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NATA

Client:

LumCAT: 1709-M

Luminaire: 92.70.127.00

Report No: nt0100

Test No: GC2020011015

LampCAT: LUMINUS CLM-9-AA40

Lamp flux(lm): 1442.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 34.6100

Current(A): 0.3490

Power (W): 12.0800

PF: 0.0000

Ballast type: DC

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 1325.54, Efficiency(%): 91.92% , Luminous Efficacy(lm/W): 109.73

Central intensity(cd): 4808.391, Maximum intensity(cd): 4808.391

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=19.0

[C90/270]Total=19.0

Field angle(10%Imax): [C0/180]Total=61.6

[C90/270]Total=61.6

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

Maximum s/h(1/4): C0_180=0.34 C90_270=0.34

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 91.92%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.745%

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/1/10
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4808.391	0.000	0	.000%	.000%
1.0	4785.961	4.591	4.591	.318%	.346%
2.0	4709.602	13.629	18.22	.945%	1.375%
3.0	4574.672	22.205	40.425	1.540%	3.050%
4.0	4381.102	29.978	70.402	2.079%	5.311%
5.0	4090.008	36.442	106.845	2.527%	8.060%
6.0	3762.422	41.267	148.111	2.862%	11.174%
7.0	3361.289	44.217	192.328	3.066%	14.509%
8.0	2944.336	45.128	237.456	3.130%	17.914%
9.0	2565.000	44.650	282.106	3.096%	21.282%
10.0	2219.414	43.297	325.404	3.003%	24.549%
11.0	1885.992	41.021	366.425	2.845%	27.643%
12.0	1623.727	38.366	404.791	2.661%	30.538%
13.0	1388.074	35.742	440.534	2.479%	33.234%
14.0	1203.497	33.172	473.706	2.300%	35.737%
15.0	1075.268	31.284	504.99	2.169%	38.097%
16.0	969.356	29.959	534.949	2.078%	40.357%
17.0	883.758	28.858	563.807	2.001%	42.534%
18.0	816.820	28.039	591.846	1.944%	44.649%
19.0	763.488	27.494	619.34	1.907%	46.724%
20.0	715.022	27.061	646.401	1.877%	48.765%
21.0	678.713	26.763	673.163	1.856%	50.784%
22.0	648.626	26.673	699.837	1.850%	52.796%
23.0	619.713	26.613	726.45	1.846%	54.804%
24.0	595.378	26.566	753.016	1.842%	56.808%
25.0	572.238	26.549	779.565	1.841%	58.811%
26.0	551.208	26.519	806.084	1.839%	60.812%
27.0	533.791	26.545	832.629	1.841%	62.814%
28.0	518.449	26.641	859.27	1.847%	64.824%
29.0	502.439	26.709	885.979	1.852%	66.839%
30.0	490.493	26.809	912.788	1.859%	68.862%
31.0	478.969	26.979	939.767	1.871%	70.897%
32.0	468.668	27.149	966.915	1.883%	72.945%
33.0	459.478	27.344	994.259	1.896%	75.008%
34.0	450.288	27.532	1021.791	1.909%	77.085%
35.0	441.422	27.693	1049.484	1.920%	79.174%
36.0	432.991	27.841	1077.326	1.931%	81.274%
37.0	420.462	27.835	1105.161	1.930%	83.374%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	400.303	27.396	1132.557	1.900%	85.441%
39.0	373.029	26.396	1158.952	1.831%	87.432%
40.0	341.311	24.914	1183.866	1.728%	89.312%
41.0	306.232	23.059	1206.925	1.599%	91.051%
42.0	266.948	20.825	1227.749	1.444%	92.623%
43.0	229.943	18.406	1246.156	1.276%	94.011%
44.0	185.041	15.663	1261.818	1.086%	95.193%
45.0	144.506	12.665	1274.483	.878%	96.148%
46.0	108.830	9.907	1284.391	.687%	96.896%
47.0	75.923	7.348	1291.739	.510%	97.450%
48.0	47.510	4.990	1296.729	.346%	97.826%
49.0	28.238	3.111	1299.839	.216%	98.061%
50.0	18.091	1.932	1301.771	.134%	98.207%
51.0	13.465	1.335	1303.106	.093%	98.307%
52.0	10.463	1.027	1304.133	.071%	98.385%
53.0	8.135	0.809	1304.942	.056%	98.446%
54.0	6.834	0.660	1305.602	.046%	98.496%
55.0	6.391	0.590	1306.192	.041%	98.540%
56.0	6.110	0.565	1306.757	.039%	98.583%
57.0	5.920	0.550	1307.307	.038%	98.624%
58.0	5.730	0.539	1307.846	.037%	98.665%
59.0	5.674	0.533	1308.379	.037%	98.705%
60.0	5.597	0.532	1308.911	.037%	98.745%
61.0	5.548	0.532	1309.443	.037%	98.786%
62.0	5.498	0.532	1309.975	.037%	98.826%
63.0	5.456	0.533	1310.508	.037%	98.866%
64.0	5.428	0.534	1311.042	.037%	98.906%
65.0	5.386	0.535	1311.577	.037%	98.947%
66.0	5.351	0.536	1312.113	.037%	98.987%
67.0	5.344	0.538	1312.651	.037%	99.028%
68.0	5.330	0.541	1313.192	.037%	99.068%
69.0	5.323	0.543	1313.735	.038%	99.109%
70.0	5.309	0.546	1314.281	.038%	99.151%
71.0	5.295	0.548	1314.829	.038%	99.192%
72.0	5.280	0.550	1315.379	.038%	99.233%
73.0	5.273	0.552	1315.931	.038%	99.275%
74.0	5.273	0.554	1316.485	.038%	99.317%
75.0	5.245	0.556	1317.041	.039%	99.359%

