



NATA LIGHTING CO.,LTD.
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Nata

Client:

LumCAT: 1658-S

Luminaire: 92.70.127.00

Report No: nt0100

Test No: NATA07

LampCAT: LUMINUS CLM-9-AA40

Lamp flux(lm): 1234.0

Number of Lamps: 1

Length(mm): 0

Phm Type: C

Voltage(V): 220.5000

Current(A): 0.1010

Power (W): 12.1600

PF: 0.5450

Ballast type: AC

Width(mm): 0

Height(mm): 0

Photometric Results

Lumens(lm): 1059.62, Efficiency(%): 85.87% , Luminous Efficacy(lm/W): 87.14

Central intensity(cd): 2176.363, Maximum intensity(cd): 2176.363

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=38.8

[C90/270]Total=38.8

Field angle(10%Imax): [C0/180]Total=69.0

[C90/270]Total=69.0

Maximum s/h(1/2): C0_180=0.62 C90_270=0.62

Maximum s/h(1/4): C0_180=0.65 C90_270=0.65

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 85.87%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 99.358%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2176.363	0.000	0	.000%	.000%
1.0	2172.767	2.081	2.081	.169%	.196%
2.0	2160.934	6.220	8.301	.504%	.783%
3.0	2147.071	10.303	18.604	.835%	1.756%
4.0	2110.528	14.252	32.856	1.155%	3.101%
5.0	2077.756	18.018	50.874	1.460%	4.801%
6.0	2036.399	21.621	72.495	1.752%	6.842%
7.0	1983.093	24.949	97.444	2.022%	9.196%
8.0	1924.219	27.964	125.408	2.266%	11.835%
9.0	1867.085	30.726	156.134	2.490%	14.735%
10.0	1795.740	33.147	189.281	2.686%	17.863%
11.0	1724.859	35.178	224.459	2.851%	21.183%
12.0	1656.008	36.958	261.417	2.995%	24.671%
13.0	1575.904	38.355	299.772	3.108%	28.290%
14.0	1505.081	39.436	339.208	3.196%	32.012%
15.0	1413.713	40.070	379.278	3.247%	35.794%
16.0	1336.103	40.292	419.571	3.265%	39.596%
17.0	1261.817	40.457	460.028	3.278%	43.414%
18.0	1185.240	40.347	500.374	3.270%	47.222%
19.0	1111.818	39.964	540.338	3.239%	50.993%
20.0	1047.167	39.515	579.854	3.202%	54.723%
21.0	978.896	38.905	618.758	3.153%	58.394%
22.0	907.185	37.902	656.66	3.071%	61.971%
23.0	836.583	36.589	693.249	2.965%	65.424%
24.0	769.118	35.106	728.355	2.845%	68.737%
25.0	689.954	33.176	761.531	2.689%	71.868%
26.0	631.932	31.203	792.734	2.529%	74.813%
27.0	580.778	29.669	822.404	2.404%	77.613%
28.0	524.920	27.994	850.398	2.269%	80.255%
29.0	474.851	26.157	876.555	2.120%	82.723%
30.0	421.279	24.195	900.75	1.961%	85.007%
31.0	368.385	21.975	922.725	1.781%	87.080%
32.0	323.368	19.818	942.543	1.606%	88.951%
33.0	277.190	17.693	960.236	1.434%	90.620%
34.0	235.091	15.503	975.739	1.256%	92.083%
35.0	199.940	13.510	989.249	1.095%	93.358%
36.0	174.146	11.911	1001.16	.965%	94.483%
37.0	138.972	10.212	1011.372	.828%	95.446%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	116.820	8.538	1019.91	.692%	96.252%
39.0	90.057	7.061	1026.972	.572%	96.918%
40.0	74.825	5.751	1032.722	.466%	97.461%
41.0	51.380	4.494	1037.216	.364%	97.885%
42.0	36.566	3.195	1040.411	.259%	98.187%
43.0	25.249	2.290	1042.701	.186%	98.403%
44.0	17.268	1.605	1044.306	.130%	98.554%
45.0	12.169	1.131	1045.437	.092%	98.661%
46.0	9.826	0.860	1046.297	.070%	98.742%
47.0	8.295	0.721	1047.018	.058%	98.810%
48.0	7.135	0.624	1047.642	.051%	98.869%
49.0	6.421	0.557	1048.199	.045%	98.922%
50.0	5.858	0.512	1048.711	.041%	98.970%
51.0	5.563	0.483	1049.194	.039%	99.016%
52.0	5.249	0.464	1049.658	.038%	99.059%
53.0	4.977	0.445	1050.103	.036%	99.101%
54.0	4.768	0.430	1050.532	.035%	99.142%
55.0	4.548	0.416	1050.948	.034%	99.181%
56.0	4.316	0.400	1051.348	.032%	99.219%
57.0	4.130	0.386	1051.735	.031%	99.255%
58.0	3.956	0.374	1052.108	.030%	99.291%
59.0	3.776	0.361	1052.47	.029%	99.325%
60.0	3.608	0.349	1052.819	.028%	99.358%
61.0	3.440	0.336	1053.155	.027%	99.389%
62.0	3.312	0.325	1053.48	.026%	99.420%
63.0	3.155	0.315	1053.795	.025%	99.450%
64.0	3.022	0.303	1054.098	.025%	99.478%
65.0	2.889	0.293	1054.391	.024%	99.506%
66.0	2.778	0.283	1054.673	.023%	99.533%
67.0	2.651	0.273	1054.946	.022%	99.559%
68.0	2.558	0.264	1055.21	.021%	99.583%
69.0	2.459	0.256	1055.466	.021%	99.608%
70.0	2.390	0.249	1055.715	.020%	99.631%
71.0	2.303	0.243	1055.958	.020%	99.654%
72.0	2.222	0.235	1056.193	.019%	99.676%
73.0	2.187	0.231	1056.424	.019%	99.698%
74.0	2.129	0.227	1056.65	.018%	99.719%
75.0	2.053	0.221	1056.871	.018%	99.740%

