
Nata

Client:

LumCAT: 3-1701-N

Luminaire: 92.70.045.00+92.70.061.00

Report No: nata-0100

Voltage(V): 36.2000

Test No: GC2018052904

Current(A): 0.5000

LampCAT: NICHIA NFDWJ130B-V3

Power (W): 18.1000

Lamp flux(lm): 2390.3

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 86

Width(mm): 86

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 1877.57, Efficiency(%): 78.55% , Luminous Efficacy(lm/W): 103.73

Central intensity(cd): 11088.360, Maximum intensity(cd): 11088.360

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=18.6

[C90/270]Total=18.6

Field angle(10%Imax): [C0/180]Total=35.6

[C90/270]Total=35.6

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

Maximum s/h(1/4): C0_180=0.31 C90_270=0.31

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 78.98%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.236%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11088.359	10.611	10.611	.444%	.565%
2.0	10851.754	83.059	93.67	3.475%	4.989%
4.0	10014.759	153.211	246.881	6.410%	13.149%
6.0	8591.482	196.955	443.836	8.240%	23.639%
8.0	6812.335	207.930	651.766	8.699%	34.713%
10.0	4821.977	183.637	835.403	7.683%	44.494%
12.0	3166.362	144.379	979.782	6.040%	52.184%
14.0	1954.020	103.674	1083.456	4.337%	57.705%
16.0	1345.716	81.350	1164.806	3.403%	62.038%
18.0	1081.377	73.287	1238.093	3.066%	65.941%
20.0	917.859	68.848	1306.941	2.880%	69.608%
22.0	776.454	63.791	1370.731	2.669%	73.006%
24.0	652.198	58.178	1428.909	2.434%	76.104%
26.0	546.366	52.528	1481.437	2.198%	78.902%
28.0	459.927	47.355	1528.792	1.981%	81.424%
30.0	389.077	42.665	1571.457	1.785%	83.696%
32.0	326.739	37.973	1609.43	1.589%	85.719%
34.0	279.377	34.262	1643.692	1.433%	87.544%
36.0	234.533	30.234	1673.926	1.265%	89.154%
38.0	198.079	26.745	1700.671	1.119%	90.578%
40.0	168.452	23.747	1724.418	.993%	91.843%
42.0	140.993	20.691	1745.109	.866%	92.945%
44.0	115.976	17.669	1762.777	.739%	93.886%
46.0	95.502	15.067	1777.844	.630%	94.689%
48.0	79.164	12.902	1790.746	.540%	95.376%
50.0	65.655	11.030	1801.776	.461%	95.963%
52.0	54.616	9.439	1811.215	.395%	96.466%
54.0	43.729	7.759	1818.974	.325%	96.879%
56.0	35.621	6.477	1825.45	.271%	97.224%
58.0	29.669	5.518	1830.968	.231%	97.518%
60.0	25.016	4.751	1835.72	.199%	97.771%
62.0	21.444	4.153	1839.872	.174%	97.992%
64.0	19.586	3.861	1843.733	.162%	98.198%
66.0	18.306	3.668	1847.401	.153%	98.393%
68.0	17.102	3.478	1850.878	.145%	98.578%
70.0	16.049	3.307	1854.186	.138%	98.755%
72.0	15.058	3.141	1857.327	.131%	98.922%
74.0	14.315	3.018	1860.345	.126%	99.083%

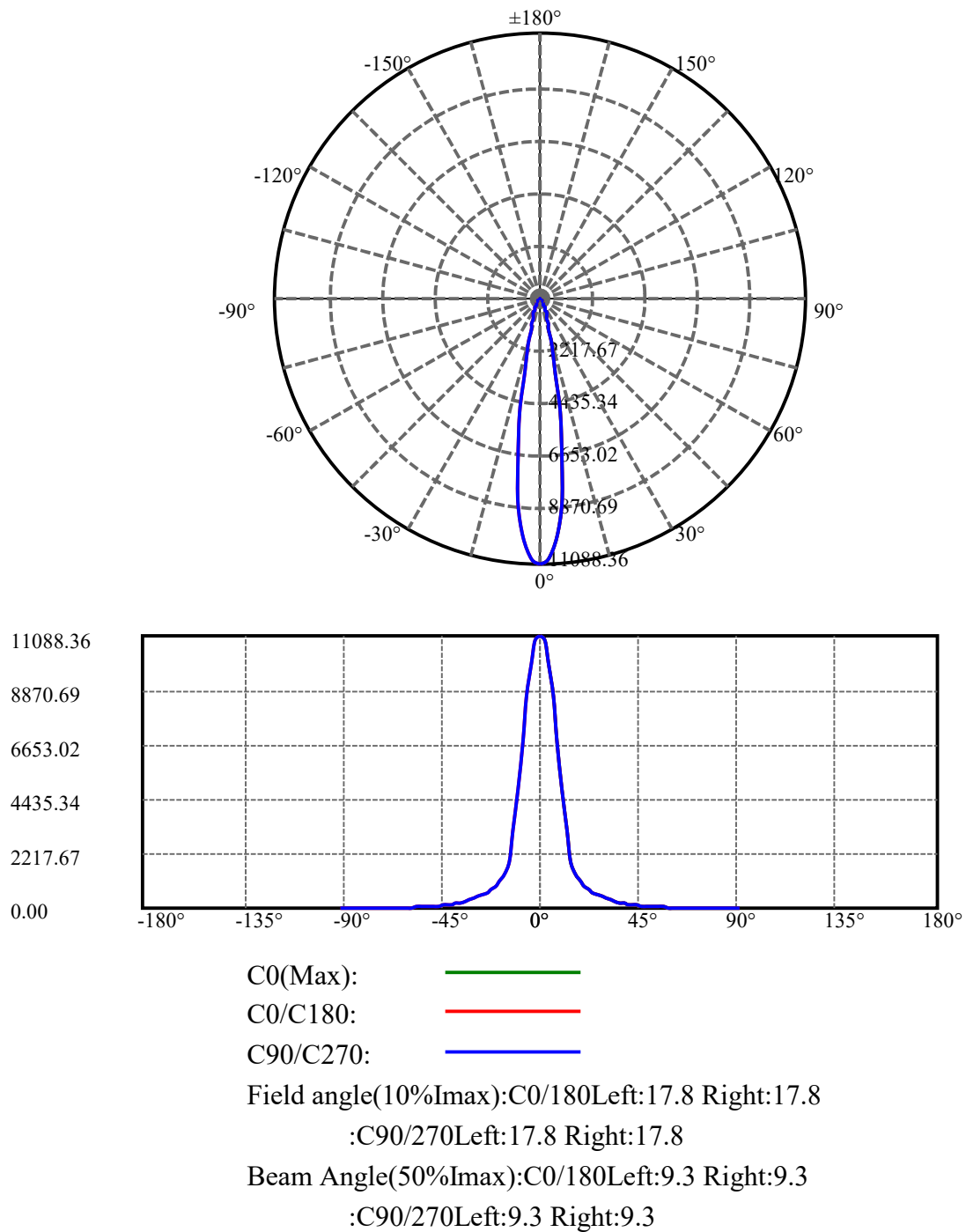
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.606	2.895	1863.24	.121%	99.237%
78.0	12.821	2.750	1865.99	.115%	99.383%
80.0	11.803	2.549	1868.539	.107%	99.519%
82.0	10.770	2.339	1870.879	.098%	99.644%
84.0	9.800	2.138	1873.016	.089%	99.757%
86.0	8.857	1.938	1874.954	.081%	99.861%
88.0	8.080	1.771	1876.725	.074%	99.955%
90.0	7.715	0.846	1877.571	.035%	100.000%