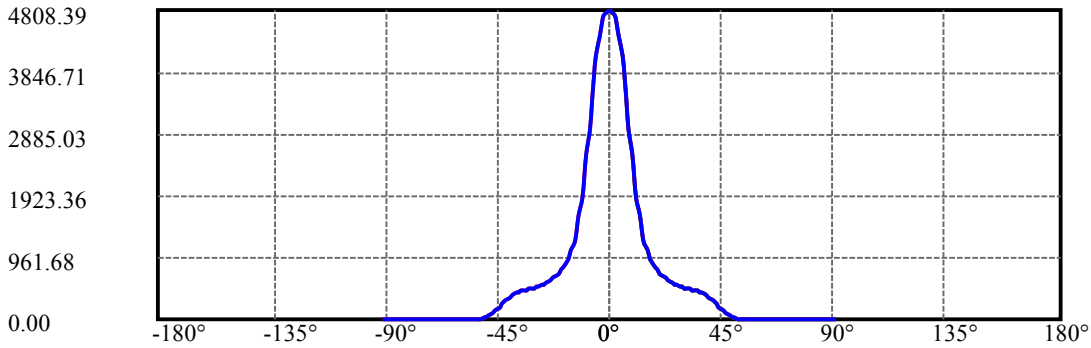
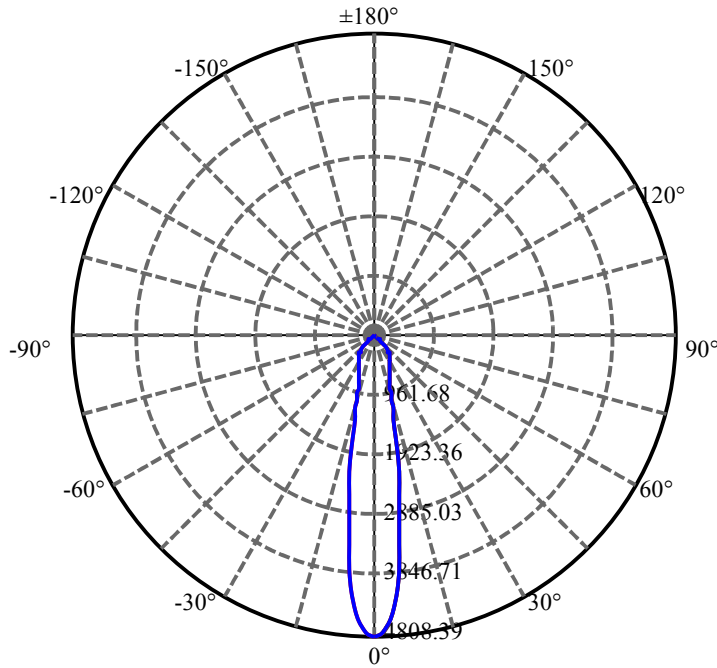
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.252	0.557	1317.598	.039%	99.401%
77.0	5.238	0.559	1318.158	.039%	99.443%
78.0	5.231	0.560	1318.718	.039%	99.485%
79.0	5.238	0.563	1319.281	.039%	99.528%
80.0	5.231	0.564	1319.845	.039%	99.570%
81.0	5.245	0.567	1320.412	.039%	99.613%
82.0	5.224	0.568	1320.979	.039%	99.656%
83.0	5.224	0.568	1321.547	.039%	99.699%
84.0	5.224	0.569	1322.117	.039%	99.742%
85.0	5.231	0.571	1322.687	.040%	99.785%
86.0	5.210	0.571	1323.258	.040%	99.828%
87.0	5.224	0.571	1323.829	.040%	99.871%
88.0	5.210	0.572	1324.401	.040%	99.914%
89.0	5.203	0.571	1324.971	.040%	99.957%
90.0	5.189	0.570	1325.541	.040%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	912.79	63.30%	68.86%
0-40	1183.87	82.10%	89.31%
0-60	1308.91	90.77%	98.75%
0-90	1324.97	91.88%	99.96%
0-120	1324.97	91.88%	99.96%
0-180	1325.54	91.92%	100.00%
60-90	16.59	1.15%	1.25%
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%
0-35.39	1060.43	73.54%	80.00%

ZONAL LUMEN SUMMARY

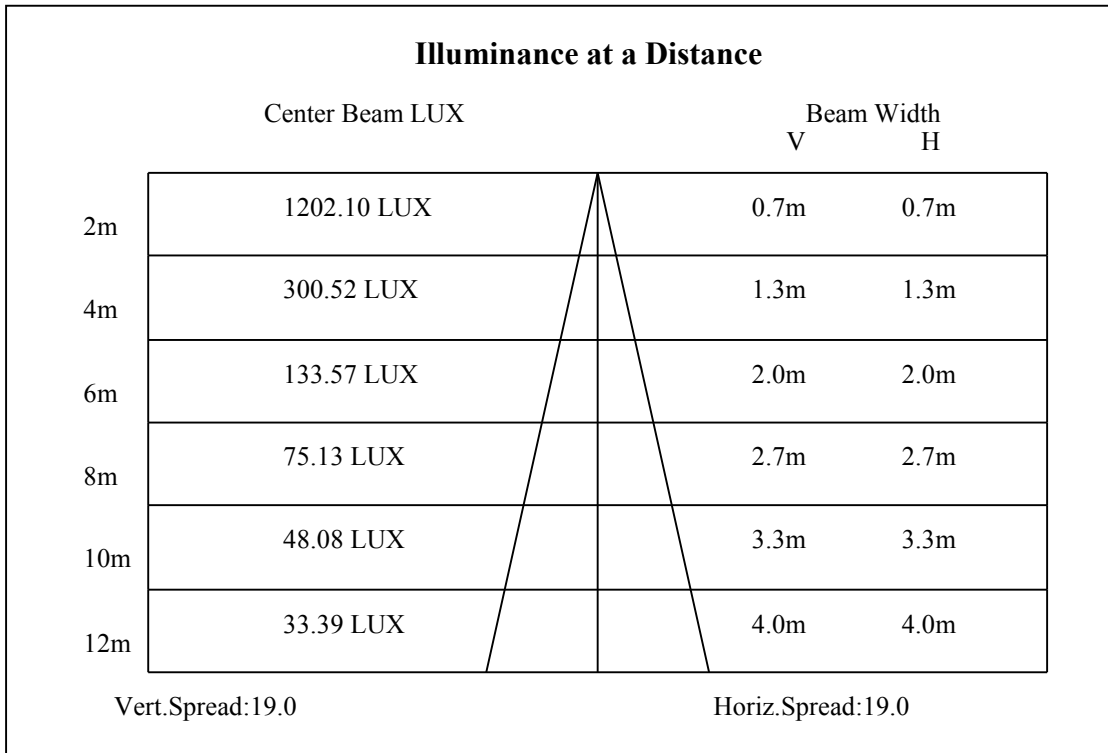
0-10	325.40
10-20	321.00
20-30	266.39
30-40	271.08
40-50	117.90
50-60	7.14
60-70	5.37
70-80	5.56
80-90	5.13
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