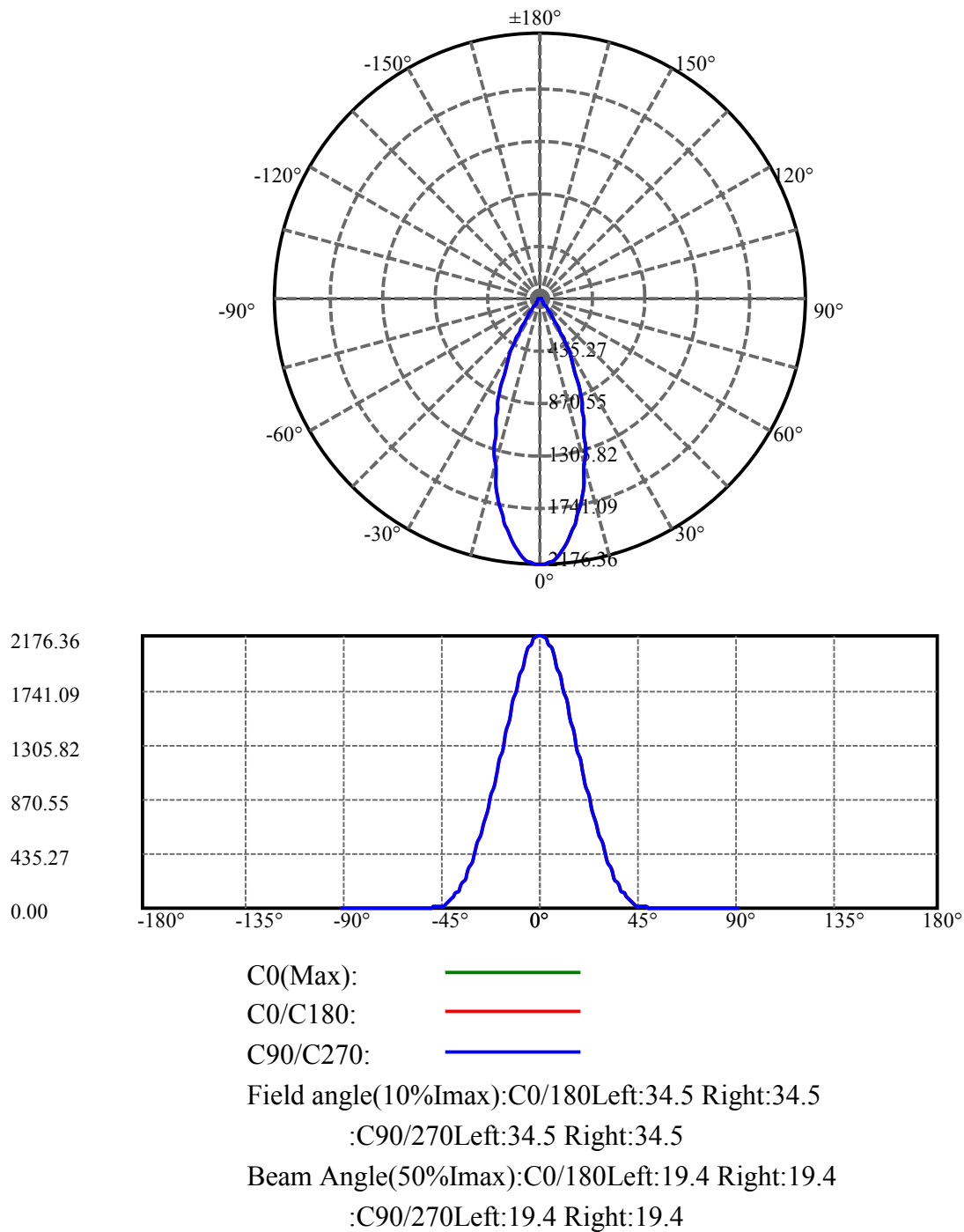
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.990	0.215	1057.086	.017%	99.760%
77.0	1.955	0.210	1057.296	.017%	99.780%
78.0	1.920	0.207	1057.504	.017%	99.800%
79.0	1.868	0.204	1057.707	.016%	99.819%
80.0	1.740	0.195	1057.902	.016%	99.837%
81.0	1.647	0.183	1058.085	.015%	99.855%
82.0	1.665	0.180	1058.264	.015%	99.872%
83.0	1.671	0.181	1058.446	.015%	99.889%
84.0	1.717	0.185	1058.63	.015%	99.906%
85.0	1.601	0.181	1058.811	.015%	99.923%
86.0	1.549	0.172	1058.984	.014%	99.940%
87.0	1.473	0.165	1059.149	.013%	99.955%
88.0	1.456	0.160	1059.309	.013%	99.970%
89.0	1.439	0.159	1059.468	.013%	99.985%
90.0	1.410	0.156	1059.624	.013%	100.000%

