
Nata

Client:

LumCAT: 1709-M

Luminaire: 92.70.125.00

Report No: NT2018010503

Test No: GC2018010503

LampCAT: BXRV-DR-1830-H-1000-A-13

Lamp flux(lm): 610.0

Number of Lamps: 1

Length(mm): 46

Phm Type: C

Voltage(V): 17.6000

Current(A): 0.4000

Power (W): 7.0400

PF: 0.0000

Ballast type: DC

Width(mm): 46

Height(mm): 0

Photometric Results

Lumens(lm): 560.67, Efficiency(%): 91.91% , Luminous Efficacy(lm/W): 79.64

Central intensity(cd): 2446.018, Maximum intensity(cd): 2446.018

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=16.0

[C90/270]Total=16.0

Field angle(10%Imax): [C0/180]Total=48.6

[C90/270]Total=48.6

Maximum s/h(1/2): C0_180=0.28 C90_270=0.28

Maximum s/h(1/4): C0_180=0.30 C90_270=0.30

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 92.00%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.525%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2446.018	0.585	0.585	.096%	.104%
1.0	2415.255	4.622	5.208	.758%	.929%
2.0	2338.796	8.951	14.158	1.467%	2.525%
3.0	2209.826	12.683	26.841	2.079%	4.787%
4.0	2045.965	15.651	42.492	2.566%	7.579%
5.0	1862.076	17.797	60.289	2.918%	10.753%
6.0	1642.257	18.825	79.113	3.086%	14.111%
7.0	1434.728	19.174	98.288	3.143%	17.531%
8.0	1223.511	18.673	116.961	3.061%	20.861%
9.0	1052.616	18.057	135.018	2.960%	24.082%
10.0	868.935	16.547	151.565	2.713%	27.033%
11.0	752.883	15.754	167.318	2.583%	29.843%
12.0	645.061	14.707	182.025	2.411%	32.466%
13.0	547.729	13.512	195.537	2.215%	34.876%
14.0	481.943	12.786	208.323	2.096%	37.156%
15.0	432.041	12.262	220.585	2.010%	39.343%
16.0	390.887	11.815	232.4	1.937%	41.451%
17.0	361.390	11.587	243.987	1.899%	43.517%
18.0	336.986	11.419	255.406	1.872%	45.554%
19.0	316.567	11.302	266.708	1.853%	47.570%
20.0	299.700	11.241	277.949	1.843%	49.575%
21.0	283.554	11.143	289.092	1.827%	51.562%
22.0	271.311	11.145	300.238	1.827%	53.550%
23.0	257.822	11.047	311.285	1.811%	55.521%
24.0	247.864	11.055	322.34	1.812%	57.492%
25.0	236.226	10.948	333.288	1.795%	59.445%
26.0	228.229	10.971	344.26	1.799%	61.402%
27.0	221.251	11.015	355.275	1.806%	63.367%
28.0	215.312	11.085	366.36	1.817%	65.344%
29.0	210.398	11.186	377.545	1.834%	67.339%
30.0	206.241	11.308	388.854	1.854%	69.356%
31.0	201.988	11.408	400.262	1.870%	71.390%
32.0	198.313	11.524	411.786	1.889%	73.446%
33.0	195.017	11.647	423.434	1.909%	75.523%
34.0	191.328	11.733	435.166	1.923%	77.616%
35.0	188.031	11.827	446.993	1.939%	79.725%
36.0	184.583	11.898	458.891	1.950%	81.847%
37.0	179.821	11.867	470.758	1.945%	83.964%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	173.166	11.691	482.449	1.917%	86.049%
39.0	163.449	11.280	493.729	1.849%	88.061%
40.0	150.256	10.591	504.321	1.736%	89.950%
41.0	135.831	9.772	514.093	1.602%	91.693%
42.0	117.862	8.648	522.741	1.418%	93.236%
43.0	96.741	7.235	529.976	1.186%	94.526%
44.0	78.180	5.956	535.932	.976%	95.588%
45.0	59.076	4.581	540.513	.751%	96.406%
46.0	41.389	3.265	543.778	.535%	96.988%
47.0	28.863	2.315	546.092	.379%	97.401%
48.0	19.359	1.578	547.67	.259%	97.682%
49.0	11.830	0.979	548.649	.161%	97.857%
50.0	7.866	0.661	549.31	.108%	97.975%
51.0	6.400	0.545	549.855	.089%	98.072%
52.0	5.533	0.478	550.334	.078%	98.157%
53.0	4.687	0.410	550.744	.067%	98.230%
54.0	4.081	0.362	551.106	.059%	98.295%
55.0	3.668	0.330	551.436	.054%	98.354%
56.0	3.517	0.320	551.755	.052%	98.411%
57.0	3.358	0.309	552.064	.051%	98.466%
58.0	3.221	0.300	552.364	.049%	98.519%
59.0	3.145	0.296	552.659	.048%	98.572%
60.0	3.076	0.292	552.951	.048%	98.624%
61.0	3.021	0.290	553.241	.048%	98.676%
62.0	2.946	0.285	553.526	.047%	98.727%
63.0	2.877	0.281	553.807	.046%	98.777%
64.0	2.829	0.279	554.086	.046%	98.826%
65.0	2.767	0.275	554.361	.045%	98.876%
66.0	2.718	0.272	554.634	.045%	98.924%
67.0	2.636	0.266	554.9	.044%	98.972%
68.0	2.608	0.265	555.165	.043%	99.019%
69.0	2.560	0.262	555.427	.043%	99.066%
70.0	2.539	0.262	555.689	.043%	99.112%
71.0	2.512	0.260	555.949	.043%	99.159%
72.0	2.498	0.261	556.21	.043%	99.205%
73.0	2.457	0.258	556.467	.042%	99.251%
74.0	2.450	0.258	556.726	.042%	99.297%
75.0	2.436	0.258	556.984	.042%	99.343%