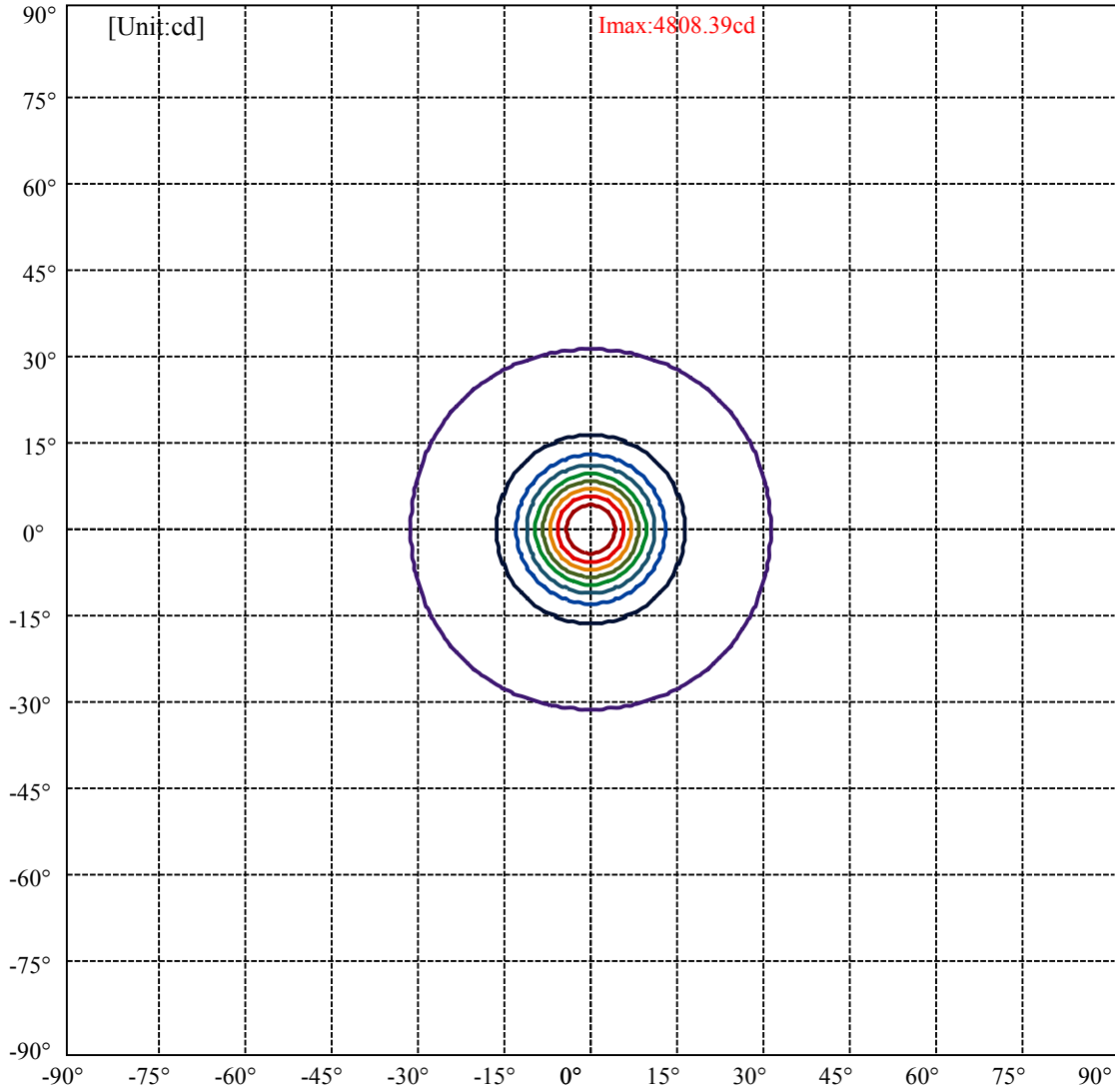


C0(Max): —————
C0/C180: —————
C90/C270: —————

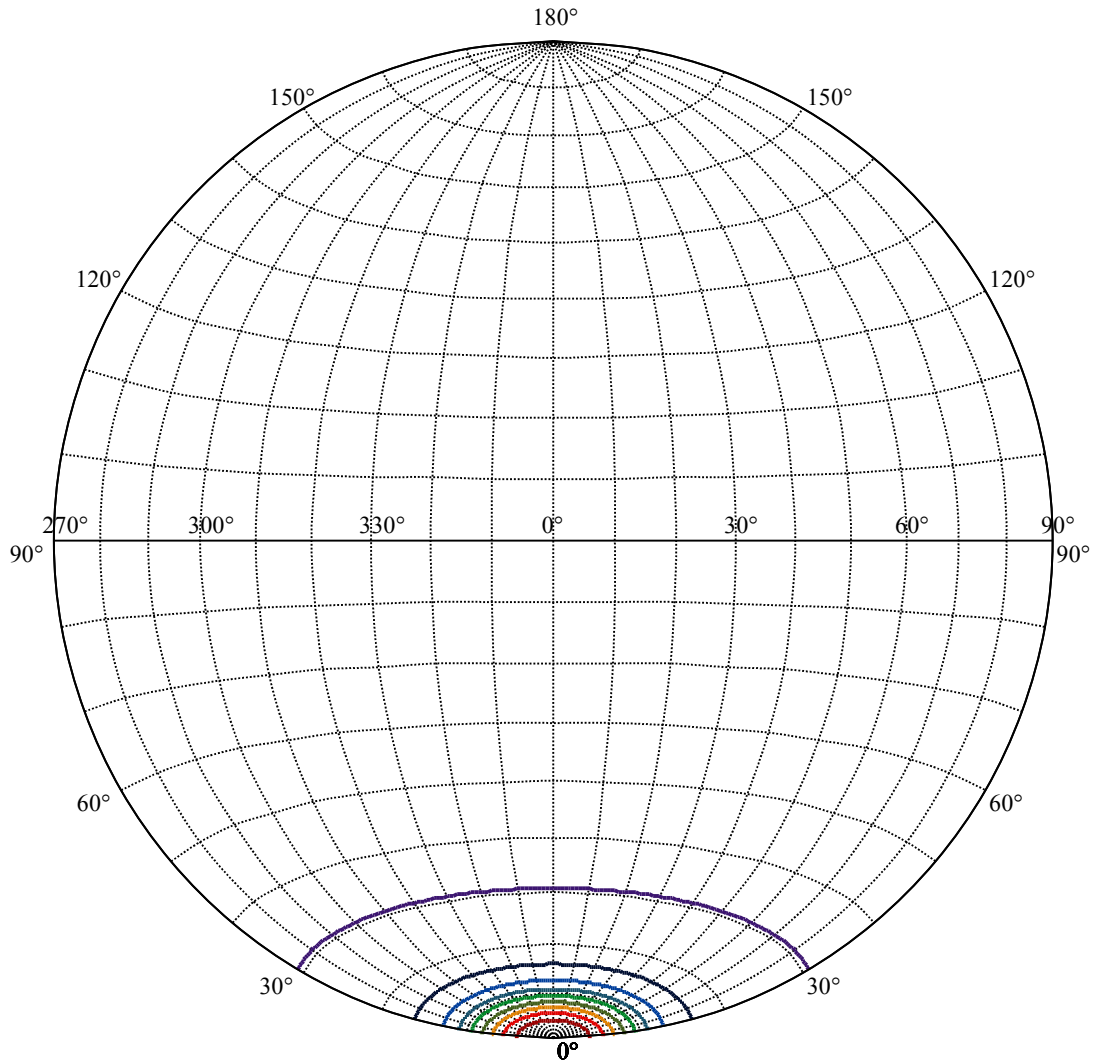
Field angle(10%Imax):C0/180Left:30.8 Right:30.8
:C90/270Left:30.8 Right:30.8

