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NATA

Client:

LumCAT: 3-2035-M

Luminaire: 92.70.135.00

Report No: NT2018010513

Test No: GC2018010513

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

Lamp flux(lm): 1355.0

Number of Lamps: 1

Length(mm): 78

Phm Type: C

Voltage(V): 220.4000

Current(A): 0.0950

Power (W): 19.2600

PF: 0.9190

Ballast type: AC

Width(mm): 78

Height(mm): 0

Photometric Results

Lumens(lm): 1208.48, Efficiency(%): 89.19% , Luminous Efficacy(lm/W): 62.75

Central intensity(cd): 2071.723, Maximum intensity(cd): 2071.723

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=43.0

[C90/270]Total=43.0

Field angle(10%Imax): [C0/180]Total=74.4

[C90/270]Total=74.4

Maximum s/h(1/2): C0_180=0.70 C90_270=0.70

Maximum s/h(1/4): C0_180=0.72 C90_270=0.72

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 89.22%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 99.510%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2071.724	0.496	0.496	.037%	.041%
1.0	2068.765	3.959	4.455	.292%	.369%
2.0	2059.717	7.883	12.338	.582%	1.021%
3.0	2046.898	11.748	24.085	.867%	1.993%
4.0	2026.190	15.499	39.585	1.144%	3.276%
5.0	2004.149	19.155	58.74	1.414%	4.861%
6.0	1977.119	22.663	81.403	1.673%	6.736%
7.0	1945.507	26.000	107.403	1.919%	8.887%
8.0	1909.254	29.139	136.542	2.150%	11.299%
9.0	1866.679	32.022	168.564	2.363%	13.948%
10.0	1824.510	34.743	203.307	2.564%	16.823%
11.0	1769.928	37.034	240.342	2.733%	19.888%
12.0	1725.207	39.334	279.676	2.903%	23.143%
13.0	1667.029	41.123	320.799	3.035%	26.546%
14.0	1607.516	42.646	363.445	3.147%	30.074%
15.0	1548.700	43.956	407.401	3.244%	33.712%
16.0	1484.257	44.864	452.265	3.311%	37.424%
17.0	1416.102	45.403	497.668	3.351%	41.181%
18.0	1338.029	45.342	543.01	3.346%	44.933%
19.0	1259.433	44.964	587.974	3.318%	48.654%
20.0	1174.341	44.045	632.019	3.251%	52.299%
21.0	1083.431	42.578	674.597	3.142%	55.822%
22.0	991.993	40.751	715.348	3.007%	59.194%
23.0	926.855	39.714	755.061	2.931%	62.480%
24.0	871.664	38.879	793.94	2.869%	65.697%
25.0	819.199	37.966	831.906	2.802%	68.839%
26.0	767.221	36.882	868.788	2.722%	71.891%
27.0	724.223	36.055	904.843	2.661%	74.874%
28.0	678.347	34.923	939.766	2.577%	77.764%
29.0	641.567	34.109	973.875	2.517%	80.587%
30.0	600.738	32.939	1006.814	2.431%	83.312%
31.0	559.682	31.611	1038.424	2.333%	85.928%
32.0	511.086	29.700	1068.124	2.192%	88.386%
33.0	455.176	27.186	1095.31	2.006%	90.635%
34.0	394.637	24.200	1119.51	1.786%	92.638%
35.0	334.887	21.064	1140.574	1.555%	94.381%
36.0	266.274	17.163	1157.737	1.267%	95.801%
37.0	218.722	14.435	1172.172	1.065%	96.995%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	147.377	9.950	1182.122	.734%	97.819%
39.0	96.971	6.692	1188.814	.494%	98.372%
40.0	52.117	3.674	1192.487	.271%	98.676%
41.0	29.066	2.091	1194.579	.154%	98.849%
42.0	17.187	1.261	1195.84	.093%	98.954%
43.0	11.508	0.861	1196.7	.064%	99.025%
44.0	8.648	0.659	1197.359	.049%	99.079%
45.0	6.868	0.533	1197.892	.039%	99.124%
46.0	5.766	0.455	1198.347	.034%	99.161%
47.0	5.244	0.421	1198.767	.031%	99.196%
48.0	4.832	0.394	1199.161	.029%	99.229%
49.0	4.542	0.376	1199.537	.028%	99.260%
50.0	4.356	0.366	1199.903	.027%	99.290%
51.0	4.188	0.357	1200.26	.026%	99.319%
52.0	4.002	0.346	1200.605	.026%	99.348%
53.0	3.817	0.334	1200.94	.025%	99.376%
54.0	3.677	0.326	1201.266	.024%	99.403%
55.0	3.503	0.315	1201.581	.023%	99.429%
56.0	3.358	0.305	1201.886	.023%	99.454%
57.0	3.208	0.295	1202.181	.022%	99.478%
58.0	3.074	0.286	1202.467	.021%	99.502%
59.0	2.935	0.276	1202.743	.020%	99.525%
60.0	2.836	0.269	1203.012	.020%	99.547%
61.0	2.732	0.262	1203.274	.019%	99.569%
62.0	2.610	0.253	1203.527	.019%	99.590%
63.0	2.512	0.245	1203.772	.018%	99.610%
64.0	2.419	0.238	1204.011	.018%	99.630%
65.0	2.309	0.229	1204.24	.017%	99.649%
66.0	2.222	0.223	1204.463	.016%	99.667%
67.0	2.117	0.214	1204.676	.016%	99.685%
68.0	2.082	0.212	1204.888	.016%	99.702%
69.0	2.019	0.207	1205.095	.015%	99.720%
70.0	1.903	0.196	1205.291	.014%	99.736%
71.0	1.850	0.192	1205.483	.014%	99.752%
72.0	1.810	0.189	1205.671	.014%	99.767%
73.0	1.752	0.184	1205.855	.014%	99.783%
74.0	1.688	0.178	1206.033	.013%	99.797%
75.0	1.642	0.174	1206.207	.013%	99.812%