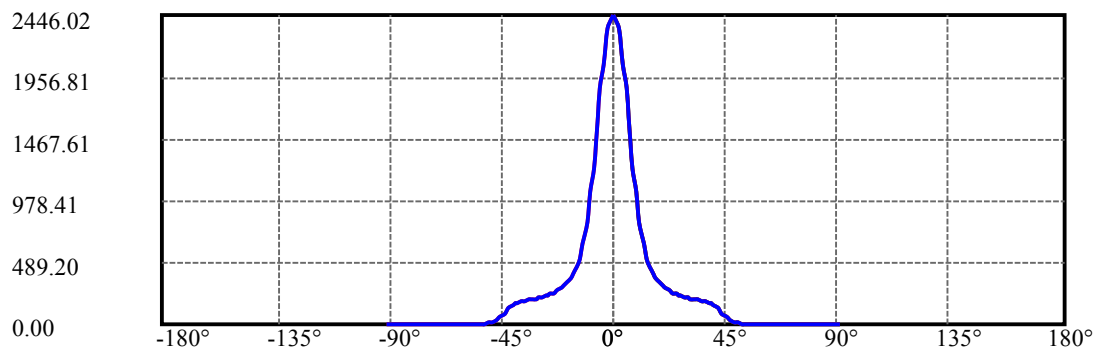
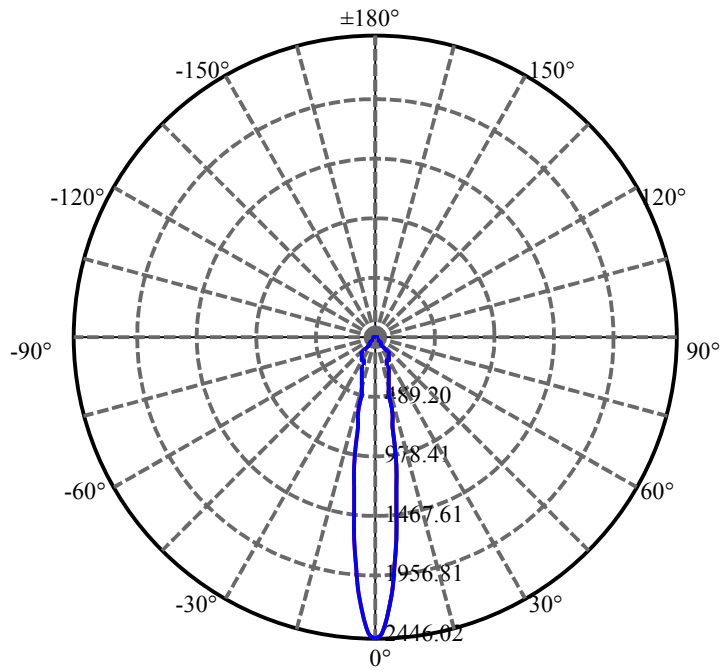
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	2.409	0.256	557.24	.042%	99.389%
77.0	2.381	0.254	557.494	.042%	99.434%
78.0	2.367	0.254	557.748	.042%	99.480%
79.0	2.367	0.255	558.003	.042%	99.525%
80.0	2.354	0.254	558.257	.042%	99.570%
81.0	2.361	0.256	558.513	.042%	99.616%
82.0	2.347	0.255	558.768	.042%	99.661%
83.0	2.333	0.254	559.022	.042%	99.707%
84.0	2.333	0.254	559.276	.042%	99.752%
85.0	2.312	0.253	559.529	.041%	99.797%
86.0	2.312	0.253	559.782	.041%	99.842%
87.0	2.305	0.252	560.034	.041%	99.887%
88.0	2.299	0.252	560.286	.041%	99.932%
89.0	2.312	0.254	560.54	.042%	99.978%
90.0	2.299	0.126	560.666	.021%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	388.85	63.75%	69.36%
0-40	504.32	82.68%	89.95%
0-60	552.95	90.65%	98.62%
0-90	560.54	91.89%	99.98%
0-120	560.54	91.89%	99.98%
0-180	560.67	91.91%	100.00%
60-90	7.88	1.29%	1.41%
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%
0-35.13	448.53	73.53%	80.00%

ZONAL LUMEN SUMMARY

0-10	151.56
10-20	126.38
20-30	110.90
30-40	115.47
40-50	44.99
50-60	3.64
60-70	2.74
70-80	2.57
80-90	2.28
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: —————

