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NATA

Client:

LumCAT: 1657-S

Luminaire: 92.70.124.00

Report No: nt0100

Voltage(V): 34.8400

Test No: GC2020011601

Current(A): 0.3970

LampCAT: LUMINUS CXM-9-AC40

Power (W): 13.8300

Lamp flux(lm): 1387.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 0

Width(mm): 0

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 1259.64, Efficiency(%): 90.82% , Luminous Efficacy(lm/W): 91.08

Central intensity(cd): 4407.328, Maximum intensity(cd): 4407.328

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=24.8

[C90/270]Total=24.8

Field angle(10%Imax): [C0/180]Total=62.0

[C90/270]Total=62.0

Maximum s/h(1/2): C0_180=0.42 C90_270=0.42

Maximum s/h(1/4): C0_180=0.42 C90_270=0.42

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 90.82%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.278%

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/1/16
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	4407.328	0.000	0	.000%	.000%
1.0	4394.953	4.212	4.212	.304%	.334%
2.0	4342.570	12.541	16.753	.904%	1.330%
3.0	4264.172	20.584	37.337	1.484%	2.964%
4.0	4161.516	28.203	65.541	2.033%	5.203%
5.0	4012.242	35.163	100.704	2.535%	7.995%
6.0	3830.836	41.217	141.921	2.972%	11.267%
7.0	3636.422	46.349	188.27	3.342%	14.946%
8.0	3389.414	50.283	238.553	3.625%	18.938%
9.0	3135.445	52.880	291.433	3.813%	23.136%
10.0	2859.047	54.248	345.681	3.911%	27.443%
11.0	2563.875	54.186	399.867	3.907%	31.745%
12.0	2305.055	53.224	453.092	3.837%	35.970%
13.0	2037.797	51.539	504.63	3.716%	40.061%
14.0	1780.453	48.873	553.504	3.524%	43.941%
15.0	1580.414	46.139	599.643	3.327%	47.604%
16.0	1392.680	43.564	643.207	3.141%	51.063%
17.0	1179.450	40.055	683.262	2.888%	54.243%
18.0	1054.751	36.837	720.099	2.656%	57.167%
19.0	938.194	34.673	754.773	2.500%	59.920%
20.0	829.280	32.350	787.122	2.332%	62.488%
21.0	745.538	30.240	817.362	2.180%	64.889%
22.0	685.238	28.752	846.114	2.073%	67.171%
23.0	632.257	27.645	873.759	1.993%	69.366%
24.0	592.453	26.777	900.535	1.931%	71.491%
25.0	566.051	26.342	926.877	1.899%	73.583%
26.0	543.600	26.193	953.07	1.888%	75.662%
27.0	525.305	26.151	979.221	1.885%	77.738%
28.0	509.653	26.203	1005.424	1.889%	79.818%
29.0	494.796	26.279	1031.704	1.895%	81.905%
30.0	473.302	26.138	1057.842	1.885%	83.980%
31.0	439.334	25.397	1083.239	1.831%	85.996%
32.0	393.539	23.861	1107.1	1.720%	87.890%
33.0	347.365	21.827	1128.927	1.574%	89.623%
34.0	301.830	19.647	1148.574	1.416%	91.183%
35.0	258.173	17.392	1165.966	1.254%	92.563%
36.0	204.659	14.737	1180.702	1.062%	93.733%
37.0	162.605	11.978	1192.68	.864%	94.684%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	118.441	9.381	1202.061	.676%	95.429%
39.0	74.827	6.597	1208.658	.476%	95.953%
40.0	46.793	4.242	1212.9	.306%	96.289%
41.0	31.430	2.785	1215.685	.201%	96.511%
42.0	25.502	2.068	1217.754	.149%	96.675%
43.0	21.347	1.735	1219.489	.125%	96.813%
44.0	18.155	1.491	1220.98	.107%	96.931%
45.0	16.355	1.326	1222.306	.096%	97.036%
46.0	15.476	1.245	1223.551	.090%	97.135%
47.0	14.808	1.204	1224.756	.087%	97.231%
48.0	14.189	1.172	1225.928	.085%	97.324%
49.0	13.627	1.142	1227.07	.082%	97.414%
50.0	13.057	1.113	1228.183	.080%	97.503%
51.0	12.551	1.083	1229.266	.078%	97.589%
52.0	12.122	1.059	1230.325	.076%	97.673%
53.0	11.658	1.034	1231.359	.075%	97.755%
54.0	11.215	1.008	1232.367	.073%	97.835%
55.0	10.842	0.985	1233.352	.071%	97.913%
56.0	10.455	0.962	1234.314	.069%	97.989%
57.0	10.083	0.939	1235.253	.068%	98.064%
58.0	9.745	0.917	1236.17	.066%	98.137%
59.0	9.457	0.898	1237.068	.065%	98.208%
60.0	9.127	0.878	1237.946	.063%	98.278%
61.0	8.831	0.857	1238.803	.062%	98.346%
62.0	8.627	0.841	1239.644	.061%	98.413%
63.0	8.388	0.828	1240.472	.060%	98.478%
64.0	8.191	0.814	1241.285	.059%	98.543%
65.0	8.009	0.802	1242.087	.058%	98.607%
66.0	7.826	0.790	1242.877	.057%	98.669%
67.0	7.692	0.780	1243.657	.056%	98.731%
68.0	7.552	0.772	1244.429	.056%	98.792%
69.0	7.397	0.763	1245.192	.055%	98.853%
70.0	7.284	0.754	1245.946	.054%	98.913%
71.0	7.151	0.746	1246.692	.054%	98.972%
72.0	7.031	0.737	1247.43	.053%	99.031%
73.0	6.919	0.729	1248.159	.053%	99.089%
74.0	6.848	0.724	1248.883	.052%	99.146%
75.0	6.750	0.718	1249.601	.052%	99.203%