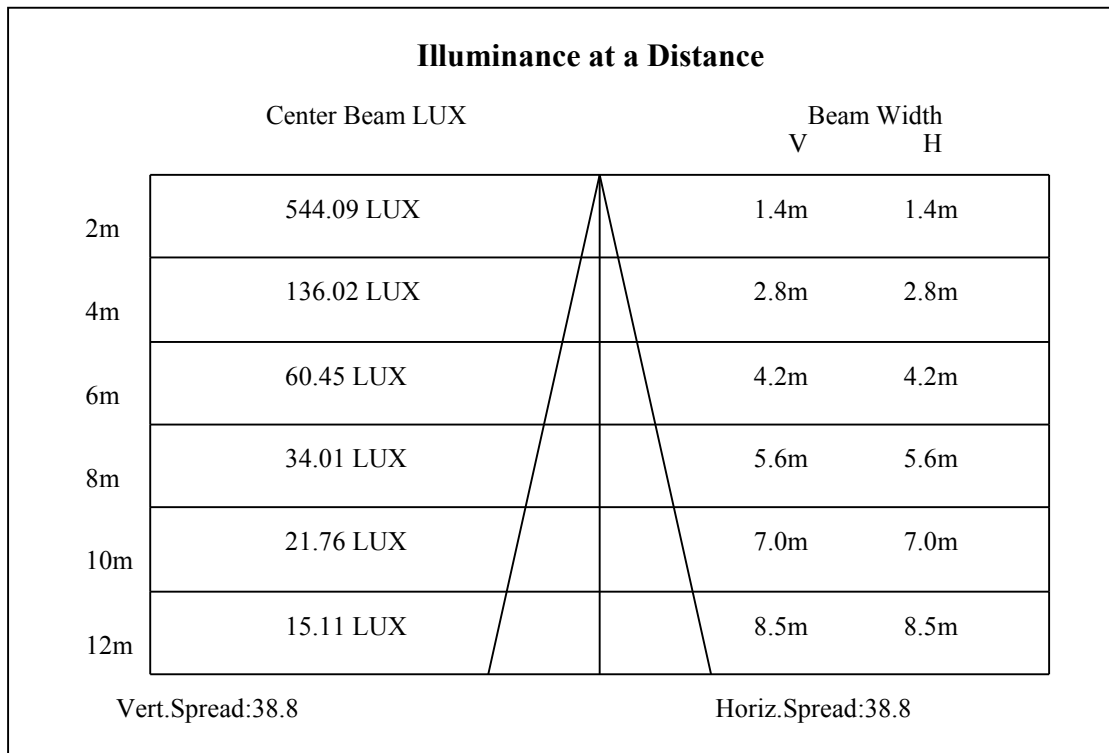
ZONAL LUMEN SUMMARY

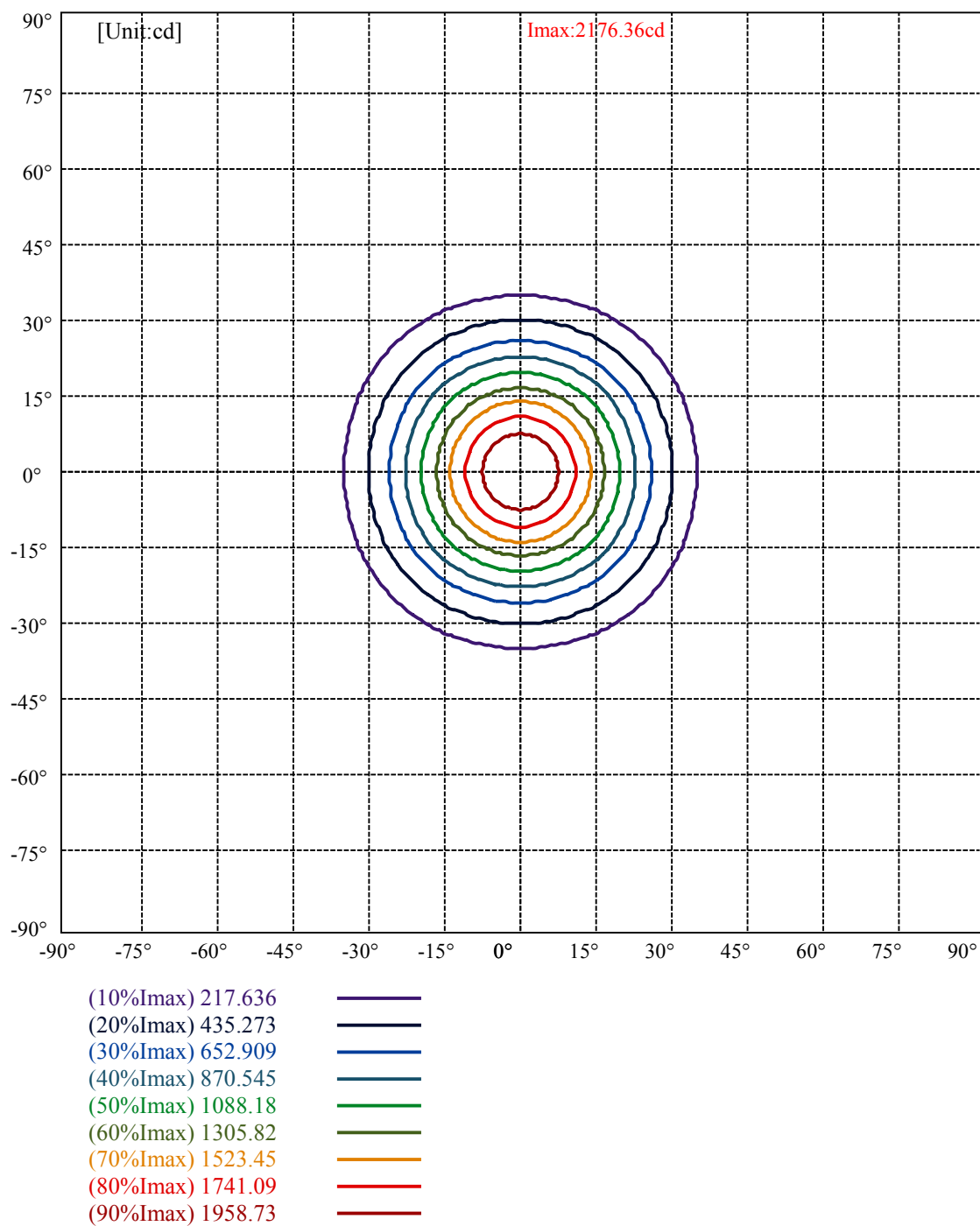
Zone	Lumens	%Lamp	%Fixt
0-30	900.75	72.99%	85.01%
0-40	1032.72	83.69%	97.46%
0-60	1052.82	85.32%	99.36%
0-90	1059.47	85.86%	99.99%
0-120	1059.47	85.86%	99.99%
0-180	1059.62	85.87%	100.00%
60-90	7.00	0.57%	0.66%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.90	847.70	68.70%	80.00%

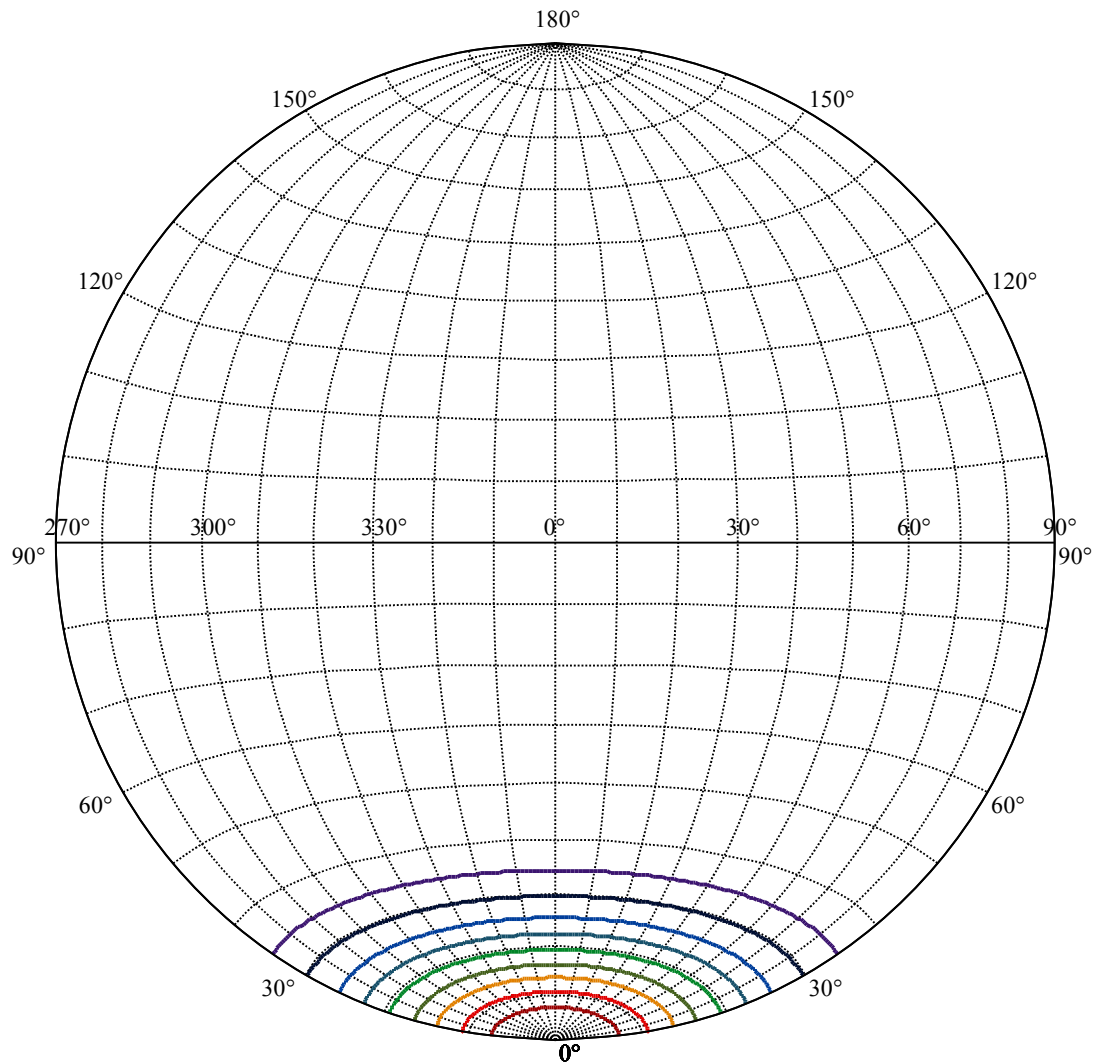
ZONAL LUMEN SUMMARY

0-10	189.28
10-20	390.57
20-30	320.90
30-40	131.97
40-50	15.99
50-60	4.11
60-70	2.90
70-80	2.19
80-90	1.57
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