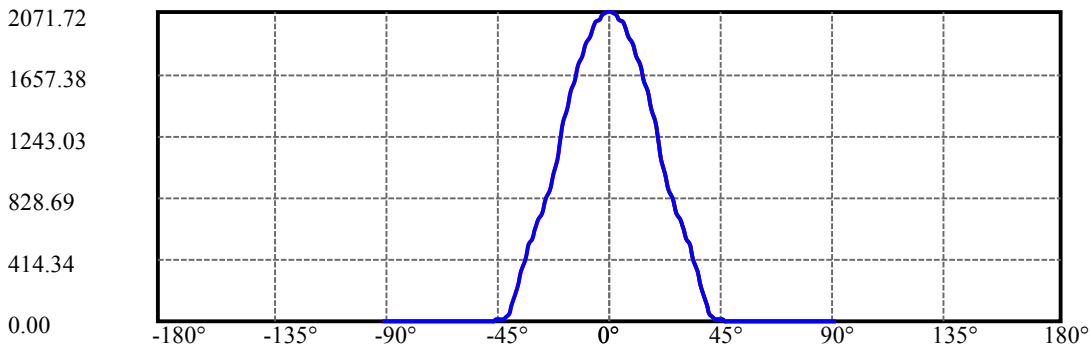
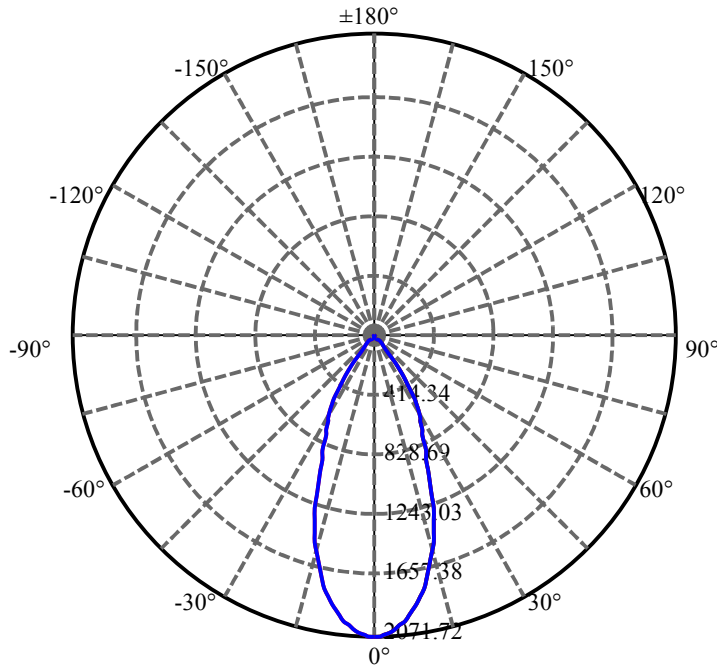
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.624	0.173	1206.38	.013%	99.826%
77.0	1.595	0.170	1206.55	.013%	99.840%
78.0	1.549	0.166	1206.716	.012%	99.854%
79.0	1.491	0.160	1206.877	.012%	99.867%
80.0	1.502	0.162	1207.039	.012%	99.880%
81.0	1.473	0.160	1207.199	.012%	99.894%
82.0	1.439	0.156	1207.355	.012%	99.907%
83.0	1.421	0.155	1207.509	.011%	99.919%
84.0	1.398	0.152	1207.662	.011%	99.932%
85.0	1.386	0.151	1207.813	.011%	99.945%
86.0	1.380	0.151	1207.964	.011%	99.957%
87.0	1.369	0.150	1208.114	.011%	99.969%
88.0	1.363	0.149	1208.264	.011%	99.982%
89.0	1.322	0.145	1208.409	.011%	99.994%
90.0	1.363	0.075	1208.483	.006%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1006.81	74.30%	83.31%
0-40	1192.49	88.01%	98.68%
0-60	1203.01	88.78%	99.55%
0-90	1208.41	89.18%	99.99%
0-120	1208.41	89.18%	99.99%
0-180	1208.48	89.19%	100.00%
60-90	5.67	0.42%	0.47%
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%
0-28.79	966.79	71.35%	80.00%

ZONAL LUMEN SUMMARY

0-10	203.31
10-20	428.71
20-30	374.79
30-40	185.67
40-50	7.42
50-60	3.11
60-70	2.28
70-80	1.75
80-90	1.37
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: —————

