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Nata

Client:

LumCAT: CT01D03524AF

Luminaire:

Report No: GC2019091909

Voltage(V): 220.5000

Test No: NATA07

Current(A): 0.0430

LampCAT: CREE CXA1507

Power (W): 8.5300

Lamp flux(lm): 573.4

PF: 0.9010

Number of Lamps: 1

Ballast type: AC

Length(mm): 33

Width(mm): 33

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 524.12, Efficiency(%): 91.41% , Luminous Efficacy(lm/W): 61.44

Central intensity(cd): 1378.922, Maximum intensity(cd): 1378.922

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=64.0

[C90/270]Total=64.0

Maximum s/h(1/2): C0_180=0.46 C90_270=0.46

Maximum s/h(1/4): C0_180=0.52 C90_270=0.52

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 91.41%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 93.308%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1378.922	0.000	0	.000%	.000%
1.0	1372.715	1.317	1.317	.230%	.251%
2.0	1353.632	3.913	5.23	.682%	.998%
3.0	1325.036	6.406	11.636	1.117%	2.220%
4.0	1286.695	8.742	20.379	1.525%	3.888%
5.0	1243.192	10.883	31.262	1.898%	5.965%
6.0	1186.696	12.770	44.032	2.227%	8.401%
7.0	1116.232	14.294	58.326	2.493%	11.128%
8.0	1068.437	15.635	73.961	2.727%	14.112%
9.0	972.017	16.537	90.498	2.884%	17.267%
10.0	927.870	17.193	107.691	2.998%	20.547%
11.0	862.754	17.892	125.583	3.120%	23.961%
12.0	795.150	18.123	143.706	3.161%	27.419%
13.0	734.733	18.156	161.862	3.166%	30.883%
14.0	674.200	18.034	179.897	3.145%	34.324%
15.0	623.852	17.820	197.717	3.108%	37.724%
16.0	574.729	17.563	215.279	3.063%	41.074%
17.0	529.601	17.197	232.477	2.999%	44.356%
18.0	488.911	16.793	249.27	2.929%	47.560%
19.0	451.423	16.360	265.63	2.853%	50.681%
20.0	416.679	15.889	281.518	2.771%	53.713%
21.0	384.678	15.388	296.906	2.684%	56.649%
22.0	355.966	14.884	311.79	2.596%	59.488%
23.0	327.532	14.342	326.131	2.501%	62.225%
24.0	299.429	13.708	339.839	2.391%	64.840%
25.0	276.790	13.102	352.941	2.285%	67.340%
26.0	253.339	12.514	365.455	2.182%	69.727%
27.0	230.103	11.828	377.282	2.063%	71.984%
28.0	211.251	11.174	388.456	1.949%	74.116%
29.0	190.242	10.504	398.96	1.832%	76.120%
30.0	171.170	9.758	408.718	1.702%	77.982%
31.0	157.342	9.142	417.861	1.594%	79.726%
32.0	138.015	8.462	426.322	1.476%	81.341%
33.0	116.768	7.506	433.828	1.309%	82.773%
34.0	101.386	6.602	440.43	1.151%	84.032%
35.0	86.786	5.844	446.274	1.019%	85.147%
36.0	73.433	5.101	451.375	.890%	86.121%
37.0	61.508	4.401	455.776	.768%	86.960%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	51.055	3.757	459.534	.655%	87.677%
39.0	42.053	3.178	462.712	.554%	88.284%
40.0	34.478	2.669	465.381	.465%	88.793%
41.0	28.555	2.245	467.625	.391%	89.221%
42.0	23.370	1.887	469.512	.329%	89.581%
43.0	19.600	1.592	471.104	.278%	89.885%
44.0	17.111	1.386	472.489	.242%	90.149%
45.0	15.017	1.235	473.724	.215%	90.385%
46.0	13.759	1.125	474.849	.196%	90.599%
47.0	12.964	1.063	475.912	.185%	90.802%
48.0	12.372	1.024	476.936	.179%	90.998%
49.0	12.111	1.005	477.942	.175%	91.189%
50.0	11.937	1.003	478.944	.175%	91.381%
51.0	11.792	1.004	479.948	.175%	91.572%
52.0	11.653	1.006	480.954	.175%	91.764%
53.0	11.607	1.012	481.966	.176%	91.957%
54.0	11.485	1.018	482.984	.177%	92.152%
55.0	11.404	1.022	484.006	.178%	92.346%
56.0	11.235	1.023	485.029	.178%	92.542%
57.0	11.061	1.019	486.048	.178%	92.736%
58.0	10.858	1.014	487.062	.177%	92.930%
59.0	10.563	1.001	488.063	.175%	93.121%
60.0	10.255	0.984	489.047	.172%	93.308%
61.0	9.971	0.965	490.012	.168%	93.492%
62.0	9.687	0.947	490.959	.165%	93.673%
63.0	9.379	0.927	491.887	.162%	93.850%
64.0	9.112	0.907	492.794	.158%	94.023%
65.0	8.915	0.892	493.686	.156%	94.193%
66.0	8.677	0.878	494.564	.153%	94.361%
67.0	8.451	0.861	495.425	.150%	94.525%
68.0	8.283	0.848	496.273	.148%	94.687%
69.0	8.132	0.837	497.11	.146%	94.847%
70.0	8.057	0.831	497.942	.145%	95.005%
71.0	7.964	0.828	498.77	.144%	95.163%
72.0	8.074	0.834	499.604	.145%	95.322%
73.0	8.295	0.856	500.46	.149%	95.486%
74.0	8.672	0.892	501.352	.156%	95.656%
75.0	9.223	0.945	502.297	.165%	95.836%

