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## Nata

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### Client:

LumCAT: 2-2184-M

Luminaire: BJB 47.360.5080

Report No: nt0100

Test No: GC2020031335

LampCAT: NICHIA NFCWJ120B-V3

Lamp flux(lm): 2445.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 220.5000

Current(A): 0.1080

Power (W): 22.8800

PF: 0.9570

Ballast type: AC

Width(mm): 0

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1852.24, Efficiency(%): 75.76% , Luminous Efficacy(lm/W): 80.95

Central intensity(cd): 9390.040, Maximum intensity(cd): 9407.104

Angle of maximum intensity: C=0.0  $\gamma=1.0$

Beam Angle(50%Imax): [C0/180]Total=24.4

[C90/270]Total=24.4

Field angle(10%Imax): [C0/180]Total=43.6

[C90/270]Total=43.6

Maximum s/h(1/2): C0\_180=0.41 C90\_270=0.41

Maximum s/h(1/4): C0\_180=0.41 C90\_270=0.41

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 75.76%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 98.652%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9390.041	0.000	0	.000%	.000%
1.0	9407.106	8.994	8.994	.368%	.486%
2.0	9317.084	26.875	35.869	1.099%	1.937%
3.0	9104.092	44.057	79.926	1.802%	4.315%
4.0	8809.431	59.962	139.888	2.452%	7.552%
5.0	8470.339	74.337	214.225	3.040%	11.566%
6.0	8017.895	86.650	300.875	3.544%	16.244%
7.0	7529.441	96.502	397.377	3.947%	21.454%
8.0	7012.914	104.077	501.454	4.257%	27.073%
9.0	6479.682	109.350	610.804	4.472%	32.977%
10.0	5945.115	112.440	723.244	4.599%	39.047%
11.0	5404.980	113.411	836.655	4.638%	45.170%
12.0	4784.452	111.385	948.04	4.556%	51.183%
13.0	4238.980	107.085	1055.125	4.380%	56.965%
14.0	3739.738	102.127	1157.252	4.177%	62.479%
15.0	3293.918	96.561	1253.813	3.949%	67.692%
16.0	2785.500	89.080	1342.894	3.643%	72.501%
17.0	2354.767	80.048	1422.942	3.274%	76.823%
18.0	1966.713	71.252	1494.193	2.914%	80.670%
19.0	1634.100	62.647	1556.84	2.562%	84.052%
20.0	1332.808	54.303	1611.143	2.221%	86.984%
21.0	1102.387	46.761	1657.903	1.913%	89.508%
22.0	902.191	40.283	1698.186	1.648%	91.683%
23.0	598.737	31.494	1729.68	1.288%	93.383%
24.0	468.105	23.325	1753.005	.954%	94.642%
25.0	344.887	18.486	1771.49	.756%	95.641%
26.0	253.745	14.131	1785.621	.578%	96.403%
27.0	140.202	9.638	1795.259	.394%	96.924%
28.0	98.039	6.032	1801.291	.247%	97.249%
29.0	59.814	4.130	1805.421	.169%	97.472%
30.0	18.405	2.112	1807.533	.086%	97.586%
31.0	12.639	0.864	1808.397	.035%	97.633%
32.0	11.264	0.685	1809.081	.028%	97.670%
33.0	10.592	0.644	1809.725	.026%	97.705%
34.0	10.180	0.629	1810.354	.026%	97.739%
35.0	9.878	0.623	1810.977	.025%	97.772%
36.0	9.658	0.622	1811.599	.025%	97.806%
37.0	9.472	0.624	1812.223	.026%	97.840%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	9.240	0.625	1812.847	.026%	97.873%
39.0	9.060	0.625	1813.472	.026%	97.907%
40.0	8.892	0.626	1814.098	.026%	97.941%
41.0	8.776	0.629	1814.727	.026%	97.975%
42.0	8.654	0.633	1815.361	.026%	98.009%
43.0	8.480	0.635	1815.995	.026%	98.043%
44.0	8.358	0.636	1816.631	.026%	98.078%
45.0	8.283	0.640	1817.27	.026%	98.112%
46.0	8.173	0.644	1817.914	.026%	98.147%
47.0	8.057	0.645	1818.559	.026%	98.182%
48.0	7.987	0.649	1819.208	.027%	98.217%
49.0	7.923	0.653	1819.861	.027%	98.252%
50.0	7.860	0.658	1820.519	.027%	98.288%
51.0	7.778	0.662	1821.181	.027%	98.323%
52.0	7.686	0.664	1821.845	.027%	98.359%
53.0	7.616	0.666	1822.51	.027%	98.395%
54.0	7.564	0.669	1823.179	.027%	98.431%
55.0	7.477	0.671	1823.851	.027%	98.467%
56.0	7.419	0.673	1824.524	.028%	98.504%
57.0	7.367	0.676	1825.2	.028%	98.540%
58.0	7.367	0.681	1825.881	.028%	98.577%
59.0	7.343	0.688	1826.569	.028%	98.614%
60.0	7.355	0.694	1827.263	.028%	98.652%
61.0	7.355	0.702	1827.965	.029%	98.690%
62.0	7.384	0.710	1828.675	.029%	98.728%
63.0	7.494	0.724	1829.399	.030%	98.767%
64.0	7.639	0.743	1830.141	.030%	98.807%
65.0	7.900	0.769	1830.911	.031%	98.849%
66.0	8.254	0.806	1831.717	.033%	98.892%
67.0	8.654	0.850	1832.567	.035%	98.938%
68.0	9.136	0.901	1833.468	.037%	98.987%
69.0	9.698	0.961	1834.429	.039%	99.038%
70.0	10.383	1.031	1835.46	.042%	99.094%
71.0	11.206	1.116	1836.576	.046%	99.154%
72.0	11.885	1.201	1837.777	.049%	99.219%
73.0	12.442	1.272	1839.049	.052%	99.288%
74.0	12.796	1.327	1840.375	.054%	99.360%
75.0	12.860	1.356	1841.731	.055%	99.433%