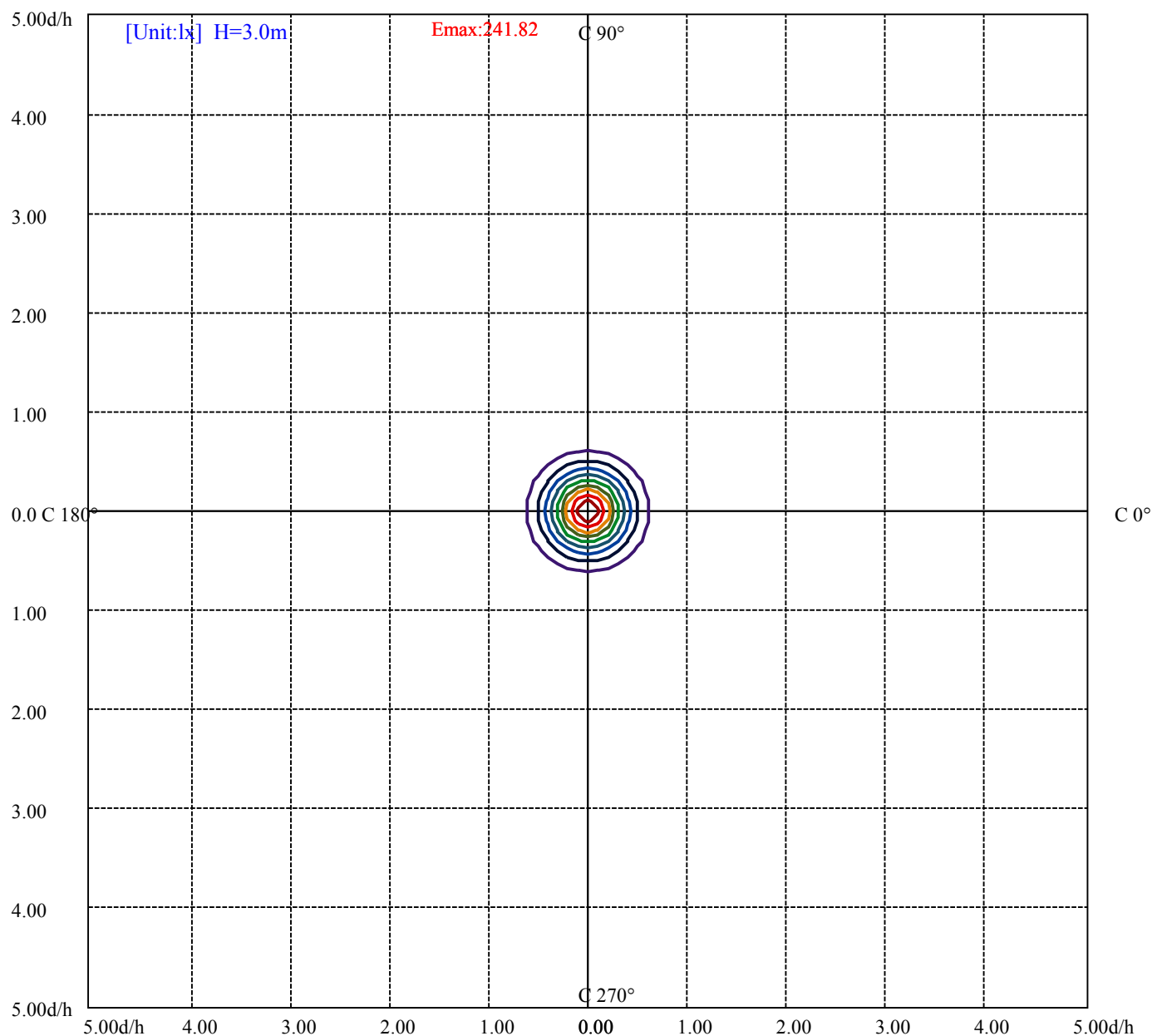
House

[Unit:cd]

