NATA LIGHTING CO.,LTD.
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Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

Client:
LumCAT: 1656-S
Luminaire: 92.70.127.00

Report No: nt0100	Voltage(V): 220.5000
Test No: NATA07	Current(A): 0.1000
LampCAT: LUMINUS CLM-9-AA40	Power (W): 12.1500
Lamp flux(lm): 1234.0	PF: 0.5460
Number of Lamps: 1	Ballast type: AC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1112.85, Efficiency(%): 90.18% , Luminous Efficacy(lm/W): 91.59
Central intensity(cd): 5682.715, Maximum intensity(cd): 5682.715
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=18.6
[C90/270]Total=18.6
Field angle(10%Imax): [C0/180]Total=44.0
[C90/270]Total=44.0
Maximum s/h(1/2): C0_180=0.32 C90_270=0.32
Maximum s/h(1/4): C0_180=0.33 C90_270=0.33
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.18%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.276%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5682.716	0.000	0	.000%	.000%
1.0	5631.846	5.414	5.414	.439%	.486%
2.0	5479.643	15.948	21.362	1.292%	1.920%
3.0	5244.610	25.649	47.011	2.079%	4.224%
4.0	4944.613	34.107	81.118	2.764%	7.289%
5.0	4578.200	40.967	122.084	3.320%	10.970%
6.0	4209.700	46.183	168.267	3.743%	15.120%
7.0	3782.963	49.610	217.877	4.020%	19.578%
8.0	3312.955	50.784	268.661	4.115%	24.142%
9.0	2944.339	50.712	319.373	4.110%	28.699%
10.0	2550.664	49.728	369.101	4.030%	33.167%
11.0	2199.565	47.465	416.566	3.846%	37.432%
12.0	1873.639	44.526	461.092	3.608%	41.434%
13.0	1579.390	40.979	502.07	3.321%	45.116%
14.0	1407.582	38.233	540.303	3.098%	48.551%
15.0	1203.674	35.848	576.152	2.905%	51.773%
16.0	1058.849	33.152	609.304	2.687%	54.752%
17.0	927.875	30.939	640.243	2.507%	57.532%
18.0	806.229	28.592	668.834	2.317%	60.101%
19.0	735.621	26.825	695.659	2.174%	62.512%
20.0	668.168	25.693	721.353	2.082%	64.821%
21.0	612.832	24.598	745.95	1.993%	67.031%
22.0	566.527	23.700	769.65	1.921%	69.160%
23.0	530.094	23.010	792.66	1.865%	71.228%
24.0	501.307	22.550	815.21	1.827%	73.255%
25.0	477.467	22.255	837.465	1.803%	75.254%
26.0	458.181	22.086	859.551	1.790%	77.239%
27.0	439.817	21.970	881.521	1.780%	79.213%
28.0	422.183	21.824	903.345	1.769%	81.174%
29.0	404.283	21.623	924.968	1.752%	83.117%
30.0	379.516	21.162	946.13	1.715%	85.019%
31.0	355.339	20.450	966.58	1.657%	86.857%
32.0	330.322	19.643	986.224	1.592%	88.622%
33.0	301.645	18.618	1004.842	1.509%	90.295%
34.0	270.154	17.304	1022.146	1.402%	91.850%
35.0	225.775	15.402	1037.548	1.248%	93.234%
36.0	195.225	13.405	1050.952	1.086%	94.438%
37.0	151.466	11.307	1062.26	.916%	95.454%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	125.451	9.243	1071.503	.749%	96.285%
39.0	95.086	7.528	1079.03	.610%	96.961%
40.0	65.754	5.610	1084.64	.455%	97.465%
41.0	43.550	3.892	1088.532	.315%	97.815%
42.0	27.859	2.594	1091.126	.210%	98.048%
43.0	17.419	1.677	1092.804	.136%	98.199%
44.0	11.607	1.095	1093.899	.089%	98.297%
45.0	9.194	0.799	1094.699	.065%	98.369%
46.0	7.906	0.669	1095.367	.054%	98.429%
47.0	7.251	0.603	1095.97	.049%	98.484%
48.0	6.995	0.576	1096.546	.047%	98.535%
49.0	7.222	0.584	1097.13	.047%	98.588%
50.0	7.558	0.616	1097.746	.050%	98.643%
51.0	7.715	0.646	1098.392	.052%	98.701%
52.0	8.039	0.676	1099.068	.055%	98.762%
53.0	8.103	0.702	1099.77	.057%	98.825%
54.0	8.289	0.722	1100.493	.059%	98.890%
55.0	8.213	0.737	1101.229	.060%	98.956%
56.0	8.173	0.740	1101.97	.060%	99.023%
57.0	7.981	0.739	1102.709	.060%	99.089%
58.0	7.662	0.723	1103.432	.059%	99.154%
59.0	7.245	0.697	1104.129	.056%	99.217%
60.0	6.769	0.662	1104.791	.054%	99.276%
61.0	6.201	0.619	1105.41	.050%	99.332%
62.0	5.603	0.569	1105.979	.046%	99.383%
63.0	5.017	0.517	1106.495	.042%	99.429%
64.0	4.490	0.466	1106.962	.038%	99.471%
65.0	3.991	0.420	1107.381	.034%	99.509%
66.0	3.532	0.375	1107.757	.030%	99.543%
67.0	3.144	0.336	1108.092	.027%	99.573%
68.0	2.802	0.301	1108.394	.024%	99.600%
69.0	2.535	0.272	1108.666	.022%	99.624%
70.0	2.343	0.251	1108.916	.020%	99.647%
71.0	2.135	0.231	1109.148	.019%	99.668%
72.0	2.030	0.217	1109.364	.018%	99.687%
73.0	1.955	0.208	1109.573	.017%	99.706%
74.0	1.879	0.202	1109.774	.016%	99.724%
75.0	1.827	0.196	1109.97	.016%	99.742%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	1.798	0.192	1110.163	.016%	99.759%
77.0	1.781	0.191	1110.353	.015%	99.776%
78.0	1.769	0.190	1110.543	.015%	99.793%
79.0	1.752	0.189	1110.733	.015%	99.810%
80.0	1.781	0.190	1110.923	.015%	99.827%
81.0	1.798	0.194	1111.117	.016%	99.845%
82.0	1.816	0.196	1111.313	.016%	99.862%
83.0	1.850	0.199	1111.512	.016%	99.880%
84.0	1.874	0.203	1111.715	.016%	99.898%
85.0	1.885	0.205	1111.92	.017%	99.917%
86.0	1.891	0.206	1112.126	.017%	99.935%
87.0	1.810	0.203	1112.329	.016%	99.953%
88.0	1.601	0.187	1112.516	.015%	99.970%
89.0	1.508	0.170	1112.686	.014%	99.986%
90.0	1.415	0.160	1112.846	.013%	100.000%

