1.16	1.11	1.11	1.21	1.16
180.0	1.25	1.16	1.11	1.16	1.16	1.16	1.11	1.16	1.16
225.0	1.30	1.25	1.25	1.16	1.11	1.11	1.11	1.11	1.11
270.0	1.72	1.62	1.44	1.39	1.35	1.30	1.21	1.16	1.11
315.0	1.58	1.48	1.39	1.30	1.25	1.21	1.16	1.11	1.07
360.0	1.35	1.30	1.21	1.16	1.16	1.16	1.16	1.21	1.16
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.16	1.16	1.16	1.16	1.11	1.16	1.21	1.16	1.16
45.0	1.16	1.11	1.16	1.11	1.16	1.16	1.16	1.11	1.11
90.0	1.11	1.16	1.16	1.16	1.16	1.21	1.16	1.16	1.16
135.0	1.11	1.16	1.16	1.21	1.16	1.16	1.16	1.21	1.21
180.0	1.11	1.11	1.16	1.16	1.11	1.11	1.16	1.16	1.16
225.0	1.07	1.11	1.11	1.16	1.11	1.16	1.11	1.11	1.11
270.0	1.11	1.11	1.16	1.11	1.16	1.11	1.11	1.11	1.11
315.0	1.11	1.16	1.07	1.07	1.16	1.11	1.11	1.11	1.11
360.0	1.16	1.16	1.16	1.16	1.11	1.16	1.21	1.16	1.16

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>1.21</b>
<b>45.0</b>	<b>1.07</b>
<b>90.0</b>	<b>1.16</b>
<b>135.0</b>	<b>1.16</b>
<b>180.0</b>	<b>1.21</b>
<b>225.0</b>	<b>1.11</b>
<b>270.0</b>	<b>1.11</b>
<b>315.0</b>	<b>1.16</b>
<b>360.0</b>	<b>1.21</b>