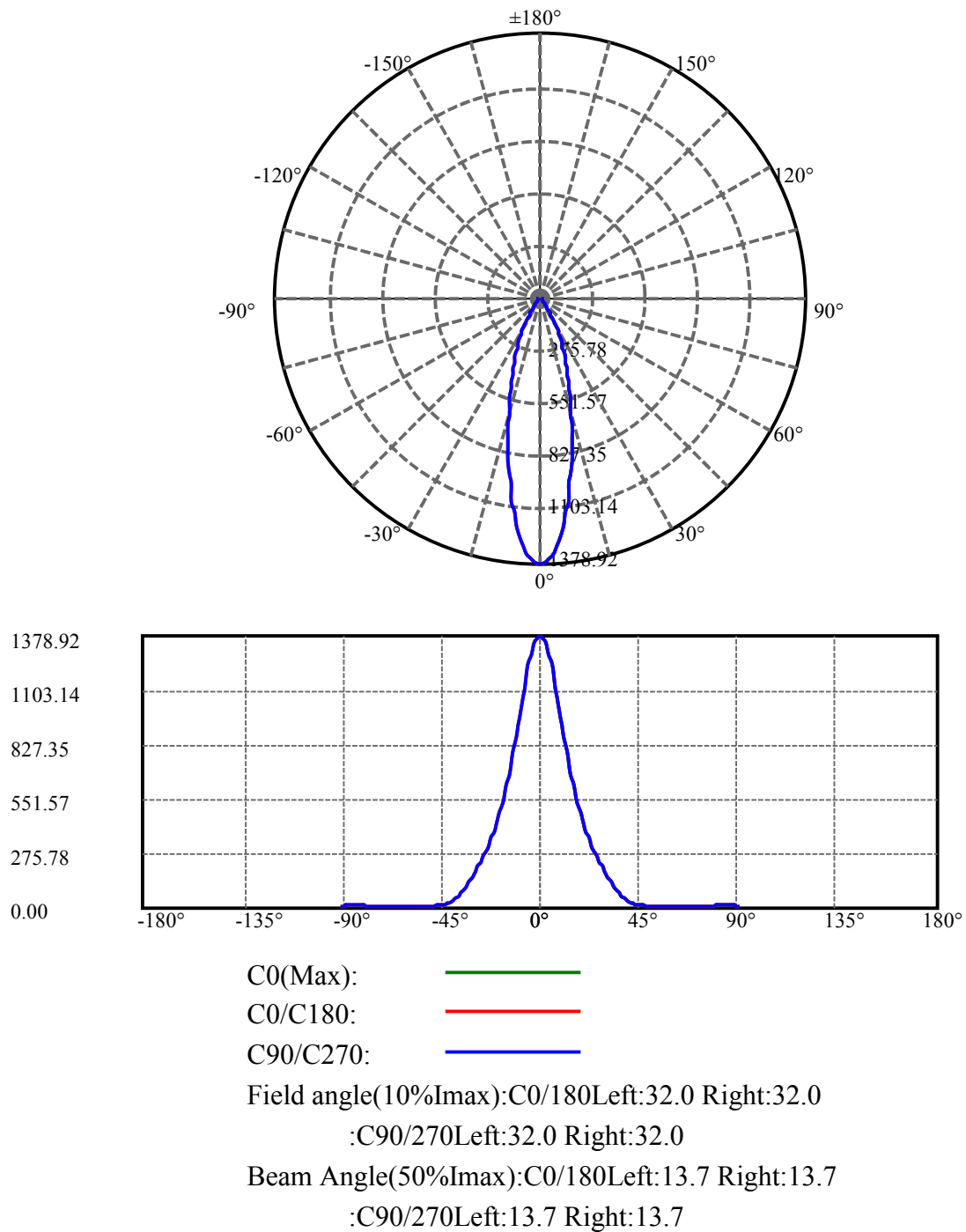
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	9.913	1.016	503.313	.177%	96.030%
77.0	10.731	1.101	504.413	.192%	96.240%
78.0	11.815	1.207	505.62	.210%	96.470%
79.0	12.564	1.310	506.93	.228%	96.720%
80.0	13.376	1.398	508.329	.244%	96.987%
81.0	14.112	1.487	509.815	.259%	97.271%
82.0	14.785	1.567	511.382	.273%	97.570%
83.0	15.011	1.620	513.002	.282%	97.879%
84.0	15.806	1.679	514.681	.293%	98.199%
85.0	16.085	1.741	516.422	.304%	98.531%
86.0	15.742	1.740	518.161	.303%	98.863%
87.0	14.634	1.662	519.824	.290%	99.180%
88.0	13.474	1.540	521.363	.269%	99.474%
89.0	12.541	1.426	522.789	.249%	99.746%
90.0	11.717	1.330	524.119	.232%	100.000%