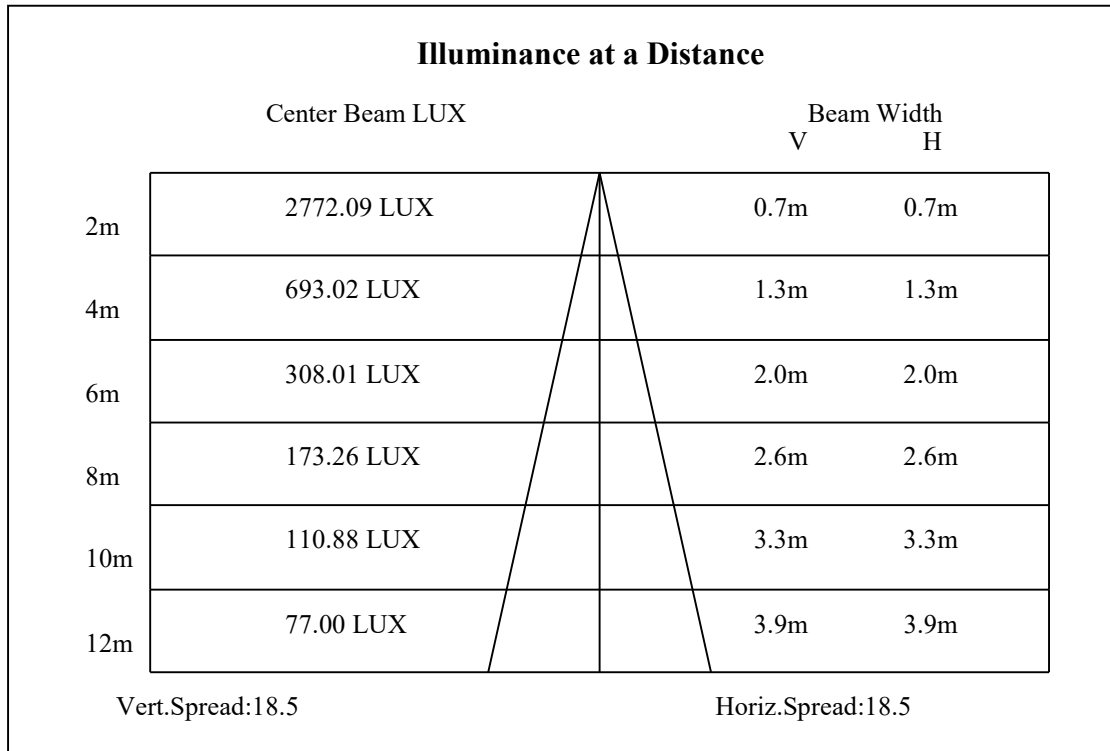
ZONAL LUMEN SUMMARY

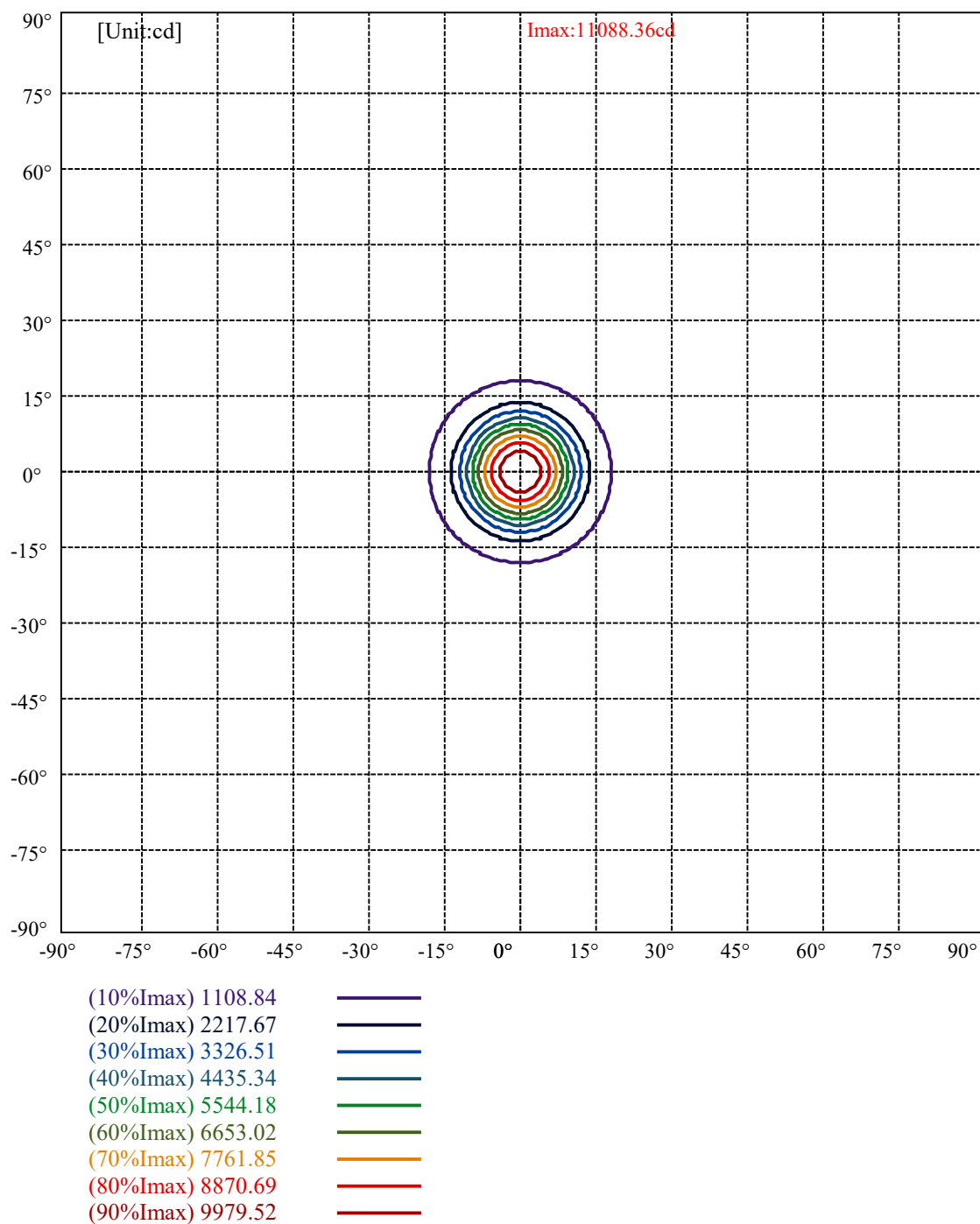
Zone	Lumens	%Lamp	%Fixt
0-30	1571.46	65.74%	83.70%
0-40	1724.42	72.14%	91.84%
0-60	1835.72	76.80%	97.77%
0-90	1876.72	78.51%	99.95%
0-120	1876.72	78.51%	99.95%
0-180	1877.57	78.55%	100.00%