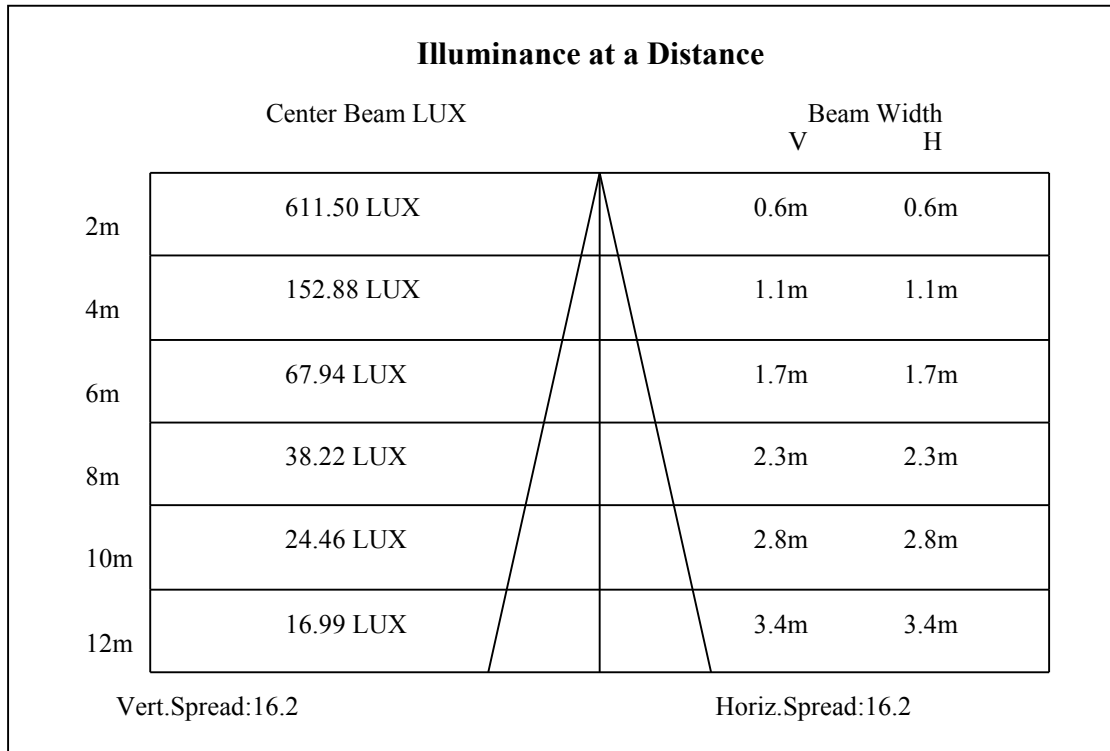
C90/C270: —————

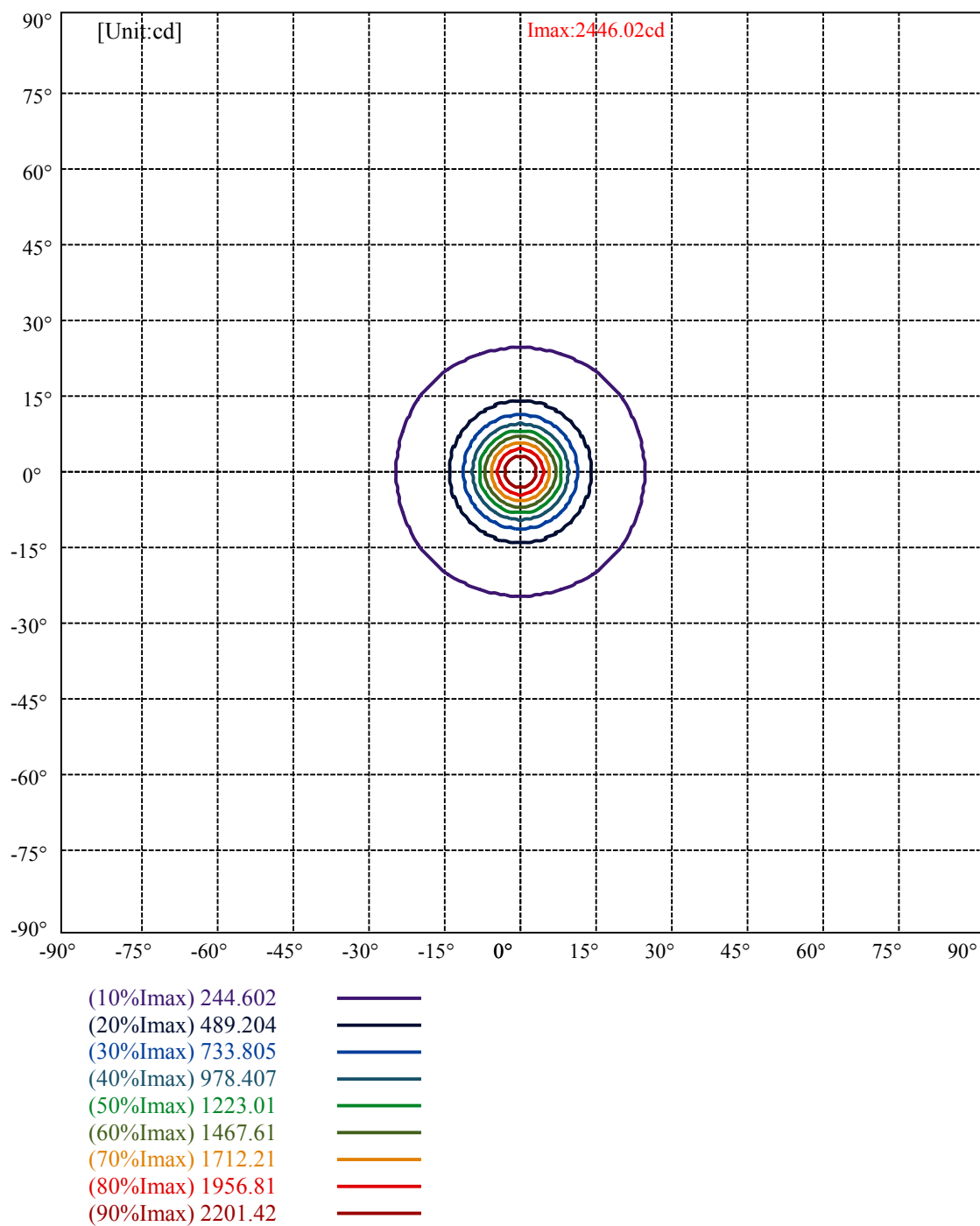
Field angle(10%Imax):C0/180Left:24.3 Right:24.3