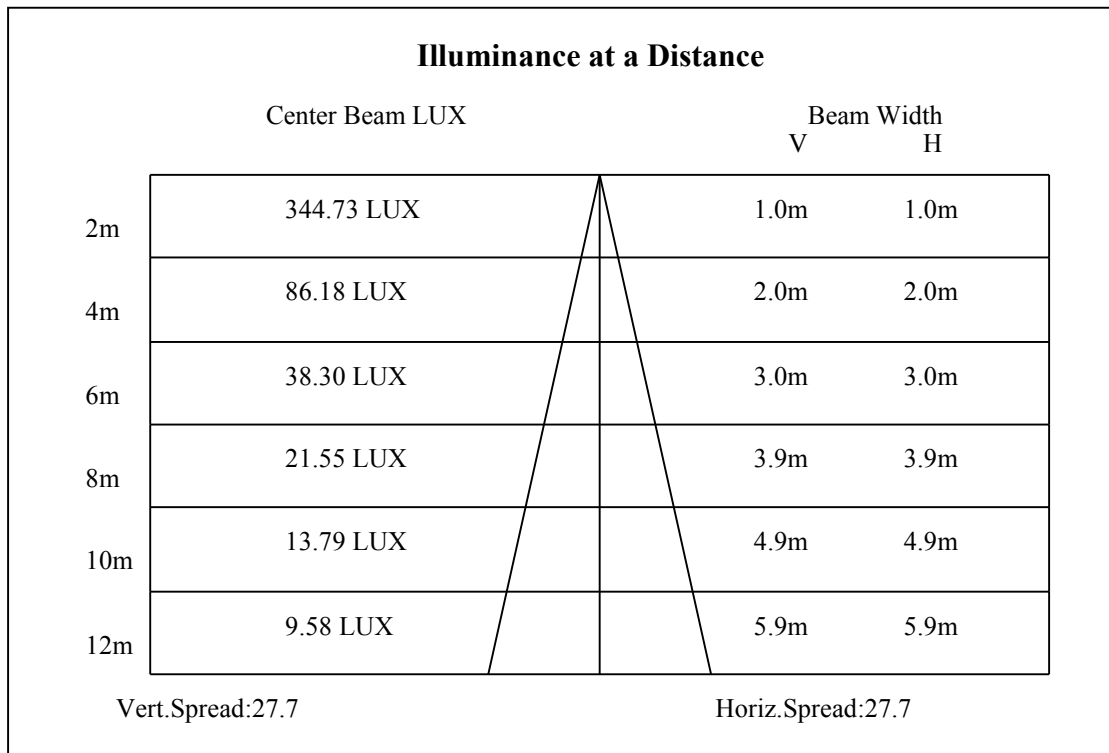
ZONAL LUMEN SUMMARY

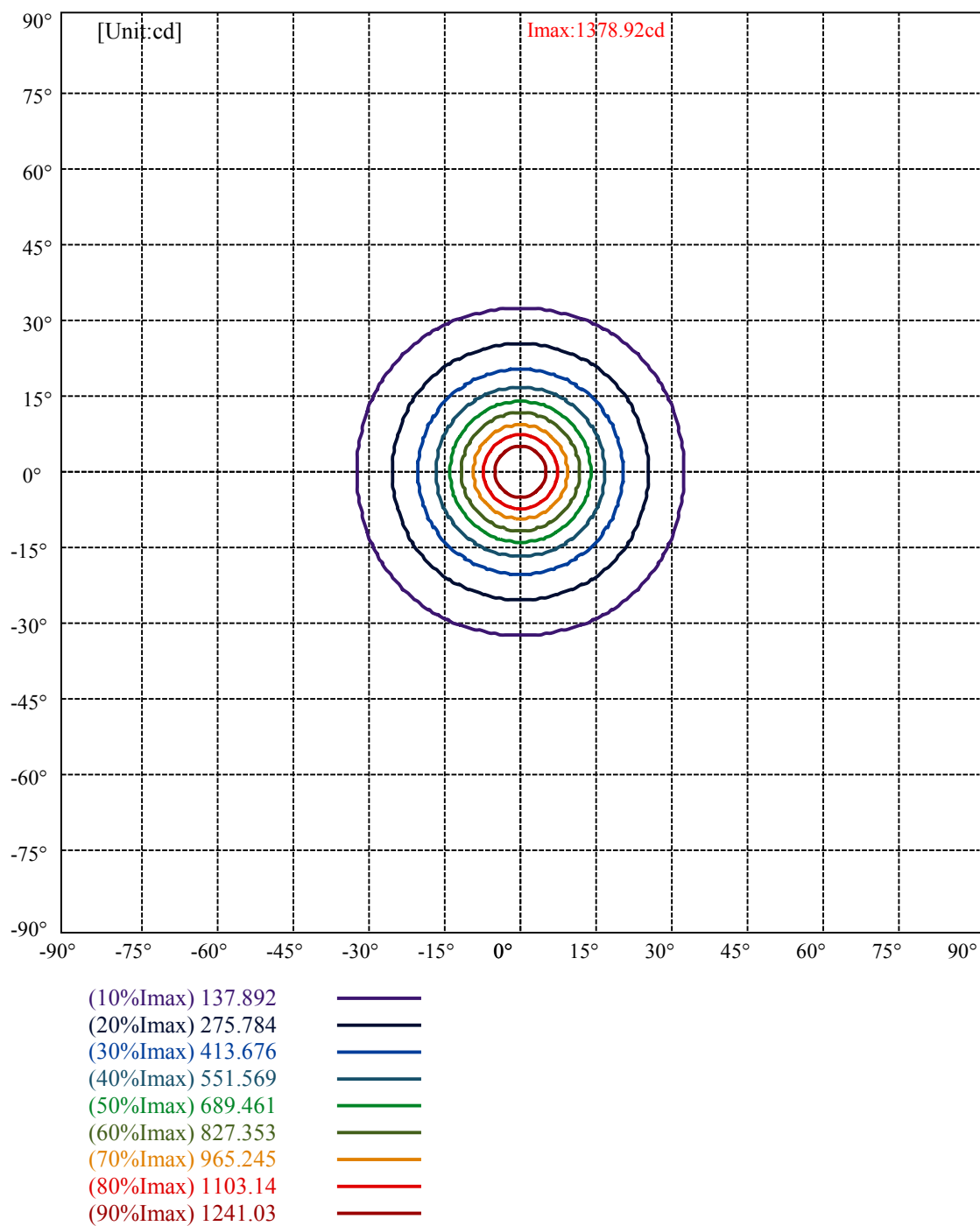
Zone	Lumens	%Lamp	%Fixt
0-30	408.72	71.28%	77.98%
0-40	465.38	81.16%	88.79%
0-60	489.05	85.29%	93.31%
0-90	522.79	91.17%	99.75%
0-120	522.79	91.17%	99.75%
0-180	524.12	91.41%	100.00%
60-90	34.73	6.06%	6.63%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-31.17	419.30	73.12%	80.00%

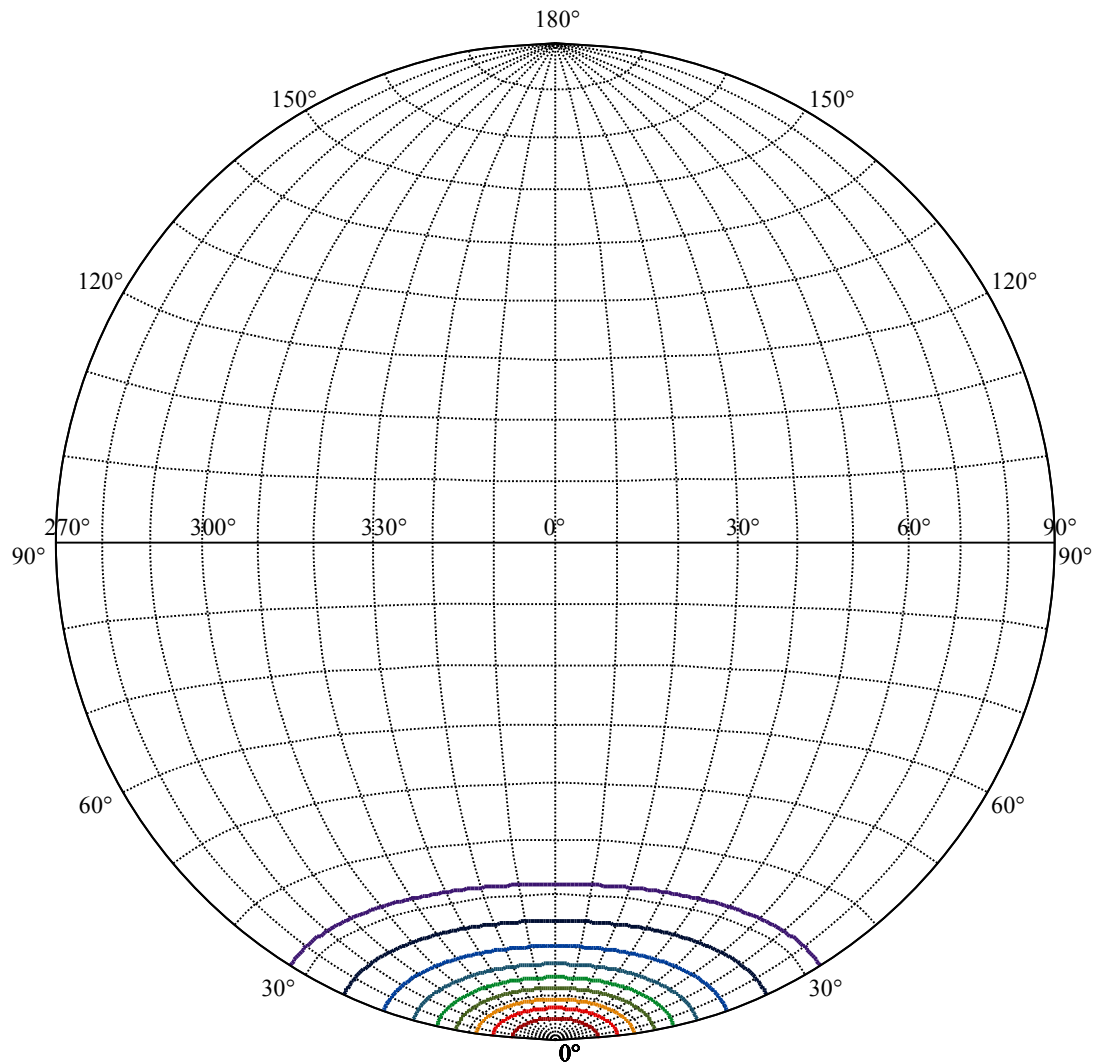
ZONAL LUMEN SUMMARY

0-10	107.69
10-20	173.83
20-30	127.20
30-40	56.66
40-50	13.56
50-60	10.10
60-70	8.89
70-80	10.39
80-90	14.46
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