60-90	45.76	1.91%	2.44%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.87	1502.06	62.84%	80.00%

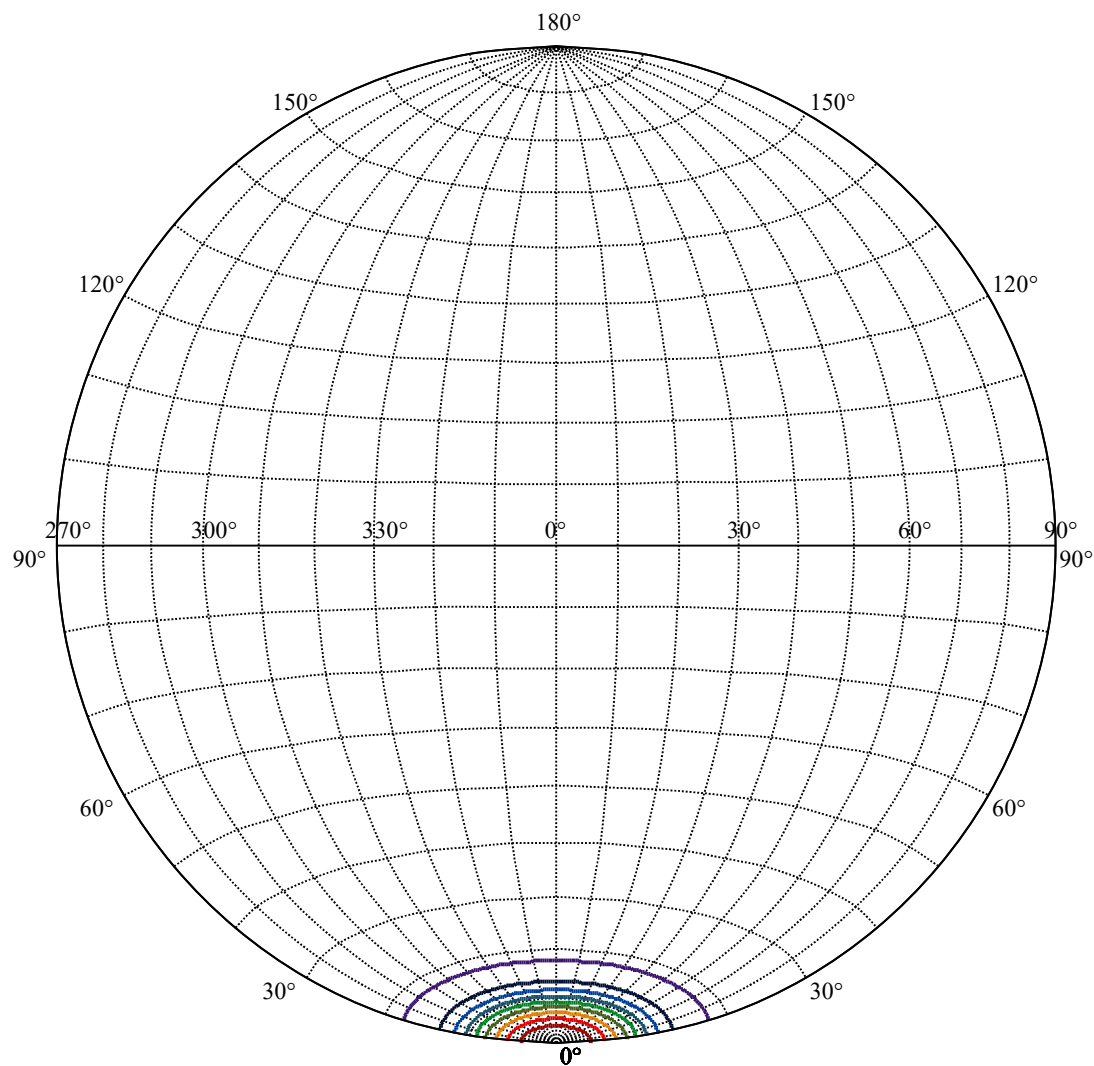
ZONAL LUMEN SUMMARY

0-10	835.40
10-20	471.54
20-30	264.52
30-40	152.96
40-50	77.36
50-60	33.94
60-70	18.47
70-80	14.35
80-90	8.19
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