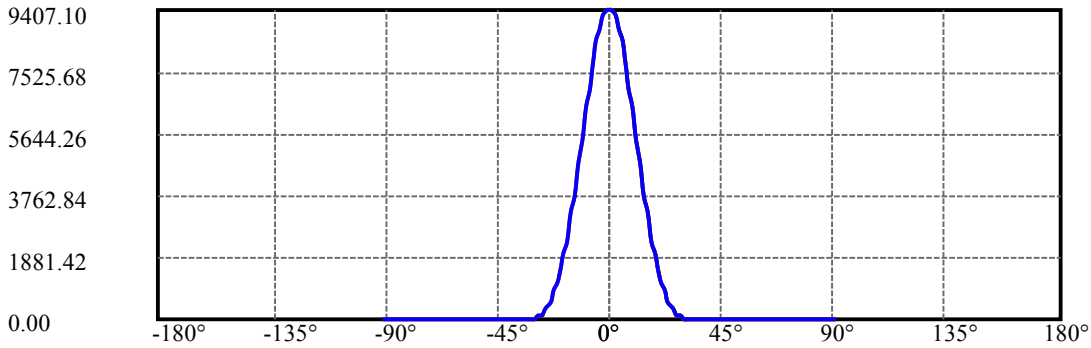
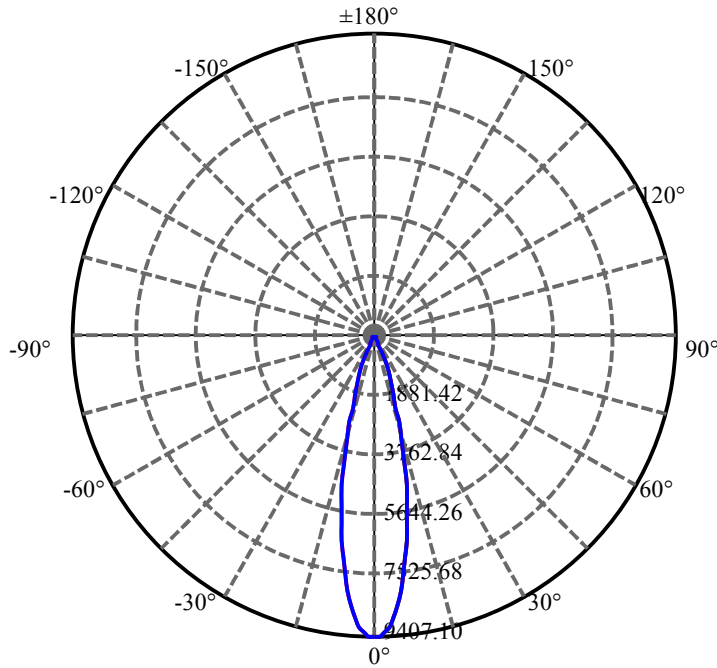
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	12.535	1.348	1843.079	.055%	99.505%
77.0	11.833	1.299	1844.378	.053%	99.576%
78.0	10.806	1.212	1845.59	.050%	99.641%
79.0	9.513	1.092	1846.682	.045%	99.700%
80.0	8.295	0.960	1847.642	.039%	99.752%
81.0	6.873	0.820	1848.462	.034%	99.796%
82.0	5.696	0.682	1849.144	.028%	99.833%
83.0	4.727	0.567	1849.71	.023%	99.864%
84.0	3.608	0.454	1850.164	.019%	99.888%
85.0	3.190	0.371	1850.535	.015%	99.908%
86.0	3.103	0.344	1850.879	.014%	99.927%
87.0	3.039	0.336	1851.216	.014%	99.945%
88.0	3.063	0.334	1851.55	.014%	99.963%
89.0	3.167	0.341	1851.891	.014%	99.981%
90.0	3.167	0.347	1852.239	.014%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1807.53	73.93%	97.59%
0-40	1814.10	74.20%	97.94%
0-60	1827.26	74.73%	98.65%
0-90	1851.89	75.74%	99.98%
0-120	1851.89	75.74%	99.98%
0-180	1852.24	75.76%	100.00%
60-90	25.32	1.04%	1.37%
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%
0-17.83	1481.79	60.60%	80.00%

ZONAL LUMEN SUMMARY

0-10	723.24
10-20	887.90
20-30	196.39
30-40	6.57
40-50	6.42
50-60	6.74
60-70	8.20
70-80	12.18
80-90	4.25
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: —————

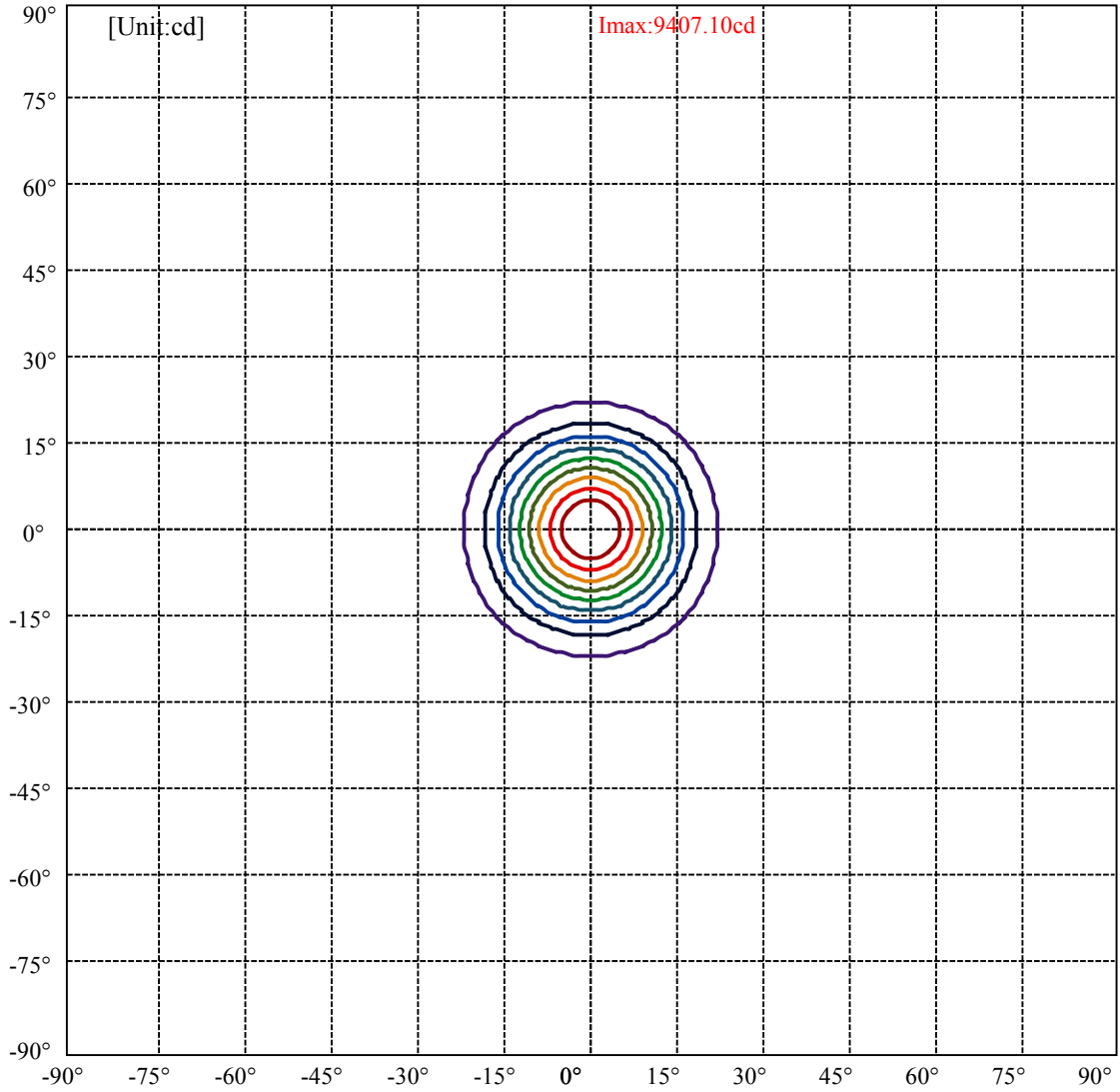
Field angle(10%Imax):C0/180Left:21.8 Right:21.8