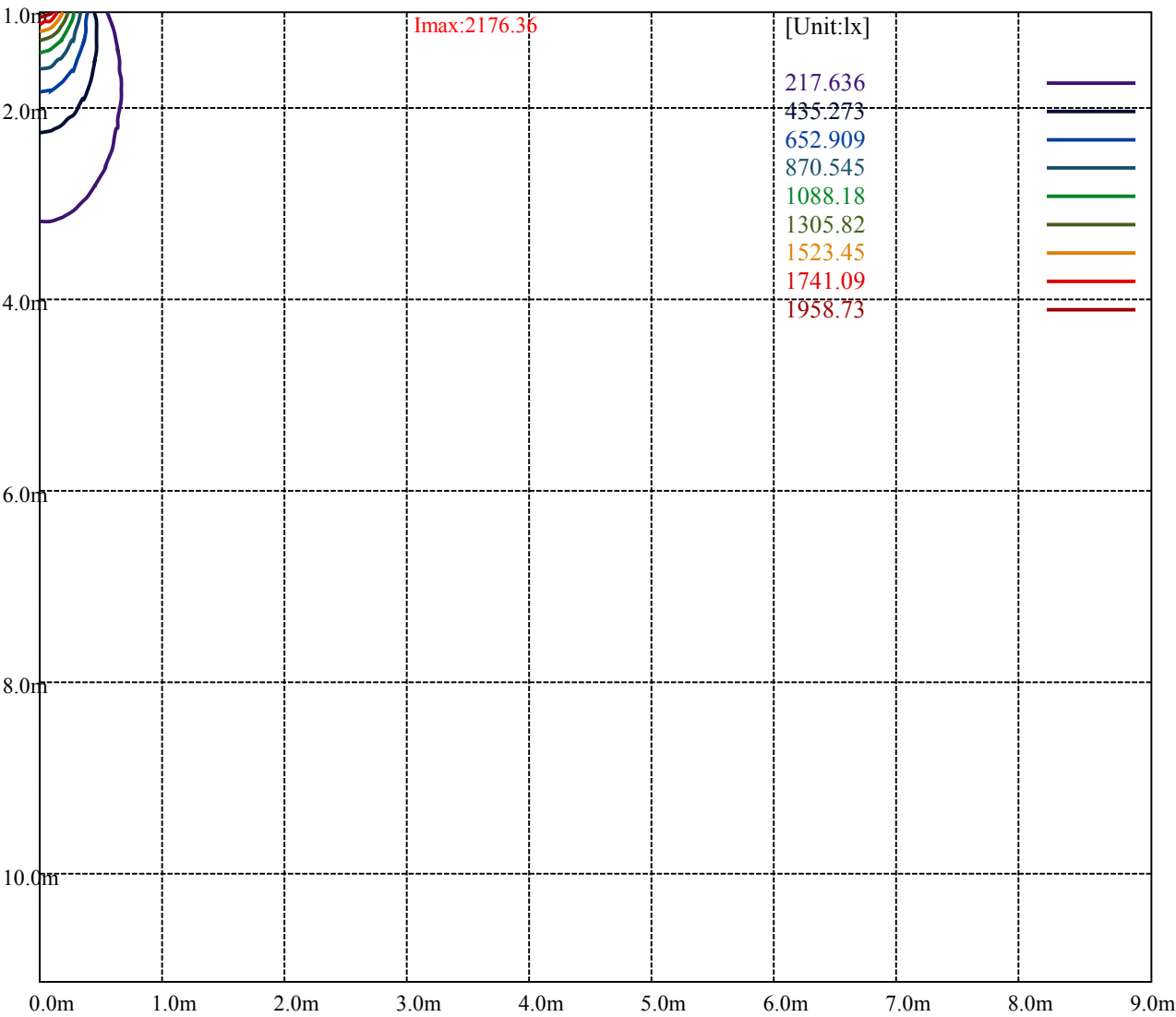
Road

Imax:2176.36

(10%Imax)	217.636	—
(20%Imax)	435.273	—
(30%Imax)	652.909	—
(40%Imax)	870.545	—
(50%Imax)	1088.18	—
(60%Imax)	1305.82	—
(70%Imax)	1523.45	—
(80%Imax)	1741.09	—
(90%Imax)	1958.73	—



(10%Emax)	24.18178	—
(20%Emax)	48.36367	—
(30%Emax)	72.54544	—
(40%Emax)	96.72722	—
(50%Emax)	120.9089	—
(60%Emax)	145.0911	—
(70%Emax)	169.2722	—
(80%Emax)	193.4544	—
(90%Emax)	217.6367	—



Luminance Table

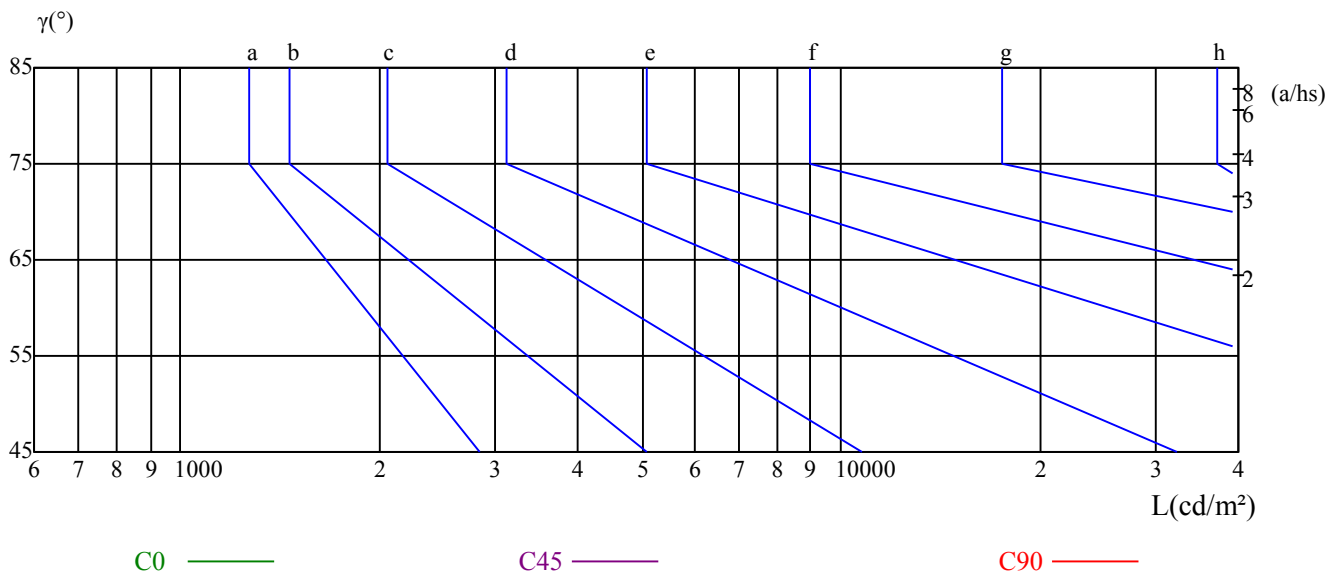
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

