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NATA

Client:

LumCAT: 2-1672-M

Luminaire: 92.70.135.00

Report No: NT2018010510

Test No: GC2018010510

LampCAT: BXRV-DR-1830-H-3000-A-13

Lamp flux(lm): 1355.0

Number of Lamps: 1

Length(mm): 70

Phm Type: C

Voltage(V): 220.3000

Current(A): 0.0950

Power (W): 19.3400

PF: 0.9200

Ballast type: AC

Width(mm): 70

Height(mm): 0

Photometric Results

Lumens(lm): 1268.75, Efficiency(%): 93.63% , Luminous Efficacy(lm/W): 65.60

Central intensity(cd): 4213.818, Maximum intensity(cd): 4213.818

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=27.4

[C90/270]Total=27.4

Field angle(10%Imax): [C0/180]Total=62.4

[C90/270]Total=62.4

Maximum s/h(1/2): C0_180=0.47 C90_270=0.47

Maximum s/h(1/4): C0_180=0.43 C90_270=0.43

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 93.71%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 99.592%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4213.818	1.008	1.008	.074%	.079%
1.0	4204.769	8.047	9.055	.594%	.714%
2.0	4176.579	15.984	25.04	1.180%	1.974%
3.0	4129.538	23.700	48.74	1.749%	3.842%
4.0	4066.081	31.104	79.844	2.295%	6.293%
5.0	3979.307	38.033	117.876	2.807%	9.291%
6.0	3877.046	44.441	162.318	3.280%	12.793%
7.0	3747.290	50.080	212.397	3.696%	16.741%
8.0	3593.057	54.837	267.234	4.047%	21.063%
9.0	3407.386	58.453	325.687	4.314%	25.670%
10.0	3188.246	60.712	386.399	4.481%	30.455%
11.0	2934.014	61.392	447.791	4.531%	35.294%
12.0	2648.169	60.378	508.169	4.456%	40.053%
13.0	2338.311	57.682	565.851	4.257%	44.599%
14.0	2023.696	53.687	619.538	3.962%	48.831%
15.0	1695.068	48.110	667.648	3.551%	52.622%
16.0	1420.447	42.935	710.584	3.169%	56.007%
17.0	1174.962	37.671	748.255	2.780%	58.976%
18.0	934.384	31.664	779.918	2.337%	61.471%
19.0	833.369	29.753	809.671	2.196%	63.816%
20.0	728.150	27.310	836.982	2.016%	65.969%
21.0	643.458	25.287	862.269	1.866%	67.962%
22.0	583.046	23.951	886.22	1.768%	69.850%
23.0	543.267	23.278	909.498	1.718%	71.684%
24.0	513.917	22.922	932.42	1.692%	73.491%
25.0	494.080	22.898	955.318	1.690%	75.296%
26.0	477.525	22.956	978.274	1.694%	77.105%
27.0	464.463	23.123	1001.397	1.707%	78.928%
28.0	453.129	23.328	1024.725	1.722%	80.766%
29.0	443.372	23.572	1048.297	1.740%	82.624%
30.0	434.300	23.813	1072.11	1.757%	84.501%
31.0	424.324	23.966	1096.076	1.769%	86.390%
32.0	409.260	23.783	1119.858	1.755%	88.265%
33.0	387.561	23.147	1143.006	1.708%	90.089%
34.0	357.486	21.922	1164.927	1.618%	91.817%
35.0	322.840	20.306	1185.234	1.499%	93.417%
36.0	285.624	18.410	1203.644	1.359%	94.868%
37.0	240.398	15.865	1219.509	1.171%	96.119%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	214.053	14.452	1233.961	1.067%	97.258%
39.0	143.450	9.900	1243.861	.731%	98.038%
40.0	108.833	7.672	1251.532	.566%	98.643%
41.0	67.227	4.837	1256.369	.357%	99.024%
42.0	38.619	2.834	1259.202	.209%	99.247%
43.0	18.869	1.411	1260.614	.104%	99.359%
44.0	10.719	0.817	1261.43	.060%	99.423%
45.0	6.108	0.474	1261.904	.035%	99.460%
46.0	4.043	0.319	1262.223	.024%	99.485%
47.0	3.034	0.243	1262.466	.018%	99.505%
48.0	2.529	0.206	1262.672	.015%	99.521%
49.0	2.280	0.189	1262.861	.014%	99.536%
50.0	2.059	0.173	1263.034	.013%	99.549%
51.0	1.891	0.161	1263.195	.012%	99.562%
52.0	1.804	0.156	1263.351	.012%	99.574%
53.0	1.746	0.153	1263.504	.011%	99.586%
54.0	1.700	0.151	1263.654	.011%	99.598%
55.0	1.647	0.148	1263.802	.011%	99.610%
56.0	1.636	0.149	1263.951	.011%	99.622%
57.0	1.601	0.147	1264.098	.011%	99.633%
58.0	1.584	0.147	1264.246	.011%	99.645%
59.0	1.508	0.142	1264.387	.010%	99.656%
60.0	1.508	0.143	1264.531	.011%	99.667%
61.0	1.485	0.142	1264.673	.011%	99.679%
62.0	1.473	0.143	1264.816	.011%	99.690%
63.0	1.473	0.144	1264.96	.011%	99.701%
64.0	1.444	0.142	1265.102	.011%	99.712%
65.0	1.421	0.141	1265.243	.010%	99.723%
66.0	1.433	0.144	1265.387	.011%	99.735%
67.0	1.410	0.142	1265.529	.011%	99.746%
68.0	1.392	0.142	1265.671	.010%	99.757%
69.0	1.375	0.141	1265.811	.010%	99.768%
70.0	1.386	0.143	1265.954	.011%	99.780%
71.0	1.369	0.142	1266.096	.010%	99.791%
72.0	1.346	0.140	1266.236	.010%	99.802%
73.0	1.334	0.140	1266.376	.010%	99.813%
74.0	1.351	0.142	1266.519	.011%	99.824%
75.0	1.334	0.141	1266.66	.010%	99.835%

