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

Nata

LumCAT: 2-1676-M
Luminaire: 92.70.131.00
Report No: NT2017061709
Test No: GC2017061709
LampCAT: CITIZEN CLU038
Lamp flux(lm): 2365.0
Number of Lamps: 1
Length(mm): 70
Phm Type: C

Voltage(V): 34.2000
Current(A): 0.5000
Power (W): 17.1000
PF: 0.0000
Ballast type: DC
Width(mm): 70
Height(mm): 0

Photometric Results

Lumens(lm): 2137.61
Efficiency(%): 90.39%
Lumens(lm)/Power(W): 125.01
Central intensity(cd): 5011.234
Maximum intensity(cd): 5011.234
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=34.7
[C90/270]Total=34.7
Field angle(10%Imax): [C0/180]Total=69.9
[C90/270]Total=69.9
Maximum s/h(1/2): C0_180=0.57 C90_270=0.57
Maximum s/h(1/4): C0_180=0.56 C90_270=0.56
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.39%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.771%

Equipment: gms1980
Temperature(°C): 25.0
Date: 2017/6/4
Humidity(%): 60.0%
Operator: NT07
Distance(m): 7.42

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5011.234	0.000	0	.000%	.000%
1.0	4994.854	4.788	4.788	.202%	.224%
2.0	4953.149	14.278	19.066	.604%	.892%
3.0	4892.725	23.548	42.614	.996%	1.994%
4.0	4802.570	32.453	75.067	1.372%	3.512%
5.0	4710.350	40.924	115.991	1.730%	5.426%
6.0	4599.412	48.925	164.917	2.069%	7.715%
7.0	4474.296	56.320	221.237	2.381%	10.350%
8.0	4335.554	63.050	284.288	2.666%	13.299%
9.0	4196.536	69.148	353.435	2.924%	16.534%
10.0	4041.690	74.553	427.988	3.152%	20.022%
11.0	3870.327	79.057	507.046	3.343%	23.720%
12.0	3684.650	82.587	589.632	3.492%	27.584%
13.0	3478.739	85.011	674.644	3.595%	31.561%
14.0	3281.499	86.530	761.174	3.659%	35.609%
15.0	3064.990	87.127	848.302	3.684%	39.685%
16.0	2827.559	86.342	934.644	3.651%	43.724%
17.0	2587.100	84.321	1018.965	3.565%	47.668%
18.0	2360.818	81.580	1100.545	3.449%	51.485%
19.0	2133.573	78.193	1178.738	3.306%	55.143%
20.0	1903.988	73.899	1252.637	3.125%	58.600%
21.0	1702.482	69.252	1321.889	2.928%	61.840%
22.0	1517.354	64.704	1386.593	2.736%	64.866%
23.0	1336.067	59.872	1446.465	2.532%	67.667%
24.0	1229.492	56.092	1502.557	2.372%	70.291%
25.0	1107.707	53.143	1555.7	2.247%	72.778%
26.0	1022.439	50.282	1605.983	2.126%	75.130%
27.0	953.081	48.332	1654.314	2.044%	77.391%
28.0	889.120	46.641	1700.955	1.972%	79.573%
29.0	840.711	45.257	1746.212	1.914%	81.690%
30.0	798.166	44.249	1790.461	1.871%	83.760%
31.0	751.960	43.138	1833.599	1.824%	85.778%
32.0	700.593	41.614	1875.213	1.760%	87.725%