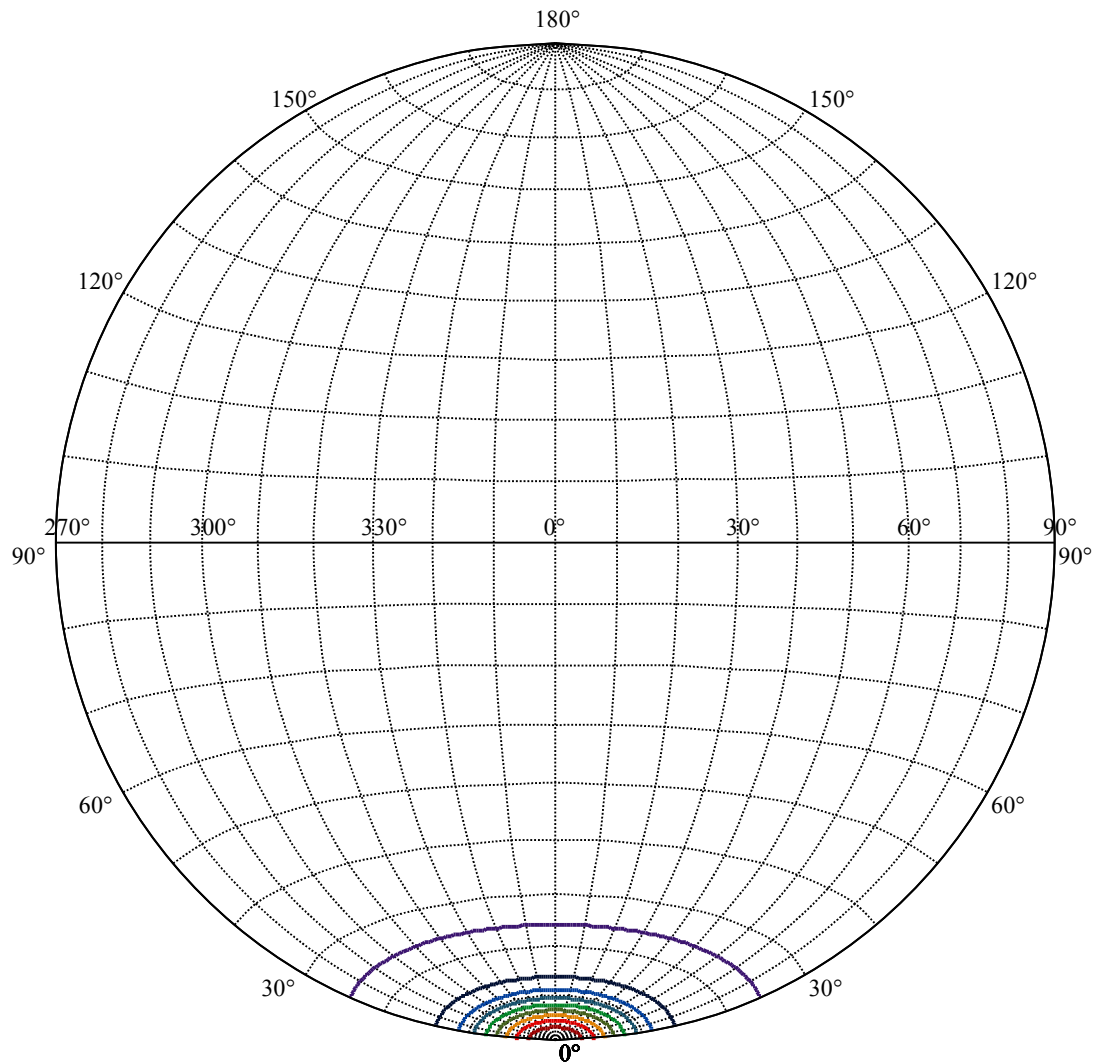
:C90/270Left:24.3 Right:24.3

Beam Angle(50%Imax):C0/180Left:8.0 Right:8.0

:C90/270Left:8.0 Right:8.0







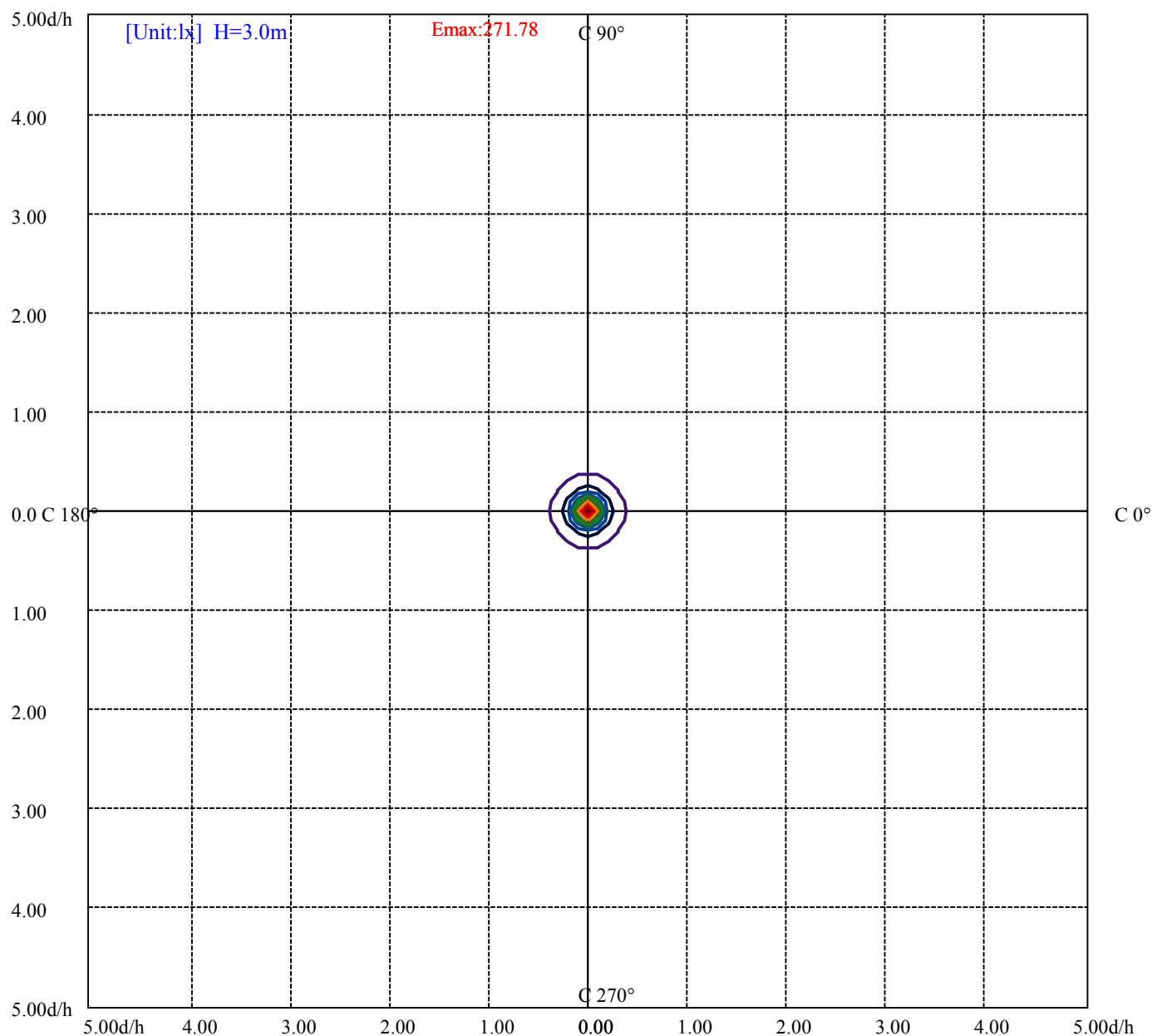
House

[Unit:cd]