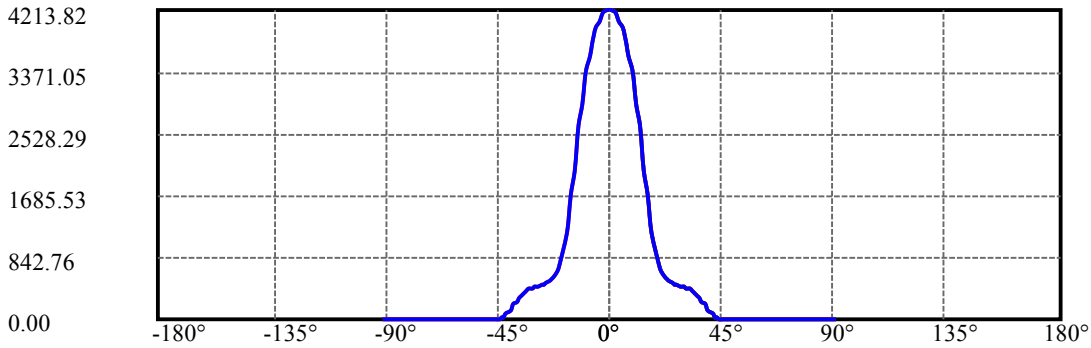
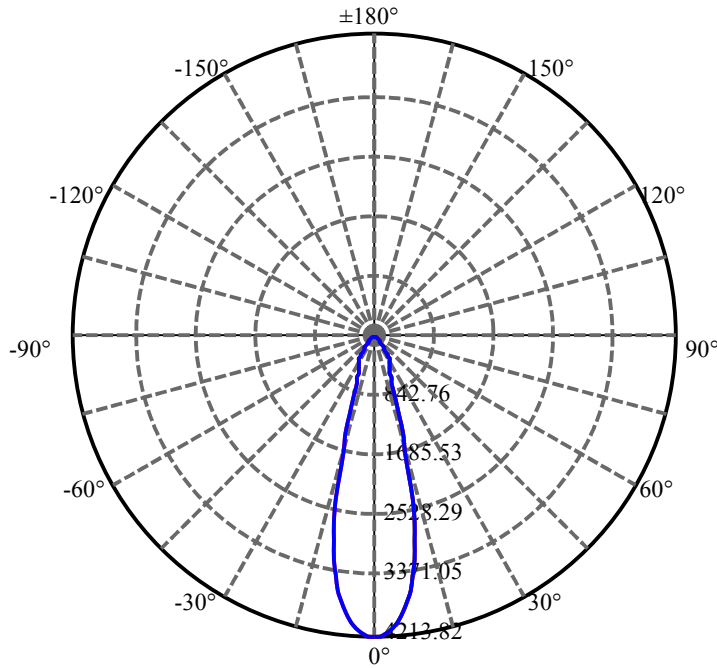
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.334	0.142	1266.802	.010%	99.846%
77.0	1.328	0.142	1266.944	.010%	99.858%
78.0	1.317	0.141	1267.085	.010%	99.869%
79.0	1.340	0.144	1267.229	.011%	99.880%
80.0	1.311	0.142	1267.371	.010%	99.891%
81.0	1.322	0.143	1267.514	.011%	99.902%
82.0	1.334	0.145	1267.659	.011%	99.914%
83.0	1.328	0.145	1267.804	.011%	99.925%
84.0	1.311	0.143	1267.947	.011%	99.937%
85.0	1.340	0.146	1268.093	.011%	99.948%
86.0	1.328	0.145	1268.238	.011%	99.960%
87.0	1.311	0.144	1268.382	.011%	99.971%
88.0	1.334	0.146	1268.528	.011%	99.982%
89.0	1.351	0.148	1268.676	.011%	99.994%
90.0	1.375	0.075	1268.752	.006%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1072.11	79.12%	84.50%
0-40	1251.53	92.36%	98.64%
0-60	1264.53	93.32%	99.67%
0-90	1268.68	93.63%	99.99%
0-120	1268.68	93.63%	99.99%
0-180	1268.75	93.63%	100.00%
60-90	4.29	0.32%	0.34%
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%
0-27.58	1015.00	74.91%	80.00%

ZONAL LUMEN SUMMARY

0-10	386.40
10-20	450.58
20-30	235.13
30-40	179.42
40-50	11.50
50-60	1.50
60-70	1.42
70-80	1.42
80-90	1.31
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