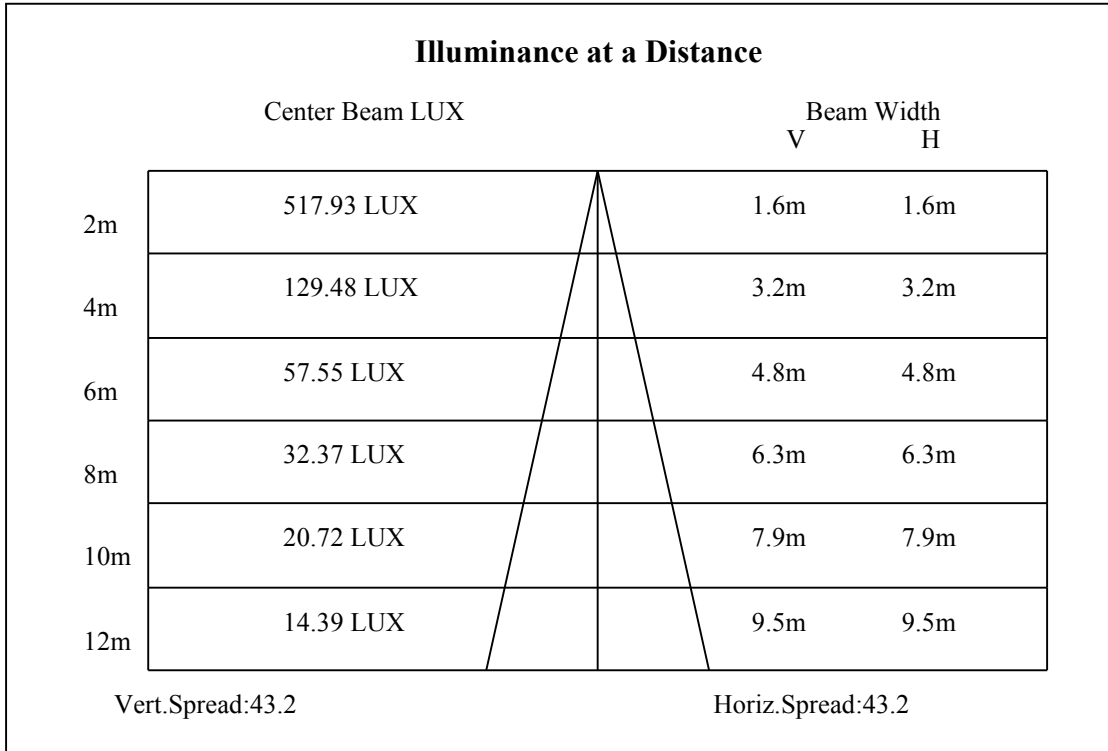
C90/C270: —————

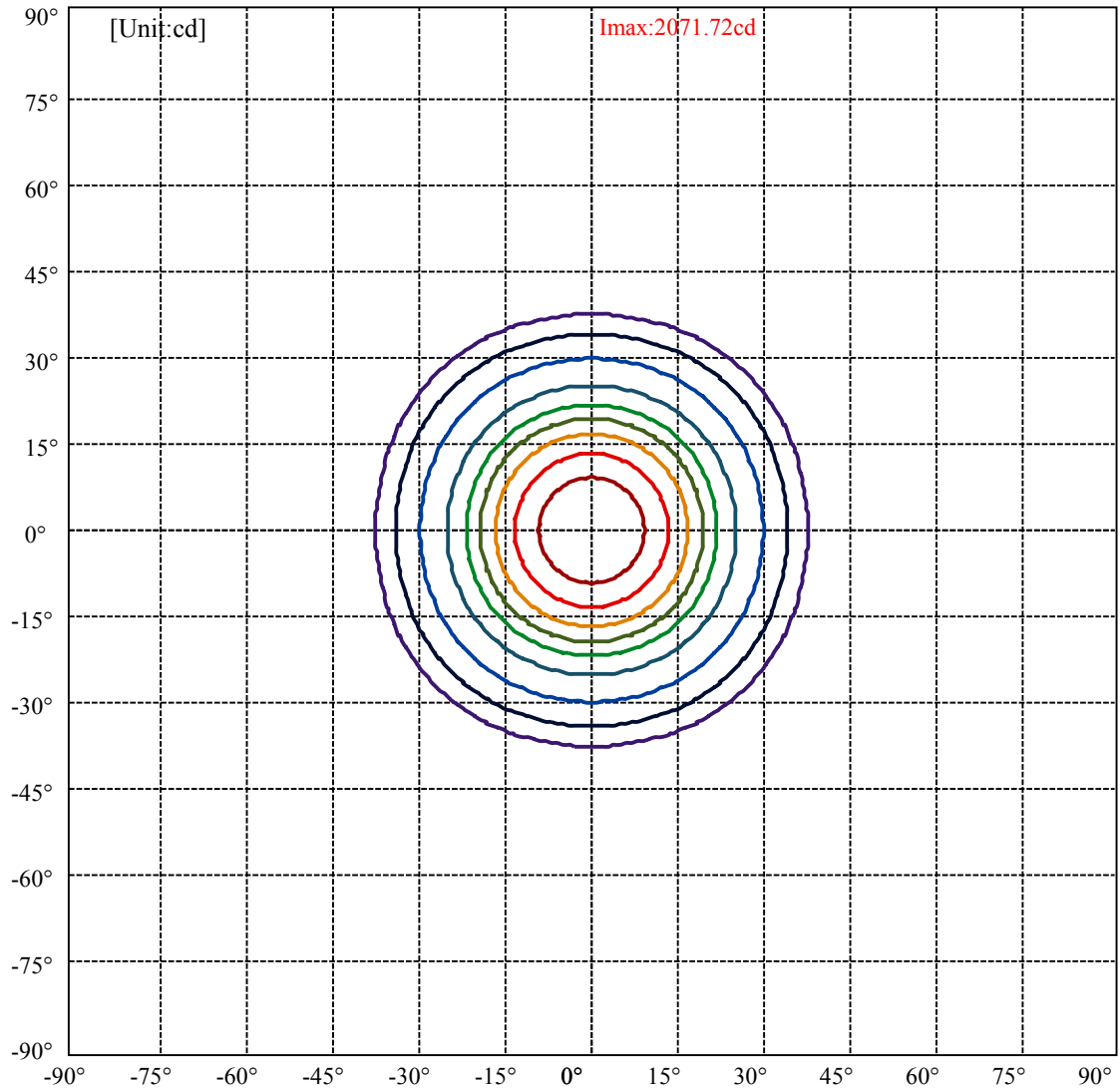
Field angle(10%Imax):C0/180Left:37.2 Right:37.2

:C90/270Left:37.2 Right:37.2

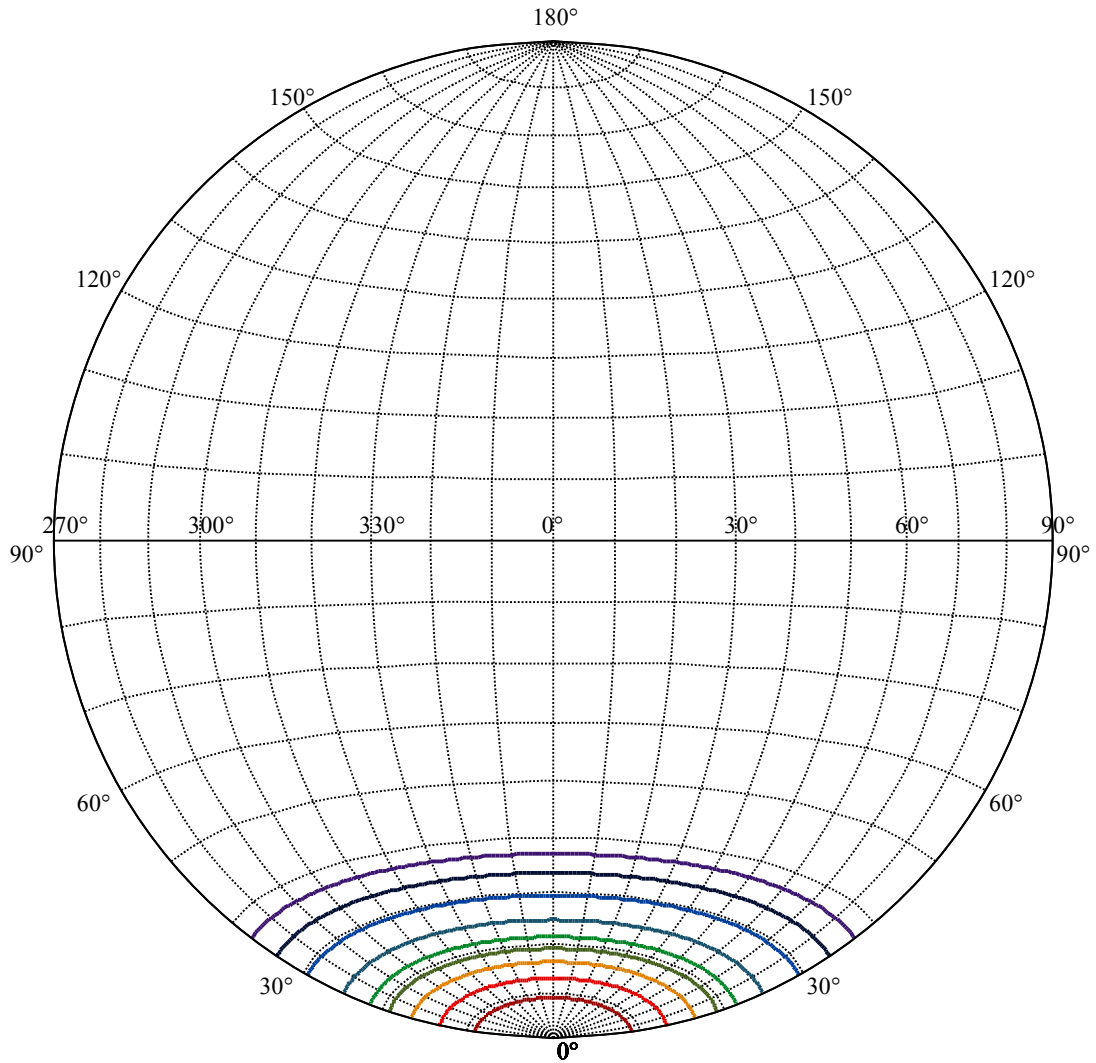
Beam Angle(50%Imax):C0/180Left:21.5 Right:21.5