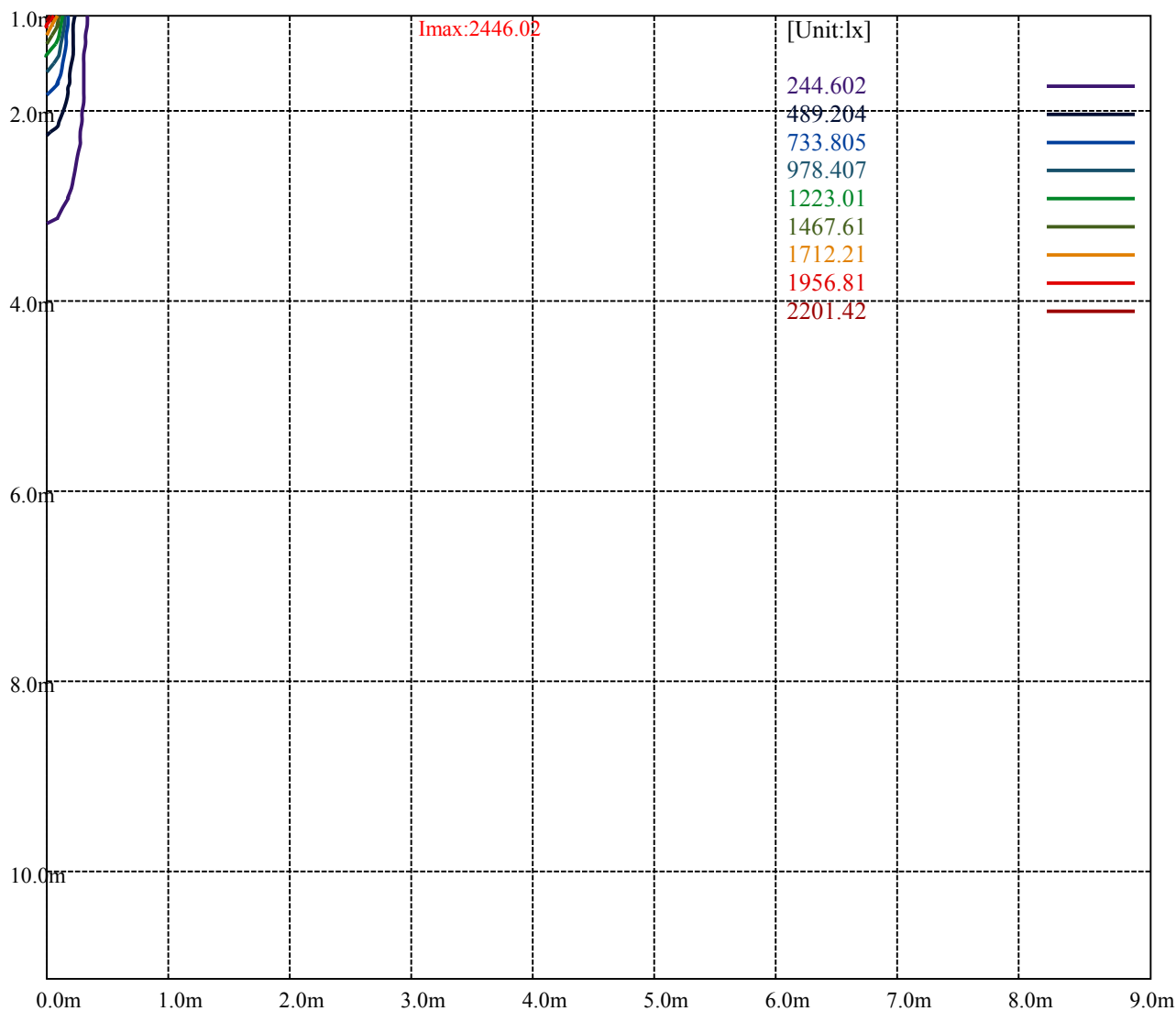
Road

Imax:2446.02

(10%Imax)	244.602	—
(20%Imax)	489.204	—
(30%Imax)	733.805	—
(40%Imax)	978.407	—
(50%Imax)	1223.01	—
(60%Imax)	1467.61	—
(70%Imax)	1712.21	—
(80%Imax)	1956.81	—
(90%Imax)	2201.42	—



(10%Emax)	27.17789	
(20%Emax)	54.35589	
(30%Emax)	81.53378	
(40%Emax)	108.7117	
(50%Emax)	135.89	
(60%Emax)	163.0678	
(70%Emax)	190.2455	
(80%Emax)	217.4233	
(90%Emax)	244.6011	



Luminance Table

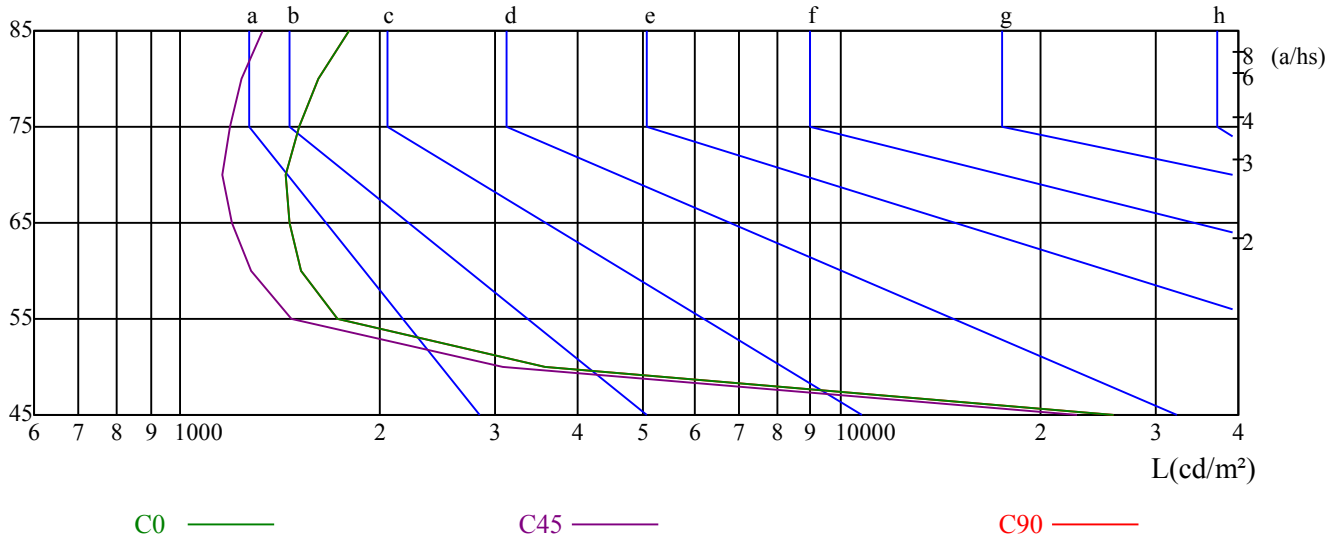
γ	45	50	55	60	65	70	75	80	85
C0	25946	3566	1732	1527	1460	1442	1509	1618	1801
C45	22719	3077	1472	1276	1198	1159	1185	1236	1329
C90	25946	3566	1732	1527	1460	1442	1509	1618	1801

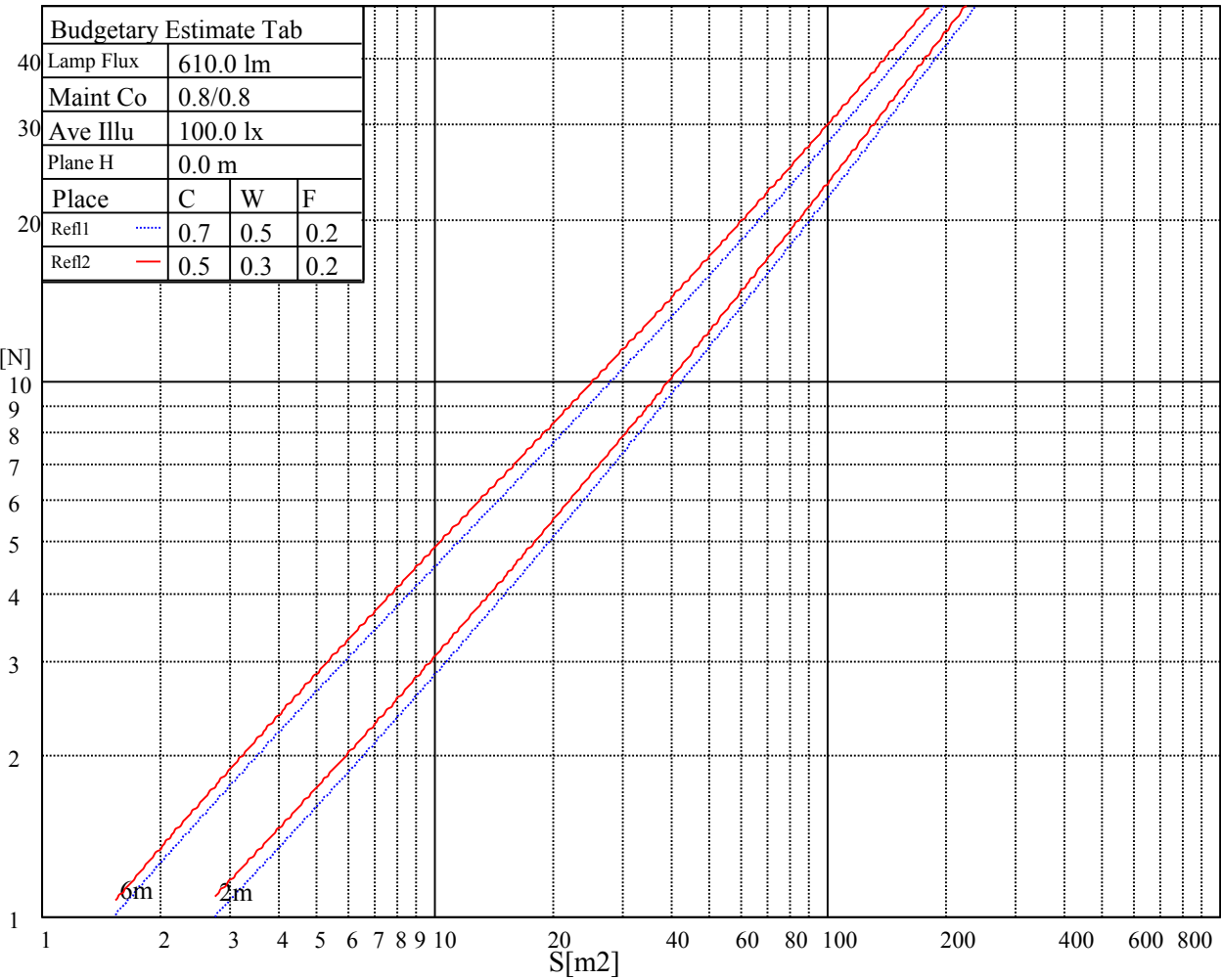
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3094	3094	3094	4448	4448	4448	12538	12538	12538