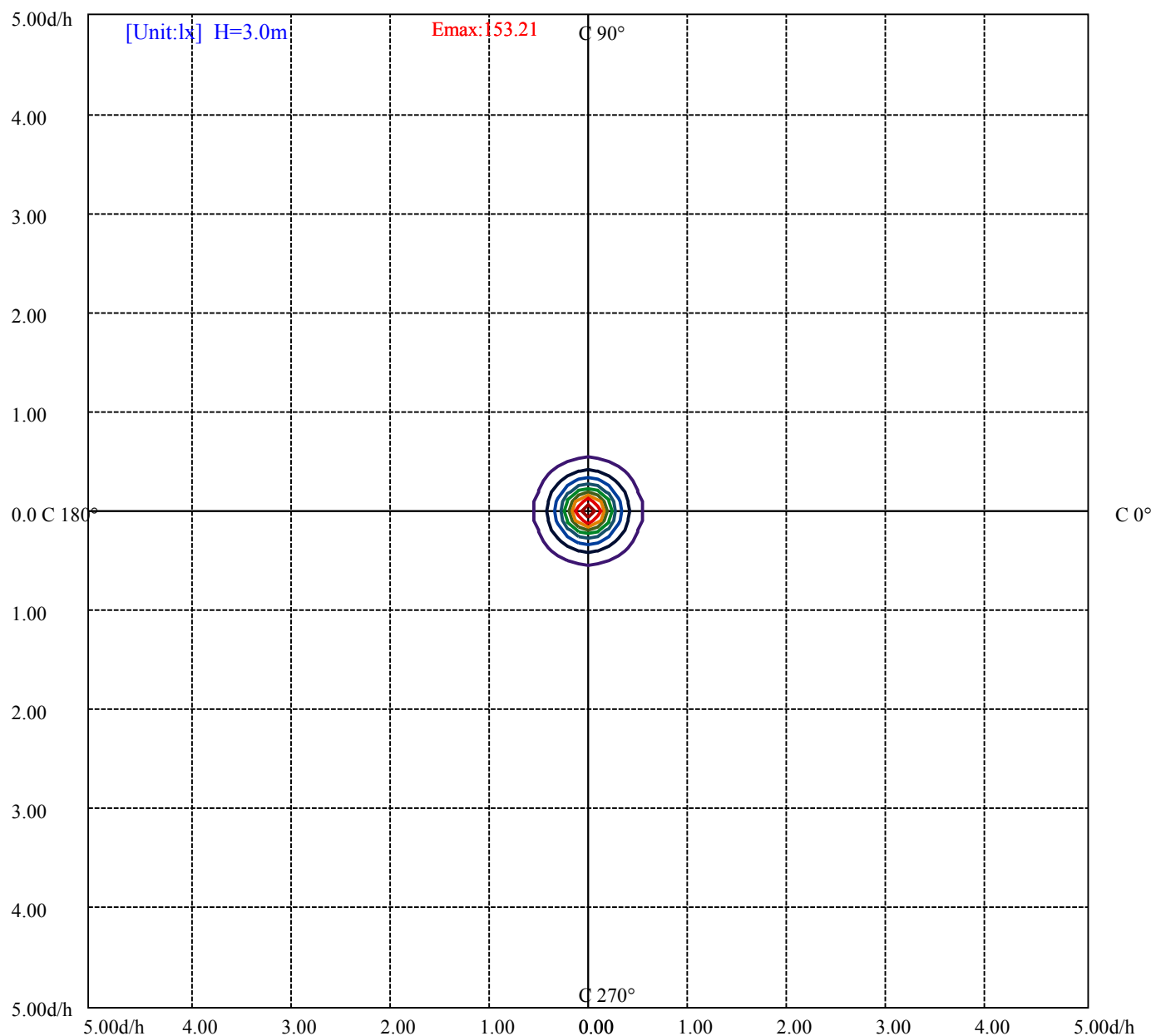
House

[Unit:cd]