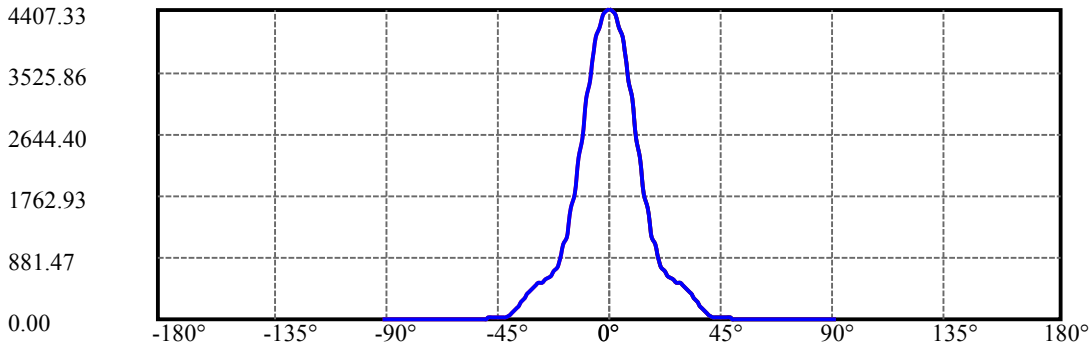
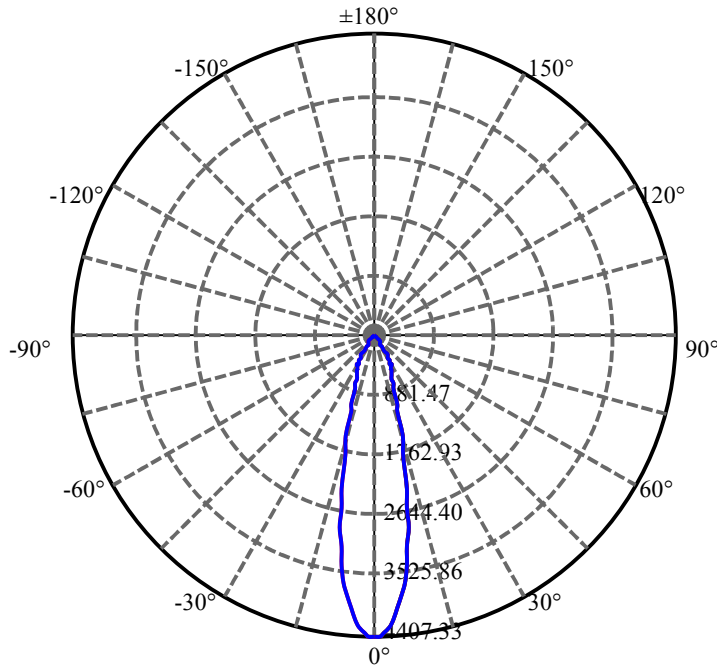
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.659	0.712	1250.313	.051%	99.260%
77.0	6.595	0.707	1251.02	.051%	99.316%
78.0	6.504	0.701	1251.721	.051%	99.371%
79.0	6.420	0.694	1252.415	.050%	99.426%
80.0	6.349	0.688	1253.104	.050%	99.481%
81.0	6.279	0.683	1253.787	.049%	99.535%
82.0	6.209	0.677	1254.464	.049%	99.589%
83.0	6.131	0.671	1255.135	.048%	99.642%
84.0	6.068	0.665	1255.799	.048%	99.695%
85.0	6.019	0.660	1256.459	.048%	99.747%
86.0	5.941	0.654	1257.113	.047%	99.799%
87.0	5.836	0.645	1257.757	.046%	99.851%
88.0	5.759	0.635	1258.392	.046%	99.901%
89.0	5.674	0.627	1259.019	.045%	99.951%
90.0	5.646	0.621	1259.64	.045%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1057.84	76.27%	83.98%
0-40	1212.90	87.45%	96.29%
0-60	1237.95	89.25%	98.28%
0-90	1259.02	90.77%	99.95%
0-120	1259.02	90.77%	99.95%
0-180	1259.64	90.82%	100.00%
60-90	21.95	1.58%	1.74%
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%
0-28.09	1007.71	72.65%	80.00%

ZONAL LUMEN SUMMARY

0-10	345.68
10-20	441.44
20-30	270.72
30-40	155.06
40-50	15.28
50-60	9.76
60-70	8.00
70-80	7.16
80-90	5.92
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: —————