Glare Table

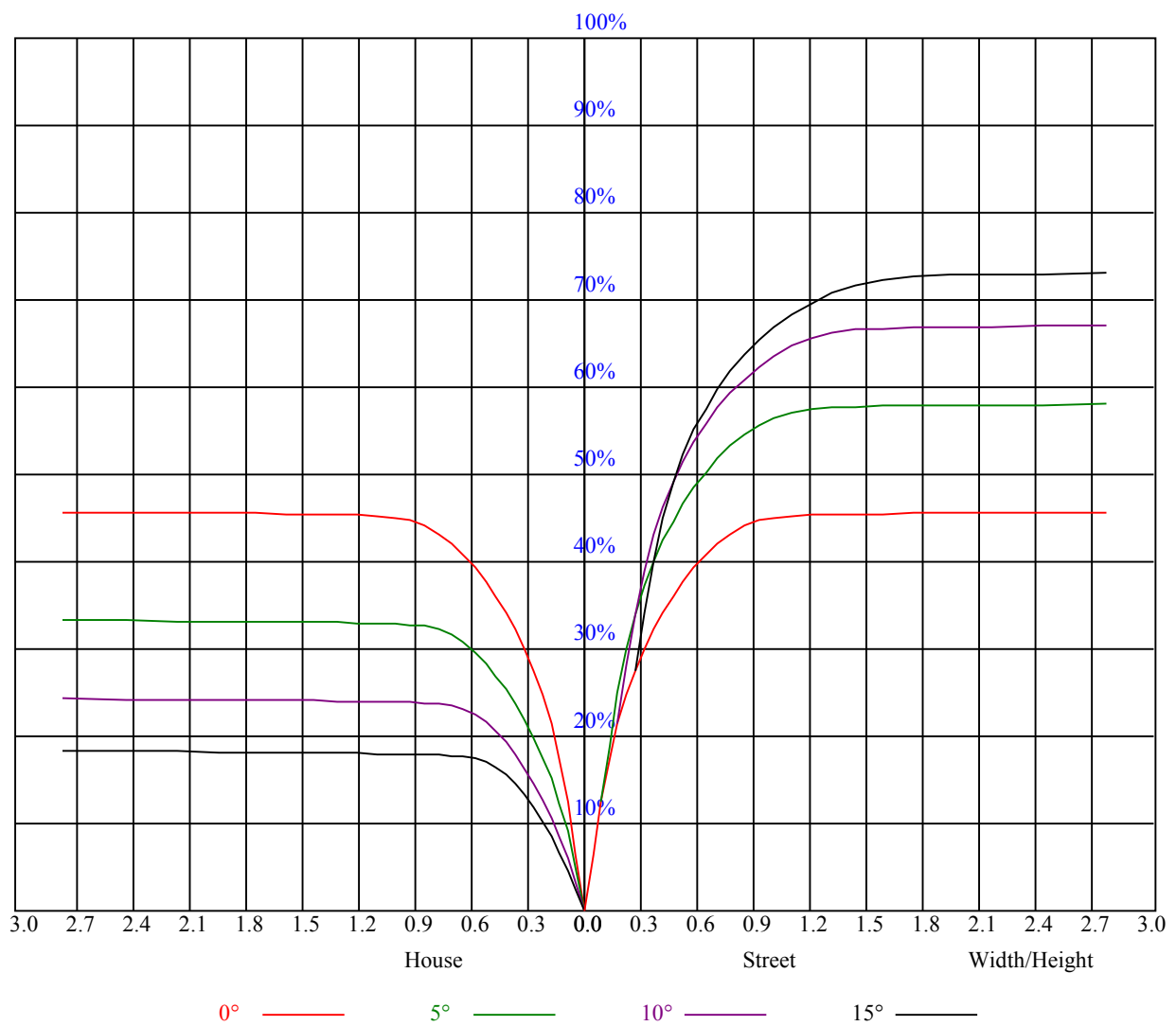
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