33.0	645.426	39.654	1914.867	1.677%	89.580%
34.0	571.348	36.823	1951.69	1.557%	91.302%
35.0	497.517	33.195	1984.885	1.404%	92.855%
36.0	415.043	29.056	2013.941	1.229%	94.215%
37.0	328.756	24.259	2038.2	1.026%	95.349%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	250.080	19.321	2057.521	.817%	96.253%
39.0	186.366	14.897	2072.418	.630%	96.950%
40.0	114.710	10.500	2082.918	.444%	97.441%
41.0	67.967	6.505	2089.423	.275%	97.746%
42.0	41.210	3.967	2093.39	.168%	97.931%
43.0	23.881	2.411	2095.801	.102%	98.044%
44.0	17.067	1.545	2097.347	.065%	98.116%
45.0	14.920	1.229	2098.576	.052%	98.174%
46.0	12.814	1.085	2099.661	.046%	98.225%
47.0	11.328	0.960	2100.621	.041%	98.270%
48.0	10.419	0.879	2101.5	.037%	98.311%
49.0	9.841	0.832	2102.332	.035%	98.350%
50.0	9.662	0.813	2103.145	.034%	98.388%
51.0	9.539	0.812	2103.957	.034%	98.426%
52.0	9.401	0.813	2104.77	.034%	98.464%
53.0	9.277	0.812	2105.583	.034%	98.502%
54.0	9.194	0.814	2106.397	.034%	98.540%
55.0	9.084	0.816	2107.213	.035%	98.578%
56.0	9.015	0.818	2108.031	.035%	98.616%
57.0	8.947	0.821	2108.852	.035%	98.655%
58.0	8.878	0.824	2109.676	.035%	98.693%
59.0	8.809	0.827	2110.503	.035%	98.732%
60.0	8.754	0.830	2111.333	.035%	98.771%
61.0	8.713	0.834	2112.166	.035%	98.810%
62.0	8.658	0.837	2113.003	.035%	98.849%
63.0	8.616	0.840	2113.843	.036%	98.888%
64.0	8.561	0.843	2114.686	.036%	98.928%
65.0	8.506	0.845	2115.531	.036%	98.967%
66.0	8.492	0.848	2116.379	.036%	99.007%
67.0	8.451	0.852	2117.231	.036%	99.047%
68.0	8.424	0.855	2118.086	.036%	99.087%
69.0	8.410	0.859	2118.945	.036%	99.127%
70.0	8.382	0.862	2119.807	.036%	99.167%
71.0	8.327	0.864	2120.671	.037%	99.208%
72.0	8.327	0.866	2121.537	.037%	99.248%
73.0	8.286	0.869	2122.405	.037%	99.289%
74.0	8.272	0.871	2123.276	.037%	99.329%
75.0	8.258	0.873	2124.149	.037%	99.370%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.245	0.876	2125.025	.037%	99.411%
77.0	8.245	0.879	2125.905	.037%	99.452%
78.0	8.341	0.888	2126.792	.038%	99.494%
79.0	8.437	0.902	2127.694	.038%	99.536%
80.0	8.451	0.911	2128.604	.038%	99.579%
81.0	8.437	0.913	2129.518	.039%	99.621%
82.0	8.327	0.909	2130.427	.038%	99.664%
83.0	8.272	0.902	2131.329	.038%	99.706%
84.0	8.272	0.901	2132.231	.038%	99.748%
85.0	8.258	0.902	2133.133	.038%	99.791%
86.0	8.231	0.901	2134.034	.038%	99.833%
87.0	8.258	0.902	2134.936	.038%	99.875%
88.0	8.107	0.896	2135.833	.038%	99.917%
89.0	8.107	0.889	2136.722	.038%	99.958%
90.0	8.107	0.889	2137.611	.038%	100.000%