:C90/270Left:21.5 Right:21.5





(10%Imax) 207.172	—
(20%Imax) 414.345	—
(30%Imax) 621.517	—
(40%Imax) 828.689	—
(50%Imax) 1035.86	—
(60%Imax) 1243.03	—
(70%Imax) 1450.21	—
(80%Imax) 1657.38	—
(90%Imax) 1864.55	—



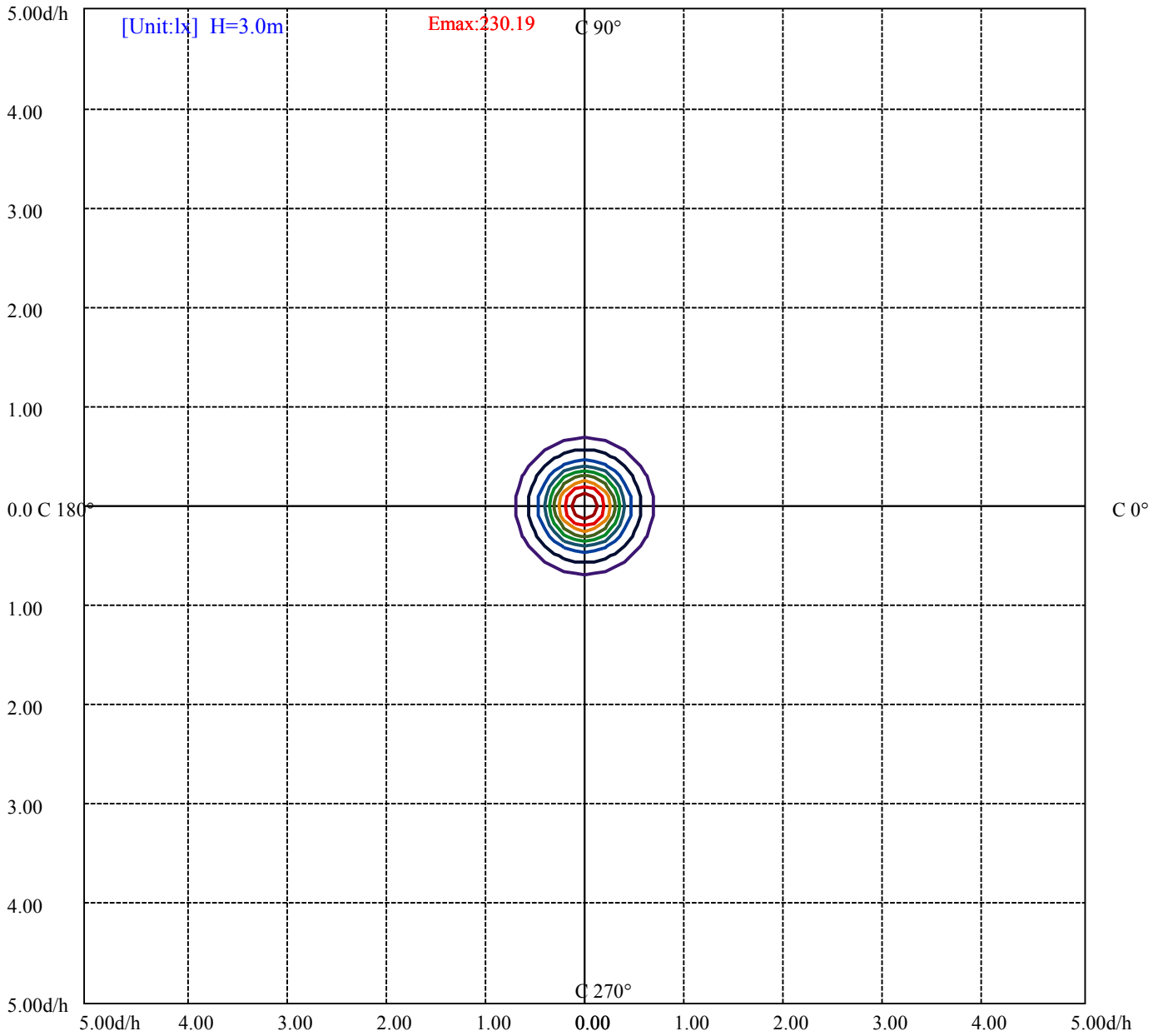
House

[Unit:cd]