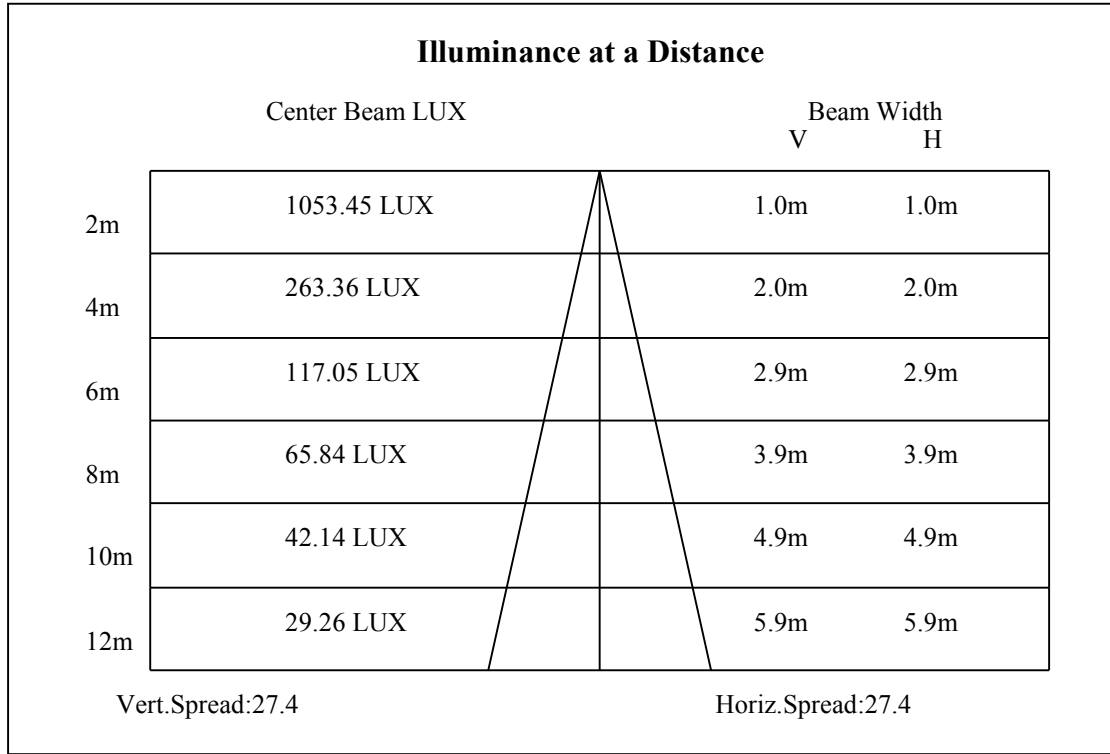
C0(Max): —————

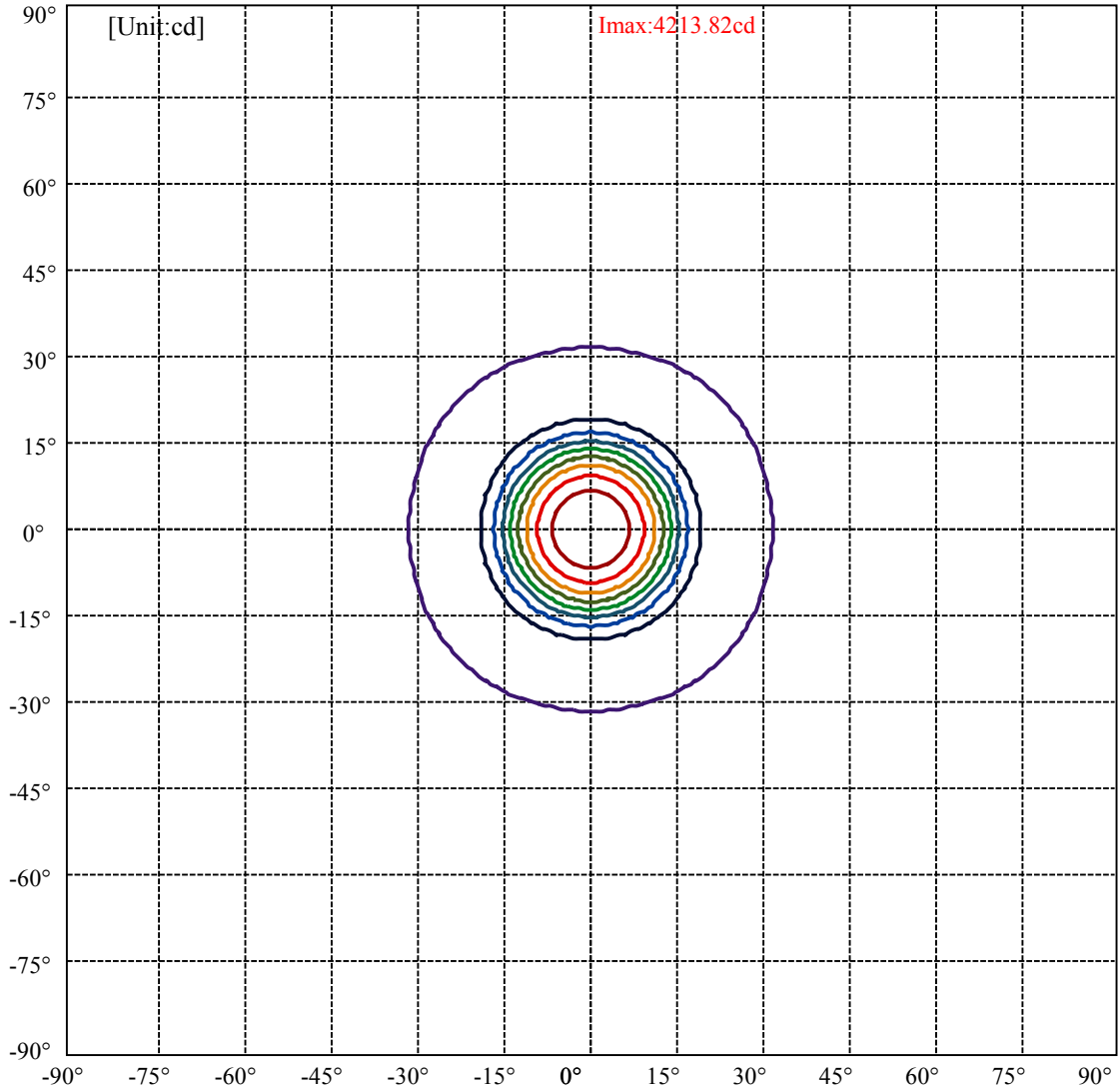
C0/C180: —————

C90/C270: —————

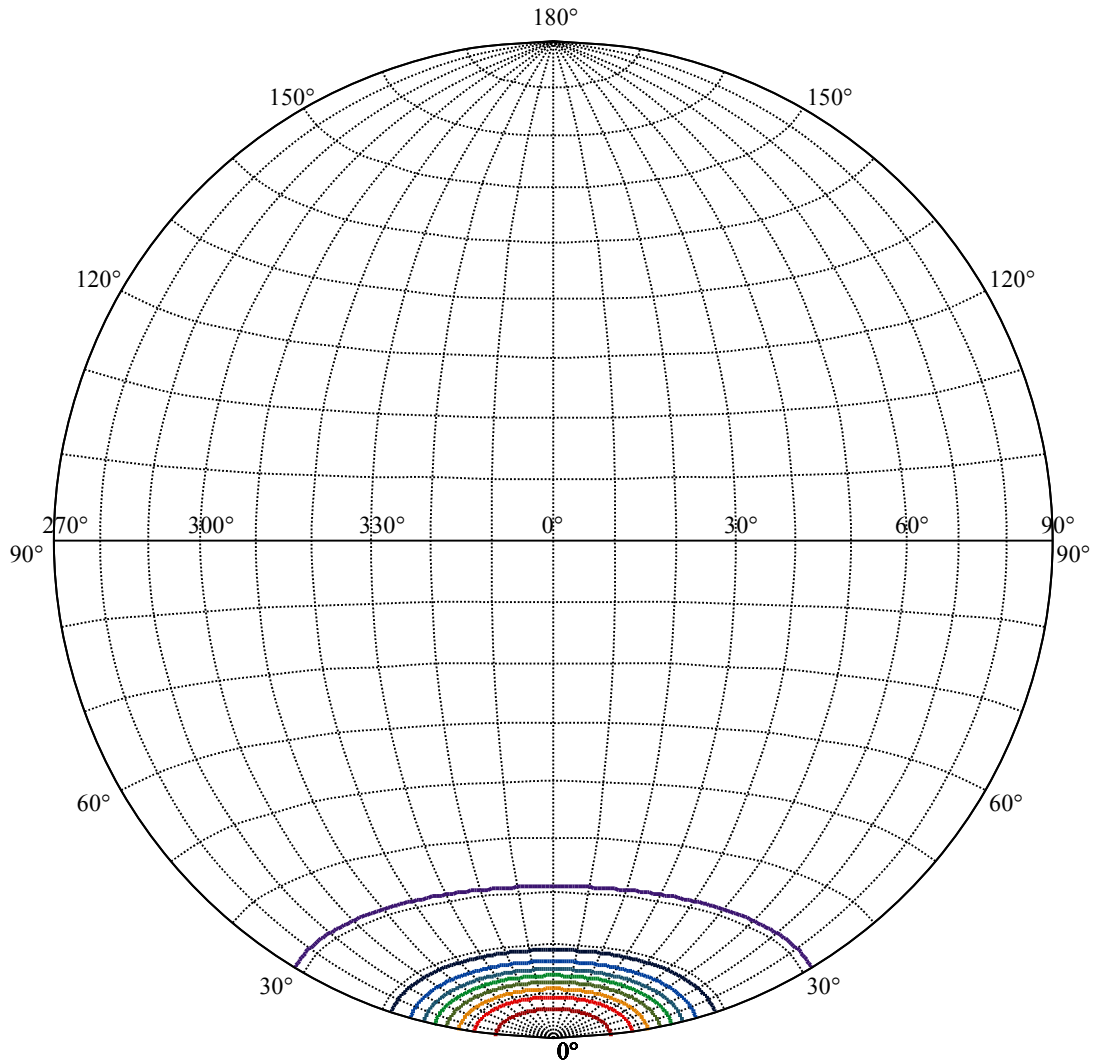
Field angle(10%Imax):C0/180Left:31.2 Right:31.2
:C90/270Left:31.2 Right:31.2