:C90/270Left:21.8 Right:21.8

Beam Angle(50%Imax):C0/180Left:12.2 Right:12.2

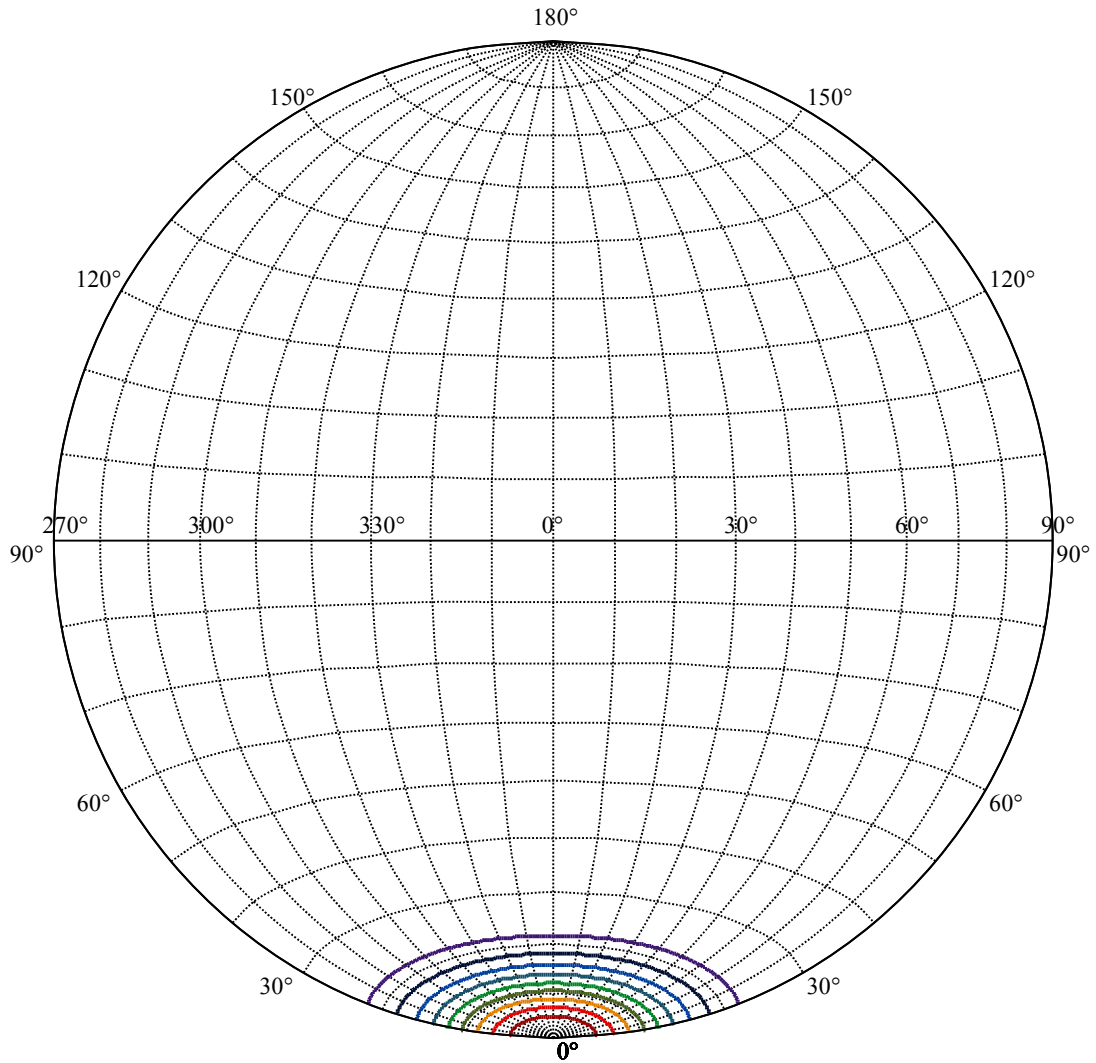
:C90/270Left:12.2 Right:12.2





(10%Imax) 940.71	—
(20%Imax) 1881.42	—
(30%Imax) 2822.13	—
(40%Imax) 3762.84	—
(50%Imax) 4703.55	—
(60%Imax) 5644.26	—
(70%Imax) 6584.97	—
(80%Imax) 7525.68	—
(90%Imax) 8466.39	—