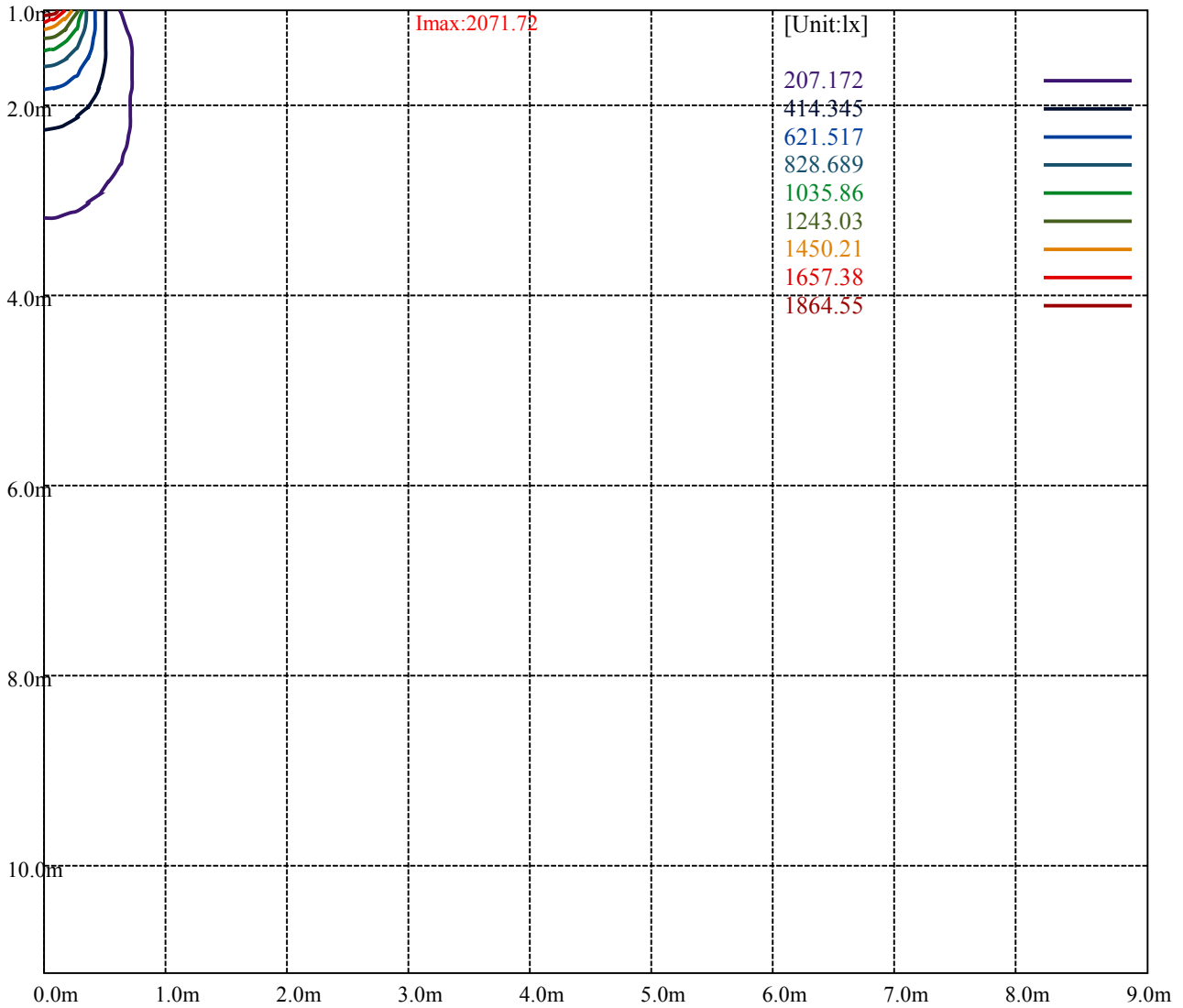
Road

Imax:2071.72

(10%Imax) 207.172	—
(20%Imax) 414.345	—
(30%Imax) 621.517	—
(40%Imax) 828.689	—
(50%Imax) 1035.86	—
(60%Imax) 1243.03	—
(70%Imax) 1450.21	—
(80%Imax) 1657.38	—
(90%Imax) 1864.55	—



(10%Emax) 23.01911	—
(20%Emax) 46.03833	—
(30%Emax) 69.05745	—
(40%Emax) 92.07656	—
(50%Emax) 115.0956	—
(60%Emax) 138.1144	—
(70%Emax) 161.1344	—
(80%Emax) 184.1533	—
(90%Emax) 207.1722	—



Luminance Table

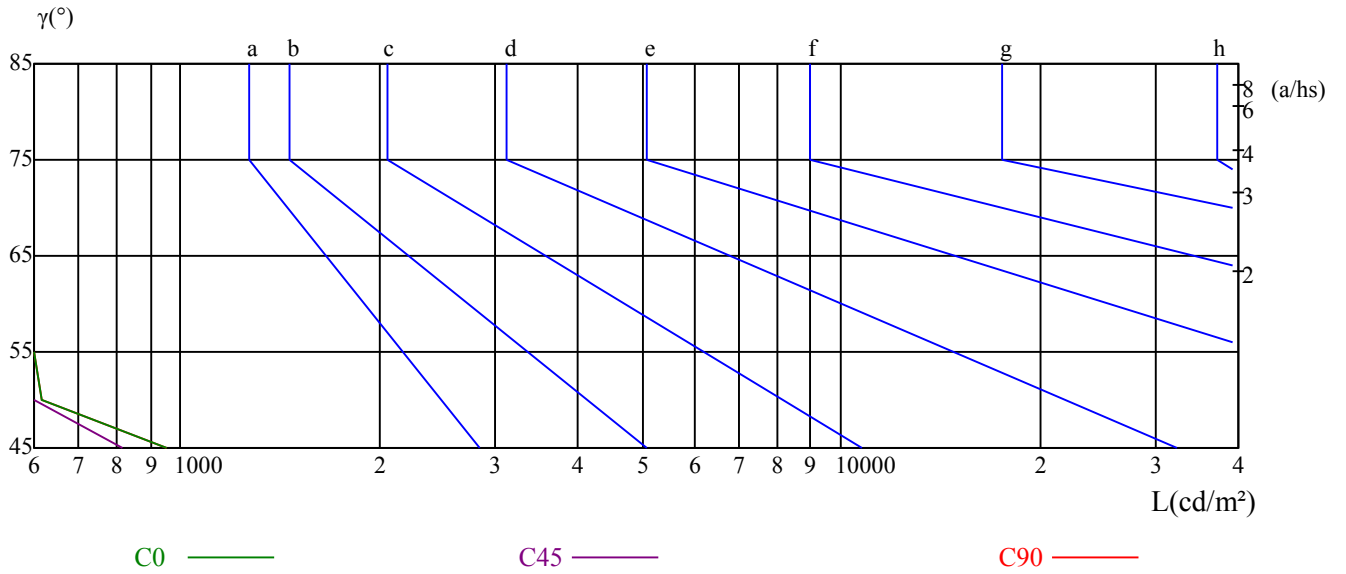
γ	45	50	55	60	65	70	75	80	85
C0	951	615	510	428	365	319	295	293	298
C45	814	519	423	350	293	251	227	220	218
C90	951	615	510	428	365	319	295	293	298