Beam Angle(50%Imax):C0/180Left:13.7 Right:13.7
:C90/270Left:13.7 Right:13.7





(10%Imax) 421.382	—
(20%Imax) 842.764	—
(30%Imax) 1264.15	—
(40%Imax) 1685.53	—
(50%Imax) 2106.91	—
(60%Imax) 2528.29	—
(70%Imax) 2949.67	—
(80%Imax) 3371.05	—
(90%Imax) 3792.44	—



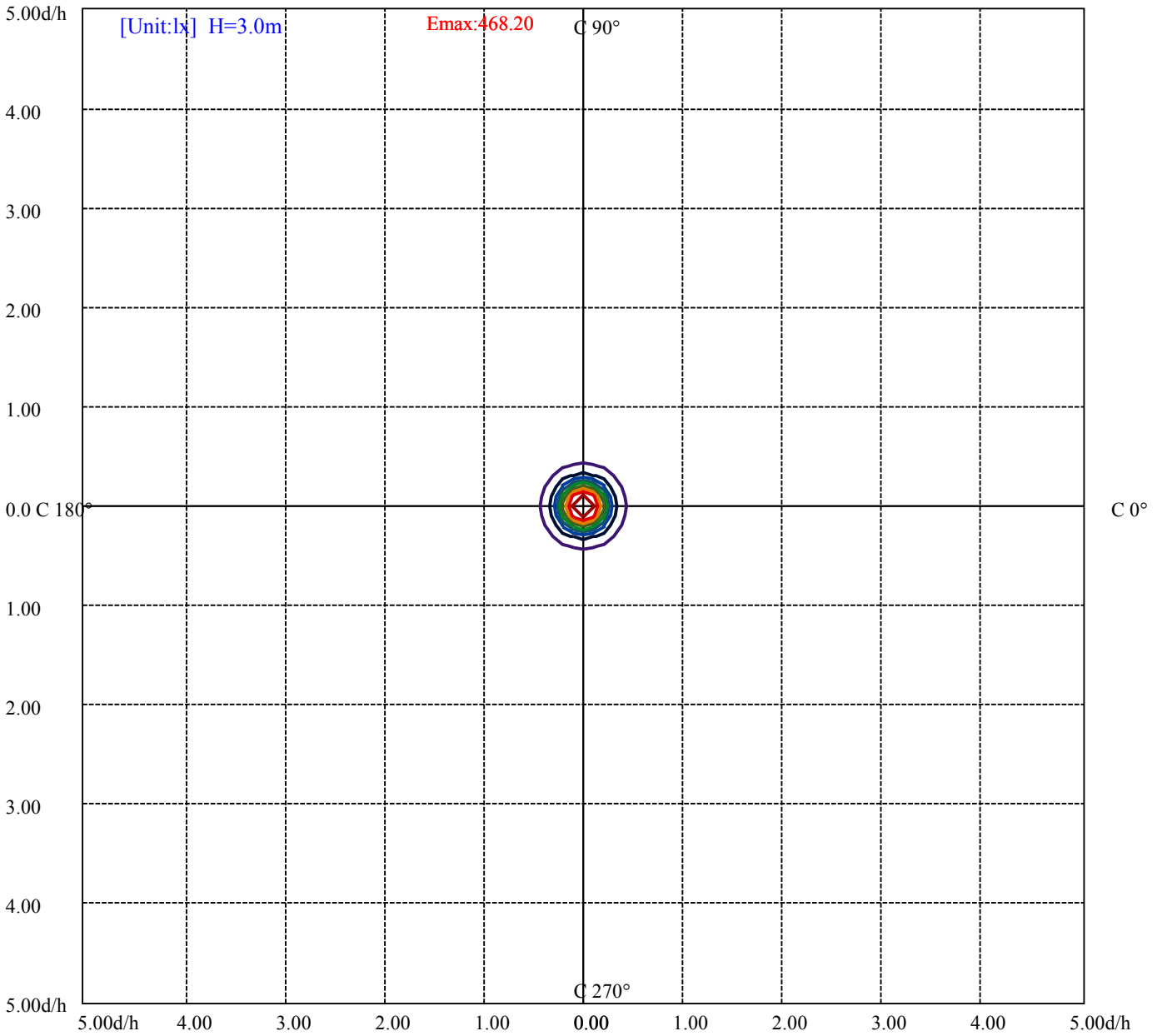
House

[Unit:cd]