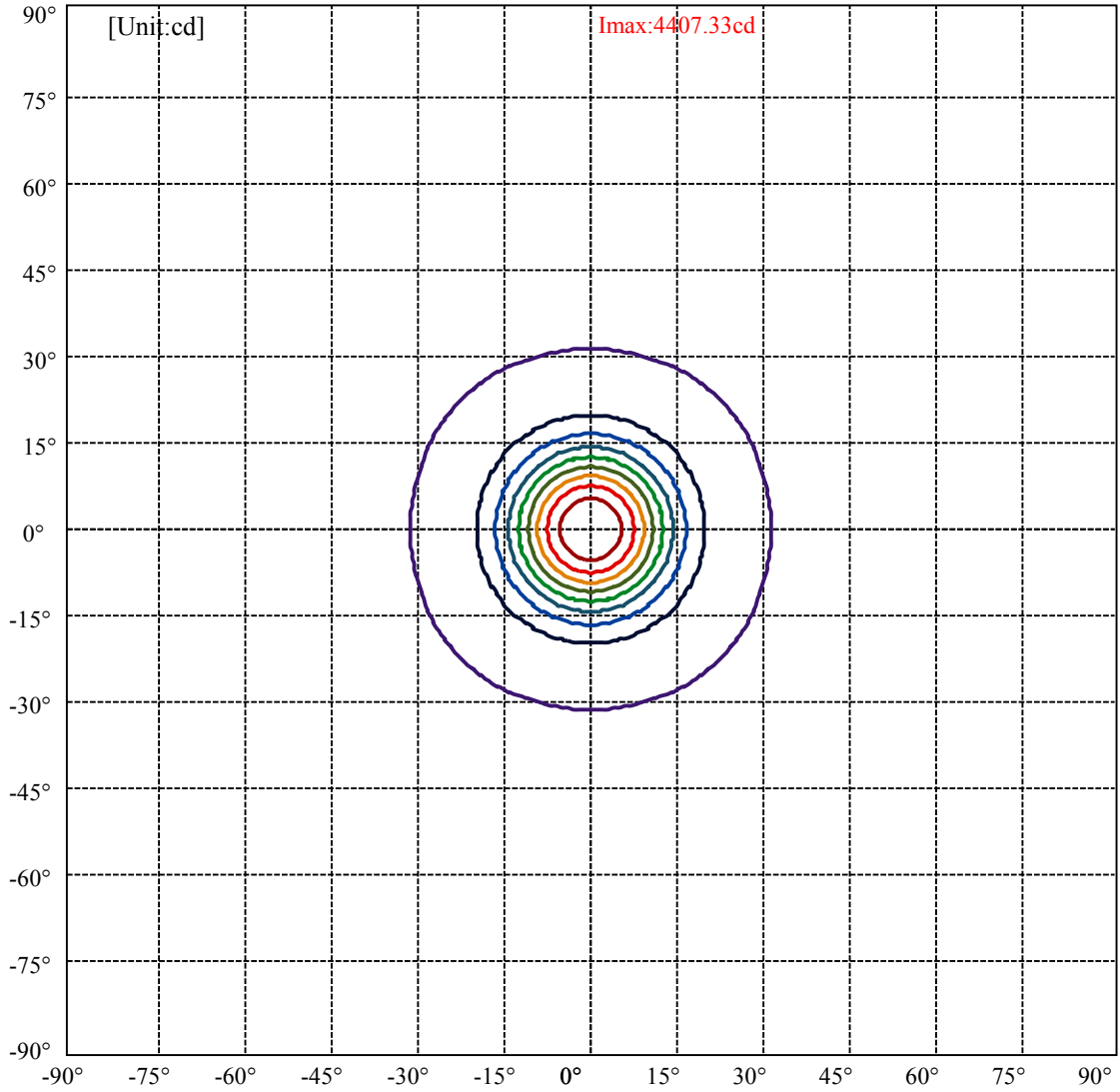
C90/C270: —————

Field angle(10%Imax):C0/180Left:31.0 Right:31.0

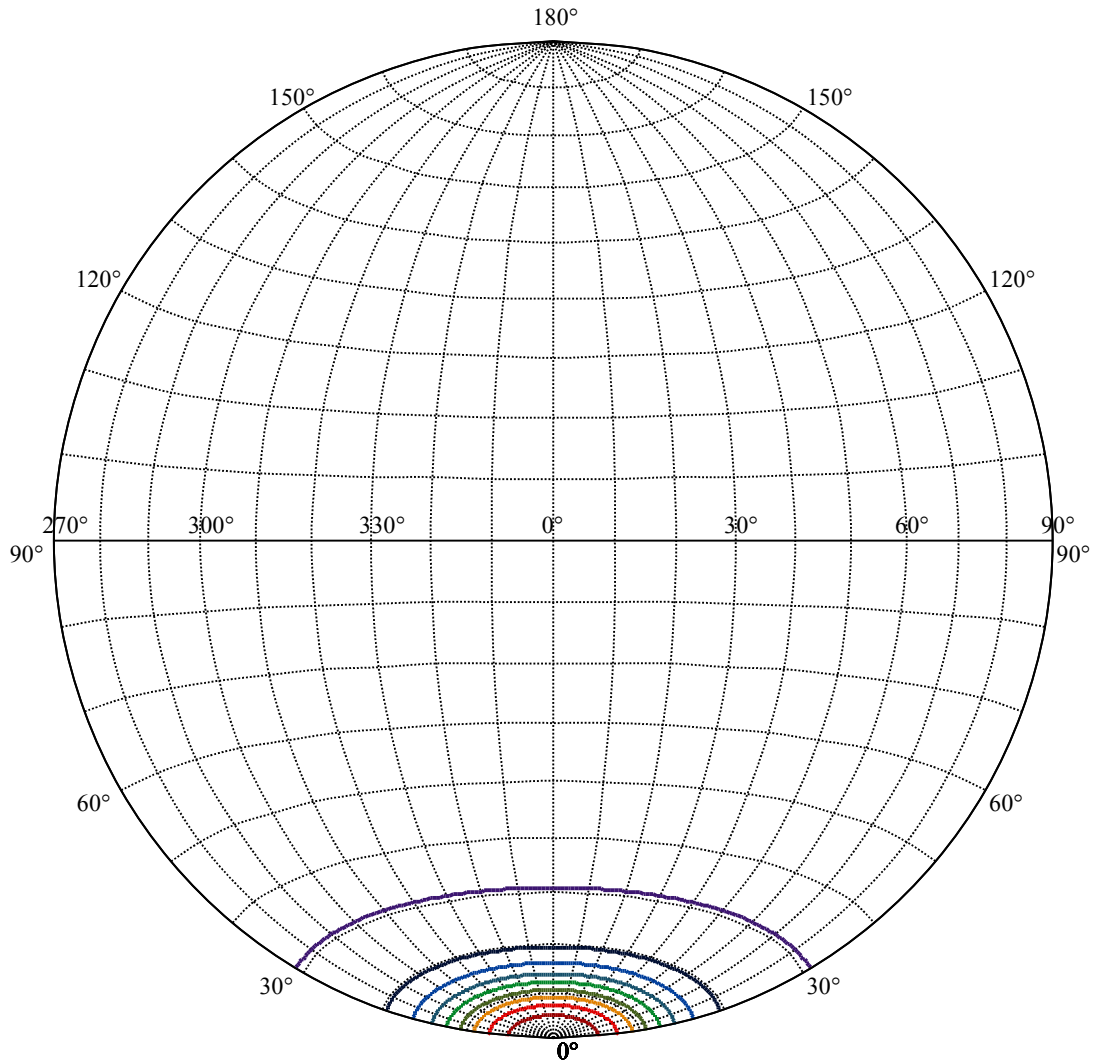
:C90/270Left:31.0 Right:31.0

Beam Angle(50%Imax):C0/180Left:12.4 Right:12.4

:C90/270Left:12.4 Right:12.4



(10%Imax) 440.733	—
(20%Imax) 881.466	—
(30%Imax) 1322.2	—
(40%Imax) 1762.93	—
(50%Imax) 2203.66	—
(60%Imax) 2644.4	—
(70%Imax) 3085.13	—
(80%Imax) 3525.86	—
(90%Imax) 3966.6	—