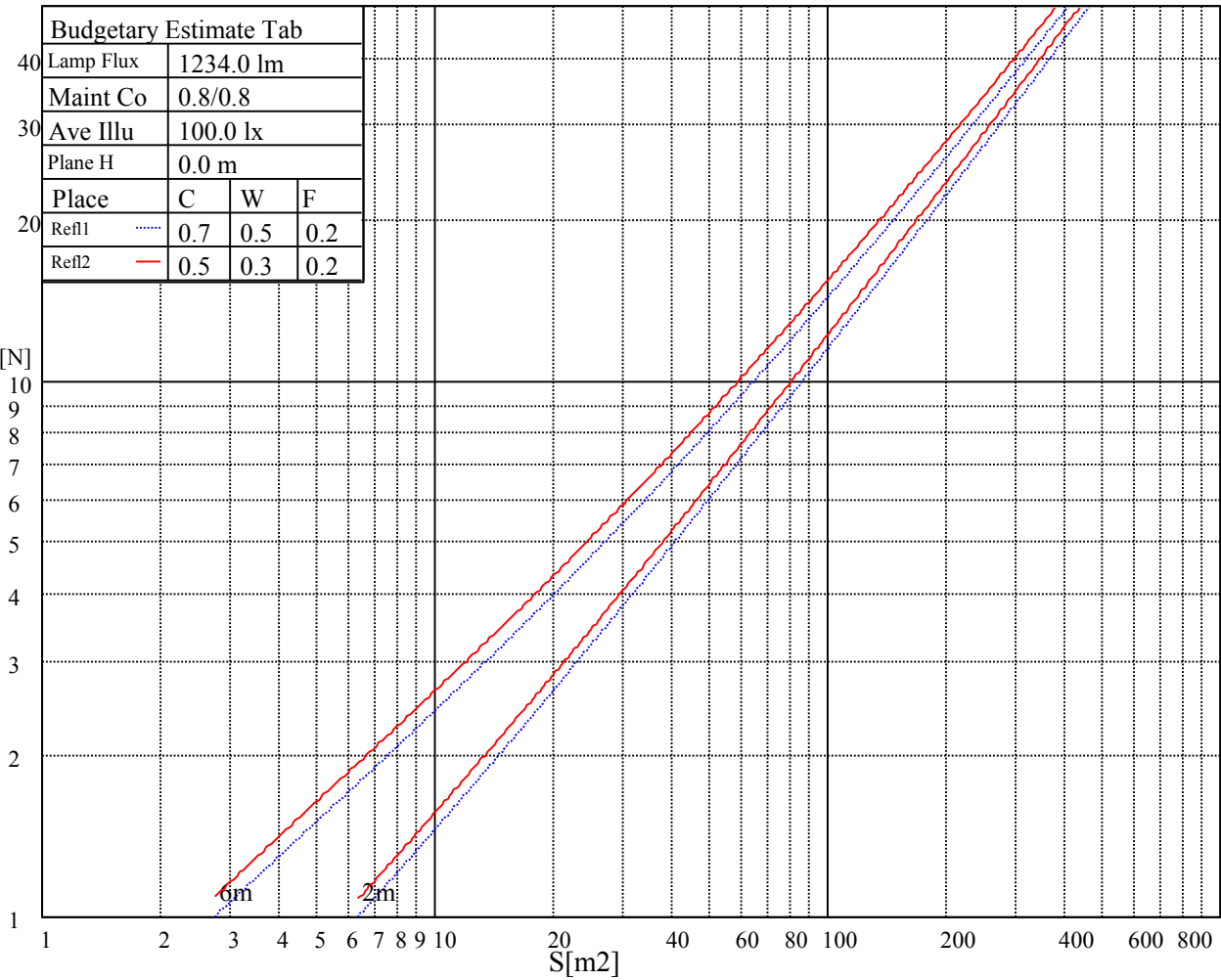
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

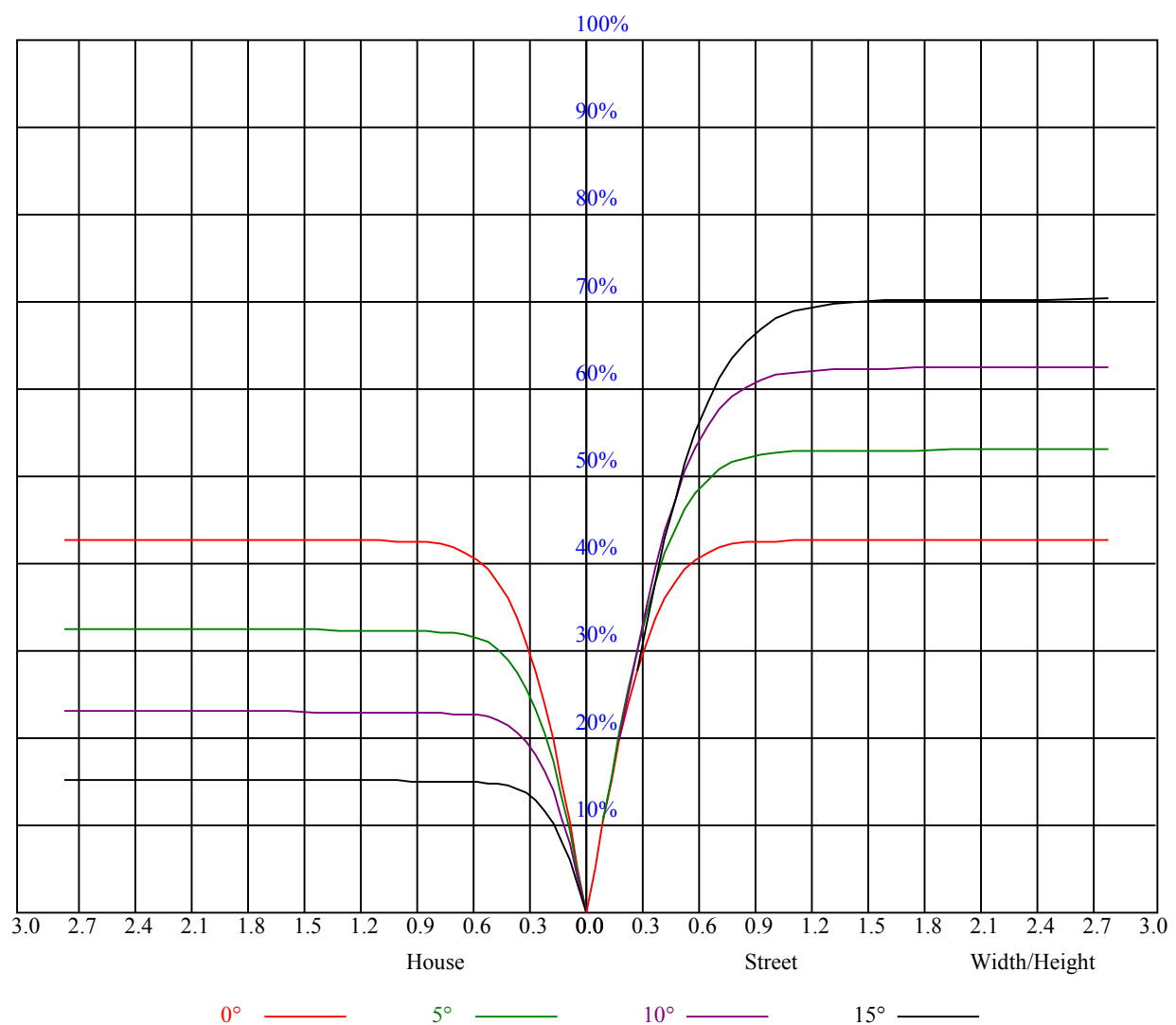
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