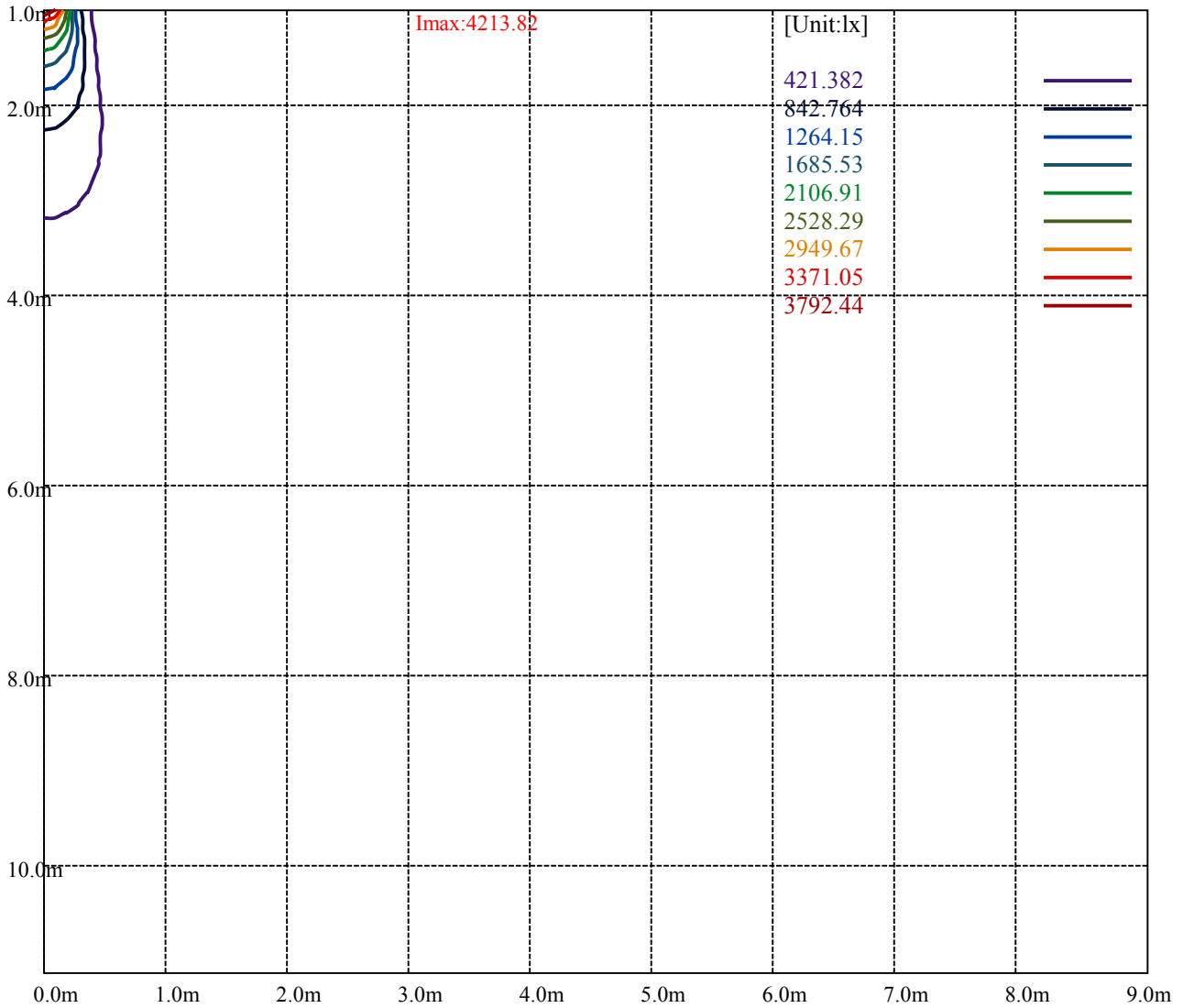
Road

Imax:4213.82

(10%Imax) 421.382	—
(20%Imax) 842.764	—
(30%Imax) 1264.15	—
(40%Imax) 1685.53	—
(50%Imax) 2106.91	—
(60%Imax) 2528.29	—
(70%Imax) 2949.67	—
(80%Imax) 3371.05	—
(90%Imax) 3792.44	—



(10%Emax) 46.82022	—
(20%Emax) 93.64034	—
(30%Emax) 140.46	—
(40%Emax) 187.2811	—
(50%Emax) 234.1011	—
(60%Emax) 280.9211	—
(70%Emax) 327.7411	—
(80%Emax) 374.5611	—
(90%Emax) 421.3811	—



Luminance Table

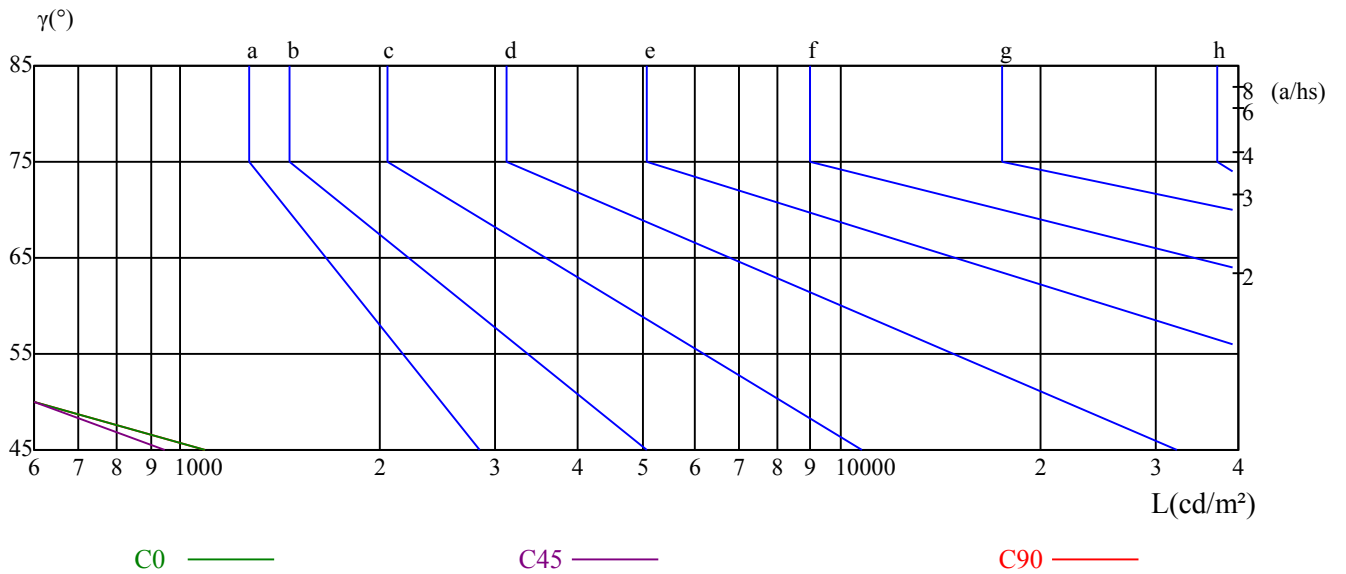
γ	45	50	55	60	65	70	75	80	85
C0	1092	377	312	298	296	308	319	344	391
C45	943	321	262	246	240	244	248	260	287
C90	1092	377	312	298	296	308	319	344	391