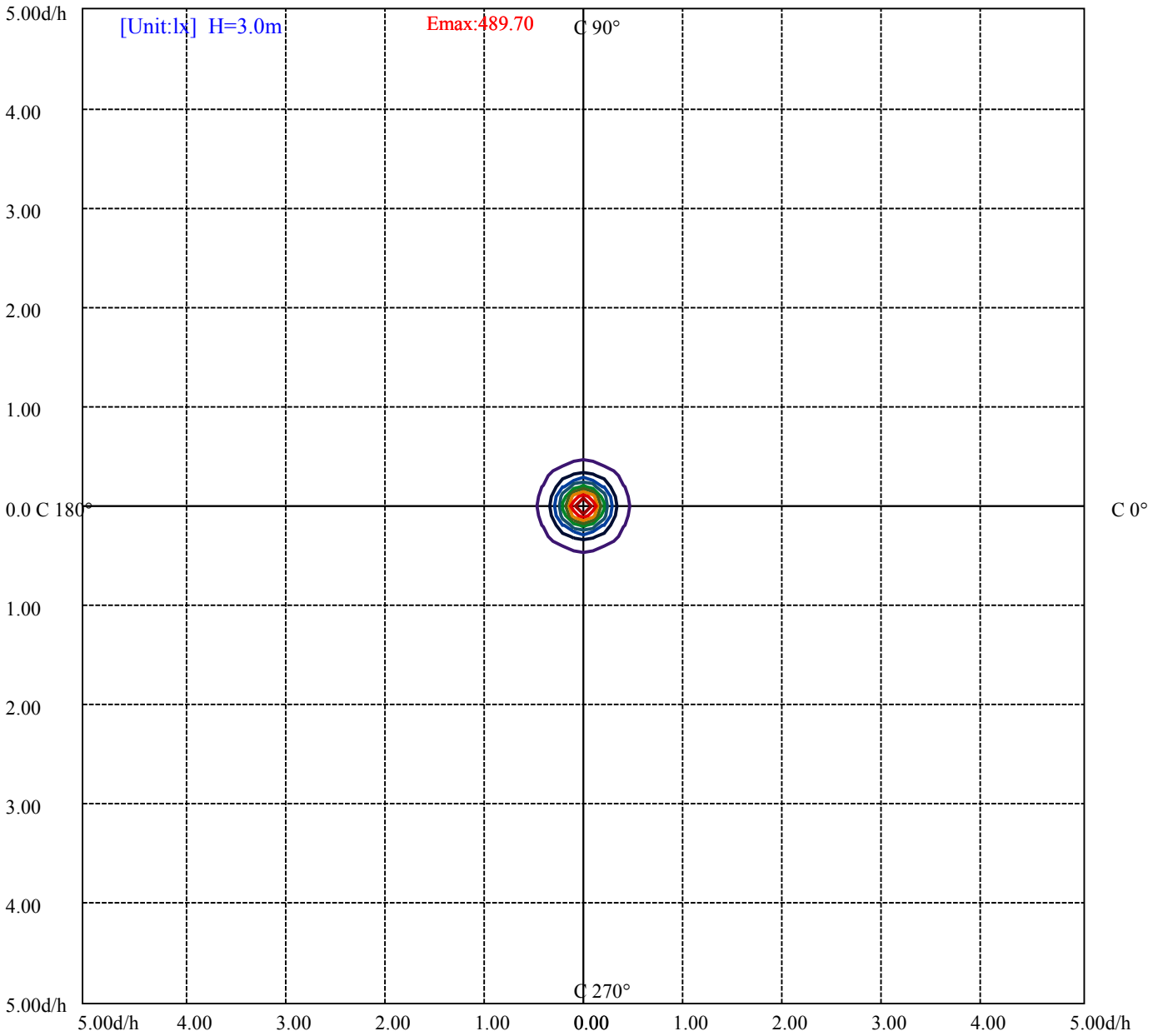
House

[Unit:cd]

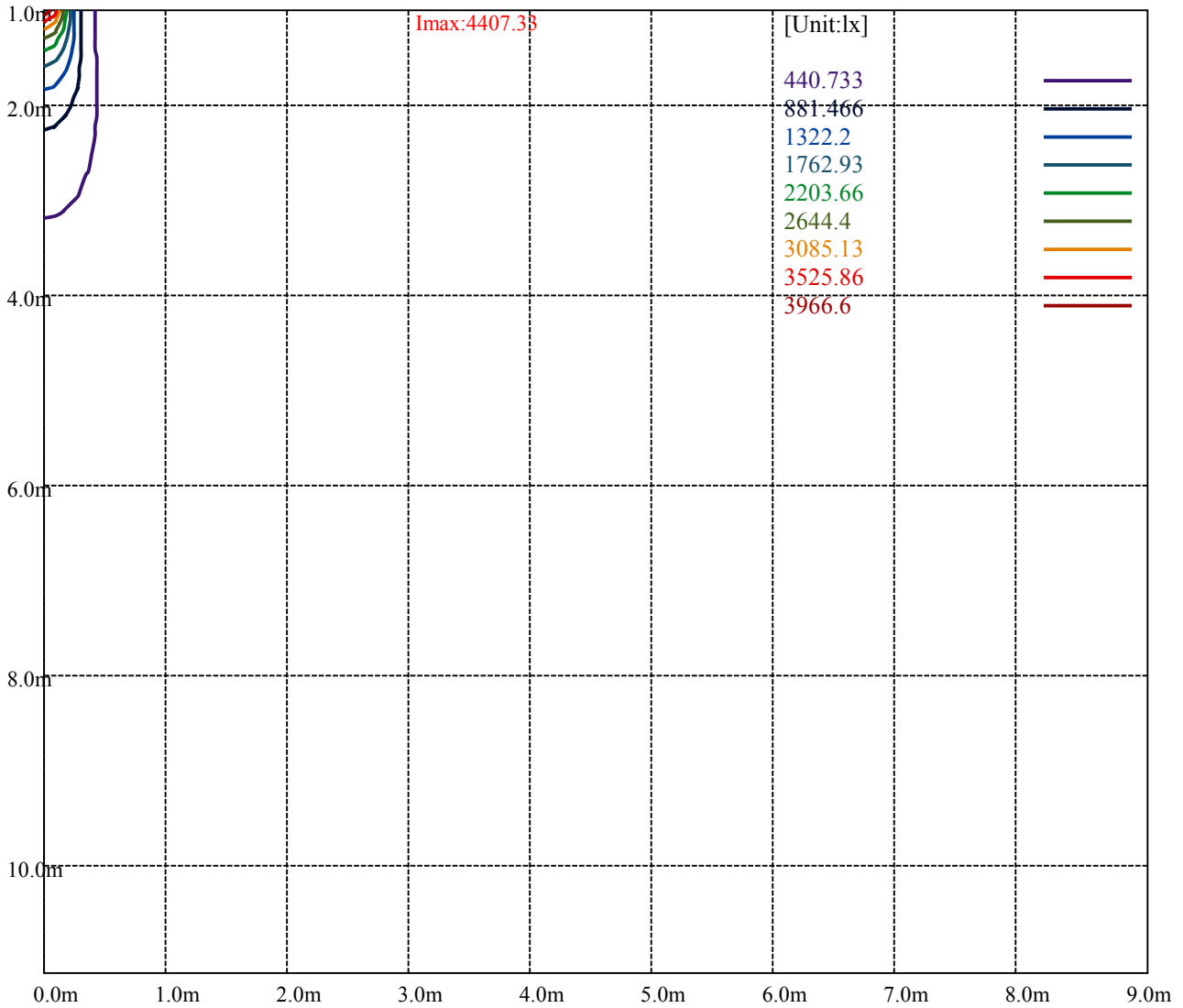
Road

Imax:4407.33

(10%Imax) 440.733	—
(20%Imax) 881.466	—
(30%Imax) 1322.2	—
(40%Imax) 1762.93	—
(50%Imax) 2203.66	—
(60%Imax) 2644.4	—
(70%Imax) 3085.13	—
(80%Imax) 3525.86	—
(90%Imax) 3966.6	—