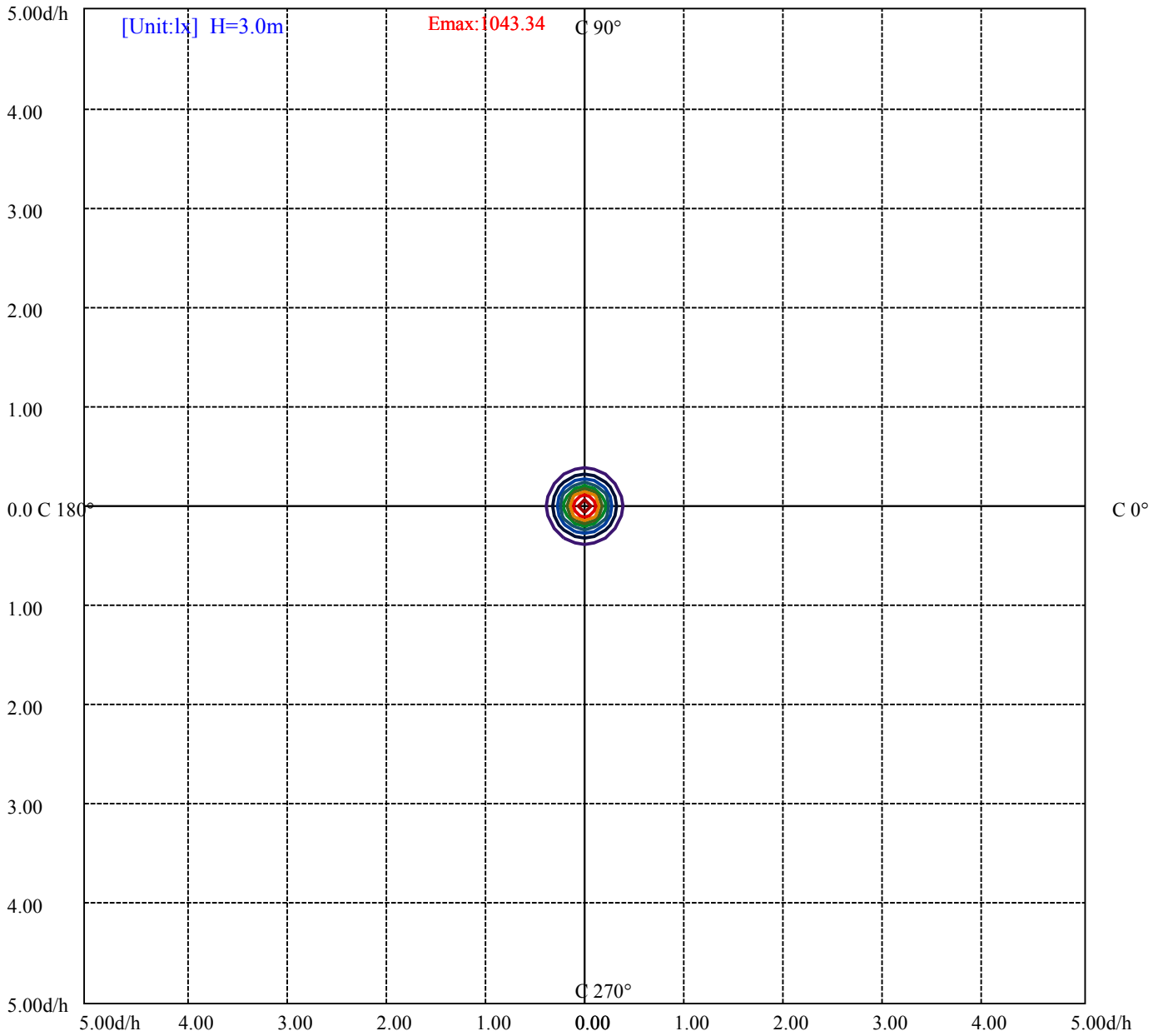
House

[Unit:cd]