Beam Angle(50%Imax):C0/180Left:9.5 Right:9.5
:C90/270Left:9.5 Right:9.5





(10%Imax) 480.839	—
(20%Imax) 961.678	—
(30%Imax) 1442.52	—
(40%Imax) 1923.36	—
(50%Imax) 2404.2	—
(60%Imax) 2885.03	—
(70%Imax) 3365.87	—
(80%Imax) 3846.71	—
(90%Imax) 4327.55	—



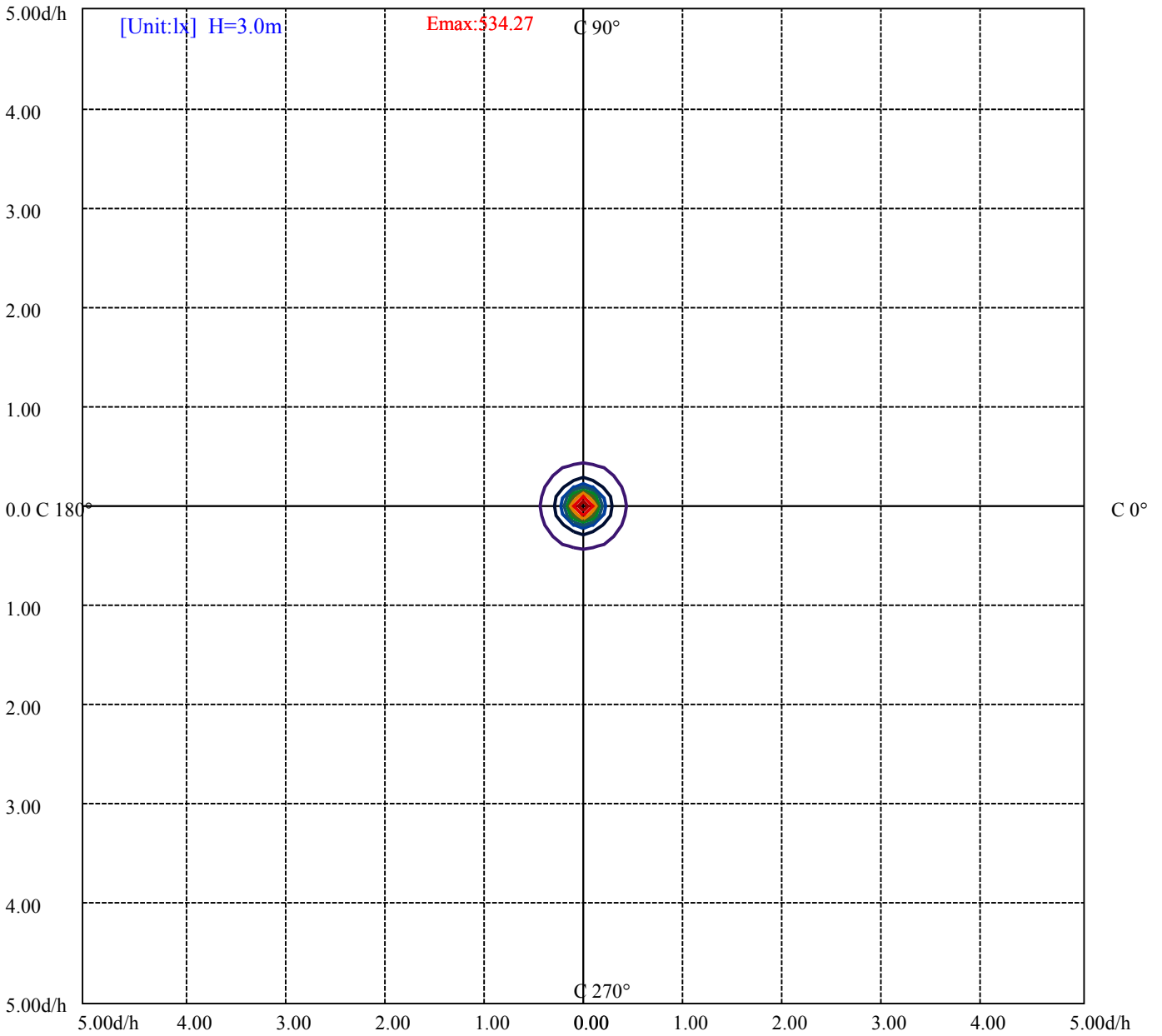
House

[Unit:cd]