(10%Emax) 48.97033	—
(20%Emax) 97.94056	—
(30%Emax) 146.9111	—
(40%Emax) 195.8811	—
(50%Emax) 244.8511	—
(60%Emax) 293.8222	—
(70%Emax) 342.7922	—
(80%Emax) 391.7622	—
(90%Emax) 440.7322	—



Luminance Table

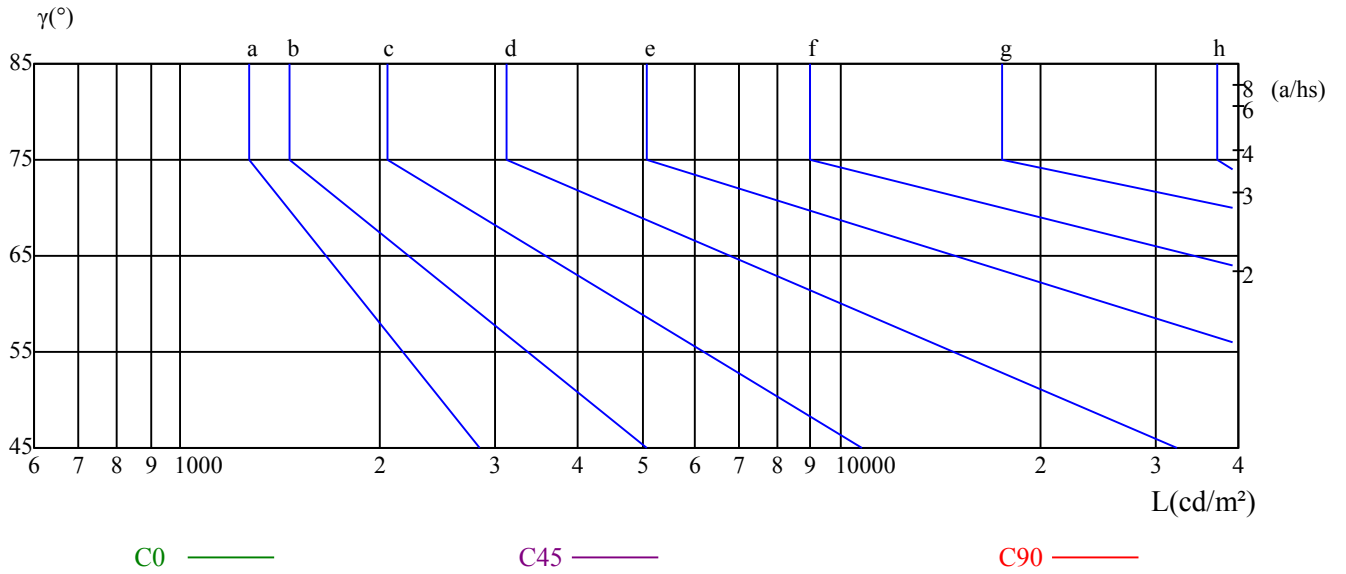
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

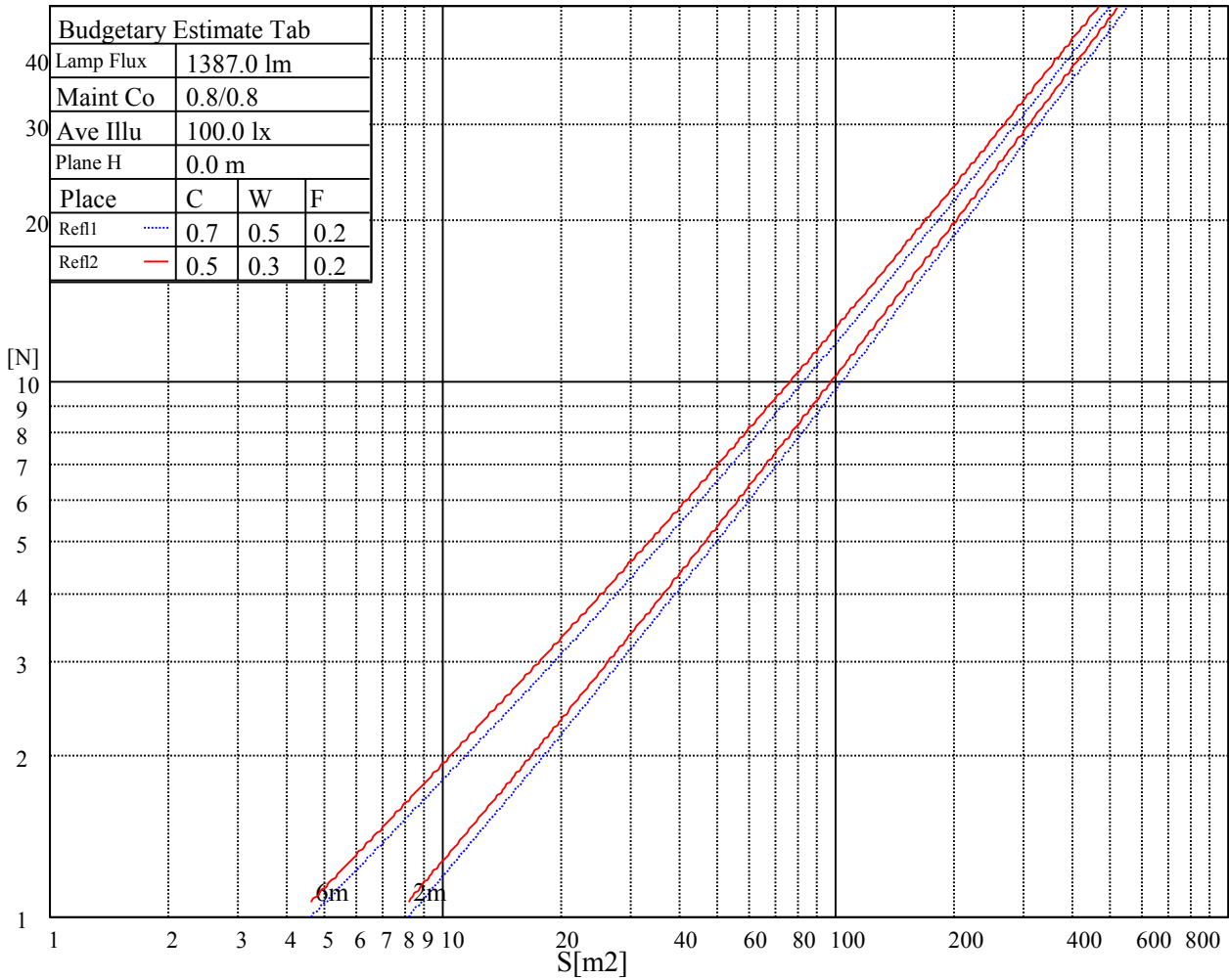
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