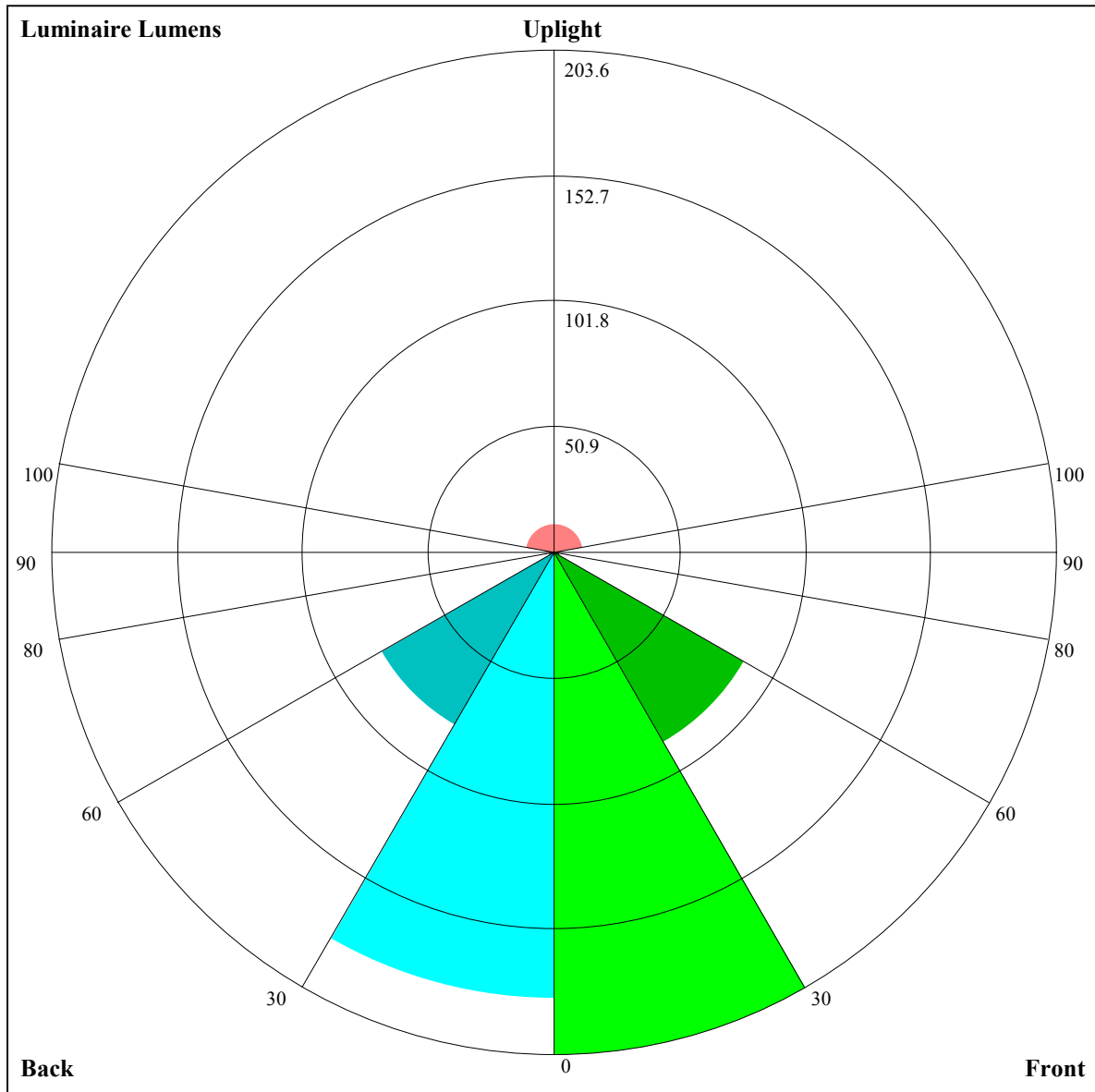
Luminance Limiting Curve

 $\gamma(^{\circ})$ 



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	1.10	1.10	1.10	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.94	0.94	0.94	0.92
1	1.02	1.00	0.98	1.00	0.98	0.96	0.96	0.95	0.93	0.93	0.92	0.90	0.90	0.89	0.88	0.86
2	0.95	0.92	0.89	0.94	0.91	0.88	0.91	0.88	0.86	0.88	0.86	0.84	0.86	0.84	0.82	0.81
3	0.90	0.85	0.82	0.88	0.84	0.81	0.86	0.83	0.80	0.84	0.81	0.79	0.82	0.79	0.78	0.76
4	0.84	0.80	0.76	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.76	0.74	0.78	0.75	0.73	0.72
5	0.80	0.75	0.71	0.79	0.74	0.71	0.77	0.73	0.70	0.76	0.72	0.70	0.74	0.71	0.69	0.68
6	0.76	0.71	0.67	0.75	0.70	0.67	0.74	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.65	0.64
7	0.72	0.67	0.63	0.71	0.67	0.63	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.61
8	0.69	0.64	0.60	0.68	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.59	0.65	0.62	0.59	0.58
9	0.66	0.61	0.57	0.65	0.60	0.57	0.64	0.60	0.57	0.63	0.60	0.57	0.63	0.59	0.57	0.56
10	0.63	0.58	0.55	0.62	0.58	0.55	0.62	0.57	0.55	0.61	0.57	0.54	0.60	0.57	0.54	0.53





Luminaire Lumens:

FL=203.6,FM=89.02,FH=2.65,FVH=1.27

BL=181.11,BM=80.62,BH=2.67,BVH=1.26

UL=2.51,UH=11.93

BUG Rating:B1-U2-G0

Nata 1709-M

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	2431.84	2497.91	2510.02	2458.27	2362.47	2201.15	1993.59	1787.13	1578.47		
45.0	2459.37	2419.18	2316.77	2181.89	1989.19	1766.76	1559.75	1329.61	1142.42		
90.0	2409.27	2282.64	2117.47	1871.37	1662.15	1457.34	1097.77	1033.57	877.98		
135.0	2483.59	2336.04	2148.85	1976.52	1714.46	1484.87	1313.10	1080.76	918.89		
180.0	2431.84	2305.21	2152.15	1942.94	1715.56	1515.15	1320.25	1085.22	918.18		
225.0	2459.37	2441.75	2376.78	2233.64	2077.83	1889.54	1662.70	1436.97	1061.43		
270.0	2409.27	2495.71	2522.13	2496.81	2405.96	2275.48	2083.88	1854.85	1639.58		
315.0	2483.59	2543.61	2566.18	2517.18	2440.10	2306.31	2107.01	1869.72	1651.14		
360.0	2431.84	2497.91	2510.02	2458.27	2362.47	2201.15	1993.59	1787.13	1578.47		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	1327.96	1138.57	966.24	815.94	664.53	572.04	494.96	438.25	401.36		
45.0	955.78	795.01	679.95	589.65	503.77	451.46	410.72	372.73	347.96		
90.0	730.65	617.29	540.76	474.53	423.93	389.41	358.86	337.33	317.46		
135.0	780.70	641.96	558.82	494.96	434.39	397.51	368.33	339.15	319.88		
180.0	773.27	632.16	549.74	487.91	434.84	394.04	366.07	340.69	321.47		
225.0	1040.29	863.06	730.60	613.60	535.48	469.80	420.52	386.17	358.97		
270.0	1403.39	1179.86	1002.03	846.22	690.41	594.61	521.93	459.17	412.37		
315.0	1408.89	1083.57	994.92	837.68	694.48	586.68	514.94	453.61	411.66		
360.0	1327.96	1138.57	966.24	815.94	664.53	572.04	494.96	438.25	401.36		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	371.08	343.00	320.98	302.81	289.05	278.59	263.44	249.13	239.05		
45.0	327.59	310.52	291.80	279.14	278.03	250.18	240.21	232.67	223.36		
90.0	300.22	287.12	275.34	260.75	249.68	239.94	230.41	224.35	219.01		
135.0	304.46	289.05	278.59	262.01	249.08	237.95	230.63	224.19	219.34		
180.0	302.81	287.06	274.57	260.91	247.92	237.84	229.64	221.88	217.03		
225.0	333.09	316.30	301.71	285.69	273.52	261.57	247.48	237.73	229.81		
270.0	381.54	354.01	330.89	313.27	296.20	282.44	279.14	252.38	241.15		
315.0	375.10	345.48	323.73	303.86	287.01	274.07	261.96	247.48	237.07		
360.0	371.08	343.00	320.98	302.81	289.05	278.59	263.44	249.13	239.05		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	230.58	222.54	217.53	213.40	208.06	204.48	201.12	197.10	193.96		
45.0	217.25	213.07	207.29	202.83	199.69	195.56	192.48	189.34	185.54		
90.0	213.67	209.27	205.53	202.00	198.31	194.84	191.65	187.74	184.16		
135.0	214.22	209.99	206.46	203.16	198.97	195.56	192.59	188.40	185.26		
180.0	212.52	207.62	203.98	200.57	196.33	193.14	190.16	186.20	183.50		
225.0	222.26	217.91	212.41	207.18	203.93	199.96	195.67	192.81	189.61		
270.0	231.18	221.44	215.38	210.54	205.14	201.56	198.26	194.51	190.94		
315.0	228.32	220.67	214.61	210.26	205.47	201.40	198.20	194.51	191.27		
360.0	230.58	222.54	217.53	213.40	208.06	204.48	201.12	197.10	193.96		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	190.94	187.41	183.67	180.47	176.07	167.32	151.18	129.60	110.55		
45.0	182.40	179.37	174.20	165.61	150.69	131.58	111.16	92.55	71.30		
90.0	180.42	173.10	160.71	140.94	123.77	104.28	85.50	60.18	44.93		
135.0	182.24	174.31	160.82	145.13	123.71	105.65	85.01	65.63	46.08		
180.0	180.03	173.10	164.89	148.16	124.37	108.63	91.39	67.44	50.71		
225.0	184.93	182.13	178.93	172.00	157.85	144.14	125.03	104.06	85.17		
270.0	187.80	184.77	180.92	177.34	172.77	161.48	144.74	128.61	108.85		
315.0	187.91	184.38	181.19	177.94	172.82	163.57	148.87	125.86	107.86		
360.0	190.94	187.41	183.67	180.47	176.07	167.32	151.18	129.60	110.55		