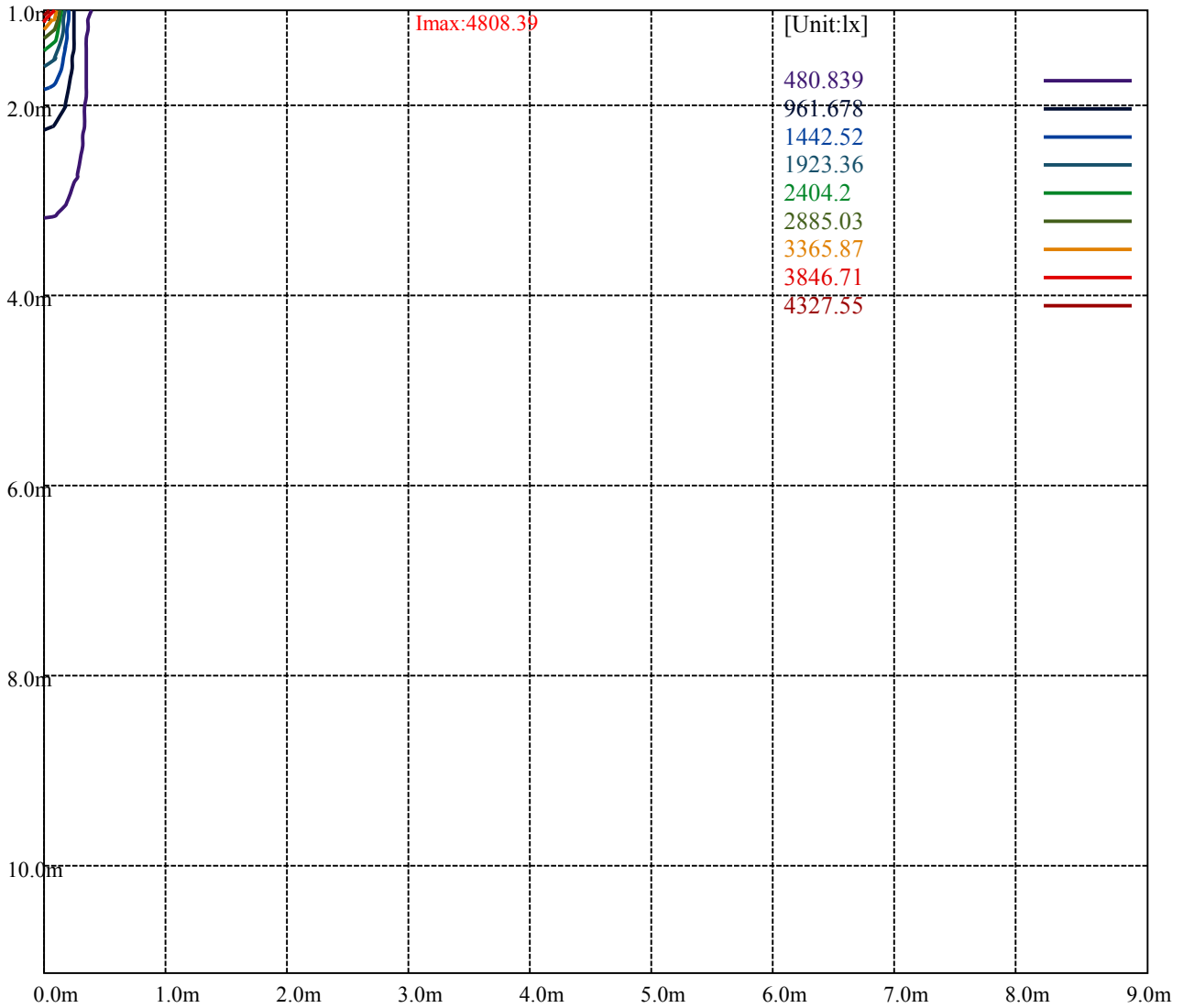
Road

I_{max}:4808.39

(10%I _{max}) 480.839	—
(20%I _{max}) 961.678	—
(30%I _{max}) 1442.52	—
(40%I _{max}) 1923.36	—
(50%I _{max}) 2404.2	—
(60%I _{max}) 2885.03	—
(70%I _{max}) 3365.87	—
(80%I _{max}) 3846.71	—
(90%I _{max}) 4327.55	—



- (10%Emax) 53.42656
- (20%Emax) 106.853
- (30%Emax) 160.28
- (40%Emax) 213.7056
- (50%Emax) 267.1322
- (60%Emax) 320.5589
- (70%Emax) 373.9856
- (80%Emax) 427.4122
- (90%Emax) 480.8389



Luminance Table

γ	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

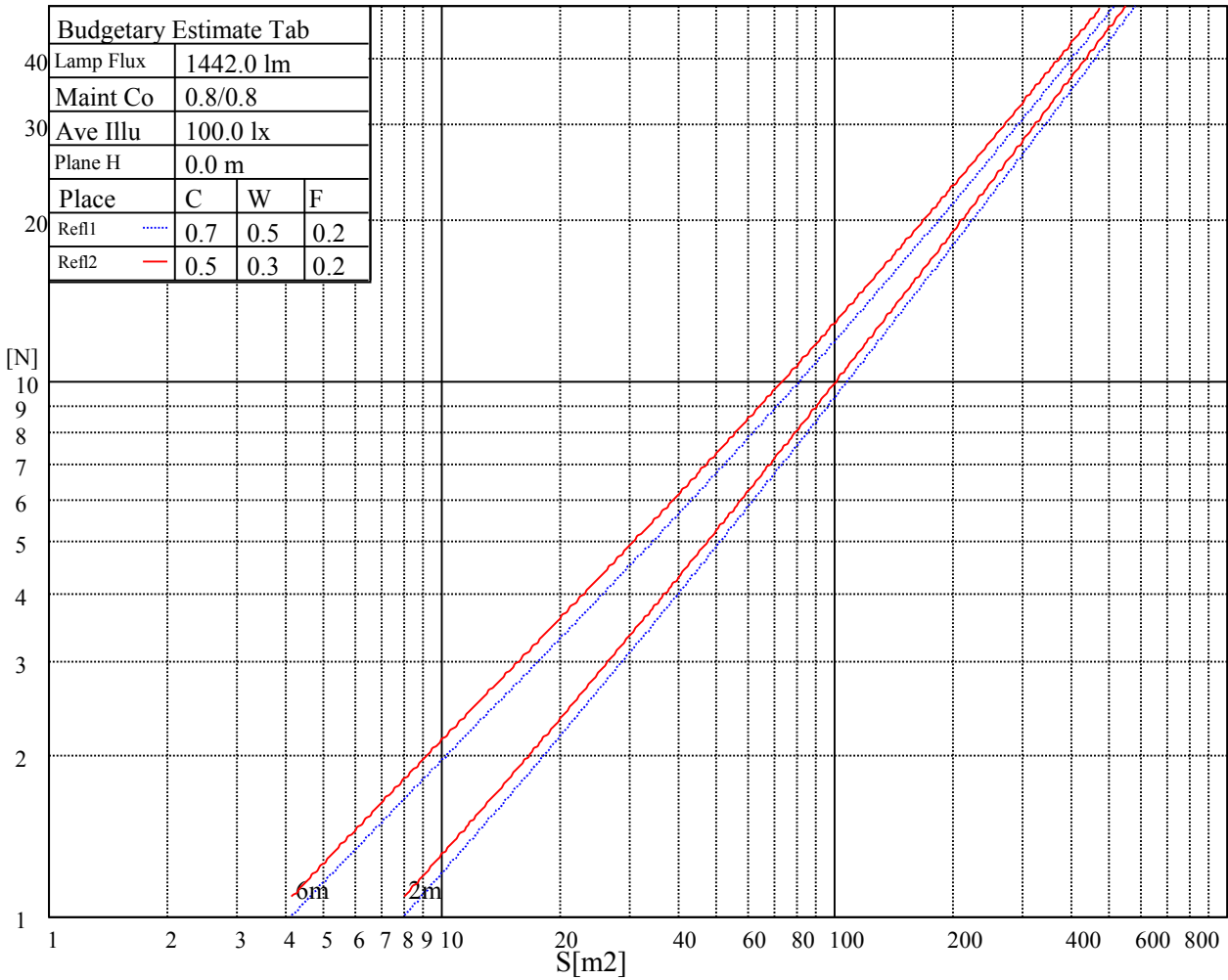
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