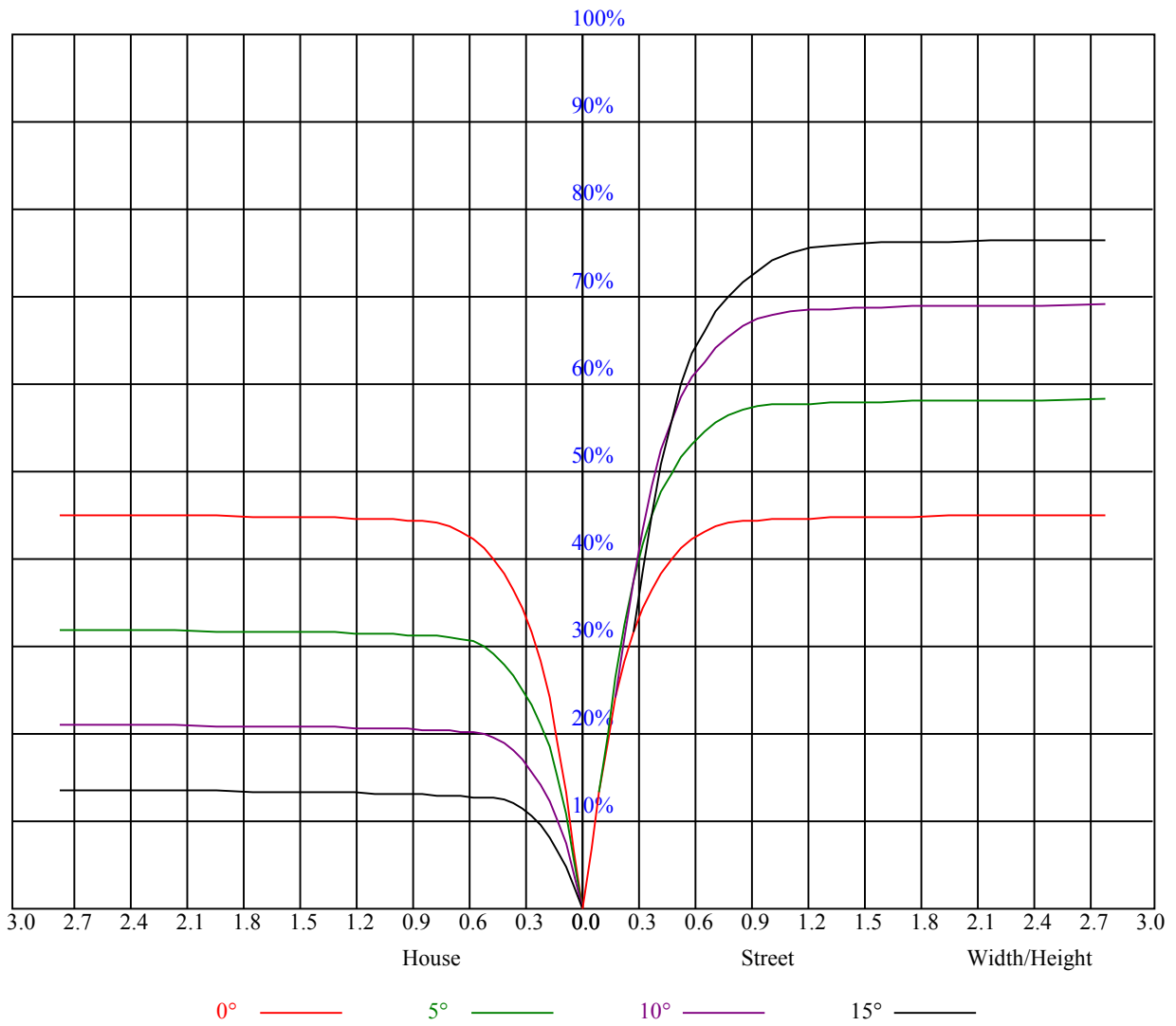
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