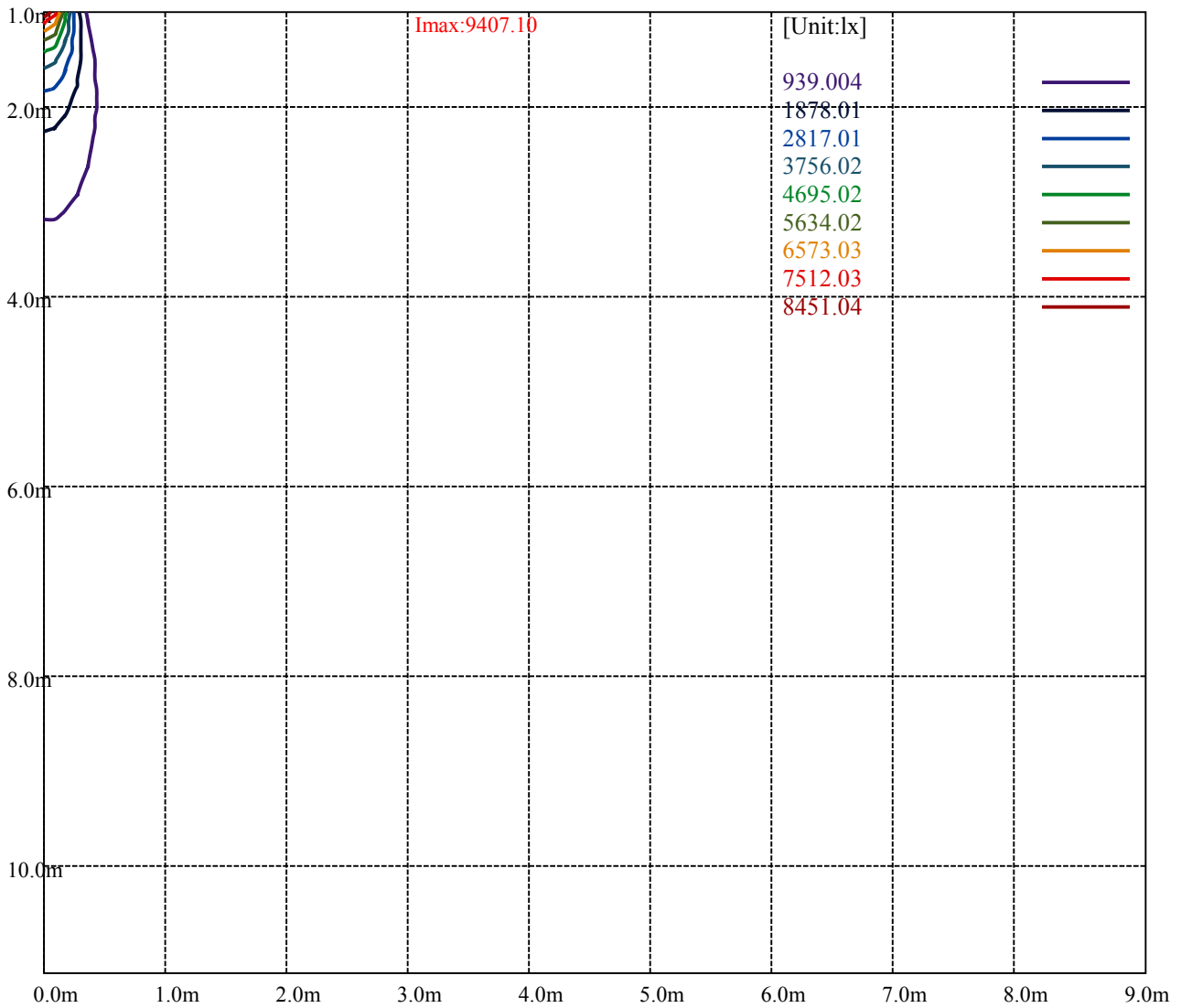
Road

Imax:9407.10

(10%Imax)	940.71	—
(20%Imax)	1881.42	—
(30%Imax)	2822.13	—
(40%Imax)	3762.84	—
(50%Imax)	4703.55	—
(60%Imax)	5644.26	—
(70%Imax)	6584.97	—
(80%Imax)	7525.68	—
(90%Imax)	8466.39	—



- (10%Emax) 104.3338
- (20%Emax) 208.6678
- (30%Emax) 313.0011
- (40%Emax) 417.3356
- (50%Emax) 521.6689
- (60%Emax) 626.0033
- (70%Emax) 730.3367
- (80%Emax) 834.67
- (90%Emax) 939.0045



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

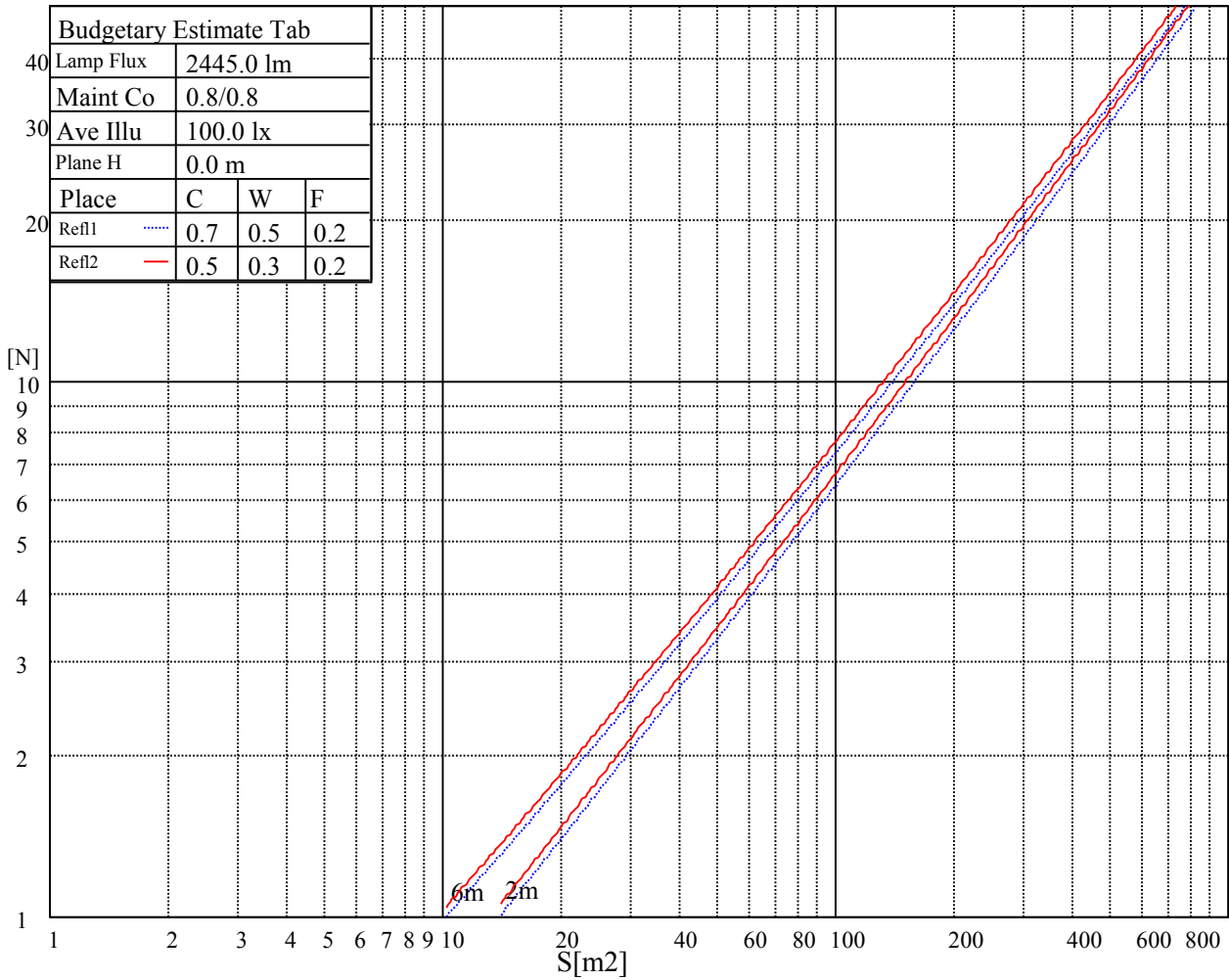
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