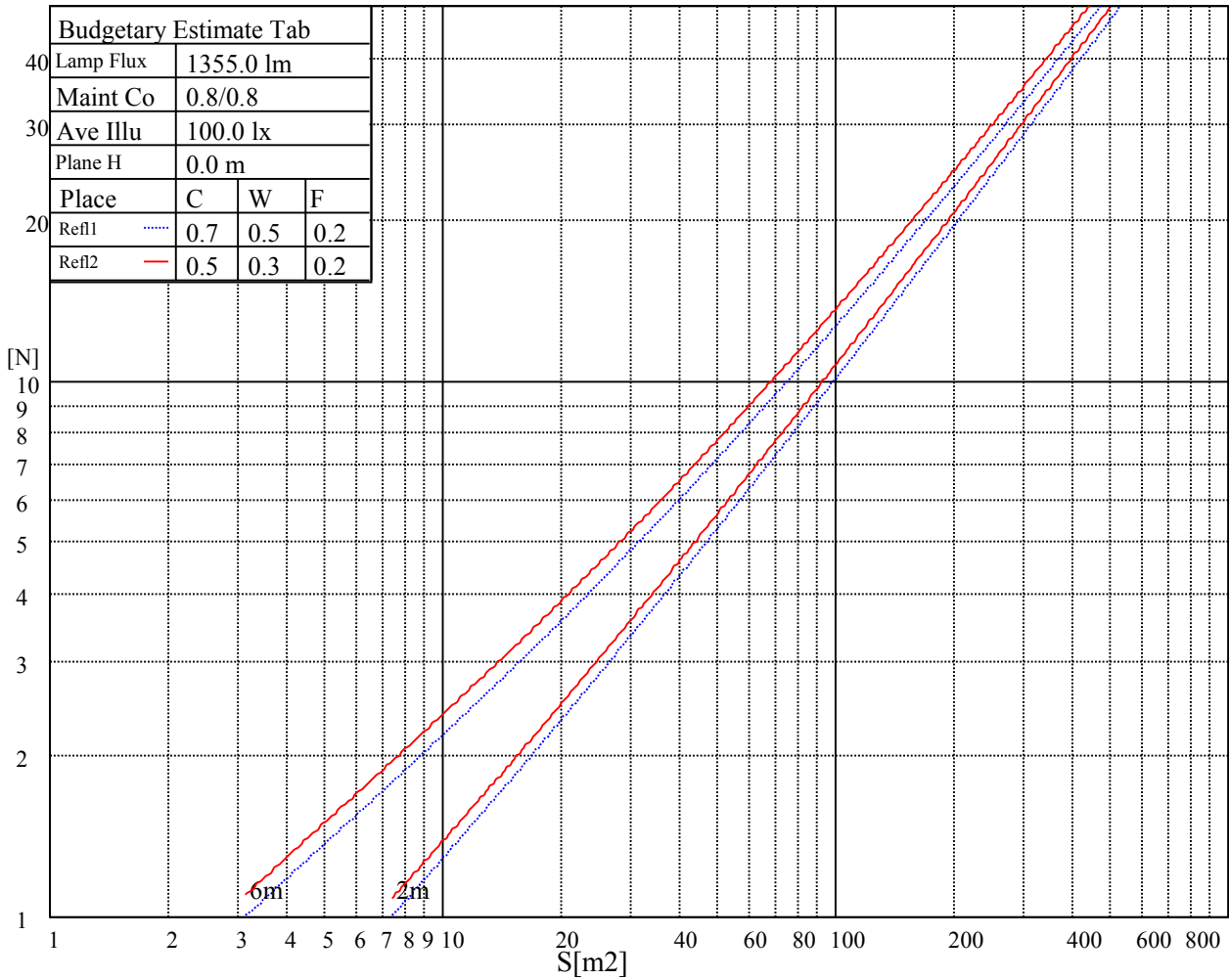
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
898	898	898	1042	1042	1042	2614	2614	2614

Glare Table

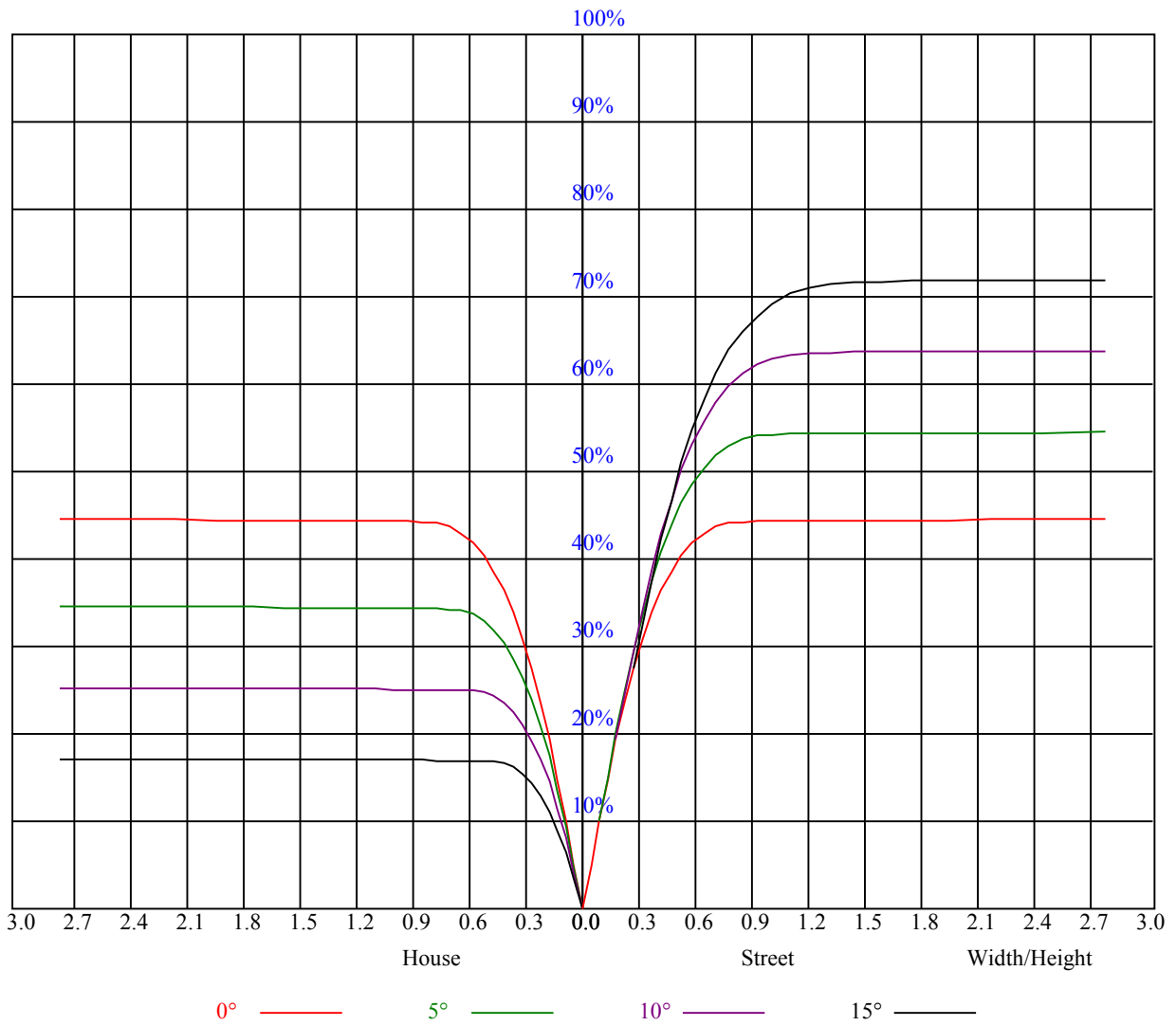
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