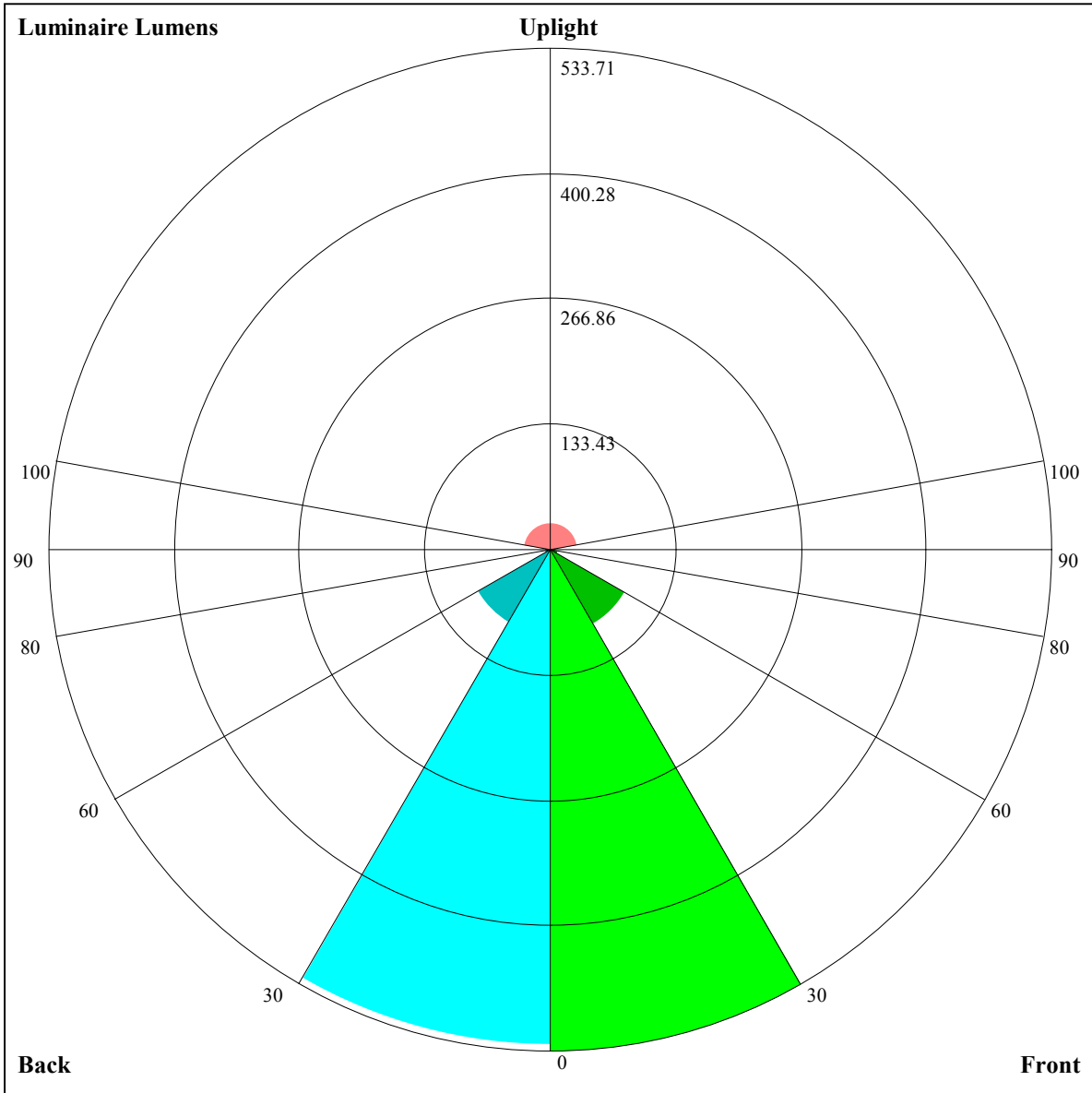
Luminance Limiting Curve





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	1.08	1.08	1.08	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.01	0.99	0.98	0.99	0.98	0.96	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.88	0.86
2	0.96	0.92	0.90	0.94	0.91	0.89	0.91	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.83	0.82
3	0.91	0.87	0.84	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.82	0.80	0.83	0.81	0.79	0.78
4	0.86	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.76	0.80	0.78	0.76	0.74
5	0.82	0.78	0.75	0.81	0.77	0.74	0.80	0.76	0.74	0.78	0.75	0.73	0.77	0.74	0.72	0.71
6	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.70	0.75	0.72	0.70	0.74	0.72	0.69	0.68
7	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.65
8	0.72	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.64	0.70	0.67	0.64	0.69	0.66	0.64	0.63
9	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.61
10	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.65	0.62	0.59	0.59





Luminaire Lumens:

FL=533.71,FM=91.51,FH=7.63,FVH=3.28

BL=527.99,BM=90.37,BH=7.49,BVH=3.25

UL=6.16,UH=29.32

BUG Rating:B2-U2-G0

NATA 1657-S

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	4405.50	4393.69	4334.63	4260.94	4152.38	4001.06	3799.13	3603.94	3363.75
45.0	4410.00	4409.44	4371.75	4317.75	4226.06	4107.38	3921.19	3722.06	3477.94
90.0	4413.38	4406.06	4368.94	4298.06	4203.00	4062.38	3907.13	3704.63	3471.19
135.0	4400.44	4413.94	4384.13	4324.50	4250.25	4124.81	3972.94	3804.19	3580.88
180.0	4405.50	4392.00	4338.56	4248.56	4142.25	3988.13	3793.50	3583.13	3317.63
225.0	4410.00	4382.44	4316.06	4213.13	4086.00	3911.63	3701.81	3502.13	3244.50
270.0	4413.38	4394.81	4330.13	4254.75	4149.00	3975.75	3818.25	3637.13	3407.63
315.0	4400.44	4367.25	4296.38	4195.69	4083.19	3926.81	3732.75	3534.19	3251.81
360.0	4405.50	4393.69	4334.63	4260.94	4152.38	4001.06	3799.13	3603.94	3363.75
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3101.06	2859.19	2574.56	2328.19	2062.13	1807.88	1598.63	1412.44	1206.00
45.0	3213.56	2961.56	2698.31	2412.00	2139.75	1889.44	1680.75	1488.94	1300.50
90.0	3232.69	2928.38	2616.19	2354.63	2109.94	1826.44	1622.81	1439.44	1120.84
135.0	3317.06	3046.50	2723.63	2442.94	2147.06	1877.63	1659.94	1463.63	1248.19
180.0	3066.75	2770.88	2471.63	2214.56	1942.31	1690.31	1491.19	1308.38	1111.16
225.0	2991.38	2701.13	2410.31	2167.88	1907.44	1671.75	1478.25	1301.63	1112.34
270.0	3138.75	2877.19	2584.13	2333.81	2065.50	1814.63	1612.69	1403.44	1219.50
315.0	3022.31	2727.56	2432.25	2186.44	1928.25	1665.56	1499.06	1323.56	1117.07
360.0	3101.06	2859.19	2574.56	2328.19	2062.13	1807.88	1598.63	1412.44	1206.00
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1067.63	950.63	832.50	753.19	687.94	624.94	578.81	548.44	519.19
45.0	1131.19	1002.38	885.38	788.63	722.81	669.38	619.31	591.19	570.94
90.0	1086.13	962.72	840.54	764.10	702.17	639.73	607.67	576.39	551.70
135.0	1095.75	965.81	839.81	755.44	689.63	632.25	589.50	565.31	543.38
180.0	979.99	870.75	782.83	692.55	637.37	594.28	552.88	528.47	508.95
225.0	991.74	891.90	802.07	725.63	673.48	628.03	592.59	568.35	546.64
270.0	1079.44	961.88	840.94	762.75	700.88	642.94	606.94	580.50	556.88
315.0	1006.14	899.49	810.17	722.03	667.63	626.51	591.92	569.76	551.14
360.0	1067.63	950.63	832.50	753.19	687.94	624.94	578.81	548.44	519.19
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	500.63	482.06	465.75	447.75	414.00	372.94	332.44	290.81	237.60
45.0	549.56	532.13	517.50	500.06	468.56	432.00	382.50	335.81	294.19
90.0	534.04	518.63	501.36	482.18	447.64	396.39	354.71	311.79	263.03
135.0	526.50	511.31	498.38	487.13	458.44	417.94	373.50	328.50	286.31
180.0	490.50	476.38	463.61	442.74	415.41	374.18	328.84	285.75	238.16
225.0	530.61	515.42	499.28	473.29	439.54	385.93	338.29	288.28	225.51
270.0	537.75	523.69	510.19	484.31	441.56	393.19	348.19	297.00	285.19
315.0	532.86	517.61	502.31	468.96	429.53	375.75	320.46	276.69	235.41
360.0	500.63	482.06	465.75	447.75	414.00	372.94	332.44	290.81	237.60
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	197.44	154.80	111.26	74.08	50.91	35.49	29.81	25.54	21.88
45.0	224.38	178.93	133.65	86.57	56.53	37.24	28.74	24.41	20.64
90.0	214.48	174.83	129.71	89.04	50.29	31.28	26.10	21.04	17.61
135.0	238.39	203.01	157.22	99.90	63.28	38.64	28.07	23.85	19.91
180.0	190.52	148.56	109.07	67.50	43.54	29.87	25.31	21.26	18.11
225.0	178.14	132.08	83.14	52.65	33.13	24.64	21.54	17.83	15.19
270.0	199.01	159.02	118.46	69.02	39.32	25.59	20.59	16.99	14.34
315.0	194.91	149.63	105.02	59.85	37.35	28.69	23.85	19.86	17.55
360.0	197.44	154.80	111.26	74.08	50.91	35.49	29.81	25.54	21.88