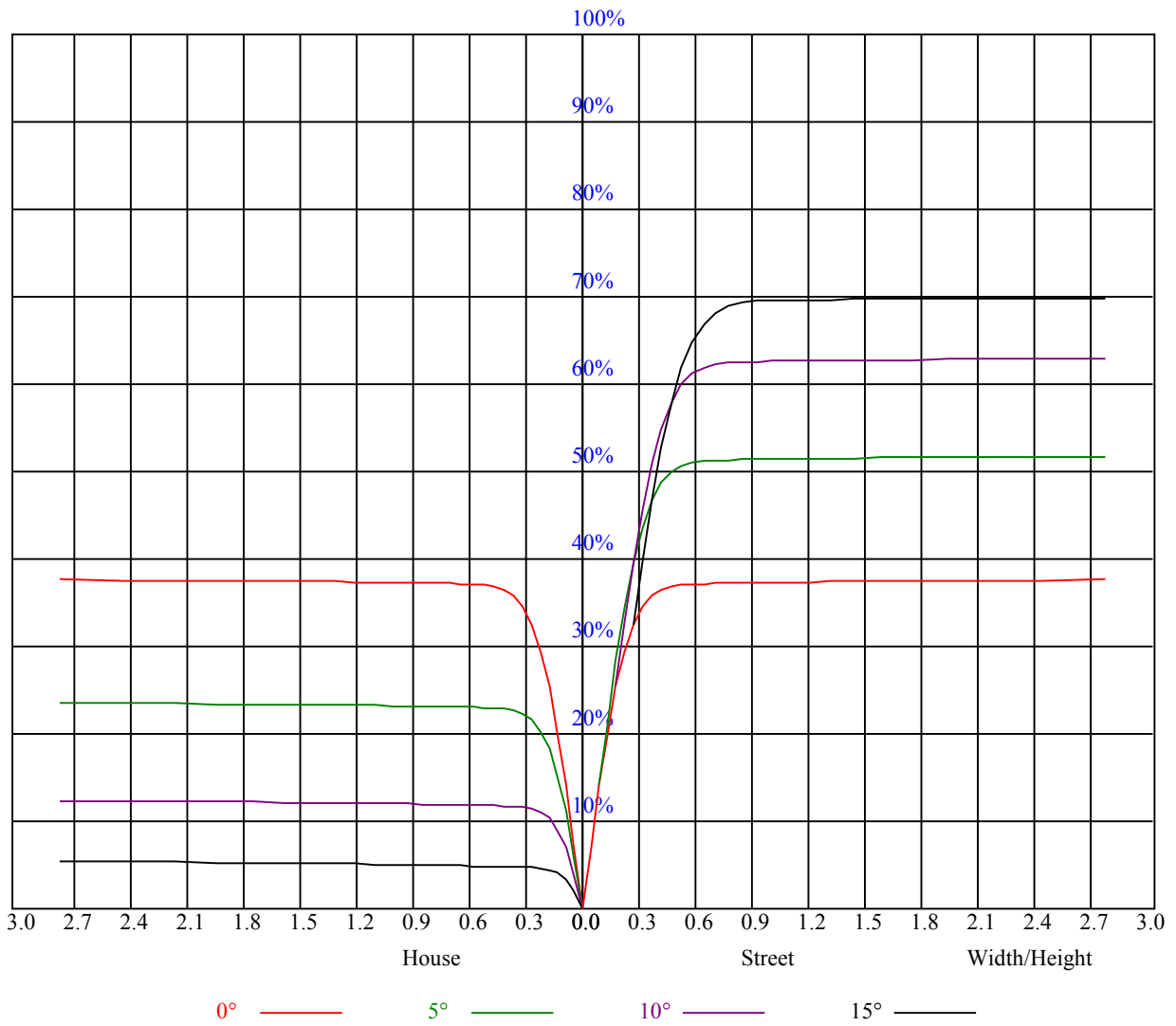
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