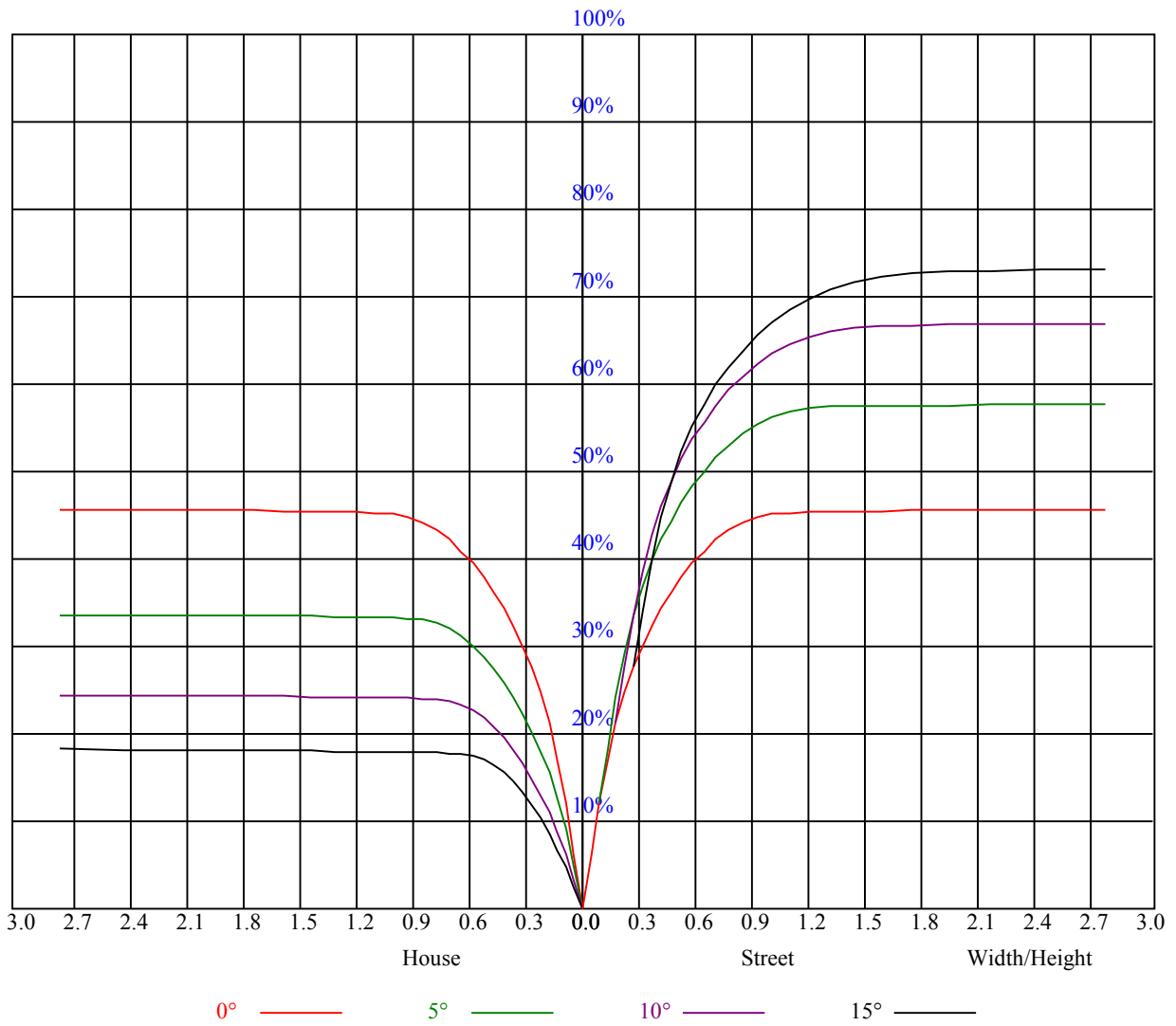
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