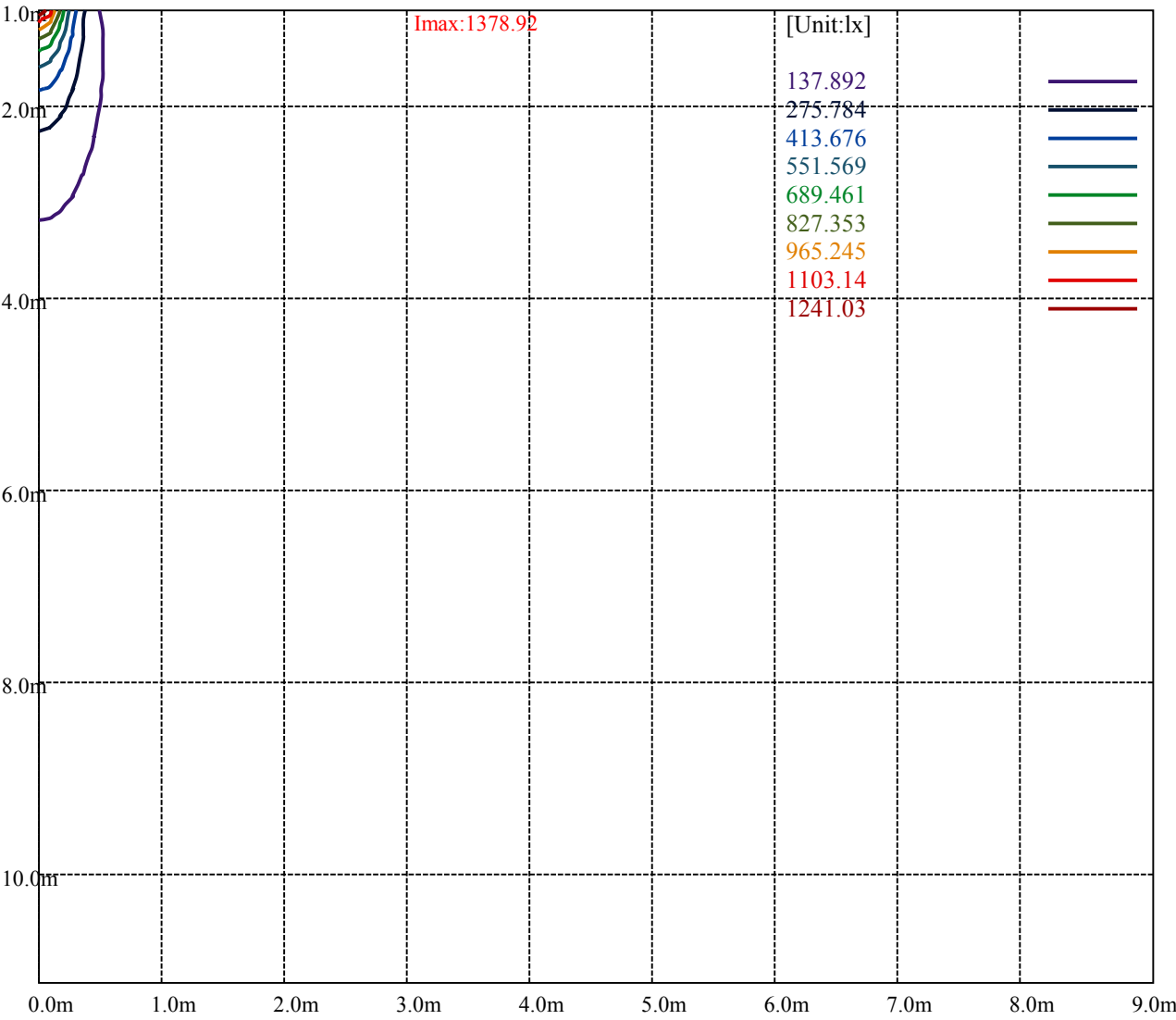
Road

Imax:1378.92

(10%Imax)	137.892	—
(20%Imax)	275.784	—
(30%Imax)	413.676	—
(40%Imax)	551.569	—
(50%Imax)	689.461	—
(60%Imax)	827.353	—
(70%Imax)	965.245	—
(80%Imax)	1103.14	—
(90%Imax)	1241.03	—



(10%Emax)	15.32133	—
(20%Emax)	30.64267	—
(30%Emax)	45.964	—
(40%Emax)	61.28533	—
(50%Emax)	76.60667	—
(60%Emax)	91.928	—
(70%Emax)	107.2493	—
(80%Emax)	122.5711	—
(90%Emax)	137.8922	—



Luminance Table

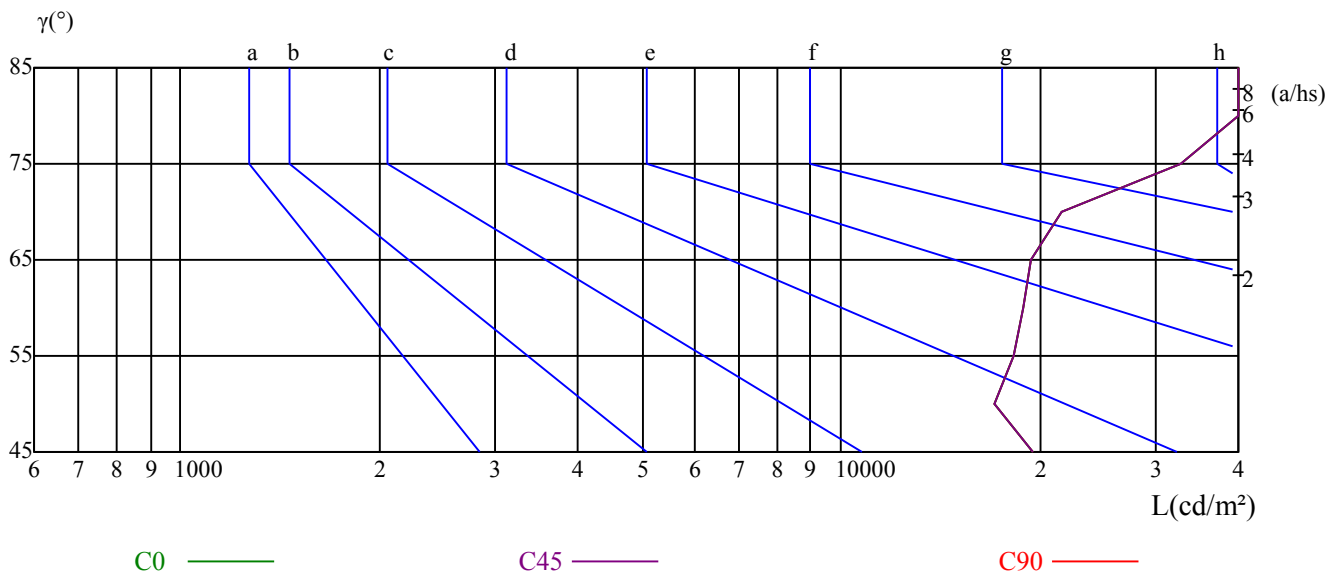
γ	45	50	55	60	65	70	75	80	85
C0	19502	17053	18257	18834	19371	21631	32721	70733	169467
C45	19502	17053	18257	18834	19371	21631	32721	70733	169467
C90	19502	17053	18257	18834	19371	21631	32721	70733	169467