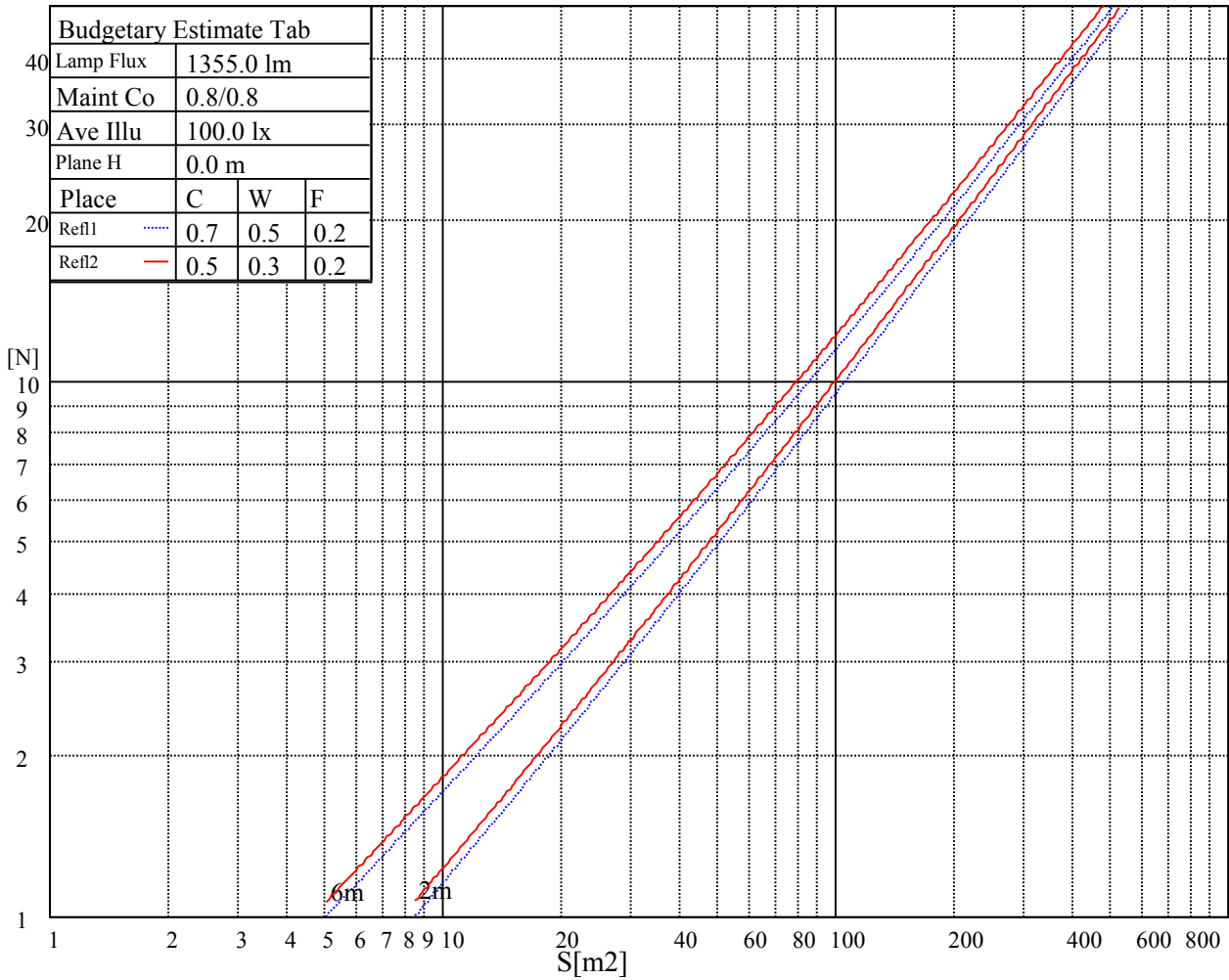
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
686	686	686	1052	1052	1052	3137	3137	3137

Glare Table

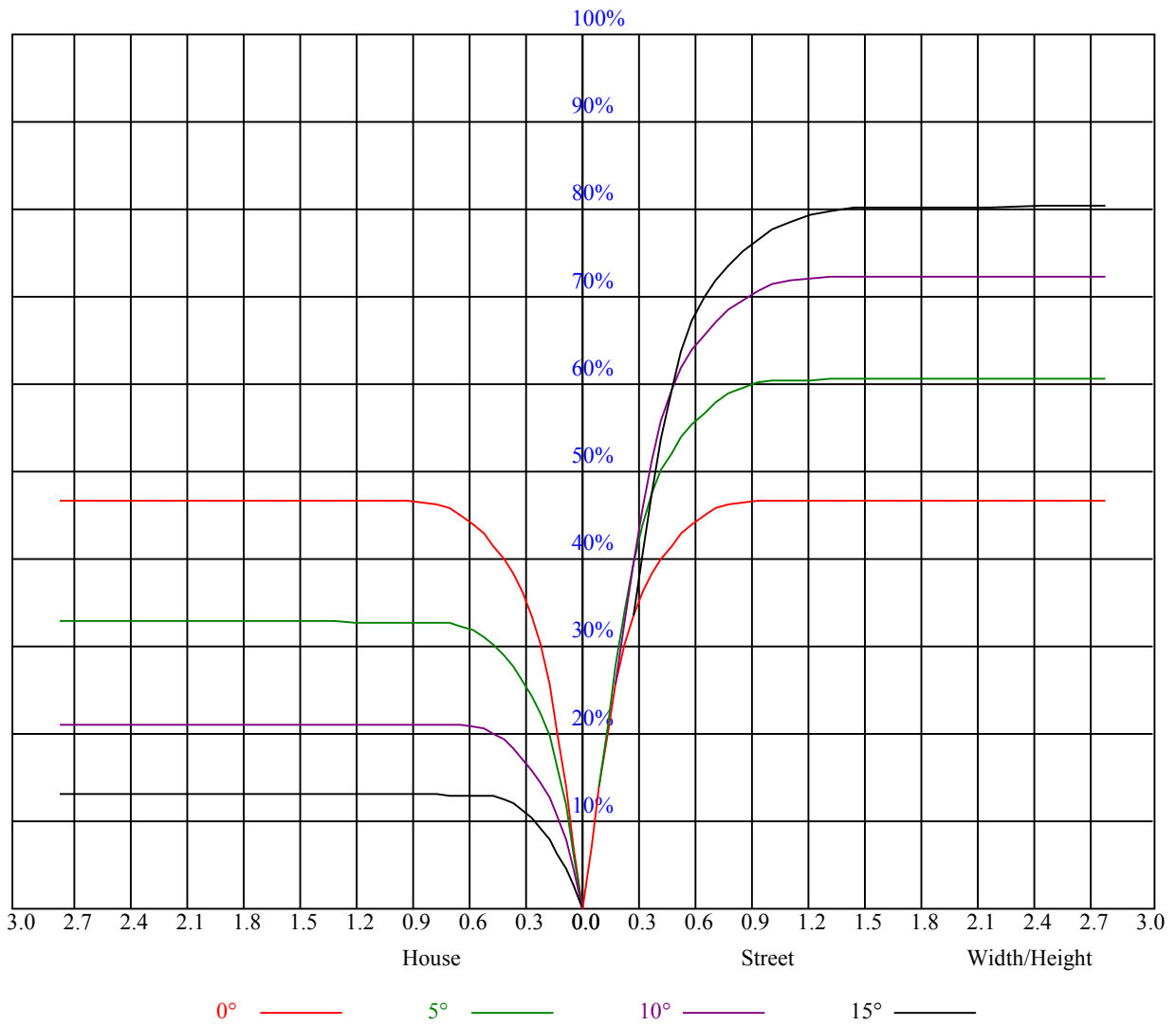
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