Nata 1709-M

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	89.96	70.09	53.35	34.85	17.73	10.57	8.09	6.99	5.84		
45.0	52.03	34.52	19.77	11.51	7.54	6.39	5.51	4.68	3.74		
90.0	28.90	14.31	9.03	7.93	6.61	5.23	4.35	3.91	3.80		
135.0	26.37	14.31	9.36	8.15	6.55	5.34	4.46	3.91	3.63		
180.0	31.22	16.68	9.58	8.15	6.99	5.78	4.73	4.07	3.80		
225.0	63.59	45.15	27.31	14.65	9.08	7.71	6.61	5.73	4.73		
270.0	91.01	68.55	51.15	35.07	20.76	10.74	8.70	7.54	5.84		
315.0	89.52	67.50	51.37	34.58	19.38	11.18	8.75	7.43	6.11		
360.0	89.96	70.09	53.35	34.85	17.73	10.57	8.09	6.99	5.84		
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	4.79	3.96	3.69	3.47	3.25	3.14	3.08	3.03	2.97		
45.0	3.47	3.30	3.19	3.14	3.08	2.97	2.92	2.92	2.81		
90.0	3.58	3.25	3.14	3.08	3.03	2.97	2.86	2.86	2.81		
135.0	3.52	3.41	3.30	3.19	3.14	3.08	3.03	2.97	2.92		
180.0	3.58	3.41	3.41	3.30	3.19	3.14	3.08	3.03	2.97		
225.0	4.18	3.96	3.85	3.52	3.30	3.25	3.14	3.08	2.97		
270.0	4.68	3.96	3.69	3.47	3.36	3.30	3.25	3.14	3.03		
315.0	4.84	4.07	3.85	3.69	3.41	3.30	3.25	3.14	3.08		
360.0	4.79	3.96	3.69	3.47	3.25	3.14	3.08	3.03	2.97		
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	2.92	2.86	2.81	2.75	2.59	2.59	2.53	2.53	2.53		
45.0	2.75	2.70	2.70	2.64	2.59	2.53	2.53	2.48	2.48		
90.0	2.75	2.70	2.64	2.64	2.64	2.59	2.53	2.53	2.48		
135.0	2.86	2.81	2.75	2.70	2.64	2.64	2.59	2.59	2.53		
180.0	2.86	2.86	2.75	2.70	2.70	2.64	2.59	2.59	2.53		
225.0	2.92	2.86	2.75	2.75	2.64	2.64	2.59	2.53	2.53		
270.0	2.97	2.92	2.86	2.75	2.70	2.64	2.59	2.53	2.53		
315.0	2.97	2.92	2.86	2.81	2.59	2.59	2.53	2.53	2.48		
360.0	2.92	2.86	2.81	2.75	2.59	2.59	2.53	2.53	2.53		
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	2.48	2.48	2.48	2.42	2.37	2.37	2.37	2.37	2.37		
45.0	2.48	2.42	2.42	2.42	2.42	2.37	2.37	2.37	2.37		
90.0	2.48	2.42	2.42	2.42	2.42	2.37	2.37	2.37	2.37		
135.0	2.53	2.48	2.48	2.48	2.42	2.42	2.37	2.37	2.37		
180.0	2.53	2.48	2.48	2.48	2.42	2.42	2.37	2.37	2.37		
225.0	2.53	2.48	2.48	2.42	2.42	2.37	2.37	2.37	2.31		
270.0	2.48	2.48	2.42	2.42	2.42	2.37	2.37	2.37	2.31		
315.0	2.48	2.42	2.42	2.42	2.37	2.37	2.37	2.37	2.37		
360.0	2.48	2.48	2.48	2.42	2.37	2.37	2.37	2.37	2.37		
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	2.37	2.37	2.37	2.37	2.31	2.31	2.31	2.31	2.31		
45.0	2.37	2.37	2.31	2.37	2.31	2.31	2.31	2.26	2.31		
90.0	2.37	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31		
135.0	2.37	2.31	2.31	2.31	2.31	2.31	2.31	2.26	2.31		
180.0	2.37	2.37	2.37	2.37	2.31	2.31	2.31	2.31	2.31		
225.0	2.31	2.31	2.31	2.31	2.31	2.31	2.26	2.31	2.31		
270.0	2.37	2.37	2.31	2.31	2.31	2.31	2.31	2.31	2.31		
315.0	2.37	2.37	2.37	2.31	2.31	2.31	2.31	2.31	2.31		
360.0	2.37	2.37	2.37	2.37	2.31	2.31	2.31	2.31	2.31		

Intensity data(cd)

Appendix Page: 19 Total:19

C/ $\gamma(^{\circ})$	90.0
0.0	2.26
45.0	2.26
90.0	2.31
135.0	2.31
180.0	2.31
225.0	2.31
270.0	2.31
315.0	2.31
360.0	2.26