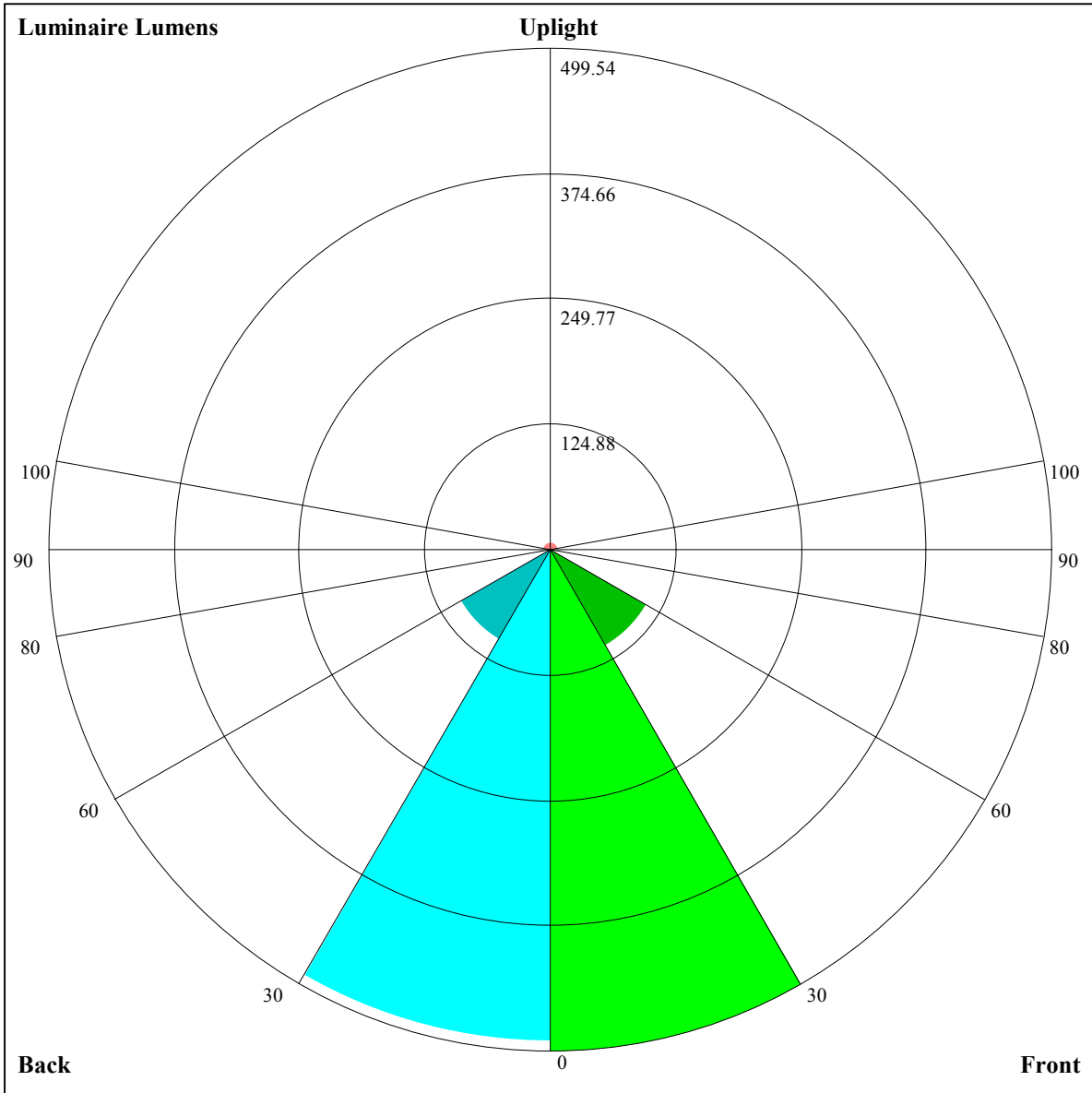
Luminance Limiting Curve





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	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	0.99	0.97	0.96	0.98	0.96	0.94	0.94	0.93	0.91	0.91	0.90	0.89	0.88	0.87	0.86	0.84
2	0.93	0.90	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.88	0.84	0.81	0.87	0.83	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.78	0.77	0.75
4	0.83	0.79	0.76	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.73	0.77	0.75	0.73	0.71
5	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.68
6	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.64
7	0.71	0.66	0.63	0.71	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.64	0.62	0.61
8	0.68	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.66	0.62	0.59	0.65	0.62	0.59	0.58
9	0.65	0.60	0.57	0.64	0.60	0.57	0.64	0.59	0.57	0.63	0.59	0.56	0.62	0.59	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	0.54	0.60	0.56	0.54	0.53





Luminaire Lumens:

FL=499.54,FM=110.83,FH=2.04,FVH=0.77

BL=490.25,BM=103.13,BH=2.03,BVH=0.76

UL=1.49,UH=7.08

BUG Rating:B1-U1-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	2071.96	2070.56	2063.14	2047.36	2026.94	2004.21	1977.29	1946.67	1911.40
45.0	2070.56	2070.10	2064.53	2052.47	2034.37	2012.10	1986.57	1955.02	1919.29
90.0	2070.10	2059.89	2035.30	2022.77	1998.64	1971.26	1937.85	1896.09	1848.29
135.0	2074.28	2070.10	2058.96	2049.22	2019.98	2005.13	1979.61	1950.84	1916.50
180.0	2071.96	2066.85	2057.57	2040.40	2019.06	1994.93	1967.55	1935.99	1897.02
225.0	2070.56	2066.39	2056.18	2038.55	2015.81	1988.89	1957.34	1920.22	1885.41
270.0	2070.10	2072.88	2074.28	2069.64	2059.43	2044.11	2025.09	2001.42	1971.26
315.0	2074.28	2073.35	2067.78	2054.79	2035.30	2012.56	1985.65	1957.80	1924.86
360.0	2071.96	2070.56	2063.14	2047.36	2026.94	2004.21	1977.29	1946.67	1911.40
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1871.49	1844.58	1778.22	1748.06	1695.16	1614.88	1579.15	1519.29	1452.47
45.0	1876.13	1828.34	1777.76	1747.13	1674.28	1640.87	1583.33	1522.54	1457.58
90.0	1797.71	1744.81	1690.52	1633.91	1574.51	1511.87	1447.37	1378.69	1302.59
135.0	1876.60	1831.12	1782.86	1731.82	1675.67	1615.35	1550.38	1480.31	1404.68
180.0	1852.93	1825.09	1755.48	1723.47	1667.32	1606.07	1542.96	1477.53	1405.60
225.0	1837.15	1785.65	1733.21	1678.92	1621.84	1560.59	1497.95	1432.52	1361.52
270.0	1935.07	1892.37	1844.12	1791.68	1736.46	1680.78	1625.56	1568.02	1506.30
315.0	1886.34	1844.12	1797.25	1746.67	1690.98	1629.73	1562.91	1495.16	1438.09
360.0	1871.49	1844.58	1778.22	1748.06	1695.16	1614.88	1579.15	1519.29	1452.47
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1377.30	1295.16	1209.78	1123.01	1006.07	912.48	887.65	832.29	781.11
45.0	1387.04	1312.80	1231.59	1148.53	1064.54	984.73	918.37	858.97	802.82
90.0	1220.45	1136.93	1018.14	912.20	912.20	847.88	789.00	736.56	687.51
135.0	1322.54	1235.30	1147.60	1058.97	972.66	899.34	835.77	782.87	734.61
180.0	1325.79	1241.34	1156.88	1071.50	987.05	916.98	856.65	805.14	757.81
225.0	1284.03	1202.82	1121.15	1008.39	924.45	899.44	840.92	809.74	760.50
270.0	1441.80	1388.43	1315.58	1235.30	1150.39	1048.76	965.24	906.77	842.27
315.0	1345.28	1262.68	1194.00	1109.55	918.60	905.24	879.71	821.25	771.13
360.0	1377.30	1295.16	1209.78	1123.01	1006.07	912.48	887.65	832.29	781.11
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	752.06	691.32	666.63	627.00	589.09	543.85	486.77	420.88	348.16
45.0	750.39	701.20	655.73	613.03	573.13	525.80	467.33	405.61	366.63
90.0	643.43	602.32	565.52	528.44	479.53	420.09	357.72	294.57	232.94
135.0	707.70	667.79	630.67	594.94	558.28	512.34	459.44	400.51	332.76
180.0	716.05	677.07	639.48	602.83	559.21	505.38	443.20	387.51	315.13
225.0	714.75	671.73	631.27	592.57	546.07	487.10	422.32	356.52	292.85
270.0	785.19	733.22	684.96	641.80	601.90	564.78	525.80	471.97	411.64
315.0	724.22	682.13	658.28	605.29	570.25	529.37	478.84	419.53	378.98
360.0	752.06	691.32	666.63	627.00	589.09	543.85	486.77	420.88	348.16
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	275.03	203.48	138.24	84.73	46.77	23.94	15.92	11.97	8.82
45.0	302.13	252.94	252.94	116.75	70.95	35.03	17.59	13.27	9.61
90.0	174.38	120.18	72.81	49.00	21.81	13.36	10.26	7.75	6.40
135.0	257.12	257.12	97.31	56.61	29.47	19.35	12.62	10.16	8.07
180.0	242.27	242.27	107.66	60.14	30.77	16.38	12.48	9.74	8.03
225.0	229.74	171.46	117.54	70.44	34.57	15.64	12.11	9.37	7.80
270.0	347.61	283.57	245.98	245.98	128.72	80.74	41.39	18.28	12.11
315.0	301.90	218.75	146.54	92.11	53.87	28.07	15.13	11.51	8.35
360.0	275.03	203.48	138.24	84.73	46.77	23.94	15.92	11.97	8.82