Zonal flux distribution table

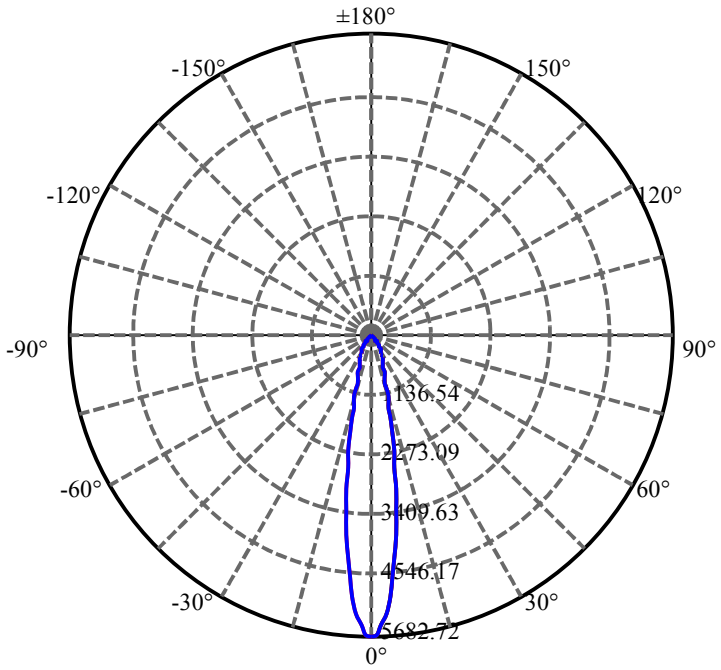
ZONAL LUMEN SUMMARY

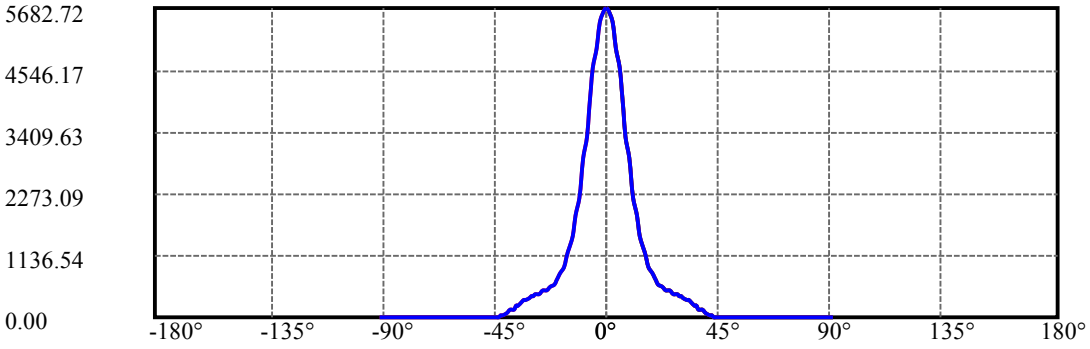
Zone	Lumens	%Lamp	%Fixt
0-30	946.13	76.67%	85.02%
0-40	1084.64	87.90%	97.47%
0-60	1104.79	89.53%	99.28%
0-90	1112.69	90.17%	99.99%
0-120	1112.69	90.17%	99.99%
0-180	1112.85	90.18%	100.00%
60-90	8.56	0.69%	0.77%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.40	890.28	72.15%	80.00%

ZONAL LUMEN SUMMARY

0-10	369.10
10-20	352.25
20-30	224.78
30-40	138.51
40-50	13.11
50-60	7.04
60-70	4.13
70-80	2.01
80-90	1.76
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

Light Distribution Curve [Unit:cd]





C0(Max):

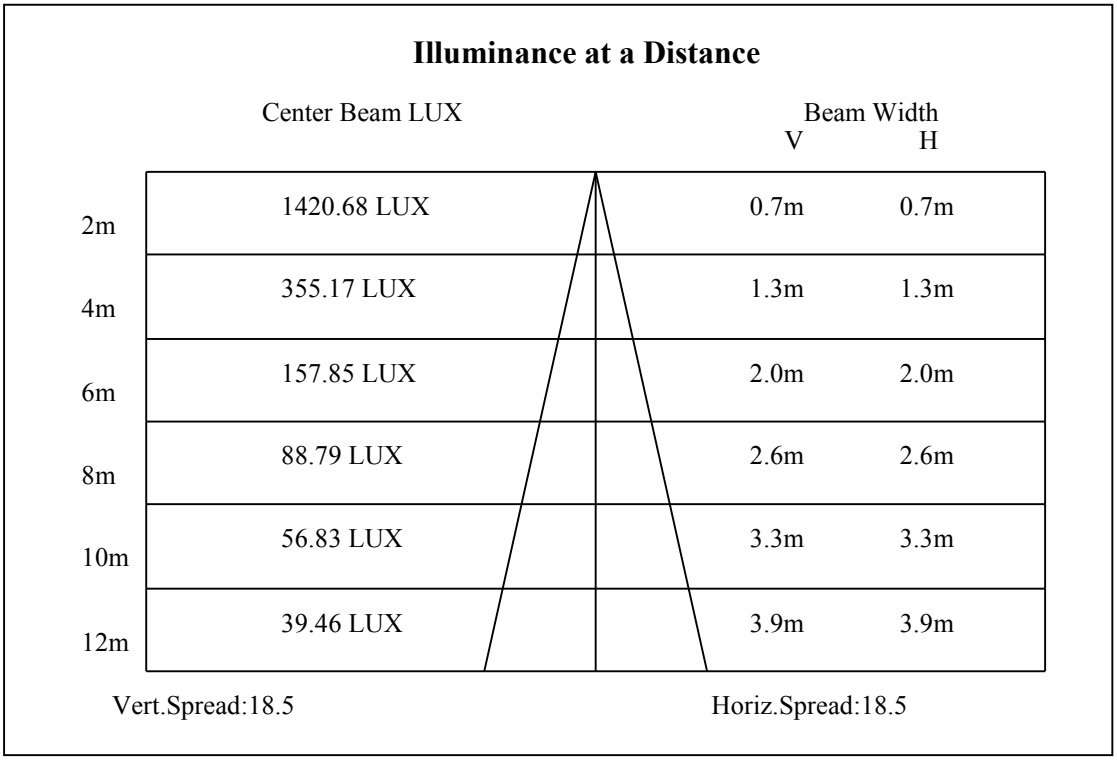
C0/C180:

C90/C270:

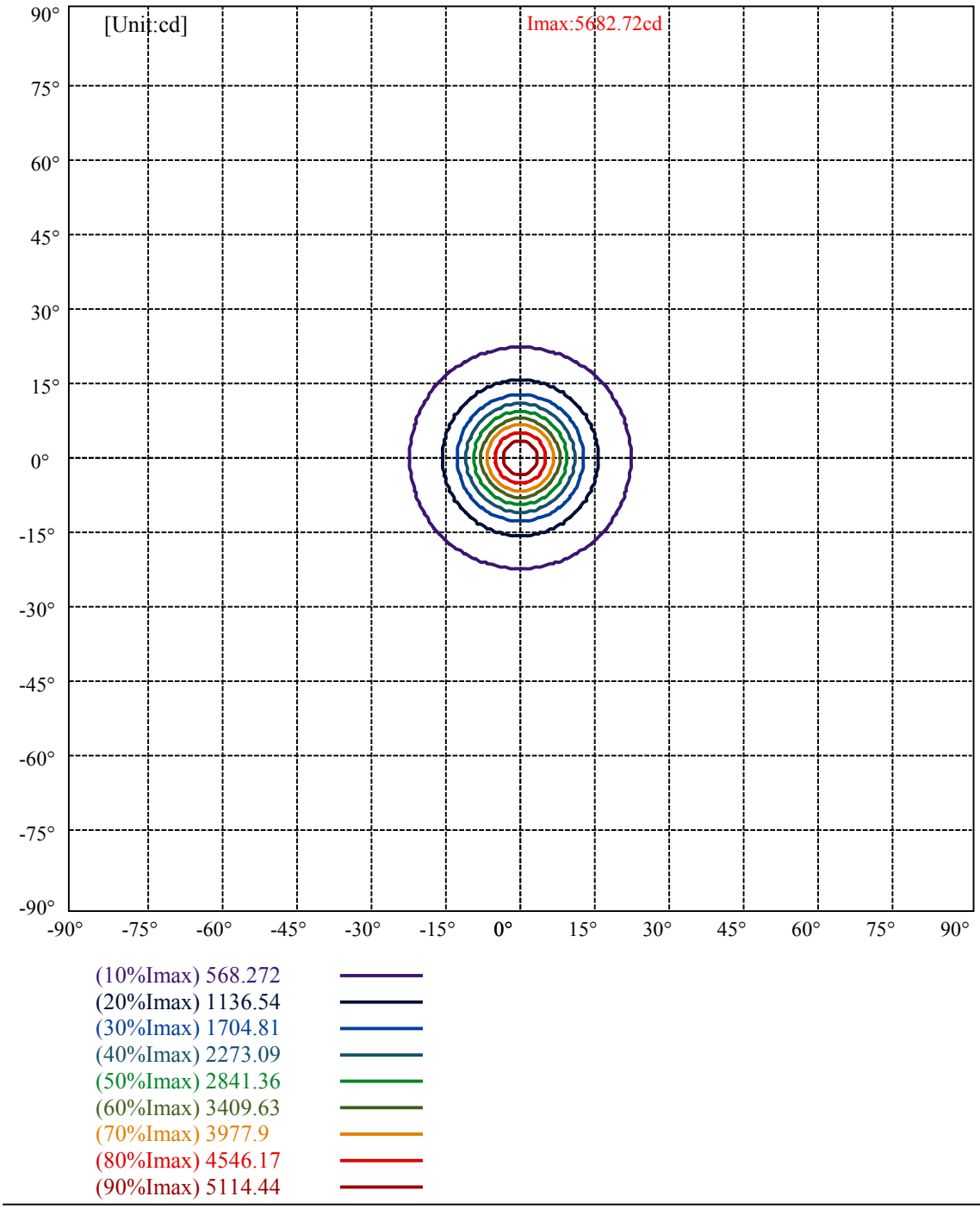
Field angle(10%Imax):C0/180Left:22.0 Right:22.0
:C90/270Left:22.0 Right:22.0

Beam Angle(50%Imax):C0/180Left:9.3 Right:9.3
:C90/270Left:9.3 Right:9.3

Lux distance Curve



ISO-Intensity(V-H)



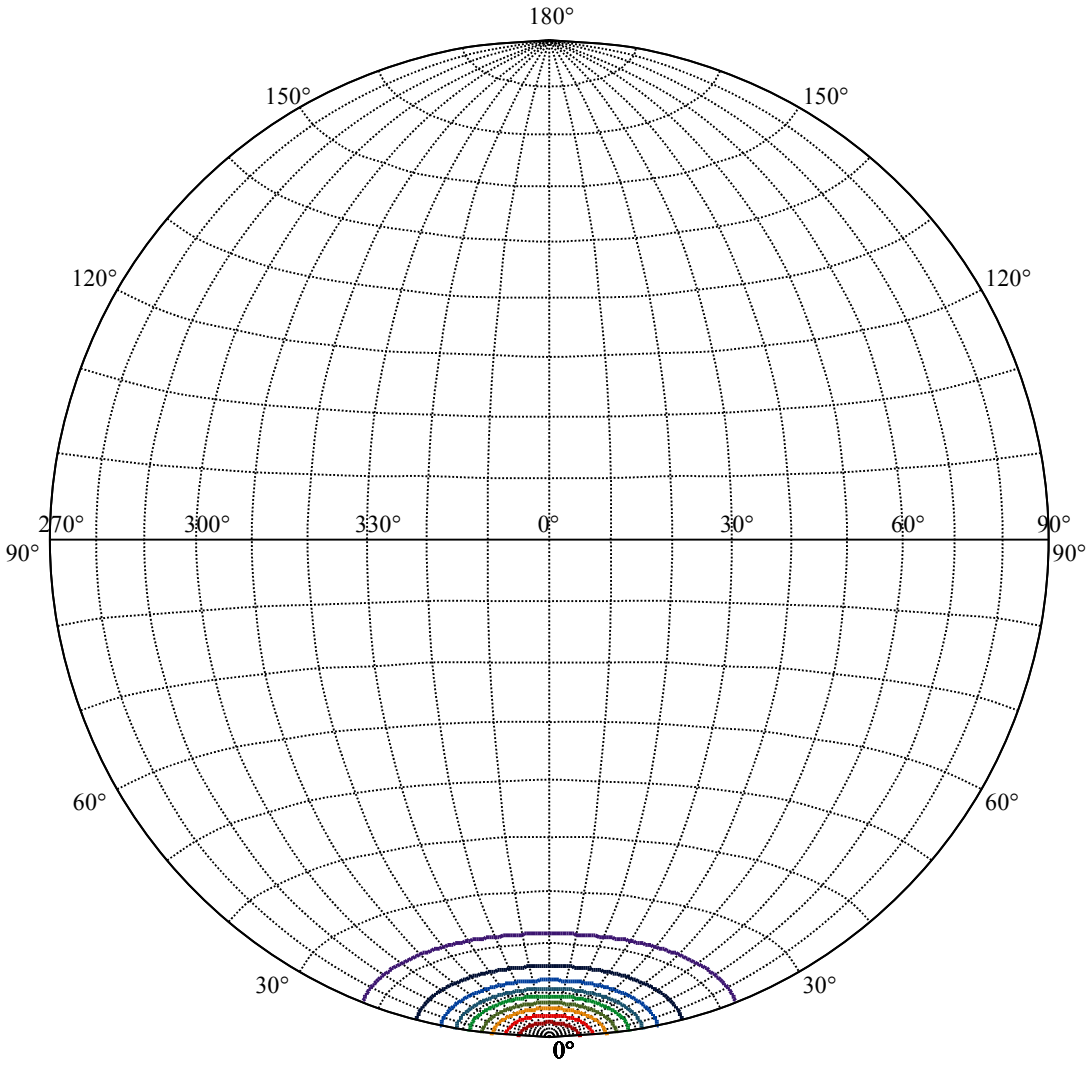
(10%Imax) 568.272
(20%Imax) 1136.54
(30%Imax) 1704.81
(40%Imax) 2273.09
(50%Imax) 2841.36
(60%Imax) 3409.63
(70%Imax) 3977.9
(80%Imax) 4546.17
(90%Imax) 5114.44

Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:5682.72

(10%Imax) 568.272
(20%Imax) 1136.54
(30%Imax) 1704.81
(40%Imax) 2273.09
(50%Imax) 2841.36
(60%Imax) 3409.63
(70%Imax) 3977.9
(80%Imax) 4546.17
(90%Imax) 5114.44

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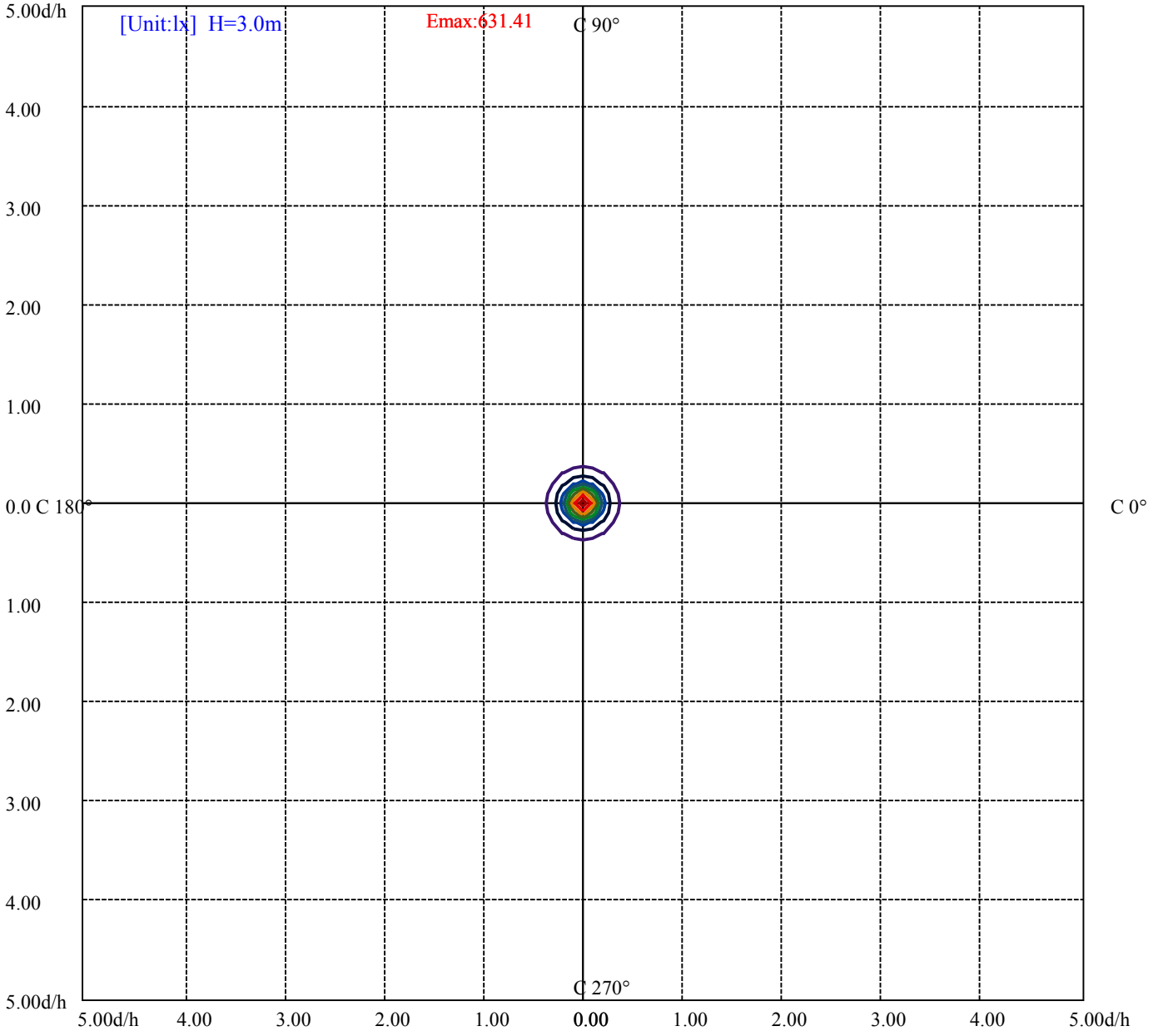
ISO illuminance diagram