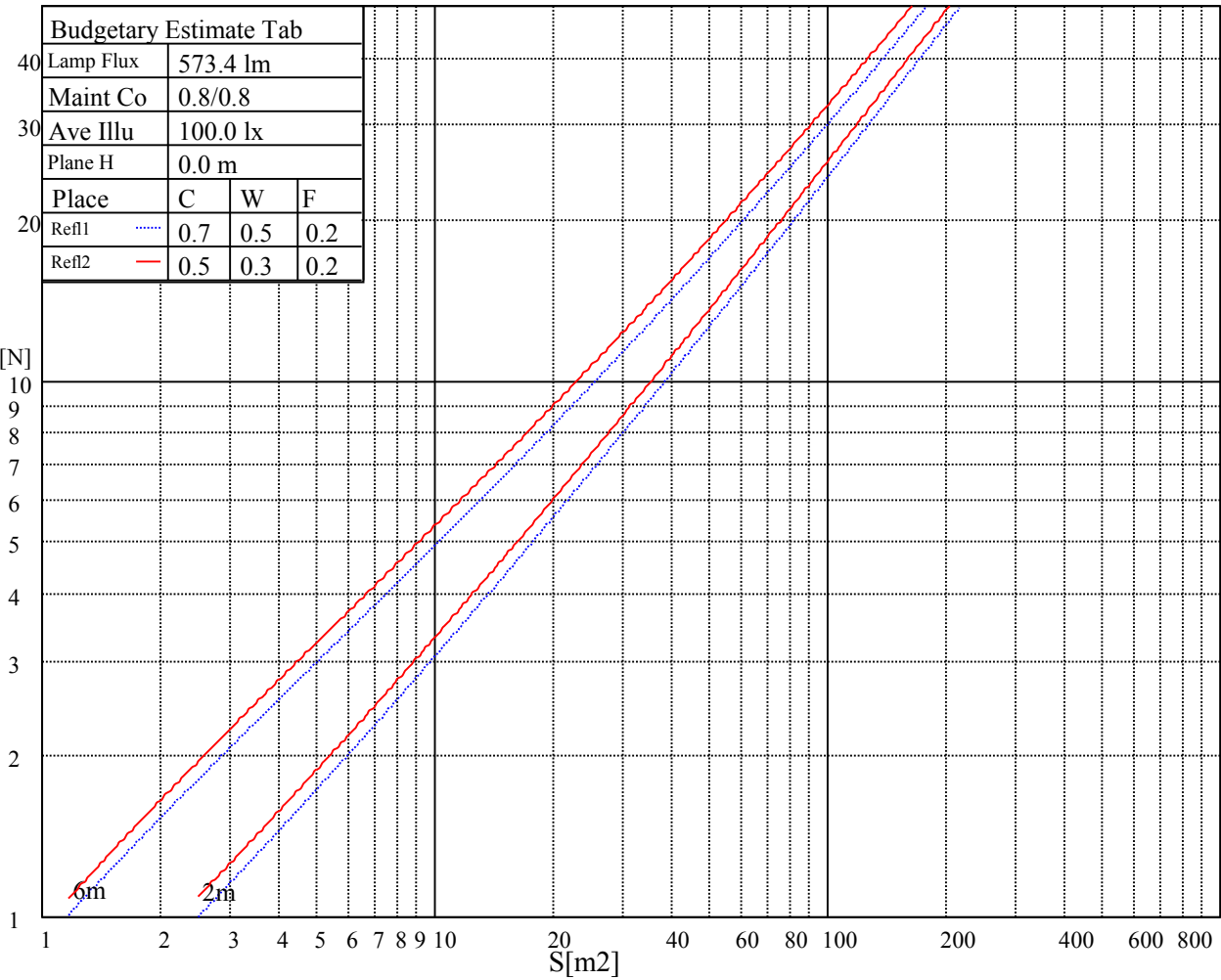
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
19371	19371	19371	32721	32721	32721	169467	169467	169467

Glare Table

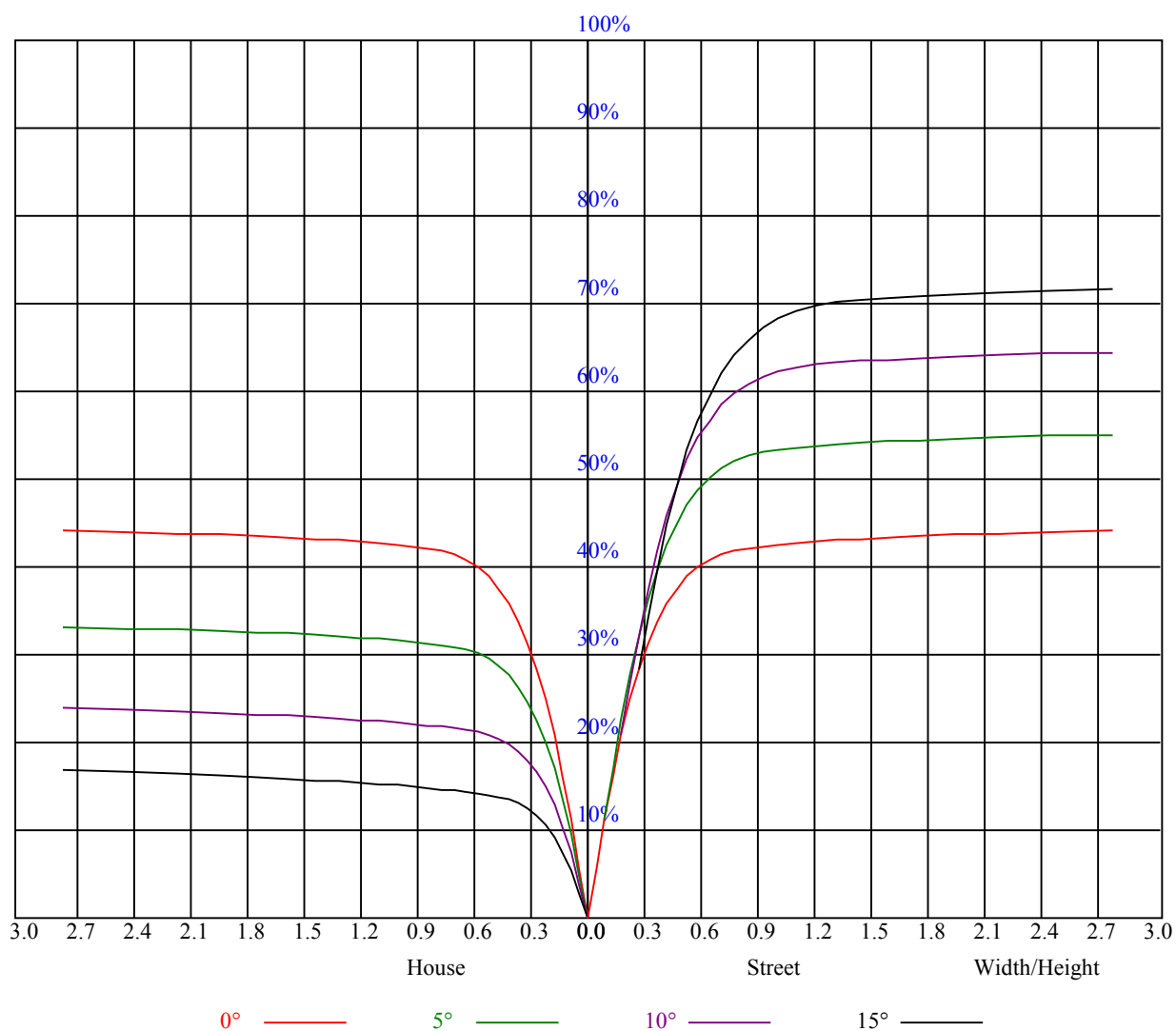
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