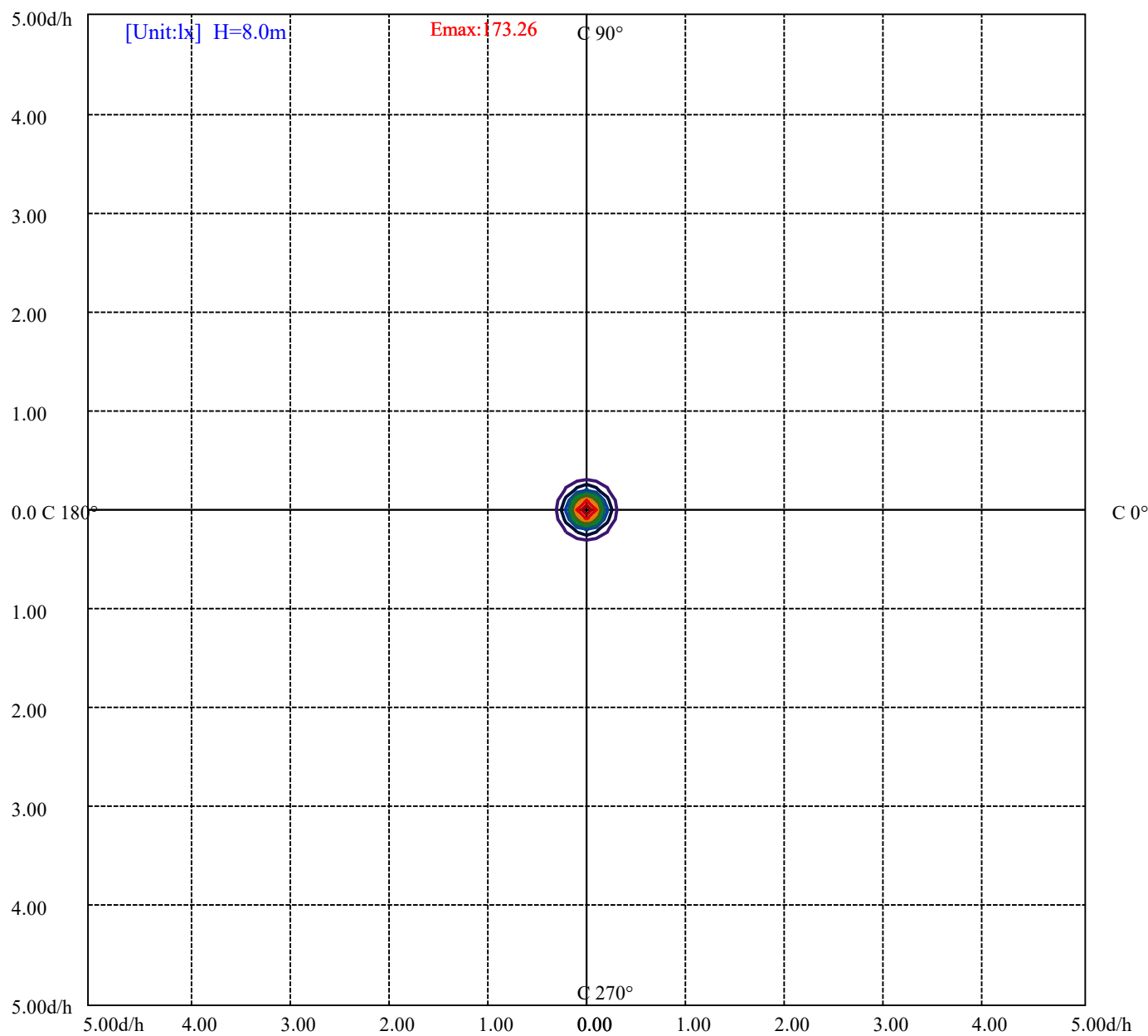
House

[Unit:cd]