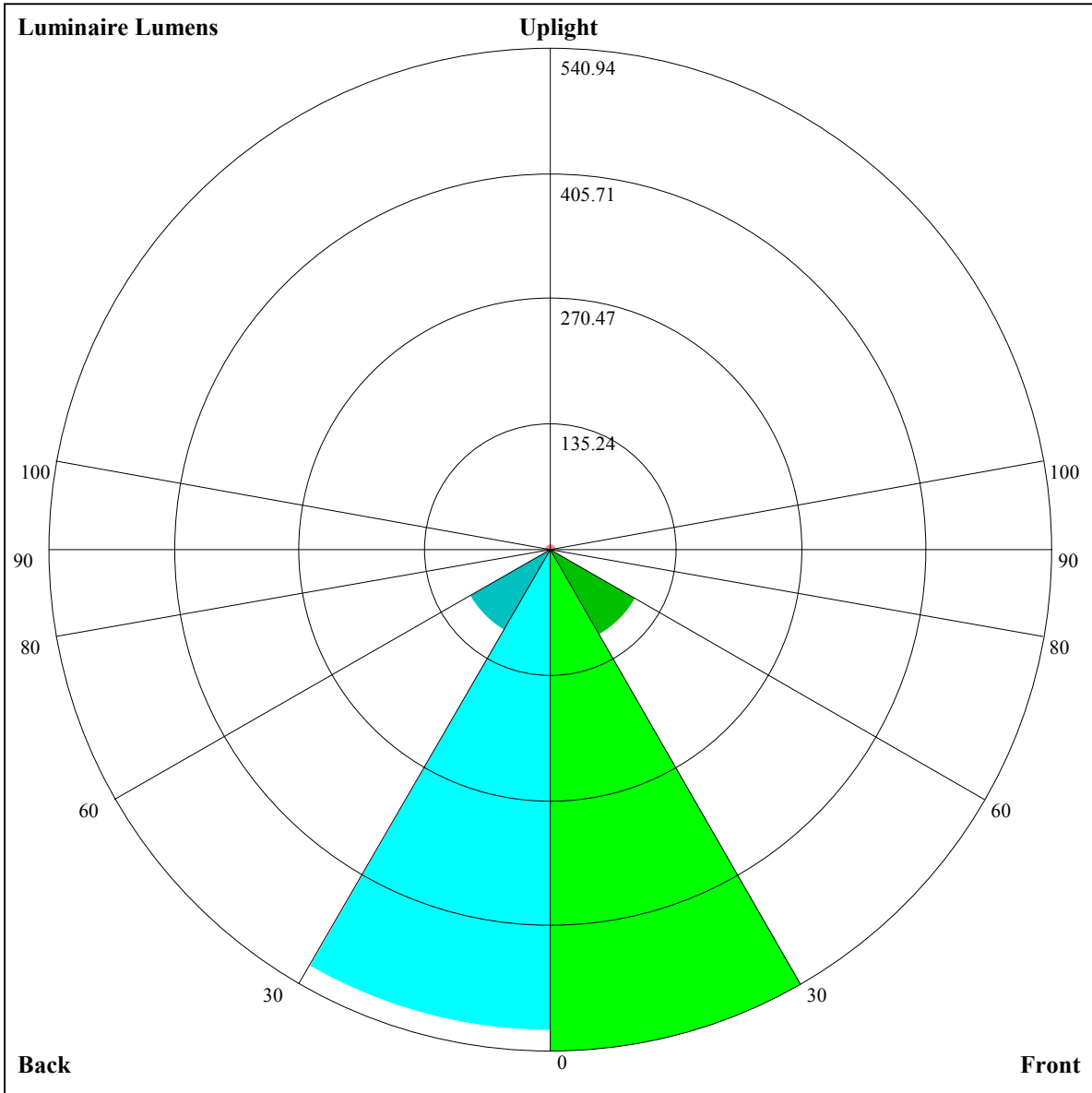
Luminance Limiting Curve





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	1.12	1.12	1.12	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.05	1.03	1.01	1.03	1.01	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.89
2	0.99	0.96	0.94	0.98	0.95	0.93	0.95	0.93	0.91	0.92	0.90	0.89	0.90	0.88	0.87	0.86
3	0.95	0.91	0.88	0.93	0.90	0.87	0.91	0.88	0.86	0.89	0.86	0.84	0.87	0.85	0.83	0.82
4	0.90	0.86	0.83	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.83	0.80	0.84	0.82	0.80	0.78
5	0.86	0.82	0.79	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.81	0.78	0.76	0.75
6	0.83	0.78	0.75	0.82	0.78	0.75	0.81	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
7	0.79	0.75	0.72	0.79	0.75	0.72	0.78	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.71	0.70
8	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.67
9	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.65
10	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.69	0.66	0.63	0.62





Luminaire Lumens:

FL=540.94,FM=105.73,FH=1.43,FVH=0.73

BL=518.16,BM=100.92,BH=1.41,BVH=0.72

UL=1.5,UH=7.14

BUG Rating:B2-U1-G0

NATA 2-1672-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	4230.18	4237.14	4224.14	4205.58	4129.94	4043.17	3978.21	3853.84	3712.78
45.0	4211.15	4212.54	4201.87	4180.06	4146.65	4091.89	4014.40	3912.31	3771.71
90.0	4187.02	4136.90	4070.08	4022.29	3933.19	3816.26	3663.13	3469.16	3244.57
135.0	4226.93	4195.84	4163.82	4047.35	3986.56	3869.16	3731.34	3573.57	3397.70
180.0	4230.18	4200.48	4148.04	4074.72	3987.49	3885.86	3760.57	3614.87	3449.21
225.0	4211.15	4199.09	4165.21	4131.80	4077.04	4010.69	3927.63	3814.40	3659.41
270.0	4187.02	4226.46	4234.35	4223.68	4198.62	4156.39	4096.07	4013.01	3912.31
315.0	4226.93	4229.71	4205.12	4150.83	4069.16	3961.04	3845.03	3727.16	3596.77
360.0	4230.18	4237.14	4224.14	4205.58	4129.94	4043.17	3978.21	3853.84	3712.78
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3550.83	3359.18	3132.27	2868.70	2570.79	2250.14	1923.47	1606.99	1320.22
45.0	3585.17	3349.90	3069.16	2750.84	2406.52	2064.07	1736.00	1437.62	1184.72
90.0	2974.50	2671.95	2348.98	2020.45	1704.44	1407.92	898.60	842.68	815.35
135.0	3202.81	2977.28	2715.57	2424.16	2117.90	1814.42	1522.08	1255.72	1034.38
180.0	3264.06	3050.14	2802.81	2523.46	2222.30	1918.82	1624.16	1353.17	1208.85
225.0	3462.20	3220.44	2937.38	2620.44	2287.27	1959.20	1649.22	1371.27	889.46
270.0	3775.89	3611.15	3409.30	3166.61	2871.95	2556.87	2240.40	1909.08	1586.11
315.0	3443.64	3265.91	3056.63	2810.70	2525.32	2218.13	1966.62	1587.04	1360.59
360.0	3550.83	3359.18	3132.27	2868.70	2570.79	2250.14	1923.47	1606.99	1320.22
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	862.96	862.96	732.85	641.80	580.00	552.99	519.21	496.24	477.40
45.0	1056.19	883.57	757.81	665.47	600.97	555.96	524.40	502.59	483.11
90.0	723.10	639.25	580.83	541.06	514.52	495.63	479.81	466.96	455.82
135.0	861.76	736.00	648.30	609.32	547.61	520.69	509.09	491.92	477.07
180.0	931.83	787.98	721.62	636.70	578.70	538.33	511.41	492.39	478.00
225.0	889.46	806.03	736.24	648.77	588.12	545.01	515.12	495.40	478.74
270.0	1298.88	1100.27	881.71	744.82	665.47	595.40	541.57	517.44	495.17
315.0	850.90	850.90	765.84	659.72	589.00	542.13	510.72	489.69	474.89
360.0	862.96	862.96	732.85	641.80	580.00	552.99	519.21	496.24	477.40
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	463.11	451.55	441.67	432.99	424.36	414.80	397.17	369.51	332.76
45.0	468.72	456.66	445.52	435.31	426.49	413.50	388.44	356.89	319.77
90.0	446.45	437.91	429.51	420.14	400.79	369.97	333.13	293.13	249.56
135.0	464.54	453.87	444.59	435.77	427.42	412.11	388.91	359.67	323.48
180.0	465.94	455.73	446.91	438.56	429.74	412.11	386.12	352.25	310.95
225.0	465.66	454.10	444.31	435.36	426.45	407.89	378.05	341.06	301.48
270.0	479.86	465.01	454.34	445.05	436.24	428.35	420.46	407.47	381.02
315.0	461.43	450.21	440.14	431.23	423.11	415.36	408.21	379.90	363.71
360.0	463.11	451.55	441.67	432.99	424.36	414.80	397.17	369.51	332.76
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	289.70	242.64	193.87	145.15	99.16	60.83	32.06	20.09	9.19
45.0	294.71	252.94	252.94	158.70	117.82	79.07	44.69	19.03	8.49
90.0	221.99	158.51	115.27	75.54	54.11	24.45	9.37	6.08	4.18
135.0	277.54	235.31	235.31	95.92	72.57	41.95	14.94	9.14	6.03
180.0	264.08	244.59	244.59	122.55	76.94	42.27	20.28	8.58	5.71
225.0	260.23	217.91	175.17	141.44	93.55	64.36	33.55	10.26	6.59
270.0	347.14	307.70	265.47	239.95	239.95	148.58	107.93	54.01	35.41
315.0	329.60	263.57	229.79	168.35	116.57	76.29	46.12	23.76	10.16
360.0	289.70	242.64	193.87	145.15	99.16	60.83	32.06	20.09	9.19