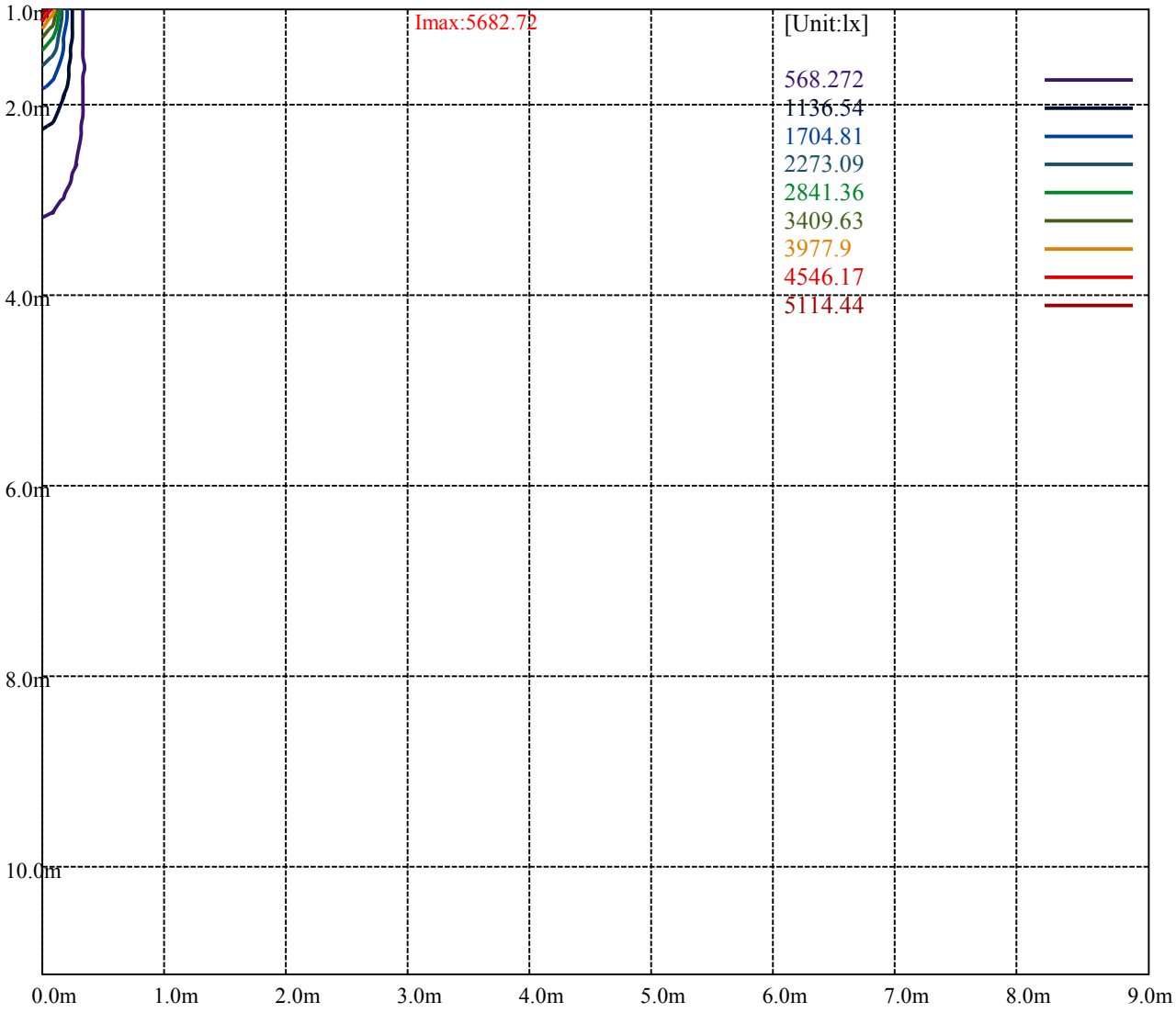


Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

Space ISO Lux diagram



Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

Nata 1656-S

Luminance Limitting Curve(no luminous side)

Luminance Table

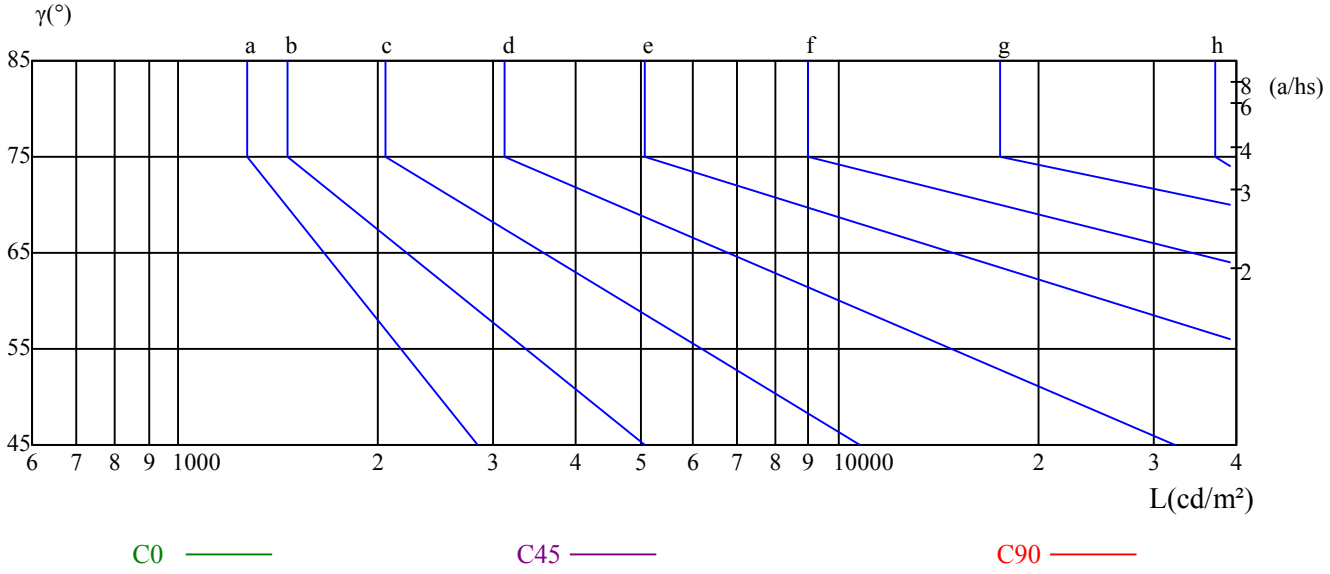
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