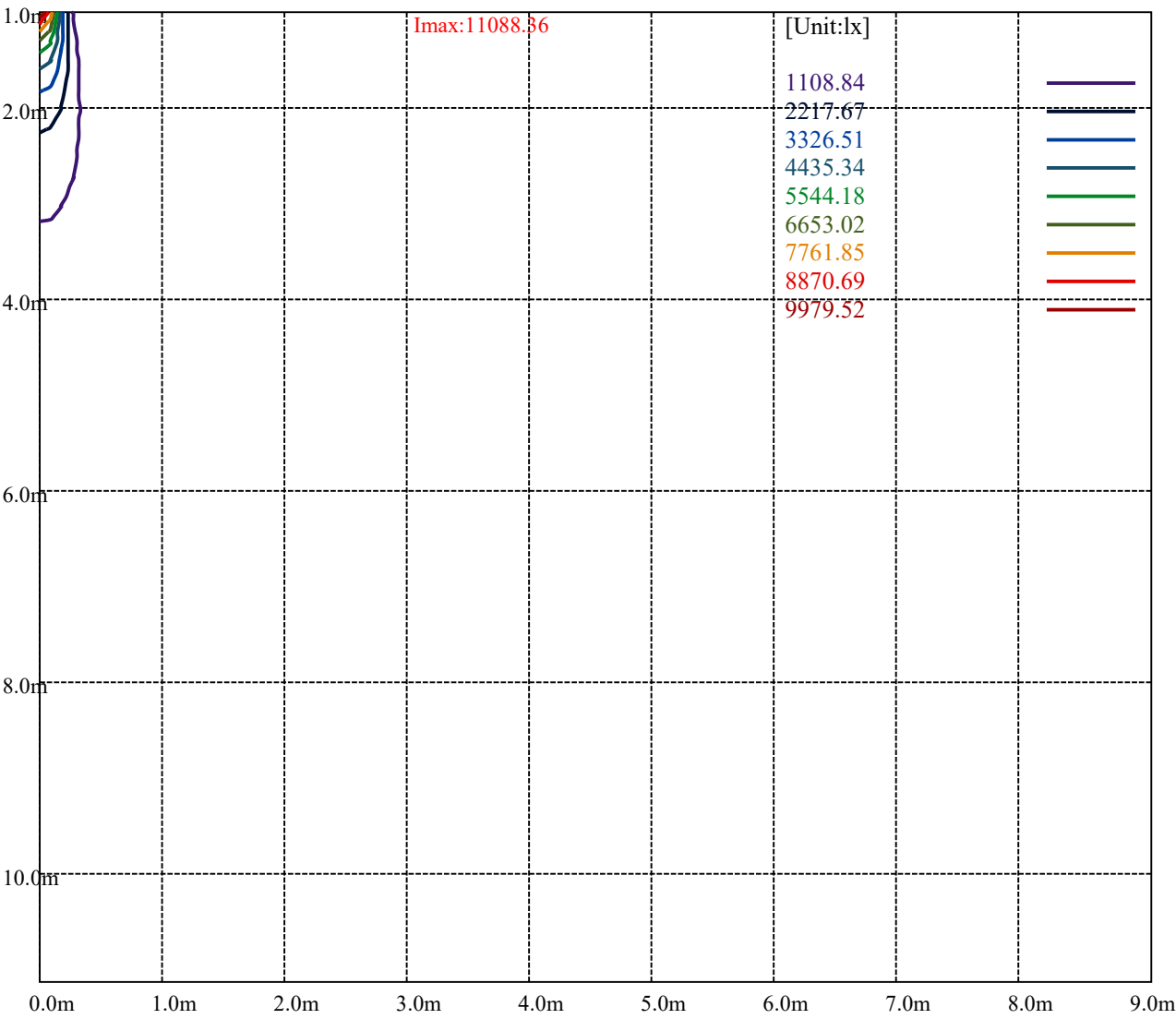
Road

Imax:11088.36

(10%Imax)	1108.84	—
(20%Imax)	2217.67	—
(30%Imax)	3326.51	—
(40%Imax)	4435.34	—
(50%Imax)	5544.18	—
(60%Imax)	6653.02	—
(70%Imax)	7761.85	—
(80%Imax)	8870.69	—
(90%Imax)	9979.52	—



(10%E _{max})	17.32547	
(20%E _{max})	34.65109	
(30%E _{max})	51.97656	
(40%E _{max})	69.30219	
(50%E _{max})	86.62766	
(60%E _{max})	103.9531	
(70%E _{max})	121.2787	
(80%E _{max})	138.6042	
(90%E _{max})	155.9298	



Luminance Table

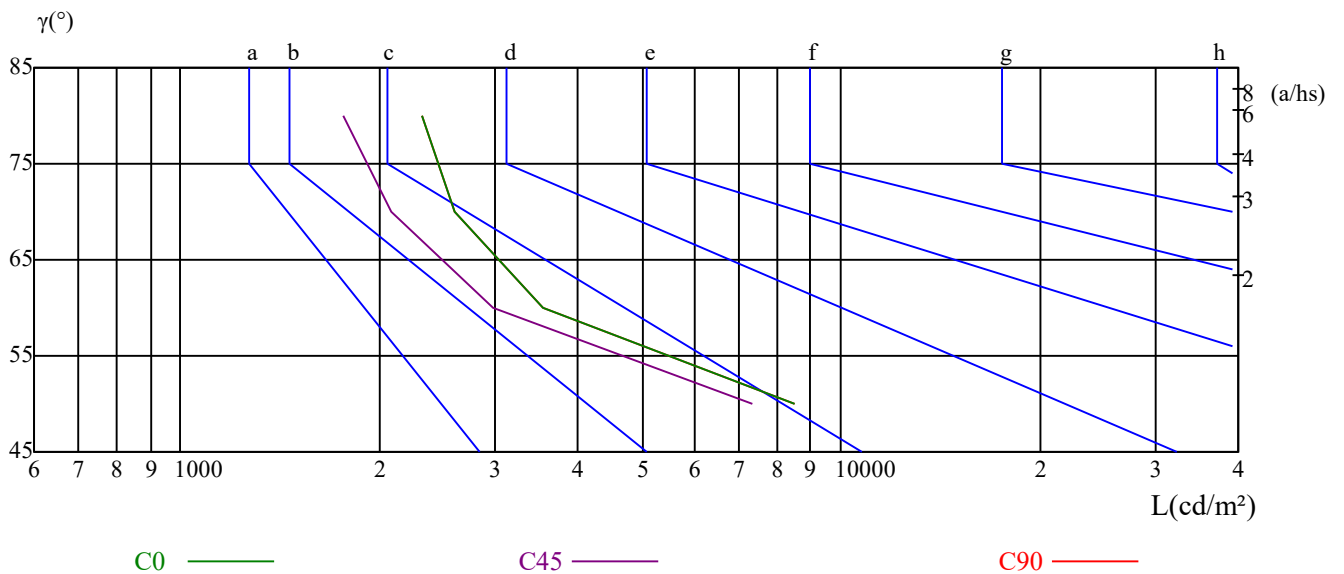
γ	45	50	55	60	65	70	75	80	85
C0	0	8506	0	3549	0	2603	0	2316	0
C45	0	7338	0	2965	0	2092	0	1768	0
C90	0	8506	0	3549	0	2603	0	2316	0