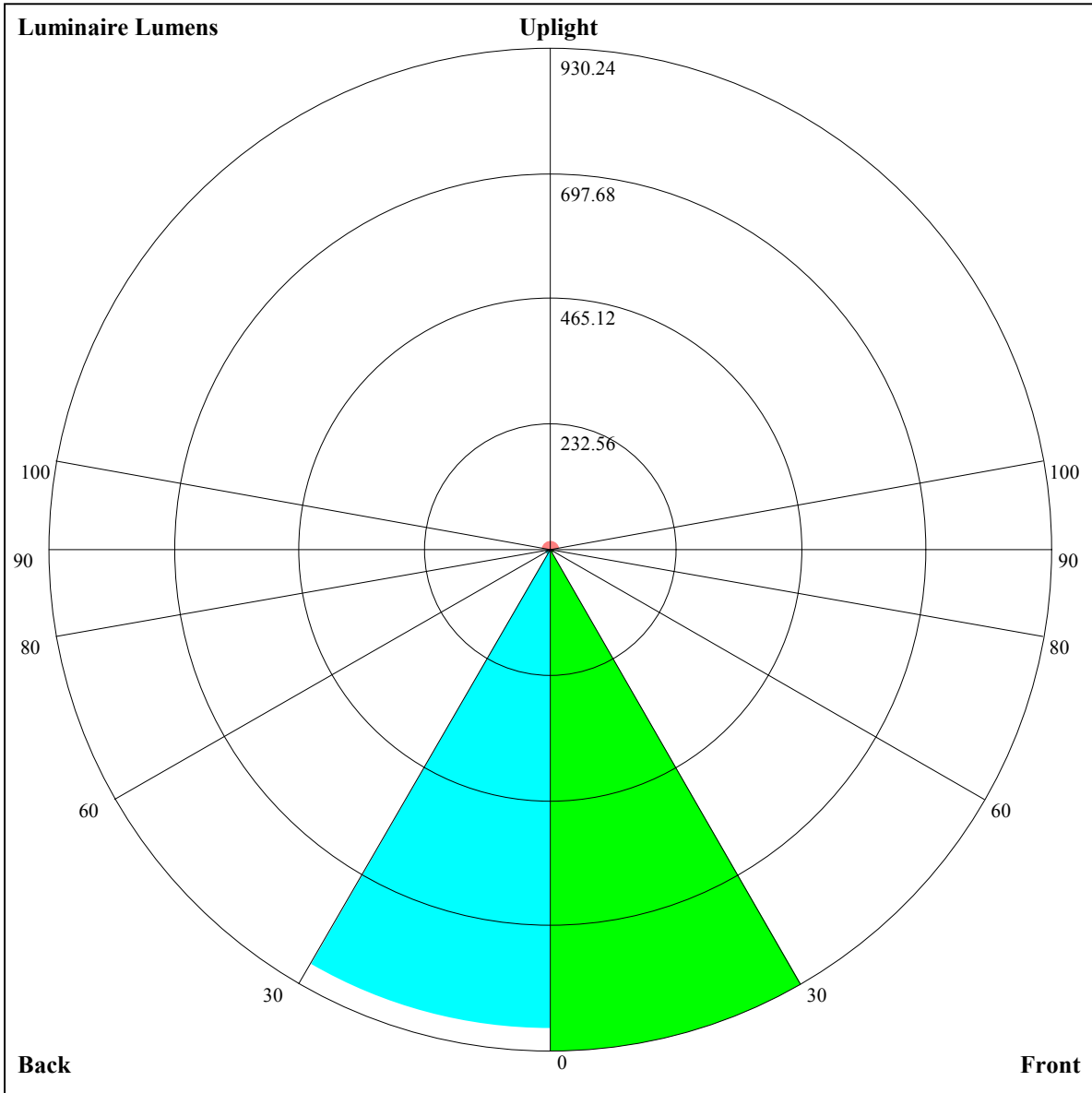
Luminance Limiting Curve





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	0.90	0.90	0.90	0.88	0.88	0.88	0.84	0.84	0.84	0.81	0.81	0.81	0.77	0.77	0.77	0.76
1	0.86	0.84	0.83	0.84	0.83	0.81	0.81	0.80	0.79	0.78	0.77	0.77	0.76	0.75	0.74	0.73
2	0.82	0.79	0.78	0.80	0.78	0.77	0.78	0.76	0.75	0.76	0.75	0.73	0.74	0.73	0.72	0.71
3	0.78	0.76	0.74	0.77	0.75	0.73	0.76	0.74	0.72	0.74	0.72	0.71	0.72	0.71	0.70	0.69
4	0.76	0.73	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.72	0.70	0.69	0.71	0.69	0.68	0.67
5	0.73	0.70	0.68	0.72	0.70	0.68	0.71	0.69	0.67	0.70	0.68	0.67	0.69	0.67	0.66	0.65
6	0.71	0.68	0.66	0.70	0.68	0.66	0.69	0.67	0.65	0.68	0.66	0.65	0.68	0.66	0.64	0.64
7	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.63	0.67	0.65	0.63	0.66	0.64	0.63	0.62
8	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.65	0.63	0.62	0.65	0.63	0.61	0.61
9	0.65	0.62	0.60	0.65	0.62	0.60	0.64	0.62	0.60	0.64	0.62	0.60	0.63	0.61	0.60	0.59
10	0.64	0.61	0.59	0.63	0.61	0.59	0.63	0.61	0.59	0.63	0.60	0.59	0.62	0.60	0.59	0.58





Luminaire Lumens:

FL=930.24,FM=9.83,FH=9.69,FVH=2.47

BL=889.15,BM=10.2,BH=10.56,BVH=2.31

UL=3.46,UH=16.44

BUG Rating:B2-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	9564.33	9531.85	9223.18	9223.18	8922.48	8535.94	8070.98	7651.49	6964.72
45.0	9178.16	9248.23	9787.07	9852.03	9856.67	9763.87	9620.02	9360.16	9007.49
90.0	9629.30	9833.47	9944.84	9977.32	9921.64	9773.15	9131.76	9131.76	8681.18
135.0	9188.37	9573.61	9643.22	9643.22	9573.61	9415.84	9165.26	8812.60	8390.33
180.0	9564.33	9504.01	9360.16	9123.50	8798.68	8390.33	8111.91	7374.09	6794.05
225.0	9178.16	9026.42	8588.38	8075.62	7503.00	6891.87	6259.86	5623.20	4995.37
270.0	9629.30	9350.88	9137.42	8506.34	7968.06	7620.03	7002.87	6116.56	5726.78
315.0	9188.37	9188.37	8852.41	8431.53	7931.31	7371.68	6780.50	6165.66	5543.39
360.0	9564.33	9531.85	9223.18	9223.18	8922.48	8535.94	8070.98	7651.49	6964.72
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6366.59	5876.10	5264.97	4666.83	4096.53	3563.36	3070.09	2615.34	2200.96
45.0	8575.94	8065.50	7494.74	6882.22	6255.77	5620.05	4998.24	4399.64	3833.52
90.0	8160.07	7583.74	7214.84	6318.33	5670.07	5287.71	4672.86	4085.86	3532.73
135.0	7903.09	7350.89	6756.93	6144.41	5527.24	4919.36	4339.32	3777.84	3258.12
180.0	6427.47	5819.58	5211.70	4627.02	4056.26	3517.98	3026.10	2571.35	2404.30
225.0	4391.66	4045.49	3498.39	2998.17	2543.88	2132.74	1768.94	1452.47	858.09
270.0	5086.41	4483.17	3907.76	3369.49	2877.61	2432.14	2432.14	1689.13	1374.05
315.0	4926.23	4336.44	3890.50	3269.16	2884.48	2444.57	2043.65	1692.38	1376.37
360.0	6366.59	5876.10	5264.97	4666.83	4096.53	3563.36	3070.09	2615.34	2200.96
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1831.59	1503.51	839.81	839.81	697.58	492.99	318.42	228.40	110.63
45.0	3313.80	2831.21	2390.38	2390.38	2311.49	1346.21	1174.05	902.59	664.54
90.0	3023.69	2564.30	2152.70	1787.50	1468.71	908.62	908.62	673.64	509.32
135.0	2780.16	2436.78	2436.78	1709.08	1400.96	1115.12	859.44	631.13	433.45
180.0	2004.21	1441.80	1151.78	992.61	665.47	465.01	359.67	266.40	266.40
225.0	858.09	630.58	433.87	269.00	138.93	52.85	21.39	16.47	14.48
270.0	1082.64	825.10	645.05	411.18	278.47	278.47	54.85	21.58	16.01
315.0	839.53	839.53	612.11	419.53	255.91	130.63	48.40	18.89	15.13
360.0	1831.59	1503.51	839.81	839.81	697.58	492.99	318.42	228.40	110.63
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	25.43	16.89	12.85	11.04	10.21	9.74	9.42	9.14	8.86
45.0	463.15	291.00	291.00	47.61	19.91	14.85	12.67	11.65	11.00
90.0	295.08	156.19	77.40	25.75	14.34	11.69	10.58	10.07	9.65
135.0	267.79	267.79	48.58	16.84	12.02	10.30	9.56	9.05	8.68
180.0	30.77	15.22	12.67	11.55	11.00	10.67	10.39	10.16	9.98
225.0	13.64	13.22	12.81	12.20	12.02	11.83	11.65	11.37	11.23
270.0	13.97	13.13	12.62	12.30	11.97	11.65	11.32	11.14	11.00
315.0	11.79	10.86	10.58	9.93	9.65	9.37	9.14	8.86	8.63
360.0	25.43	16.89	12.85	11.04	10.21	9.74	9.42	9.14	8.86
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	8.72	8.58	8.40	8.21	8.12	8.07	7.98	7.84	7.80
45.0	10.58	10.26	9.74	9.65	9.33	9.10	8.86	8.68	8.49
90.0	9.23	8.96	8.72	8.40	8.12	7.89	7.75	7.52	7.24
135.0	8.35	8.07	7.70	7.47	7.19	6.96	6.82	6.64	6.40
180.0	9.84	9.65	9.37	9.23	9.19	9.14	9.10	8.96	8.96
225.0	11.23	11.23	11.18	11.09	11.04	11.00	10.95	10.81	10.72
270.0	10.77	10.63	10.53	10.26	10.07	10.02	9.84	9.65	9.61
315.0	8.54	8.40	8.26	8.17	8.07	8.03	7.93	7.75	7.66
360.0	8.72	8.58	8.40	8.21	8.12	8.07	7.98	7.84	7.80