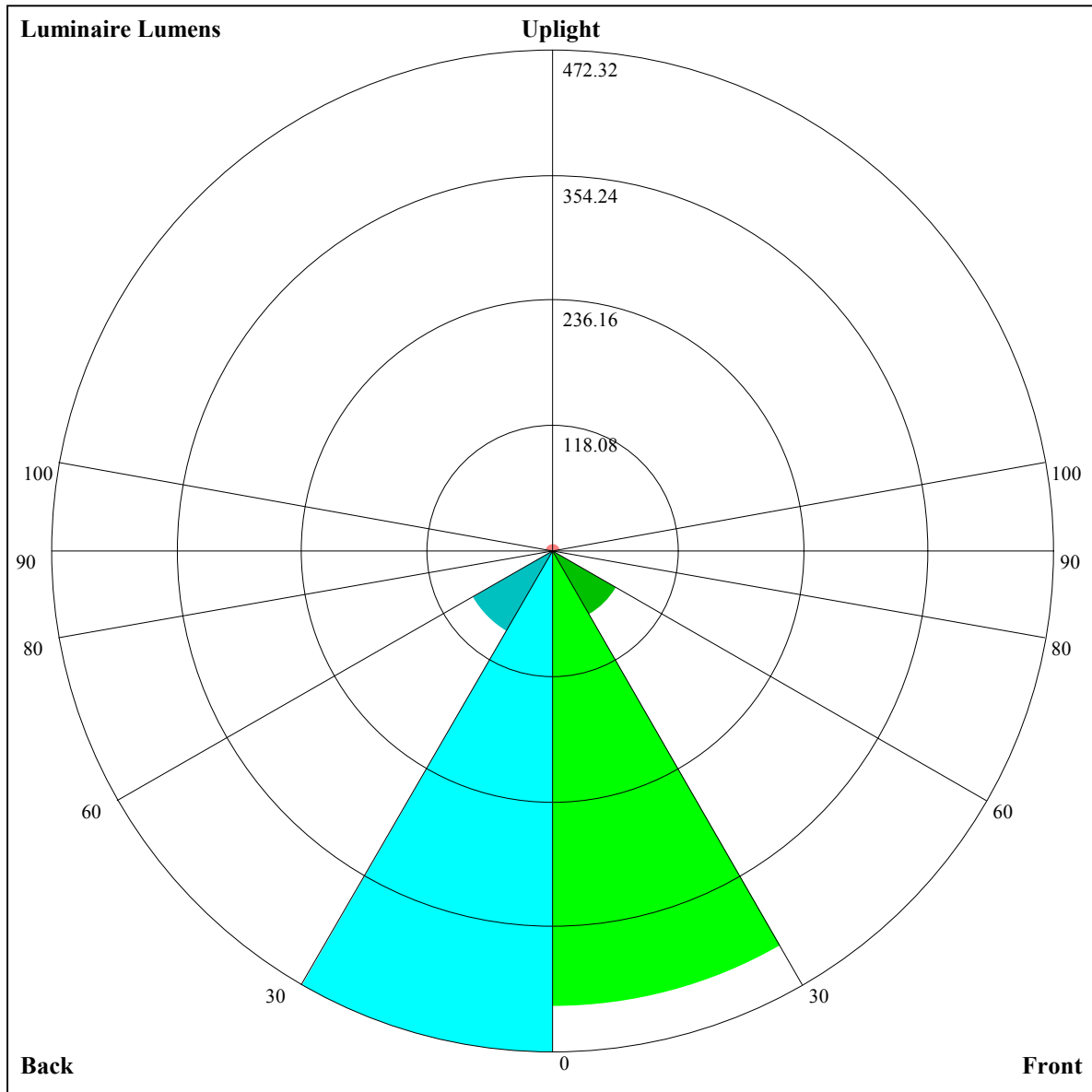
Luminance Limiting Curve





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	1.02	1.02	1.02	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.88	0.88	0.88	0.86
1	0.96	0.94	0.92	0.94	0.92	0.91	0.91	0.89	0.88	0.87	0.86	0.85	0.84	0.84	0.83	0.81
2	0.90	0.87	0.84	0.89	0.86	0.83	0.86	0.84	0.82	0.83	0.82	0.80	0.81	0.80	0.78	0.77
3	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.73
4	0.80	0.76	0.73	0.80	0.76	0.73	0.78	0.74	0.72	0.76	0.73	0.71	0.75	0.72	0.70	0.69
5	0.76	0.72	0.69	0.76	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.67	0.71	0.69	0.67	0.66
6	0.73	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.64	0.70	0.66	0.64	0.68	0.66	0.63	0.62
7	0.69	0.65	0.61	0.69	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.59
8	0.66	0.61	0.58	0.65	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.58	0.57
9	0.63	0.59	0.56	0.63	0.58	0.56	0.62	0.58	0.55	0.61	0.58	0.55	0.60	0.57	0.55	0.54
10	0.60	0.56	0.53	0.60	0.56	0.53	0.59	0.56	0.53	0.59	0.55	0.53	0.58	0.55	0.53	0.52





Luminaire Lumens:

FL=429.39,FM=68.49,FH=2.58,FVH=0.84

BL=472.32,BM=87.96,BH=2.69,BVH=0.91

UL=1.54,UH=7.32

BUG Rating:B1-U1-G0

Nata 1658-S

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	2179.61	2161.51	2129.96	2090.52	2041.79	1987.50	1929.50	1858.50	1781.93
45.0	2166.15	2197.71	2220.45	2232.51	2234.83	2226.94	2209.77	2181.00	2147.13
90.0	2218.59	2260.35	2293.76	2319.75	2326.71	2333.21	2320.21	2300.26	2271.49
135.0	2141.10	2187.50	2223.23	2253.39	2271.49	2282.63	2277.99	2269.17	2245.97
180.0	2179.61	2192.60	2196.78	2190.28	2175.44	2156.41	2129.50	2080.77	2031.58
225.0	2166.15	2127.64	2084.95	2053.39	1969.87	1898.87	1855.72	1777.29	1696.09
270.0	2218.59	2168.94	2110.47	2047.83	1977.29	1897.94	1812.56	1730.43	1639.94
315.0	2141.10	2085.88	2027.87	1988.89	1886.81	1838.55	1755.95	1667.32	1579.62
360.0	2179.61	2161.51	2129.96	2090.52	2041.79	1987.50	1929.50	1858.50	1781.93
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1707.23	1623.24	1543.89	1460.82	1378.23	1331.36	1246.44	1136.46	1092.85
45.0	2103.97	2055.71	1996.32	1930.43	1856.18	1780.54	1699.80	1614.42	1566.62
90.0	2248.75	2187.50	2136.46	2098.87	2009.78	1965.23	1887.73	1805.14	1717.90
135.0	2214.41	2178.68	2133.21	2079.38	2017.66	1954.09	1884.95	1808.85	1721.61
180.0	1988.89	1931.35	1863.14	1788.43	1709.08	1626.02	1546.21	1464.07	1383.79
225.0	1612.56	1525.79	1441.33	1358.74	1277.99	1195.86	1111.87	1007.46	905.79
270.0	1566.62	1458.04	1368.95	1297.48	1209.78	1123.94	1037.63	957.35	884.49
315.0	1494.23	1405.60	1315.58	1233.91	1148.53	1063.61	895.07	821.48	751.97
360.0	1707.23	1623.24	1543.89	1460.82	1378.23	1331.36	1246.44	1136.46	1092.85
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	918.09	891.50	877.86	810.85	748.63	687.79	631.92	571.27	511.97
45.0	1487.27	1402.36	1318.83	1239.48	1157.35	1076.14	1000.50	927.65	855.26
90.0	1628.80	1538.78	1447.83	1361.06	1275.67	1193.54	1109.09	921.01	893.77
135.0	1671.03	1584.72	1495.63	1411.64	1324.40	1241.80	1161.52	1087.74	1008.39
180.0	1304.44	1224.17	1143.42	1066.86	986.58	913.73	845.52	784.26	723.01
225.0	878.93	813.73	751.50	715.63	658.93	596.93	534.66	470.11	413.27
270.0	813.03	743.89	682.64	625.56	565.70	504.45	446.91	390.30	336.93
315.0	780.32	695.40	659.62	600.09	540.23	478.28	422.83	367.28	312.85
360.0	918.09	891.50	877.86	810.85	748.63	687.79	631.92	571.27	511.97
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	454.15	395.68	352.43	291.00	242.64	207.05	165.85	126.87	93.22
45.0	791.69	733.22	672.89	616.75	557.35	500.27	440.41	383.80	330.90
90.0	893.77	812.34	759.21	694.61	622.78	576.65	516.84	459.86	405.66
135.0	933.68	867.32	804.68	744.36	686.35	624.17	561.53	497.49	435.31
180.0	667.33	630.67	541.57	482.64	447.84	391.69	337.86	286.82	255.73
225.0	358.33	305.75	257.91	210.49	166.22	127.47	91.32	60.05	35.45
270.0	283.11	234.85	234.85	193.08	121.99	89.98	59.77	39.21	24.50
315.0	264.17	219.53	175.27	137.31	101.90	69.65	43.94	26.64	18.75
360.0	454.15	395.68	352.43	291.00	242.64	207.05	165.85	126.87	93.22
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	62.83	38.47	22.55	16.57	12.58	9.51	7.56	6.91	6.50
45.0	291.46	244.59	244.59	159.30	119.63	84.55	53.60	31.69	20.14
90.0	350.95	298.23	247.65	201.53	155.31	117.35	85.15	55.73	36.33
135.0	377.77	335.54	272.90	234.85	234.85	147.42	106.73	73.46	45.43
180.0	255.73	151.69	113.97	81.02	52.57	30.58	19.26	15.45	11.93
225.0	21.81	16.43	12.62	9.56	7.52	6.77	6.26	5.80	5.61
270.0	18.10	14.29	11.18	9.23	8.35	7.80	7.24	6.64	6.26
315.0	14.52	12.53	9.10	8.40	7.80	7.05	6.73	6.31	5.94
360.0	62.83	38.47	22.55	16.57	12.58	9.51	7.56	6.91	6.50