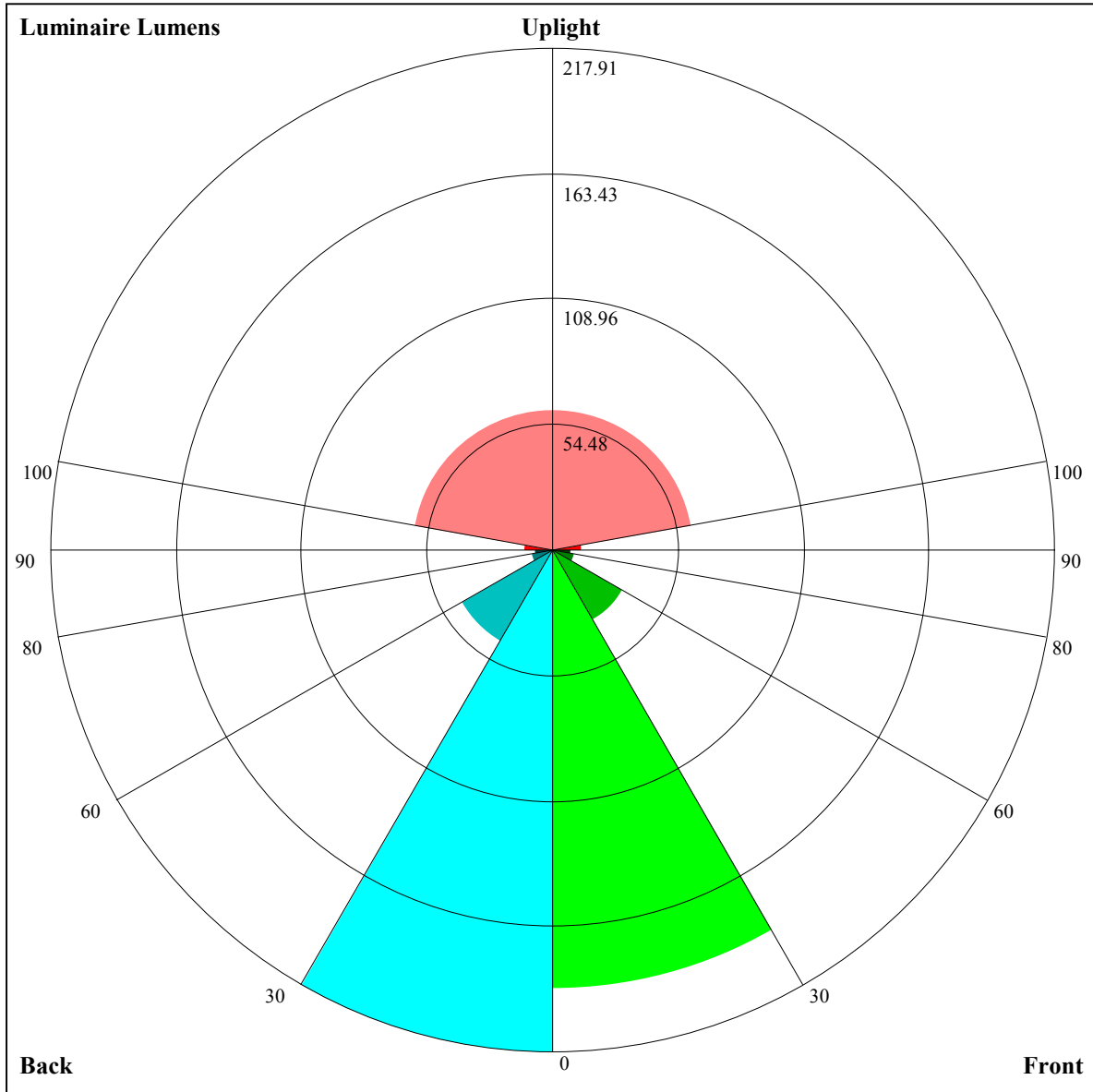
Luminance Limiting Curve





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	1.06	1.06	1.06	1.02	1.02	1.02	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.00	0.97	0.95	0.98	0.95	0.93	0.94	0.92	0.90	0.91	0.89	0.88	0.87	0.86	0.85	0.83
2	0.93	0.89	0.86	0.91	0.88	0.85	0.88	0.86	0.83	0.86	0.83	0.81	0.83	0.81	0.80	0.78
3	0.87	0.83	0.79	0.86	0.82	0.78	0.84	0.80	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.73
4	0.82	0.77	0.74	0.81	0.77	0.73	0.79	0.75	0.72	0.78	0.74	0.72	0.76	0.73	0.71	0.69
5	0.78	0.73	0.69	0.77	0.72	0.69	0.76	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.67	0.66
6	0.74	0.69	0.65	0.74	0.69	0.65	0.72	0.68	0.65	0.71	0.67	0.64	0.70	0.66	0.64	0.63
7	0.71	0.66	0.62	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.60
8	0.68	0.63	0.59	0.67	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.58	0.64	0.61	0.58	0.57
9	0.65	0.60	0.56	0.64	0.60	0.56	0.63	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	0.54	0.60	0.56	0.54	0.52





Luminaire Lumens:

FL=190.67,FM=35.13,FH=9.81,FVH=8.07

BL=217.91,BM=45.9,BH=9.65,BVH=7.83

UL=12.78,UH=60.84

BUG Rating:B1-U2-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	1370.80	1341.10	1297.48	1252.01	1201.43	1139.71	1067.32	908.76	908.76
45.0	1382.87	1382.87	1369.87	1343.42	1307.69	1267.79	1220.45	1163.38	1099.34
90.0	1390.75	1387.51	1368.95	1341.10	1305.37	1266.39	1220.45	1162.45	1098.41
135.0	1371.27	1393.54	1404.68	1398.64	1378.23	1352.24	1317.90	1267.32	1225.56
180.0	1370.80	1391.22	1400.04	1392.61	1367.55	1340.17	1306.30	1264.07	1222.31
225.0	1382.87	1368.95	1341.10	1307.23	1268.25	1225.09	1169.87	1134.61	1007.93
270.0	1390.75	1378.69	1353.63	1317.90	1271.96	1227.88	1172.66	1107.69	1063.61
315.0	1371.27	1337.85	1293.31	1247.37	1193.08	1126.26	1018.60	921.57	921.57
360.0	1370.80	1341.10	1297.48	1252.01	1201.43	1139.71	1067.32	908.76	908.76
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	833.96	792.20	728.67	647.37	615.40	567.23	522.73	481.53	443.62
45.0	1026.49	979.62	873.82	831.13	767.09	683.57	650.62	597.72	550.39
90.0	921.80	891.69	891.69	823.01	757.86	699.30	645.93	596.47	550.39
135.0	1168.48	1103.05	1027.88	951.31	878.93	810.25	748.53	691.92	639.95
180.0	1168.02	1088.67	1027.42	948.99	873.82	806.07	742.96	685.89	634.38
225.0	897.21	897.21	825.42	759.99	698.83	644.77	595.40	546.49	501.90
270.0	948.07	899.34	822.31	753.64	692.38	636.24	584.73	536.93	492.85
315.0	812.10	771.18	704.82	645.75	593.55	546.17	499.90	460.88	423.34
360.0	833.96	792.20	728.67	647.37	615.40	567.23	522.73	481.53	443.62
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	408.77	377.40	347.89	320.37	294.01	269.05	244.87	221.81	199.95
45.0	507.70	467.79	431.60	398.19	365.70	336.93	309.56	284.03	259.44
90.0	509.42	472.25	438.23	407.33	378.05	361.34	325.19	310.35	287.05
135.0	594.47	553.17	514.66	479.39	446.45	414.89	385.66	358.28	331.37
180.0	586.58	542.50	501.67	463.62	428.81	396.33	365.70	337.40	310.48
225.0	461.71	423.89	388.86	356.05	337.54	296.70	270.11	254.75	222.13
270.0	452.94	416.28	382.41	351.32	323.01	295.64	269.65	245.98	236.70
315.0	389.70	358.09	328.12	301.16	274.15	249.37	224.68	201.72	179.58
360.0	408.77	377.40	347.89	320.37	294.01	269.05	244.87	221.81	199.95
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	179.49	159.58	144.41	123.11	106.50	93.87	76.47	66.12	54.43
45.0	235.78	235.78	188.21	175.73	156.19	137.96	120.32	103.94	88.31
90.0	264.45	242.69	222.23	202.27	182.88	164.31	146.22	128.77	112.48
135.0	305.38	280.32	266.40	242.74	233.92	229.28	177.35	157.77	138.93
180.0	284.50	260.37	245.98	237.17	232.53	181.53	161.53	142.69	124.69
225.0	200.28	188.07	167.10	147.42	129.09	111.79	95.92	81.02	67.56
270.0	212.57	185.10	164.64	138.61	128.12	111.04	94.94	80.51	67.15
315.0	158.37	138.10	122.97	102.32	89.51	74.34	61.39	50.25	40.74
360.0	179.49	159.58	144.41	123.11	106.50	93.87	76.47	66.12	54.43
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	44.36	35.78	28.91	23.67	19.63	16.66	14.62	13.32	12.67
45.0	74.06	61.25	50.30	41.21	33.41	27.29	22.64	19.26	16.61
90.0	96.61	82.04	68.72	56.75	46.73	38.00	30.72	25.06	20.93
135.0	120.88	103.80	87.84	73.27	60.05	50.44	38.65	31.00	26.13
180.0	107.52	91.60	76.57	62.74	50.67	40.51	32.16	25.38	21.44
225.0	55.59	45.38	36.80	29.84	24.36	20.23	17.12	14.90	13.36
270.0	55.31	44.87	36.47	29.51	24.08	20.19	17.12	14.99	13.50
315.0	33.13	27.33	22.83	19.44	16.89	15.13	13.92	12.90	12.25
360.0	44.36	35.78	28.91	23.67	19.63	16.66	14.62	13.32	12.67