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	7.75	7.66	7.61	7.47	7.42	7.42	7.42	7.38	7.42
45.0	8.35	8.26	8.12	8.03	7.93	7.93	7.80	7.70	7.75
90.0	7.10	6.96	6.82	6.77	6.54	6.50	6.40	6.40	6.26
135.0	6.31	6.22	6.08	5.99	5.89	5.85	5.80	5.71	5.66
180.0	8.96	8.91	8.77	8.72	8.82	8.77	8.72	8.82	8.86
225.0	10.67	10.53	10.49	10.49	10.44	10.39	10.35	10.21	10.12
270.0	9.51	9.37	9.28	9.23	9.23	9.14	9.10	9.10	9.19
315.0	7.61	7.47	7.29	7.19	7.10	6.87	6.64	6.17	5.66
360.0	7.75	7.66	7.61	7.47	7.42	7.42	7.42	7.38	7.42
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.42	7.42	7.42	7.29	7.29	7.15	7.05	7.01	7.01
45.0	7.80	7.84	7.89	7.89	7.89	7.89	7.89	7.80	7.70
90.0	6.26	6.22	6.17	6.08	6.03	6.03	6.03	5.99	5.99
135.0	5.66	5.57	5.57	5.43	5.38	5.29	5.24	5.24	5.10
180.0	8.82	8.77	8.72	8.63	8.49	8.31	8.31	8.12	8.12
225.0	10.12	9.93	9.88	9.79	9.79	9.88	9.98	10.35	10.90
270.0	9.19	9.19	9.14	9.14	9.00	8.86	8.72	8.54	8.45
315.0	5.24	4.87	4.55	4.69	5.06	5.34	5.61	5.80	5.80
360.0	7.42	7.42	7.42	7.29	7.29	7.15	7.05	7.01	7.01
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	7.15	7.24	7.61	7.98	8.40	8.86	9.28	9.98	11.23
45.0	7.66	7.70	8.03	8.40	9.14	9.93	10.90	11.93	13.18
90.0	6.08	6.08	6.13	6.26	6.36	6.36	6.50	6.64	7.52
135.0	5.01	4.97	4.87	4.78	4.69	4.64	4.55	4.45	4.36
180.0	8.21	8.31	8.54	9.05	9.56	10.30	11.14	12.30	13.41
225.0	11.51	12.30	13.27	14.39	15.64	16.98	18.14	19.49	20.79
270.0	8.68	9.00	9.42	9.98	10.53	11.23	12.39	13.64	14.62
315.0	5.66	5.52	5.34	5.20	4.92	4.78	4.69	4.64	4.55
360.0	7.15	7.24	7.61	7.98	8.40	8.86	9.28	9.98	11.23
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	11.79	12.53	13.18	13.50	13.64	13.18	11.93	9.93	6.36
45.0	14.43	15.64	16.75	17.91	18.98	20.00	20.70	20.74	20.37
90.0	8.45	9.19	10.39	11.60	12.62	13.36	13.97	13.97	13.32
135.0	4.32	4.27	4.13	4.04	3.99	3.94	3.85	3.67	3.67
180.0	14.66	15.73	16.66	17.26	17.59	17.35	16.38	14.43	11.69
225.0	21.35	21.76	21.53	20.09	17.54	13.83	9.56	5.94	4.22
270.0	15.59	15.92	15.36	14.20	11.83	9.10	6.54	4.13	3.71
315.0	4.50	4.50	4.36	4.27	4.08	3.90	3.53	3.29	3.02
360.0	11.79	12.53	13.18	13.50	13.64	13.18	11.93	9.93	6.36
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	2.83	2.23	1.90	1.72	1.90	1.95	2.00	2.00	2.09
45.0	17.77	14.48	11.14	6.64	3.67	2.88	2.41	2.37	2.32
90.0	12.20	9.70	7.10	3.71	2.74	2.51	2.27	2.09	1.95
135.0	3.48	3.34	3.16	2.92	2.60	2.32	2.13	1.90	1.72
180.0	8.17	5.10	3.16	2.69	2.46	2.41	2.27	2.27	2.46
225.0	3.94	3.99	4.13	4.59	5.06	5.29	5.66	5.85	6.22
270.0	3.76	3.99	4.59	3.94	4.13	4.27	4.22	4.50	5.20
315.0	2.83	2.74	2.64	2.64	2.97	3.20	3.34	3.53	3.39
360.0	2.83	2.23	1.90	1.72	1.90	1.95	2.00	2.00	2.09

Intensity data(cd)

<b>C/γ(°)</b>	<b>90.0</b>
<b>0.0</b>	<b>2.18</b>
<b>45.0</b>	<b>2.23</b>
<b>90.0</b>	<b>1.90</b>
<b>135.0</b>	<b>1.72</b>
<b>180.0</b>	<b>2.64</b>
<b>225.0</b>	<b>6.22</b>
<b>270.0</b>	<b>5.29</b>
<b>315.0</b>	<b>3.16</b>
<b>360.0</b>	<b>2.18</b>