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	6.08	5.61	5.34	5.06	4.83	4.50	4.41	4.04	3.90
45.0	15.68	11.88	9.05	7.47	6.91	6.50	6.17	5.61	5.34
90.0	23.02	18.47	14.76	11.79	10.44	8.96	8.45	8.12	7.61
135.0	26.73	19.03	15.41	12.02	9.42	8.12	7.56	7.05	6.54
180.0	9.14	7.70	6.77	6.36	6.03	5.71	5.34	5.06	4.83
225.0	5.15	4.92	4.69	4.41	4.13	3.90	3.71	3.53	3.34
270.0	5.94	5.66	5.24	5.01	4.83	4.59	4.36	4.22	4.08
315.0	5.61	5.34	5.10	4.97	4.78	4.59	4.50	4.36	4.18
360.0	6.08	5.61	5.34	5.06	4.83	4.50	4.41	4.04	3.90
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	3.71	3.57	3.43	3.25	3.11	2.97	2.88	2.74	2.64
45.0	5.10	4.83	4.50	4.41	4.13	3.90	3.76	3.57	3.39
90.0	7.38	7.05	6.77	6.50	6.31	6.13	5.85	5.57	5.34
135.0	6.17	5.94	5.43	5.06	4.92	4.55	4.32	4.13	3.94
180.0	4.55	4.27	4.04	3.85	3.67	3.48	3.29	3.11	3.06
225.0	3.20	3.06	2.97	2.83	2.64	2.60	2.55	2.46	2.41
270.0	4.04	3.85	3.67	3.57	3.48	3.34	3.16	3.02	2.92
315.0	3.99	3.81	3.71	3.57	3.39	3.25	3.06	2.92	2.78
360.0	3.71	3.57	3.43	3.25	3.11	2.97	2.88	2.74	2.64
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	2.55	2.51	2.37	2.23	2.18	2.13	2.04	1.95	1.90
45.0	3.20	3.11	2.97	2.83	2.69	2.60	2.55	2.41	2.32
90.0	5.06	4.78	4.45	4.22	3.99	3.76	3.53	3.34	3.20
135.0	3.76	3.57	3.48	3.34	3.20	3.06	3.02	2.97	2.88
180.0	2.92	2.78	2.64	2.64	2.55	2.51	2.37	2.32	2.23
225.0	2.32	2.27	2.18	2.13	1.95	1.90	1.90	1.86	1.76
270.0	2.78	2.64	2.55	2.46	2.41	2.32	2.18	2.18	2.09
315.0	2.64	2.51	2.46	2.37	2.23	2.18	2.09	2.09	2.04
360.0	2.55	2.51	2.37	2.23	2.18	2.13	2.04	1.95	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	1.72	1.62	1.62	1.58	1.58	1.48
45.0	2.23	2.18	2.09	2.00	1.90	1.86	1.86	1.76	1.67
90.0	3.06	2.97	2.92	2.78	2.69	2.60	2.46	2.41	2.32
135.0	2.74	2.64	2.55	2.46	2.37	2.32	2.23	2.18	2.13
180.0	2.18	2.18	2.09	2.00	1.95	1.95	1.86	1.81	1.72
225.0	1.72	1.72	1.72	1.62	1.58	1.48	1.53	1.53	1.44
270.0	2.04	2.09	2.00	1.90	1.90	1.95	1.95	1.95	1.72
315.0	1.95	1.95	1.95	1.95	1.90	1.86	1.90	1.72	1.44
360.0	1.86	1.76	1.72	1.72	1.62	1.62	1.58	1.58	1.48
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	1.44	1.48	1.39	1.44	1.35	1.39	1.44	1.35	1.25
45.0	1.62	1.62	1.53	1.58	1.48	1.44	1.39	1.44	1.35
90.0	2.23	2.18	2.13	2.09	2.04	1.95	1.86	1.86	1.90
135.0	1.95	1.95	1.95	1.86	1.81	1.81	1.86	1.86	1.90
180.0	1.72	1.67	1.58	1.58	1.58	1.53	1.53	1.48	1.48
225.0	1.39	1.39	1.44	1.62	1.72	1.76	1.25	1.21	1.21
270.0	1.44	1.48	1.62	1.72	1.58	1.25	1.21	1.25	1.21
315.0	1.39	1.53	1.72	1.86	1.25	1.25	1.25	1.21	1.21
360.0	1.44	1.48	1.39	1.44	1.35	1.39	1.44	1.35	1.25

Intensity data(cd)

Appendix Page: 19 Total:19

C/γ(°)	90.0
0.0	1.25
45.0	1.35
90.0	1.95
135.0	1.76
180.0	1.48
225.0	1.16
270.0	1.16
315.0	1.16
360.0	1.25