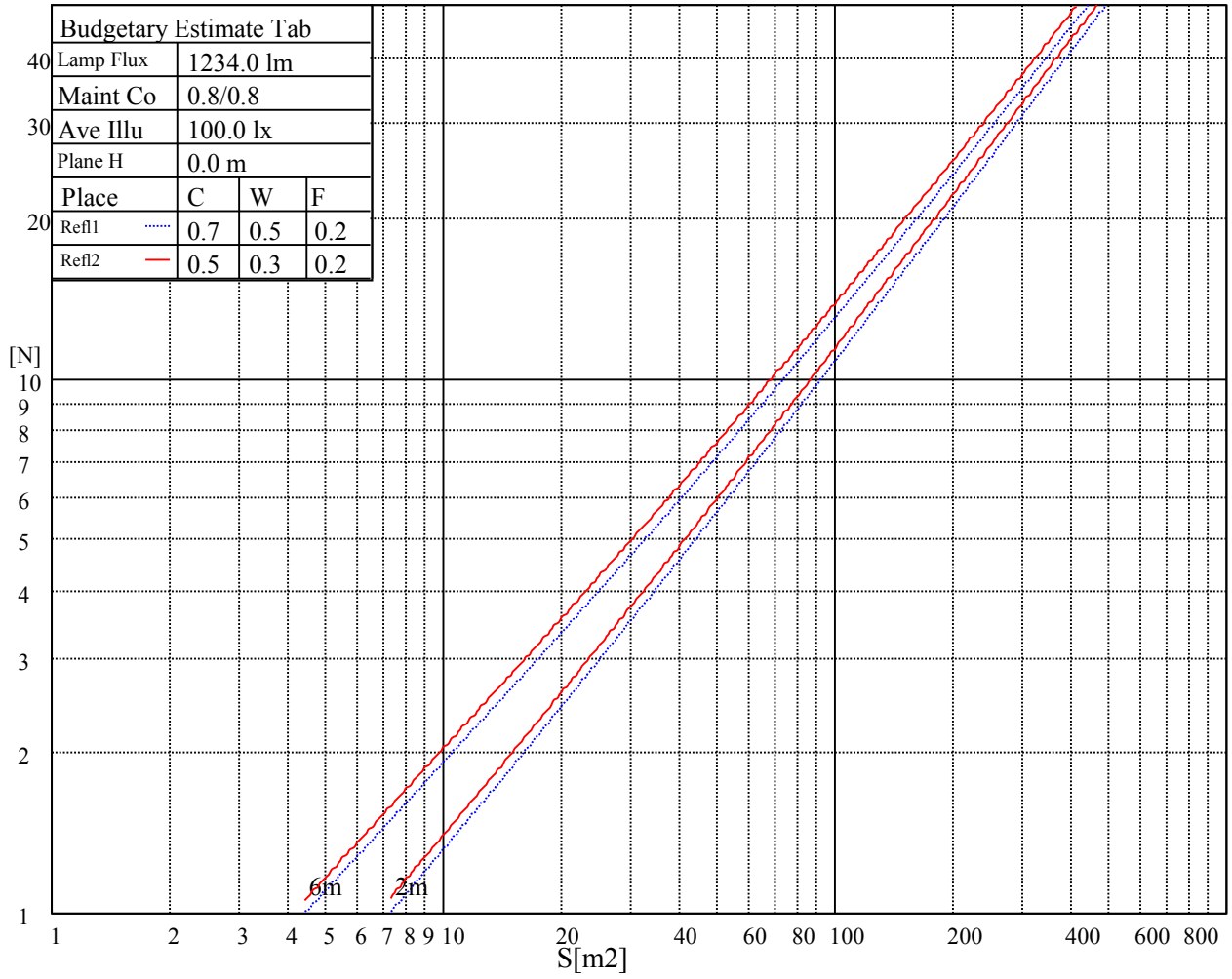
Glare Table

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 Limitting Curve



Budgetary Estimate Table



Equipment: GMS 1800
Temperature(°C): 25.0

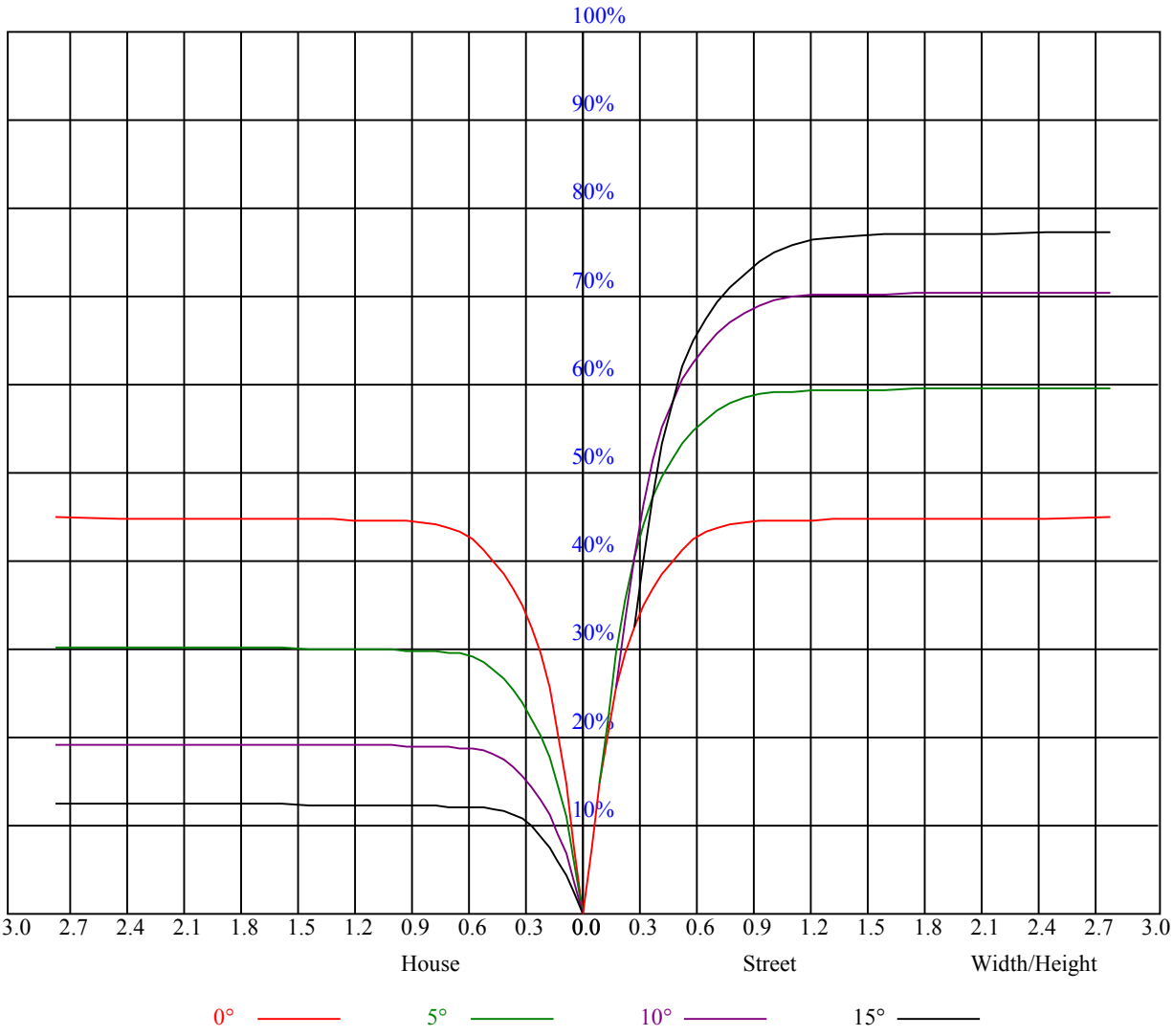
Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81

Utilization factor table for indoor luminaire

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	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.07	1.07	1.07	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
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	0.93	0.90	0.94	0.92	0.89	0.91	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.84	0.82
3	0.91	0.87	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.85	0.83	0.81	0.84	0.82	0.80	0.79
4	0.87	0.83	0.80	0.86	0.82	0.79	0.84	0.81	0.78	0.82	0.80	0.78	0.81	0.79	0.77	0.76
5	0.83	0.79	0.76	0.82	0.78	0.75	0.81	0.77	0.75	0.79	0.76	0.74	0.78	0.76	0.74	0.73
6	0.80	0.75	0.72	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
7	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.67
8	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.65
9	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	0.64	0.63
10	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.61