NATA 1657-S

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	20.03	18.79	17.83	17.04	16.20	15.36	14.63	14.06	13.28
45.0	18.23	17.21	16.59	15.81	15.13	14.40	13.84	13.22	12.60
90.0	15.75	14.96	14.06	13.50	12.99	12.43	12.04	11.70	11.31
135.0	17.04	15.86	15.36	14.63	13.89	13.44	12.83	12.26	11.81
180.0	16.31	15.53	14.96	14.29	13.89	13.33	12.71	12.32	11.81
225.0	14.40	13.67	12.99	12.60	12.15	11.59	11.25	10.97	10.58
270.0	12.71	12.15	11.64	11.25	10.91	10.63	10.35	10.18	10.01
315.0	16.37	15.64	15.02	14.40	13.84	13.28	12.77	12.26	11.87
360.0	20.03	18.79	17.83	17.04	16.20	15.36	14.63	14.06	13.28
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	12.60	12.09	11.53	11.03	10.52	10.18	9.73	9.39	9.11
45.0	12.09	11.64	11.19	10.74	10.35	10.01	9.62	9.28	9.00
90.0	10.91	10.63	10.29	10.07	9.68	9.45	9.17	8.89	8.66
135.0	11.36	10.91	10.58	10.13	9.79	9.45	9.11	8.78	8.61
180.0	11.31	10.91	10.41	9.96	9.68	9.34	9.06	8.72	8.55
225.0	10.29	10.01	9.68	9.39	9.11	8.83	8.61	8.38	8.21
270.0	9.73	9.56	9.39	9.23	9.06	8.89	8.61	8.38	8.27
315.0	11.42	10.97	10.58	10.13	9.79	9.51	9.11	8.83	8.61
360.0	12.60	12.09	11.53	11.03	10.52	10.18	9.73	9.39	9.11
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.78	8.61	8.38	8.16	7.99	7.88	7.65	7.48	7.43
45.0	8.78	8.49	8.33	8.10	7.93	7.71	7.59	7.43	7.26
90.0	8.44	8.21	7.99	7.82	7.71	7.54	7.37	7.26	7.09
135.0	8.38	8.10	7.93	7.82	7.65	7.54	7.37	7.26	7.09
180.0	8.27	8.10	7.99	7.71	7.59	7.54	7.37	7.26	7.20
225.0	8.04	7.88	7.71	7.59	7.48	7.31	7.20	7.14	6.98
270.0	8.10	7.93	7.76	7.59	7.48	7.37	7.20	7.14	6.98
315.0	8.33	8.21	7.99	7.82	7.71	7.54	7.43	7.31	7.20
360.0	8.78	8.61	8.38	8.16	7.99	7.88	7.65	7.48	7.43
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	7.26	7.14	7.09	6.92	6.81	6.75	6.69	6.58	6.53
45.0	7.14	6.98	6.92	6.81	6.69	6.64	6.53	6.41	6.41
90.0	7.03	6.86	6.75	6.69	6.58	6.53	6.41	6.36	6.24
135.0	6.98	6.86	6.81	6.69	6.58	6.53	6.41	6.36	6.30
180.0	7.09	7.03	6.98	6.92	6.86	6.75	6.69	6.58	6.47
225.0	6.86	6.81	6.69	6.64	6.53	6.47	6.41	6.30	6.24
270.0	6.86	6.75	6.69	6.58	6.53	6.47	6.36	6.30	6.19
315.0	7.03	6.92	6.86	6.75	6.69	6.64	6.53	6.47	6.41
360.0	7.26	7.14	7.09	6.92	6.81	6.75	6.69	6.58	6.53
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	6.36	6.30	6.19	6.13	6.08	5.91	5.85	5.74	5.68
45.0	6.36	6.30	6.24	6.19	6.13	6.02	5.91	5.85	5.68
90.0	6.24	6.13	6.13	6.02	6.02	6.02	5.91	5.85	5.68
135.0	6.24	6.19	6.13	6.08	6.02	5.96	5.85	5.79	5.74
180.0	6.30	6.19	6.08	5.91	5.85	5.79	5.68	5.63	5.63
225.0	6.24	6.19	6.08	6.13	6.02	5.91	5.79	5.74	5.68
270.0	6.19	6.13	6.02	6.02	5.96	5.91	5.85	5.79	5.68
315.0	6.30	6.24	6.19	6.08	6.08	6.02	5.85	5.68	5.63
360.0	6.36	6.30	6.19	6.13	6.08	5.91	5.85	5.74	5.68

Intensity data(cd)

C/γ(°)	90.0
0.0	5.63
45.0	5.68
90.0	5.68
135.0	5.63
180.0	5.63
225.0	5.68
270.0	5.63
315.0	5.63
360.0	5.63