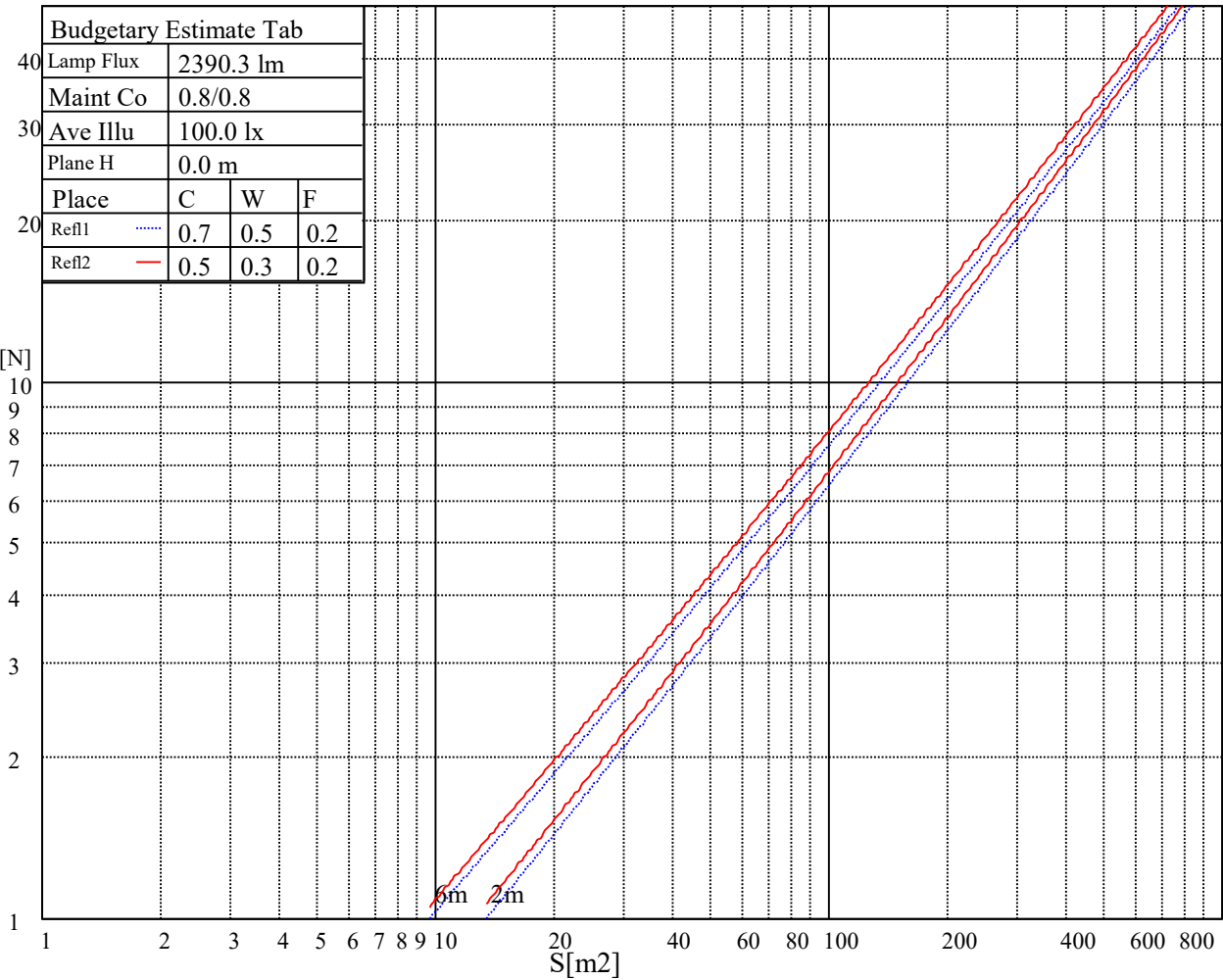
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5846	5846	5846	6669	6669	6669	13933	13933	13933

Glare Table

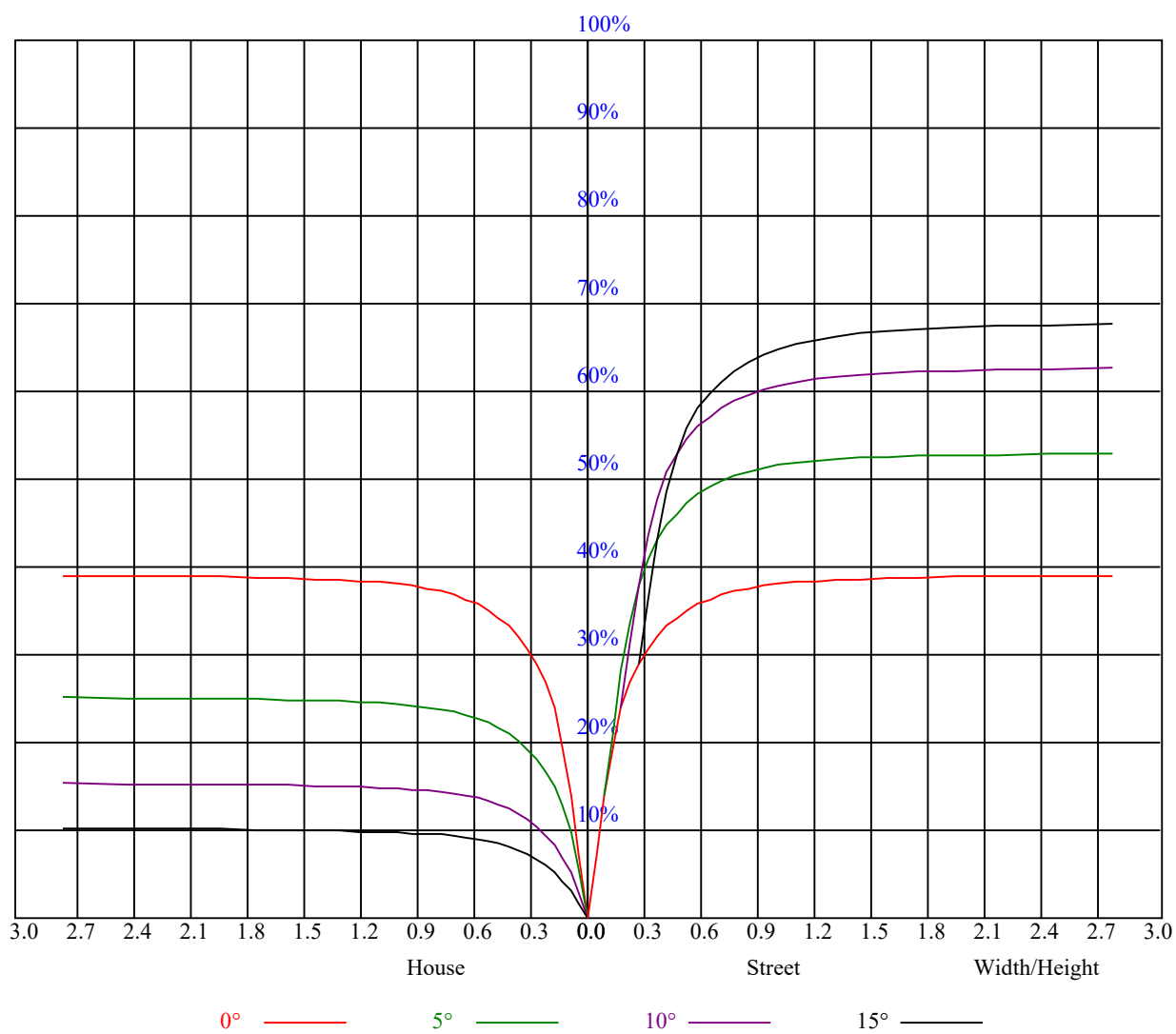
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