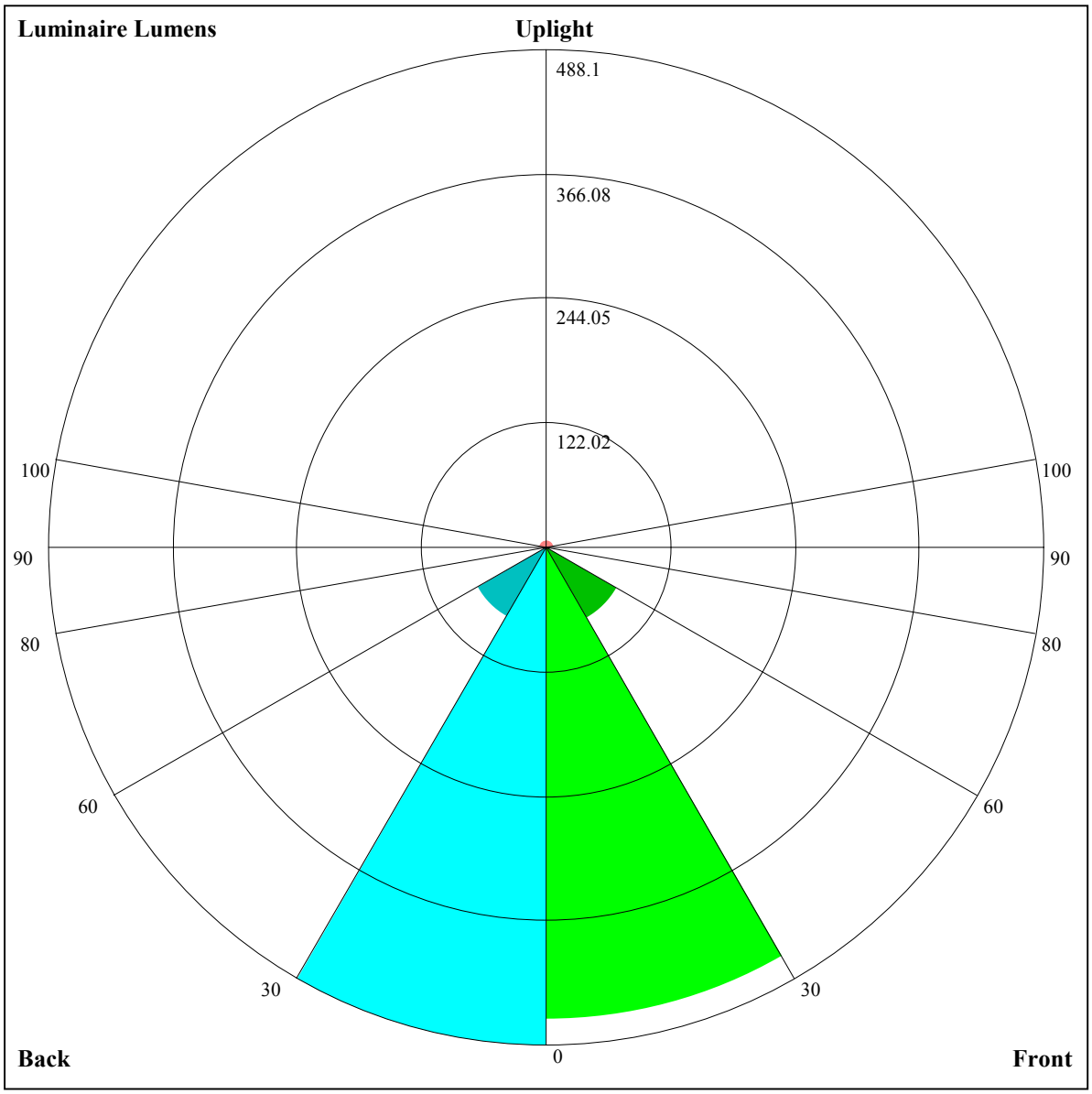
Coefficient Utilization Curve



Equipment: GMS 1800
Temperature(°C): 25.0

Date: 2019/12/12
Humidity(%): 60.0%

Operator: GC2019111102
Distance(m): 6.81



Luminaire Lumens:
FL=462.77,FM=80.82,FH=3.45,FVH=0.78
BL=488.1,BM=77.71,BH=3.12,BVH=1.06
UL=1.54,UH=7.35

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	5717.40	5600.93	5393.04	5075.64	4657.09	4164.28	3669.16	3192.60	2758.26
45.0	5593.97	5796.75	5897.45	5904.41	5817.63	5646.87	5357.78	4968.92	4496.99
90.0	5850.58	6016.70	6077.49	6069.60	5961.95	5769.37	5476.57	5072.86	4563.82
135.0	5568.91	5775.87	5883.53	5899.30	5831.09	5681.21	5413.92	5032.49	4565.21
180.0	5717.40	5728.54	5650.12	5559.17	5200.93	4824.60	4560.57	4101.17	3448.28
225.0	5593.97	5292.81	4887.71	4400.94	3899.32	3409.30	3044.11	2620.44	2175.90
270.0	5850.58	5587.94	5211.61	4727.16	4400.94	3849.67	3332.73	2861.74	2440.40
315.0	5568.91	5255.23	4836.20	4320.66	3787.95	3280.30	2822.76	2413.48	2054.79
360.0	5717.40	5600.93	5393.04	5075.64	4657.09	4164.28	3669.16	3192.60	2758.26

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	2360.12	2015.81	1718.36	1471.03	1262.22	1160.13	875.54	875.54	779.76
45.0	3988.41	3487.72	3019.51	2587.96	2206.06	2001.42	1704.44	1365.70	1244.12
90.0	4027.39	3509.53	3017.66	2572.65	2182.86	1856.64	1578.69	1436.23	1156.88
135.0	4261.73	3755.00	3258.03	2799.10	2387.03	2032.98	1735.53	1482.17	1271.03
180.0	3178.68	2744.34	2356.41	2016.27	1723.47	1477.06	1268.25	1094.70	952.24
225.0	1921.14	1642.26	1406.53	1208.85	870.94	870.94	809.09	724.12	656.89
270.0	2071.49	1760.59	1500.27	1284.49	1109.55	968.48	858.97	768.49	698.42
315.0	1745.74	1490.06	1319.76	1048.76	892.99	892.99	798.88	723.85	663.66
360.0	2360.12	2015.81	1718.36	1471.03	1262.22	1160.13	875.54	875.54	779.76

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	701.94	639.11	587.93	546.96	509.69	482.64	455.68	435.50	419.49
45.0	1071.96	935.07	822.78	731.36	661.29	599.58	554.10	513.73	483.57
90.0	886.81	886.81	805.33	724.63	659.99	609.04	568.58	535.82	509.74
135.0	1095.63	953.17	837.63	745.75	674.29	617.67	574.06	538.79	510.02
180.0	835.77	742.96	669.65	612.11	568.02	533.22	505.84	487.75	465.94
225.0	603.75	561.20	527.05	510.34	478.98	461.62	452.94	440.51	429.23
270.0	639.95	593.55	556.42	524.40	498.88	477.54	460.37	445.52	435.77
315.0	614.01	573.08	538.56	507.10	481.06	459.44	438.88	422.13	411.69
360.0	701.94	639.11	587.93	546.96	509.69	482.64	455.68	435.50	419.49