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	5.75	4.50	3.06	2.74	2.55	2.23	1.95	1.86	1.81
45.0	6.17	3.85	2.74	2.60	2.32	1.86	1.81	1.76	1.67
90.0	2.64	2.09	1.95	1.81	1.76	1.72	1.58	1.53	1.58
135.0	4.04	3.39	2.83	2.64	2.51	2.09	1.76	1.72	1.72
180.0	4.32	3.06	2.55	2.09	1.86	1.81	1.76	1.67	1.67
225.0	5.01	3.39	2.64	2.27	2.04	1.90	1.81	1.86	1.81
270.0	14.57	7.66	5.80	3.94	3.11	2.92	2.69	2.32	1.95
315.0	6.36	4.41	2.69	2.13	2.09	1.95	1.76	1.72	1.76
360.0	5.75	4.50	3.06	2.74	2.55	2.23	1.95	1.86	1.81
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	1.76	1.76	1.72	1.67	1.62	1.62	1.58	1.48	1.53
45.0	1.62	1.62	1.62	1.58	1.58	1.48	1.48	1.53	1.48
90.0	1.58	1.53	1.48	1.48	1.48	1.39	1.39	1.39	1.39
135.0	1.72	1.62	1.62	1.58	1.58	1.44	1.48	1.44	1.48
180.0	1.62	1.58	1.62	1.53	1.53	1.48	1.53	1.48	1.39
225.0	1.72	1.67	1.67	1.62	1.53	1.48	1.48	1.48	1.39
270.0	1.86	1.76	1.76	1.76	1.72	1.62	1.58	1.58	1.58
315.0	1.72	1.62	1.58	1.58	1.62	1.53	1.53	1.48	1.53
360.0	1.76	1.76	1.72	1.67	1.62	1.62	1.58	1.48	1.53
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	1.53	1.48	1.48	1.44	1.44	1.44	1.39	1.35	1.39
45.0	1.44	1.39	1.44	1.44	1.35	1.39	1.44	1.39	1.30
90.0	1.44	1.44	1.35	1.35	1.39	1.39	1.30	1.35	1.35
135.0	1.39	1.39	1.39	1.44	1.44	1.39	1.35	1.39	1.44
180.0	1.48	1.48	1.39	1.39	1.39	1.39	1.35	1.30	1.35
225.0	1.48	1.44	1.39	1.48	1.39	1.35	1.35	1.44	1.35
270.0	1.53	1.53	1.48	1.48	1.44	1.39	1.44	1.44	1.39
315.0	1.48	1.39	1.44	1.44	1.44	1.39	1.39	1.44	1.39
360.0	1.53	1.48	1.48	1.44	1.44	1.44	1.39	1.35	1.39
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.39	1.35	1.30	1.35	1.39	1.35	1.30	1.39	1.35
45.0	1.35	1.39	1.35	1.30	1.35	1.35	1.30	1.35	1.30
90.0	1.35	1.30	1.30	1.35	1.30	1.25	1.35	1.35	1.30
135.0	1.35	1.30	1.35	1.35	1.35	1.30	1.35	1.35	1.35
180.0	1.35	1.35	1.30	1.35	1.35	1.35	1.25	1.35	1.30
225.0	1.30	1.30	1.39	1.35	1.30	1.35	1.35	1.30	1.25
270.0	1.35	1.39	1.44	1.35	1.35	1.35	1.35	1.30	1.30
315.0	1.35	1.30	1.39	1.30	1.30	1.35	1.30	1.35	1.35
360.0	1.39	1.35	1.30	1.35	1.39	1.35	1.30	1.39	1.35
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.35	1.30	1.35	1.35	1.30	1.35	1.30	1.39	1.30
45.0	1.30	1.39	1.35	1.30	1.39	1.35	1.30	1.30	1.39
90.0	1.30	1.30	1.30	1.30	1.39	1.35	1.30	1.39	1.48
135.0	1.30	1.35	1.30	1.39	1.39	1.35	1.35	1.39	1.39
180.0	1.30	1.30	1.35	1.25	1.30	1.30	1.30	1.25	1.35
225.0	1.30	1.35	1.35	1.25	1.30	1.30	1.25	1.30	1.30
270.0	1.39	1.35	1.30	1.35	1.30	1.30	1.35	1.30	1.25
315.0	1.35	1.35	1.35	1.30	1.35	1.35	1.35	1.35	1.35
360.0	1.35	1.30	1.35	1.35	1.30	1.35	1.30	1.39	1.30

Intensity data(cd)

C/γ(°)	90.0
0.0	1.35
45.0	1.48
90.0	1.53
135.0	1.39
180.0	1.30
225.0	1.30
270.0	1.30
315.0	1.35
360.0	1.35