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	7.38	6.08	5.66	5.15	4.59	4.50	4.27	4.13	3.99
45.0	7.75	6.22	5.52	5.06	4.73	4.45	4.36	4.13	3.94
90.0	5.38	5.01	4.83	4.59	4.32	4.13	4.04	3.85	3.62
135.0	6.91	5.80	5.24	4.97	4.78	4.59	4.32	4.13	3.99
180.0	6.22	5.57	5.15	4.87	4.69	4.50	4.36	4.18	3.94
225.0	5.61	5.15	4.78	4.59	4.45	4.22	3.99	3.85	3.71
270.0	9.19	6.91	5.85	4.87	4.50	4.32	4.18	3.99	3.76
315.0	6.50	5.38	4.92	4.55	4.27	4.13	3.99	3.76	3.57
360.0	7.38	6.08	5.66	5.15	4.59	4.50	4.27	4.13	3.99
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.85	3.57	3.43	3.34	3.20	2.97	2.88	2.78	2.69
45.0	3.85	3.62	3.43	3.29	3.20	3.06	2.88	2.83	2.74
90.0	3.48	3.39	3.20	3.02	2.92	2.83	2.74	2.69	2.46
135.0	3.81	3.62	3.43	3.34	3.20	3.02	2.92	2.83	2.69
180.0	3.71	3.57	3.48	3.29	3.11	3.02	2.92	2.74	2.64
225.0	3.53	3.34	3.20	3.11	2.97	2.78	2.74	2.64	2.55
270.0	3.67	3.57	3.43	3.20	3.06	2.97	2.88	2.78	2.60
315.0	3.53	3.34	3.25	3.06	2.92	2.83	2.74	2.55	2.51
360.0	3.85	3.57	3.43	3.34	3.20	2.97	2.88	2.78	2.69
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.55	2.41	2.32	2.32	2.18	2.09	2.00	2.00	1.90
45.0	2.60	2.51	2.41	2.32	2.18	2.09	2.13	2.00	1.90
90.0	2.41	2.37	2.27	2.18	2.04	2.00	2.00	1.86	1.81
135.0	2.69	2.55	2.41	2.27	2.23	2.23	2.09	1.95	1.90
180.0	2.55	2.46	2.37	2.23	2.13	2.09	2.04	1.90	1.86
225.0	2.37	2.27	2.23	2.13	1.95	2.09	1.95	1.81	1.81
270.0	2.51	2.41	2.27	2.18	2.09	2.09	2.04	1.86	1.81
315.0	2.41	2.37	2.18	2.13	2.13	2.00	1.90	1.86	1.81
360.0	2.55	2.41	2.32	2.32	2.18	2.09	2.00	2.00	1.90
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.86	1.76	1.72	1.67	1.67	1.58	1.53	1.53	1.53
45.0	1.90	1.86	1.76	1.76	1.72	1.62	1.62	1.58	1.53
90.0	1.76	1.76	1.67	1.58	1.62	1.62	1.58	1.44	1.48
135.0	1.90	1.81	1.72	1.72	1.72	1.62	1.58	1.53	1.53
180.0	1.76	1.76	1.72	1.62	1.58	1.58	1.58	1.48	1.44
225.0	1.76	1.67	1.62	1.58	1.58	1.53	1.44	1.44	1.48
270.0	1.81	1.76	1.67	1.62	1.58	1.62	1.53	1.44	1.48
315.0	1.72	1.62	1.62	1.58	1.53	1.58	1.53	1.48	1.53
360.0	1.86	1.76	1.72	1.67	1.67	1.58	1.53	1.53	1.53
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.48	1.44	1.44	1.39	1.39	1.39	1.39	1.39	1.39
45.0	1.48	1.48	1.44	1.44	1.39	1.44	1.39	1.39	1.30
90.0	1.53	1.44	1.44	1.35	1.39	1.39	1.35	1.30	1.44
135.0	1.53	1.44	1.48	1.44	1.39	1.44	1.44	1.39	1.35
180.0	1.44	1.44	1.35	1.39	1.44	1.35	1.35	1.35	1.25
225.0	1.48	1.35	1.39	1.35	1.35	1.35	1.35	1.39	1.30
270.0	1.44	1.44	1.39	1.44	1.39	1.30	1.35	1.35	1.25
315.0	1.39	1.48	1.44	1.39	1.35	1.39	1.35	1.35	1.30
360.0	1.48	1.44	1.44	1.39	1.39	1.39	1.39	1.39	1.39

Intensity data(cd)

C/γ(°)	90.0
0.0	1.35
45.0	1.39
90.0	1.53
135.0	1.44
180.0	1.30
225.0	1.30
270.0	1.30
315.0	1.30
360.0	1.35