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	408.35	399.67	391.55	374.61	347.70	330.90	281.67	245.24	222.23
45.0	458.98	438.09	421.85	407.93	397.26	387.98	380.55	349.93	333.22
90.0	487.75	469.46	453.50	439.81	426.82	410.16	384.92	366.35	317.26
135.0	486.82	475.22	458.51	440.41	432.99	420.92	399.58	368.02	329.97
180.0	451.09	441.81	430.67	416.28	389.37	357.35	321.62	283.11	240.88
225.0	416.28	391.97	358.23	319.63	279.21	240.00	196.75	156.24	116.61
270.0	423.24	401.44	380.09	345.29	299.35	264.08	255.73	237.63	128.49
315.0	386.03	359.81	339.86	292.16	270.02	231.18	192.34	154.71	117.54
360.0	408.35	399.67	391.55	374.61	347.70	330.90	281.67	245.24	222.23

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	183.20	146.91	108.17	74.34	45.57	26.26	19.44	15.31	12.76
45.0	298.88	248.77	233.46	233.46	142.41	104.55	70.25	42.46	24.32
90.0	292.53	249.51	202.60	159.95	118.28	81.86	50.44	28.72	15.73
135.0	291.00	249.23	249.23	157.26	117.49	79.44	47.10	23.16	15.50
180.0	240.88	155.08	117.21	81.30	62.74	25.94	13.04	11.23	6.96
225.0	79.26	46.77	23.34	12.71	9.51	6.45	4.18	3.48	3.20
270.0	91.41	59.16	33.69	17.26	11.42	9.28	6.31	4.04	3.90
315.0	84.64	56.29	35.92	24.41	18.61	14.62	12.11	10.95	10.49
360.0	183.20	146.91	108.17	74.34	45.57	26.26	19.44	15.31	12.76

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	12.02	12.67	13.69	14.94	15.87	16.52	16.61	16.33	15.50
45.0	17.59	13.78	11.23	10.21	10.63	11.69	12.30	14.20	14.76
90.0	12.53	9.47	7.24	6.45	6.36	6.45	6.59	6.96	7.29
135.0	9.79	6.77	5.38	3.76	3.57	3.43	3.20	3.06	2.97
180.0	4.69	3.85	3.53	3.34	3.20	3.02	2.88	2.78	2.69
225.0	3.06	2.92	2.78	2.64	2.55	2.51	2.37	2.32	2.32
270.0	3.67	3.48	3.43	3.29	3.20	3.25	3.43	3.57	3.90
315.0	10.21	10.30	10.72	11.32	12.39	13.60	14.34	15.08	15.41
360.0	12.02	12.67	13.69	14.94	15.87	16.52	16.61	16.33	15.50

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	14.90	13.27	12.53	11.00	9.61	8.12	6.87	5.66	4.78
45.0	15.59	15.73	15.68	14.99	14.11	12.76	11.51	10.07	8.49
90.0	8.45	9.56	10.26	11.69	12.39	13.13	13.50	13.46	12.95
135.0	2.92	2.78	2.74	2.69	2.78	2.74	2.78	2.92	3.11
180.0	2.55	2.46	2.46	2.41	2.32	2.27	2.27	2.32	2.23
225.0	2.32	2.27	2.27	2.32	2.32	2.37	2.37	2.37	2.41
270.0	4.36	4.87	5.43	5.80	6.26	6.45	6.40	6.08	5.66
315.0	15.22	14.76	14.01	12.95	11.51	10.12	8.45	6.73	5.20
360.0	14.90	13.27	12.53	11.00	9.61	8.12	6.87	5.66	4.78

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	4.04	3.48	3.06	2.78	2.51	2.37	2.27	2.23	2.09
45.0	7.10	5.89	4.83	3.94	3.25	2.92	2.55	2.41	2.18
90.0	12.06	11.00	9.79	8.21	6.73	5.15	3.99	3.11	2.37
135.0	3.25	3.39	3.57	3.57	3.57	3.53	3.39	3.06	2.78
180.0	2.23	2.27	2.32	2.27	2.27	2.23	2.27	2.27	2.23
225.0	2.37	2.32	2.27	2.27	2.23	2.18	2.13	2.09	2.04
270.0	5.10	4.41	3.53	3.02	2.55	2.13	1.90	1.76	1.72
315.0	3.99	3.16	2.55	2.18	2.04	1.90	1.76	1.81	1.67
360.0	4.04	3.48	3.06	2.78	2.51	2.37	2.27	2.23	2.09

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	2.00	1.95	1.81	1.76	1.72	1.67	1.62	1.53	1.53
45.0	2.09	1.95	1.86	1.86	1.72	1.67	1.72	1.62	1.53
90.0	2.04	1.86	1.81	1.62	1.58	1.58	1.48	1.48	1.48
135.0	2.60	2.41	2.18	2.09	2.04	2.00	1.95	1.95	1.95
180.0	2.18	2.27	2.27	2.23	2.27	2.37	2.46	2.55	2.69
225.0	2.04	2.00	1.95	1.95	2.00	2.00	2.00	2.04	2.23
270.0	1.67	1.62	1.58	1.58	1.58	1.48	1.48	1.48	1.44
315.0	1.62	1.58	1.58	1.53	1.48	1.48	1.44	1.35	1.39
360.0	2.00	1.95	1.81	1.76	1.72	1.67	1.62	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	1.53	1.53	1.53	1.58	1.62	1.62	1.67	1.72	1.72
45.0	1.53	1.48	1.44	1.39	1.44	1.35	1.39	1.39	1.44
90.0	1.39	1.44	1.44	1.39	1.35	1.30	1.35	1.35	1.35
135.0	1.95	1.90	1.90	1.86	1.86	1.81	1.81	1.72	1.67
180.0	2.97	3.29	3.76	4.13	4.22	4.22	3.62	2.88	2.23
225.0	2.23	2.09	1.95	1.95	1.90	2.09	1.86	1.30	1.21
270.0	1.44	1.44	1.44	1.39	1.39	1.39	1.44	1.21	1.25
315.0	1.35	1.35	1.35	1.30	1.30	1.35	1.35	1.25	1.21
360.0	1.53	1.53	1.53	1.58	1.62	1.62	1.67	1.72	1.72

Intensity data(cd)

C/γ(°)	90.0
0.0	1.67
45.0	1.44
90.0	1.30
135.0	1.53
180.0	1.76
225.0	1.21
270.0	1.21
315.0	1.21
360.0	1.67