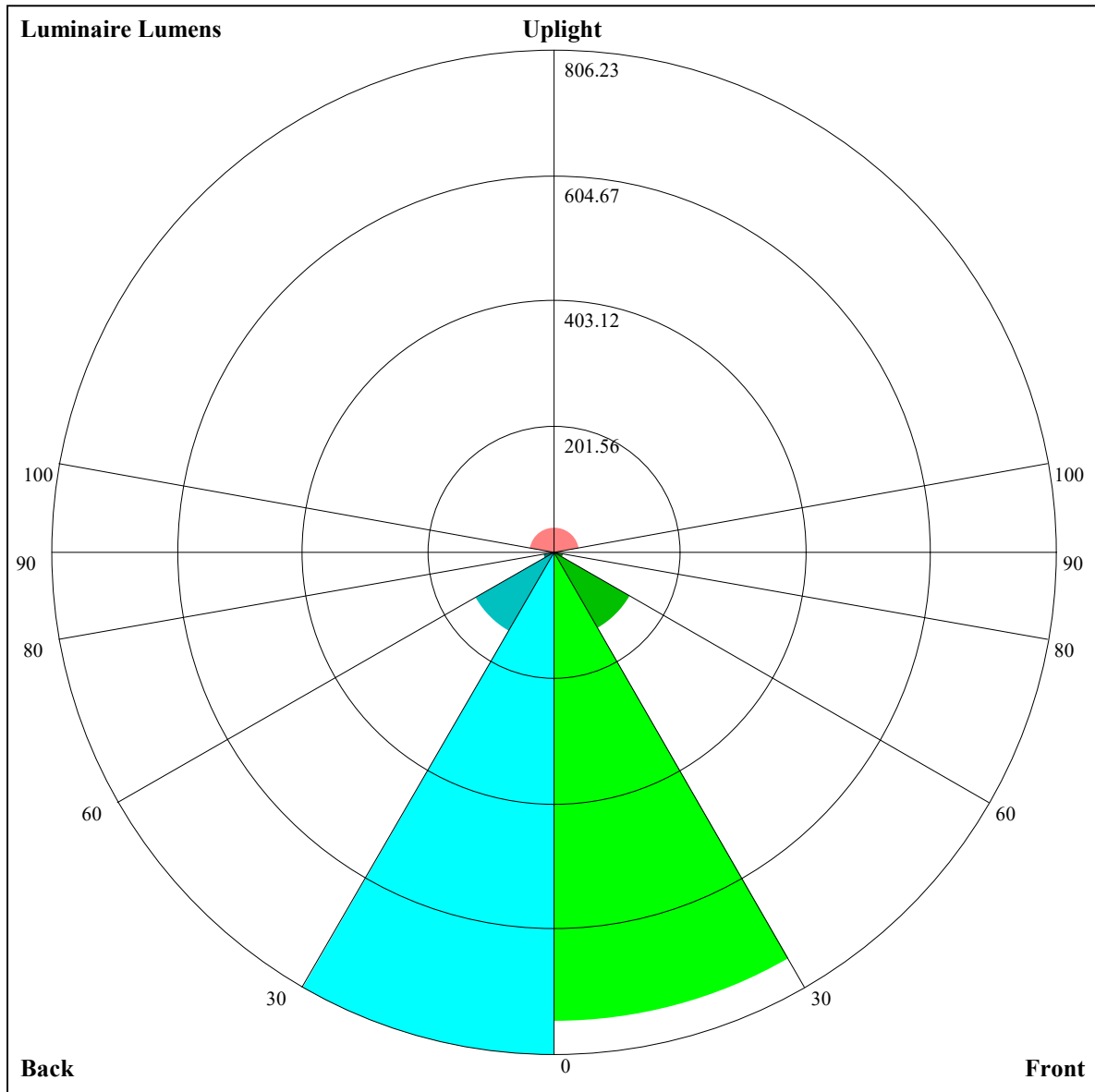
Luminance Limiting Curve





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	0.94	0.94	0.94	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.81	0.81	0.81	0.79
1	0.88	0.86	0.84	0.86	0.85	0.83	0.83	0.82	0.81	0.80	0.79	0.78	0.77	0.77	0.76	0.74
2	0.83	0.80	0.78	0.82	0.79	0.77	0.79	0.77	0.76	0.77	0.75	0.74	0.75	0.74	0.72	0.71
3	0.79	0.76	0.73	0.78	0.75	0.73	0.76	0.74	0.72	0.74	0.72	0.71	0.73	0.71	0.69	0.68
4	0.76	0.72	0.70	0.75	0.72	0.69	0.73	0.71	0.68	0.72	0.69	0.68	0.70	0.68	0.67	0.66
5	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.68	0.66	0.64	0.64
6	0.70	0.66	0.64	0.69	0.66	0.64	0.68	0.65	0.63	0.67	0.65	0.63	0.66	0.64	0.62	0.61
7	0.68	0.64	0.62	0.67	0.64	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.65	0.62	0.61	0.60
8	0.66	0.62	0.60	0.65	0.62	0.59	0.64	0.61	0.59	0.64	0.61	0.59	0.63	0.61	0.59	0.58
9	0.64	0.60	0.58	0.63	0.60	0.58	0.63	0.60	0.58	0.62	0.59	0.57	0.62	0.59	0.57	0.56
10	0.62	0.59	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.61	0.58	0.56	0.60	0.58	0.56	0.55