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	12.11	11.74	11.55	11.46	11.42	11.51	11.79	11.65	11.60
45.0	14.85	13.55	13.13	12.95	12.44	12.16	12.11	12.02	12.02
90.0	17.96	16.24	15.13	14.62	14.48	14.15	13.87	13.83	13.83
135.0	21.53	18.24	15.87	14.29	13.64	13.22	12.76	12.39	12.25
180.0	17.08	14.62	13.32	12.11	11.93	11.60	11.28	10.95	10.81
225.0	12.34	12.11	11.83	11.46	11.09	10.95	10.86	10.72	10.67
270.0	12.53	12.20	11.93	11.32	11.14	11.04	10.77	10.86	10.90
315.0	11.74	11.37	10.95	10.77	10.77	10.86	10.90	10.81	10.77
360.0	12.11	11.74	11.55	11.46	11.42	11.51	11.79	11.65	11.60
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	11.18	10.95	10.72	10.53	10.21	9.88	9.56	9.23	8.91
45.0	11.97	11.69	11.37	11.09	10.81	10.49	10.21	9.93	9.61
90.0	13.92	13.69	13.41	13.04	12.53	12.16	11.79	11.32	10.90
135.0	12.25	12.48	12.53	12.62	12.48	12.16	11.88	11.60	11.23
180.0	10.77	11.14	11.09	11.04	11.04	10.90	10.77	10.53	10.26
225.0	10.63	10.44	10.21	9.98	9.93	9.56	9.10	8.86	8.77
270.0	10.77	10.63	10.44	10.26	10.12	9.88	9.56	9.28	9.00
315.0	10.39	10.21	10.12	9.93	9.74	9.47	9.19	9.00	8.82
360.0	11.18	10.95	10.72	10.53	10.21	9.88	9.56	9.23	8.91
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.58	8.40	8.21	8.03	7.75	7.61	7.47	7.33	7.38
45.0	9.23	8.96	8.72	8.45	8.21	8.12	8.03	7.84	7.61
90.0	10.49	10.21	9.88	9.56	9.37	9.23	9.05	9.05	8.82
135.0	10.86	10.53	10.35	10.07	9.65	9.51	9.28	9.19	9.00
180.0	10.02	9.79	9.61	9.28	9.10	8.96	8.77	8.68	8.54
225.0	8.54	8.31	8.12	7.93	7.66	7.42	7.29	7.29	7.24
270.0	8.77	8.45	8.31	8.12	8.03	7.80	7.66	7.52	7.42
315.0	8.54	8.26	8.12	7.98	7.84	7.61	7.52	7.56	7.70
360.0	8.58	8.40	8.21	8.03	7.75	7.61	7.47	7.33	7.38
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.31	8.96	9.33	10.67	12.02	13.04	14.11	14.48	15.03
45.0	7.52	7.56	8.03	8.72	9.42	10.35	11.37	12.25	12.95
90.0	8.68	8.68	8.91	9.61	10.44	11.55	12.25	13.32	14.11
135.0	8.77	8.63	8.58	8.58	9.05	9.74	10.63	11.37	12.02
180.0	8.35	8.17	8.12	8.17	8.63	9.33	10.16	10.63	11.09
225.0	7.24	7.38	8.07	8.68	8.72	8.91	10.16	10.26	11.32
270.0	7.38	7.61	8.63	9.33	9.74	10.67	12.30	13.36	14.01
315.0	8.35	9.37	9.70	10.02	11.28	12.25	13.55	14.85	16.47
360.0	8.31	8.96	9.33	10.67	12.02	13.04	14.11	14.48	15.03
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	15.41	16.57	16.38	17.91	16.06	14.71	11.42	9.00	6.26
45.0	13.32	13.97	14.39	14.76	15.36	15.73	15.31	15.36	16.33
90.0	14.90	15.73	16.38	17.26	17.77	18.10	18.42	18.28	17.31
135.0	13.13	14.29	15.22	16.15	17.22	17.87	18.14	17.77	17.87
180.0	11.97	13.22	13.97	15.08	15.96	16.29	15.87	15.64	13.60
225.0	12.11	12.53	11.79	12.20	12.20	11.46	10.21	8.58	8.58
270.0	14.62	14.62	14.85	15.82	16.06	14.20	12.39	11.32	10.49
315.0	17.45	17.35	17.12	17.26	18.05	17.59	15.31	11.83	9.88
360.0	15.41	16.57	16.38	17.91	16.06	14.71	11.42	9.00	6.26

Intensity data(cd)

Appendix Page: 19 Total:19

C/ $\gamma(^{\circ})$	90.0
0.0	5.52
45.0	14.85
90.0	17.26
135.0	18.14
180.0	11.46
225.0	7.56
270.0	9.74
315.0	9.19
360.0	5.52