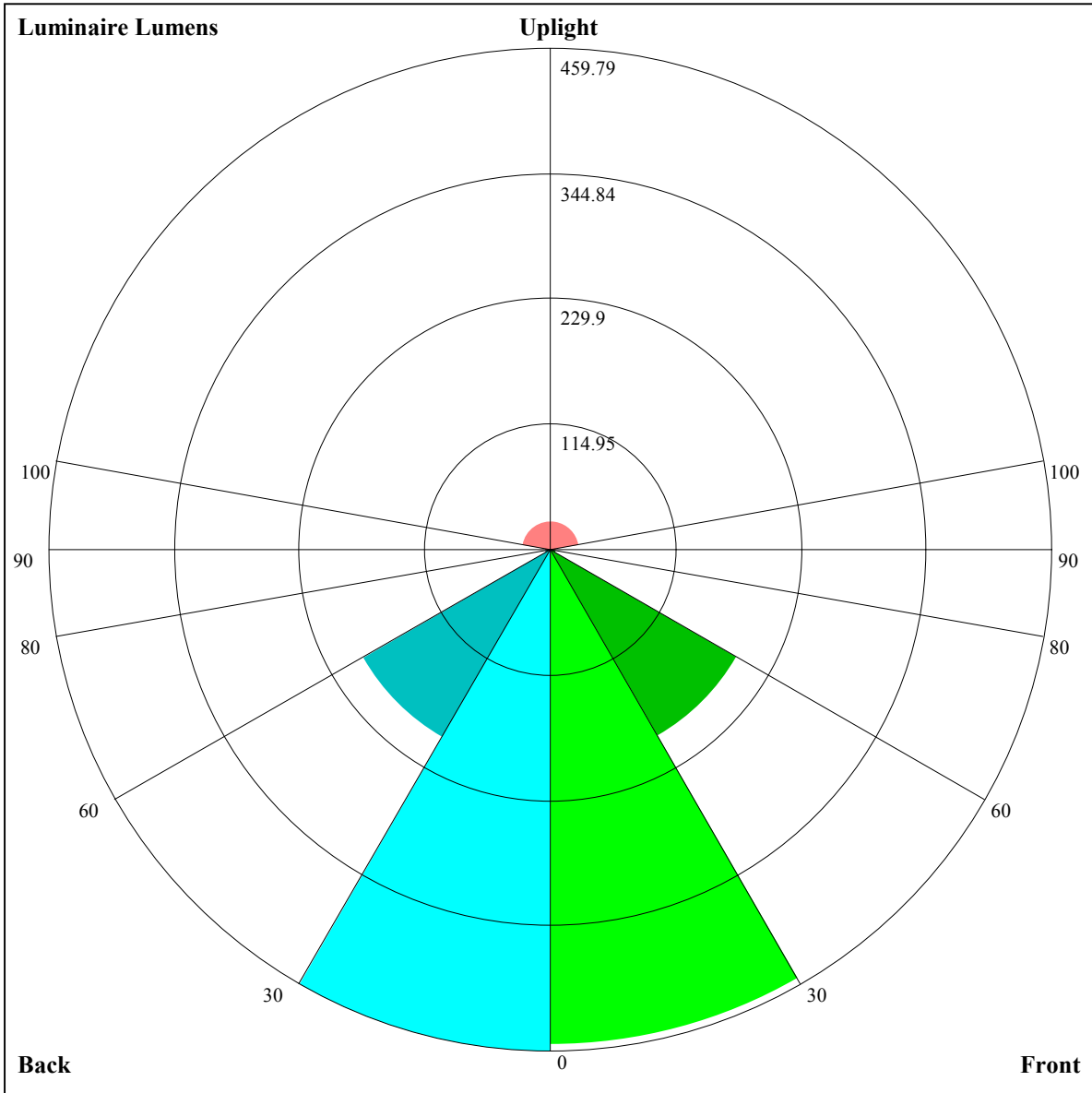
Luminance Limiting Curve





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	1.09	1.09	1.09	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	0.89	0.85	0.82	0.88	0.84	0.81	0.86	0.82	0.80	0.84	0.81	0.78	0.82	0.79	0.77	0.76
4	0.84	0.79	0.76	0.83	0.79	0.75	0.81	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.71
5	0.79	0.74	0.71	0.79	0.74	0.70	0.77	0.73	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.67
6	0.75	0.70	0.66	0.74	0.70	0.66	0.73	0.69	0.66	0.72	0.68	0.65	0.71	0.67	0.65	0.64
7	0.71	0.66	0.63	0.71	0.66	0.62	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.61	0.60
8	0.68	0.63	0.59	0.67	0.63	0.59	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.58	0.57
9	0.65	0.60	0.56	0.64	0.60	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.55
10	0.62	0.57	0.54	0.62	0.57	0.54	0.61	0.57	0.54	0.60	0.56	0.53	0.60	0.56	0.53	0.52





Luminaire Lumens:

FL=454.59,FM=197.45,FH=5.46,FVH=2.85

BL=459.79,BM=198.66,BH=5.47,BVH=2.85

UL=5.66,UH=26.94

BUG Rating:B1-U2-G0

NATA 1709-M

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	4804.88	4779.56	4699.13	4567.50	4348.13	4055.63	3732.75	3326.06	2908.69
45.0	4808.25	4812.75	4763.25	4672.13	4524.19	4260.94	3978.56	3629.81	3209.06
90.0	4830.19	4831.88	4792.50	4676.06	4521.38	4314.94	4002.75	3600.56	3160.13
135.0	4790.25	4822.31	4797.00	4734.56	4602.94	4398.19	4152.94	3786.75	3408.75
180.0	4804.88	4784.63	4711.50	4588.31	4412.25	4105.69	3768.19	3385.69	2899.13
225.0	4808.25	4763.81	4655.81	4476.94	4254.19	3904.31	3534.75	3103.31	2689.31
270.0	4830.19	4773.94	4672.69	4512.94	4299.75	3922.31	3542.63	3150.00	2730.38
315.0	4790.25	4718.81	4584.94	4368.94	4086.00	3758.06	3386.81	2908.13	2549.25
360.0	4804.88	4779.56	4699.13	4567.50	4348.13	4055.63	3732.75	3326.06	2908.69
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2557.13	2232.00	1869.75	1621.13	1409.63	1218.38	1073.81	972.56	883.13
45.0	2796.75	2448.56	2088.56	1806.19	1541.25	1327.50	1178.44	1047.38	943.88
90.0	2784.94	2431.69	2035.69	1759.50	1523.25	1305.00	1120.89	1022.57	931.78
135.0	2984.06	2572.88	2233.69	1929.94	1602.56	1386.56	1217.81	1063.13	966.94
180.0	2532.94	2196.56	1858.50	1570.50	1362.38	1112.18	1041.24	947.42	862.88
225.0	2302.31	1992.94	1686.38	1459.13	1278.56	1105.88	1001.98	917.27	833.29
270.0	2342.25	2030.06	1720.13	1460.81	1278.56	1121.06	1011.94	914.06	837.56
315.0	2219.63	1850.63	1595.25	1382.63	1108.41	1051.43	956.03	870.47	810.62
360.0	2557.13	2232.00	1869.75	1621.13	1409.63	1218.38	1073.81	972.56	883.13
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	813.38	762.75	716.06	681.19	649.69	623.25	600.19	578.25	556.31
45.0	870.19	808.31	744.19	702.00	666.56	632.81	604.13	579.38	556.88
90.0	843.98	786.26	736.76	692.27	656.66	630.34	603.23	577.86	557.33
135.0	886.50	815.63	759.38	713.25	680.06	650.25	624.38	595.69	574.88
180.0	800.72	742.28	696.94	664.88	637.82	607.28	584.44	564.02	542.03
225.0	778.16	732.99	687.49	656.94	630.17	602.44	579.83	557.33	536.40
270.0	784.13	745.31	696.38	666.56	642.94	609.75	587.81	570.94	548.44
315.0	757.52	714.38	682.99	652.61	625.11	601.59	579.04	554.46	537.41
360.0	813.38	762.75	716.06	681.19	649.69	623.25	600.19	578.25	556.31
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	541.69	527.06	509.06	497.25	486.56	478.13	465.19	456.19	448.31
45.0	536.06	521.44	504.00	491.63	477.56	466.31	456.75	447.75	437.63
90.0	537.92	523.41	507.77	493.48	482.06	471.21	461.64	453.54	445.56
135.0	554.06	536.06	522.00	508.50	490.50	480.38	471.94	459.00	450.00
180.0	526.33	511.99	496.07	482.63	472.78	463.05	454.73	445.67	436.33
225.0	523.18	508.11	492.24	483.86	475.31	464.23	457.26	449.49	440.66
270.0	529.88	515.81	498.94	487.69	478.13	466.88	457.88	449.44	439.88
315.0	521.21	503.72	489.43	478.91	468.84	459.17	450.45	441.23	433.01
360.0	541.69	527.06	509.06	497.25	486.56	478.13	465.19	456.19	448.31
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	437.63	427.50	412.88	380.81	348.19	318.38	284.06	236.19	193.61
45.0	430.31	422.44	409.50	388.13	361.13	328.50	285.75	262.91	211.67
90.0	435.60	427.95	416.98	392.18	365.91	334.07	290.64	252.79	211.56
135.0	443.25	433.13	423.00	408.94	375.75	344.81	310.50	288.00	225.45
180.0	429.81	418.61	391.39	367.76	338.96	291.43	259.88	223.26	181.41
225.0	431.33	412.26	382.95	345.88	311.57	276.75	236.03	195.53	155.03
270.0	432.00	416.81	387.56	356.63	322.88	286.31	236.59	195.86	154.24
315.0	424.01	405.00	378.17	343.91	306.11	269.61	232.14	185.01	147.38
360.0	437.63	427.50	412.88	380.81	348.19	318.38	284.06	236.19	193.61