Luminaire Lumens:

FL=754.41,FM=140.86,FH=16.85,FVH=5.11

BL=806.23,BM=145.55,BH=17.16,BVH=5.23

UL=8.42,UH=40.06

BUG Rating:B2-U2-G0

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Intensity data(cd)										Appendix Page: 16 Total:17	
C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0		
0.0	11115.89	10691.95	9722.96	8109.81	6397.55	4569.68	2884.96	1768.96	1314.20		
45.0	11143.42	10537.79	9343.07	7779.47	5968.11	3958.56	2818.89	1653.89	1280.61		
90.0	10978.25	10470.63	9099.72	7408.39	5572.81	3580.87	2160.41	1560.30	1252.53		
135.0	11115.89	10846.11	9976.22	8445.65	6601.26	4619.23	2956.53	1783.28	1362.10		
180.0	11115.89	10972.74	10393.55	9077.15	7256.43	5225.40	3366.70	1993.04	1379.71		
225.0	11143.42	11198.47	10766.28	9688.27	8031.63	6008.86	4086.84	2302.46	1450.74		
270.0	10978.25	11181.95	10780.04	9717.45	8021.72	5979.13	4167.77	2829.90	1454.04		
315.0	11115.89	10914.38	10036.23	8505.66	6649.16	4634.10	2888.81	1740.33	1271.80		
360.0	11115.89	10691.95	9722.96	8109.81	6397.55	4569.68	2884.96	1768.96	1314.20		
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0		
0.0	1065.34	883.10	753.72	626.54	527.99	447.61	380.44	321.53	278.59		
45.0	1071.40	895.77	751.52	630.95	532.40	445.96	376.04	309.97	279.14		
90.0	1034.90	889.38	743.21	633.31	532.07	453.88	385.23	323.62	275.34		
135.0	1117.09	938.71	802.17	662.88	554.97	468.53	393.65	327.59	279.14		
180.0	1091.11	933.21	784.72	660.35	554.64	465.12	390.46	335.02	282.44		
225.0	1090.67	957.10	807.29	689.09	570.44	478.33	404.00	333.42	277.10		
270.0	1153.98	962.39	831.35	699.77	585.25	492.75	421.73	357.32	303.91		
315.0	1026.53	883.21	737.65	614.70	513.18	427.24	361.06	305.45	259.37		
360.0	1065.34	883.10	753.72	626.54	527.99	447.61	380.44	321.53	278.59		
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0		
0.0	231.29	191.38	162.75	135.33	111.87	92.00	76.42	63.20	52.80		
45.0	222.92	188.95	162.86	134.12	110.44	91.56	76.03	62.71	52.63		
90.0	232.67	195.62	162.58	134.50	108.52	89.52	74.82	61.17	49.17		
135.0	235.92	201.73	175.85	142.38	116.66	95.52	79.06	65.74	54.62		
180.0	233.77	201.18	167.21	141.44	116.50	95.74	78.73	66.18	54.89		
225.0	235.64	200.35	171.39	148.49	123.71	102.79	85.45	70.86	59.19		
270.0	265.59	215.99	183.23	154.10	128.28	105.21	86.49	71.74	60.84		
315.0	218.46	189.45	161.76	137.59	111.82	91.67	76.31	63.65	52.80		
360.0	231.29	191.38	162.75	135.33	111.87	92.00	76.42	63.20	52.80		
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0		
0.0	42.39	35.07	29.40	24.45	21.03	19.49	18.22	16.96	15.97		
45.0	41.46	33.64	28.24	23.34	20.32	18.99	17.73	16.52	15.53		
90.0	39.31	32.43	26.76	22.79	20.04	18.72	17.51	16.35	15.36		
135.0	43.05	34.91	29.51	24.72	21.25	19.77	18.44	17.23	16.24		
180.0	43.38	35.68	29.62	25.05	21.53	19.66	18.33	17.29	16.19		
225.0	48.61	39.42	31.99	27.14	22.68	19.93	18.72	17.51	16.41		
270.0	49.17	39.03	32.81	27.64	23.34	20.54	19.16	17.84	16.74		
315.0	42.45	34.80	29.01	25.00	21.36	19.60	18.33	17.12	15.97		
360.0	42.39	35.07	29.40	24.45	21.03	19.49	18.22	16.96	15.97		
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0		
0.0	14.92	14.20	13.49	12.61	11.62	10.52	9.58	8.59	7.93		
45.0	14.59	13.87	13.16	12.17	11.07	10.08	9.19	8.31	7.71		
90.0	14.53	13.82	13.05	12.11	11.01	10.08	9.14	8.26	7.71		
135.0	15.20	14.37	13.60	12.72	11.73	10.68	9.74	8.75	7.98		
180.0	15.20	14.42	13.71	13.05	12.06	11.01	9.97	9.08	8.15		
225.0	15.36	14.59	13.87	13.38	12.39	11.29	10.35	9.41	8.48		
270.0	15.58	14.81	14.20	13.54	12.66	11.62	10.52	9.52	8.59		
315.0	15.09	14.42	13.76	12.99	11.89	10.90	9.91	8.92	8.09		
360.0	14.92	14.20	13.49	12.61	11.62	10.52	9.58	8.59	7.93		

Intensity data(cd)

Appendix Page: 17 Total:17

C/ $\gamma(^{\circ})$	90.0
0.0	7.71
45.0	7.65
90.0	7.71
135.0	7.71
180.0	7.65
225.0	7.76
270.0	7.82
315.0	7.71
360.0	7.71