NATA 1709-M

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	154.35	118.13	86.63	51.19	29.64	19.01	14.18	10.80	8.33
45.0	167.40	132.81	99.06	63.96	37.07	21.38	15.64	12.15	9.00
90.0	164.98	131.01	94.11	57.66	37.97	21.99	14.74	11.98	9.23
135.0	184.05	142.71	108.56	77.40	42.98	24.36	16.76	13.73	10.52
180.0	141.92	108.00	74.48	45.34	25.54	16.20	13.67	10.41	7.71
225.0	118.97	85.33	48.71	27.96	17.78	14.12	11.25	8.83	7.14
270.0	113.12	81.34	51.53	30.77	18.06	14.40	11.42	8.66	6.98
315.0	111.26	71.33	44.33	25.82	16.88	13.28	10.07	7.14	6.19
360.0	154.35	118.13	86.63	51.19	29.64	19.01	14.18	10.80	8.33
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.14	6.86	6.53	5.85	5.74	5.68	5.57	5.51	5.51
45.0	7.09	6.58	6.08	5.85	5.79	5.74	5.68	5.63	5.57
90.0	6.58	6.13	5.96	5.85	5.74	5.68	5.63	5.57	5.51
135.0	8.27	6.97	6.75	6.64	5.79	5.74	5.63	5.57	5.51
180.0	6.30	6.08	5.91	5.85	5.74	5.68	5.63	5.57	5.51
225.0	6.64	6.19	5.96	5.85	5.74	5.68	5.57	5.57	5.46
270.0	6.64	6.47	5.91	5.74	5.68	5.63	5.57	5.51	5.46
315.0	6.02	5.85	5.79	5.74	5.63	5.57	5.51	5.46	5.46
360.0	7.14	6.86	6.53	5.85	5.74	5.68	5.57	5.51	5.51
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.46	5.40	5.40	5.34	5.34	5.34	5.34	5.29	5.29
45.0	5.51	5.46	5.40	5.40	5.40	5.40	5.34	5.34	5.34
90.0	5.46	5.40	5.40	5.34	5.34	5.29	5.34	5.29	5.29
135.0	5.51	5.46	5.40	5.34	5.34	5.34	5.34	5.34	5.34
180.0	5.46	5.46	5.40	5.34	5.34	5.34	5.29	5.29	5.29
225.0	5.46	5.46	5.40	5.40	5.34	5.34	5.34	5.34	5.29
270.0	5.40	5.40	5.34	5.34	5.34	5.29	5.29	5.29	5.29
315.0	5.40	5.40	5.34	5.29	5.29	5.29	5.29	5.29	5.23
360.0	5.46	5.40	5.40	5.34	5.34	5.34	5.34	5.29	5.29
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.29	5.29	5.29	5.23	5.23	5.23	5.23	5.29	5.23
45.0	5.29	5.29	5.29	5.29	5.29	5.23	5.23	5.23	5.23
90.0	5.29	5.29	5.29	5.23	5.23	5.23	5.23	5.23	5.23
135.0	5.29	5.29	5.29	5.23	5.29	5.23	5.23	5.23	5.23
180.0	5.29	5.29	5.29	5.23	5.23	5.23	5.23	5.23	5.23
225.0	5.29	5.29	5.29	5.29	5.29	5.29	5.23	5.23	5.23
270.0	5.29	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23
315.0	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23
360.0	5.29	5.29	5.29	5.23	5.23	5.23	5.23	5.29	5.23
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23
45.0	5.29	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23
90.0	5.23	5.18	5.23	5.23	5.23	5.18	5.23	5.23	5.18
135.0	5.29	5.23	5.23	5.23	5.23	5.23	5.23	5.18	5.18
180.0	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.18
225.0	5.29	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23
270.0	5.23	5.23	5.23	5.18	5.23	5.18	5.18	5.18	5.23
315.0	5.18	5.23	5.18	5.23	5.23	5.18	5.23	5.18	5.18
360.0	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23	5.23

Intensity data(cd)

C/ γ (°)	90.0
0.0	5.23
45.0	5.18
90.0	5.18
135.0	5.18
180.0	5.18
225.0	5.18
270.0	5.18
315.0	5.23
360.0	5.23