Zonal flux distribution table

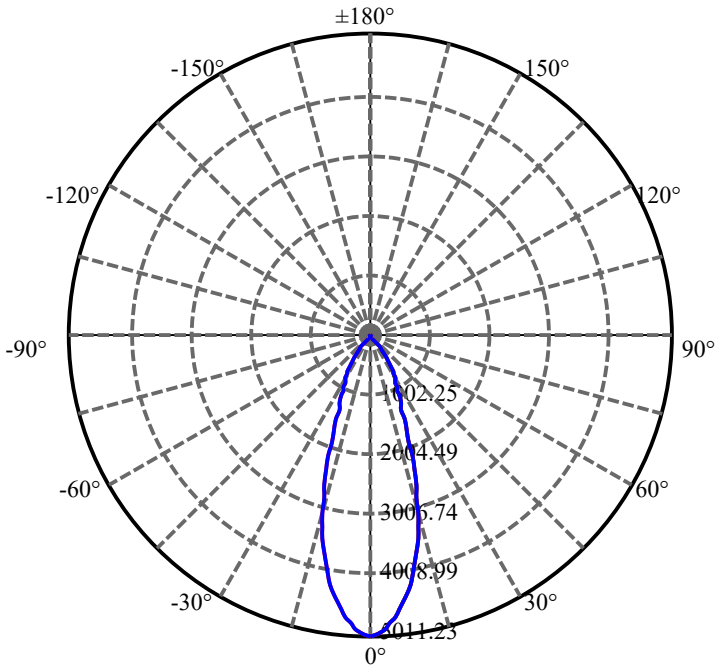
ZONAL LUMEN SUMMARY

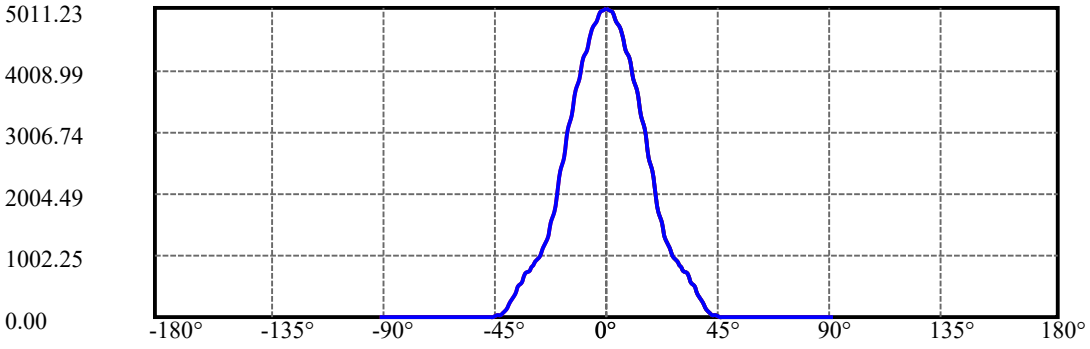
Zone	Lumens	%Lamp	%Fixt
0-30	1790.46	75.71%	83.76%
0-40	2082.92	88.07%	97.44%
0-60	2111.33	89.27%	98.77%
0-90	2136.72	90.35%	99.96%
0-120	2136.72	90.35%	99.96%
0-180	2137.61	90.39%	100.00%
60-90	26.22	1.11%	1.23%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.20	1710.09	72.31%	80.00%

ZONAL LUMEN SUMMARY

0-10	427.99
10-20	824.65
20-30	537.82
30-40	292.46
40-50	20.23
50-60	8.19
60-70	8.47
70-80	8.80
80-90	8.12
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:

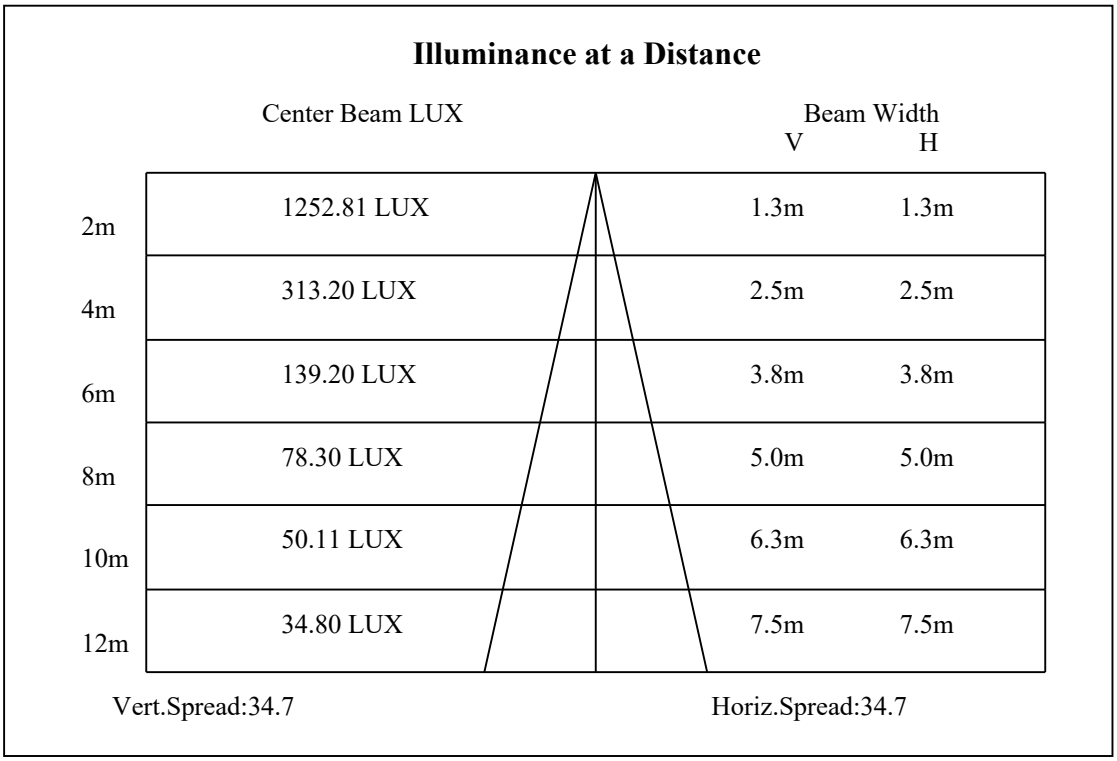
C90/C270:

Field angle(10%Imax):C0/180Left:35.0 Right:35.0
:C90/270Left:35.0 Right:35.0

Beam Angle(50%Imax):C0/180Left:17.4 Right:17.4
:C90/270Left:17.4 Right:17.4

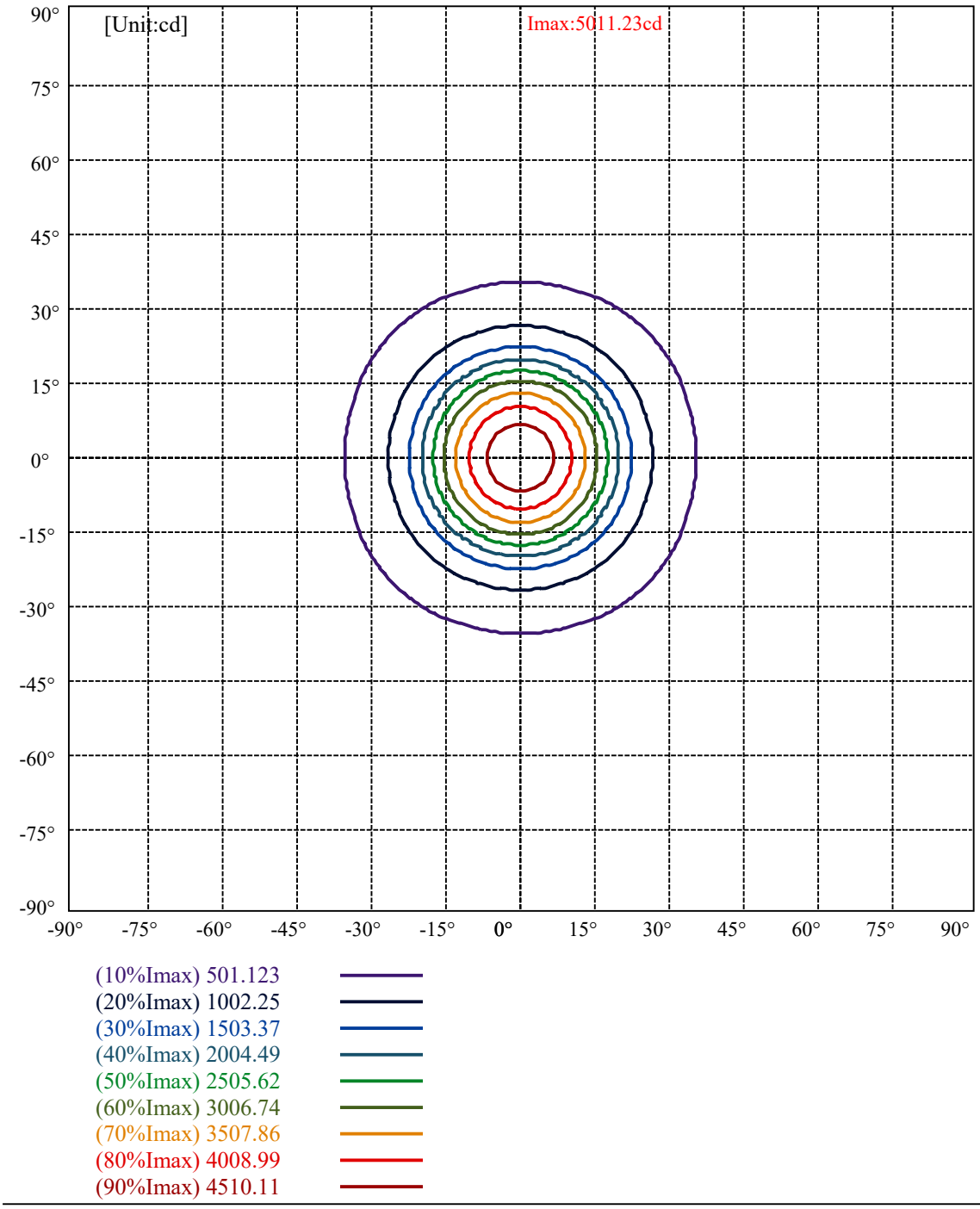
Equipment: gms1980 Date: 2017/6/4 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Lux distance Curve



Equipment: gms1980 Date: 2017/6/4 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

ISO-Intensity(V-H)

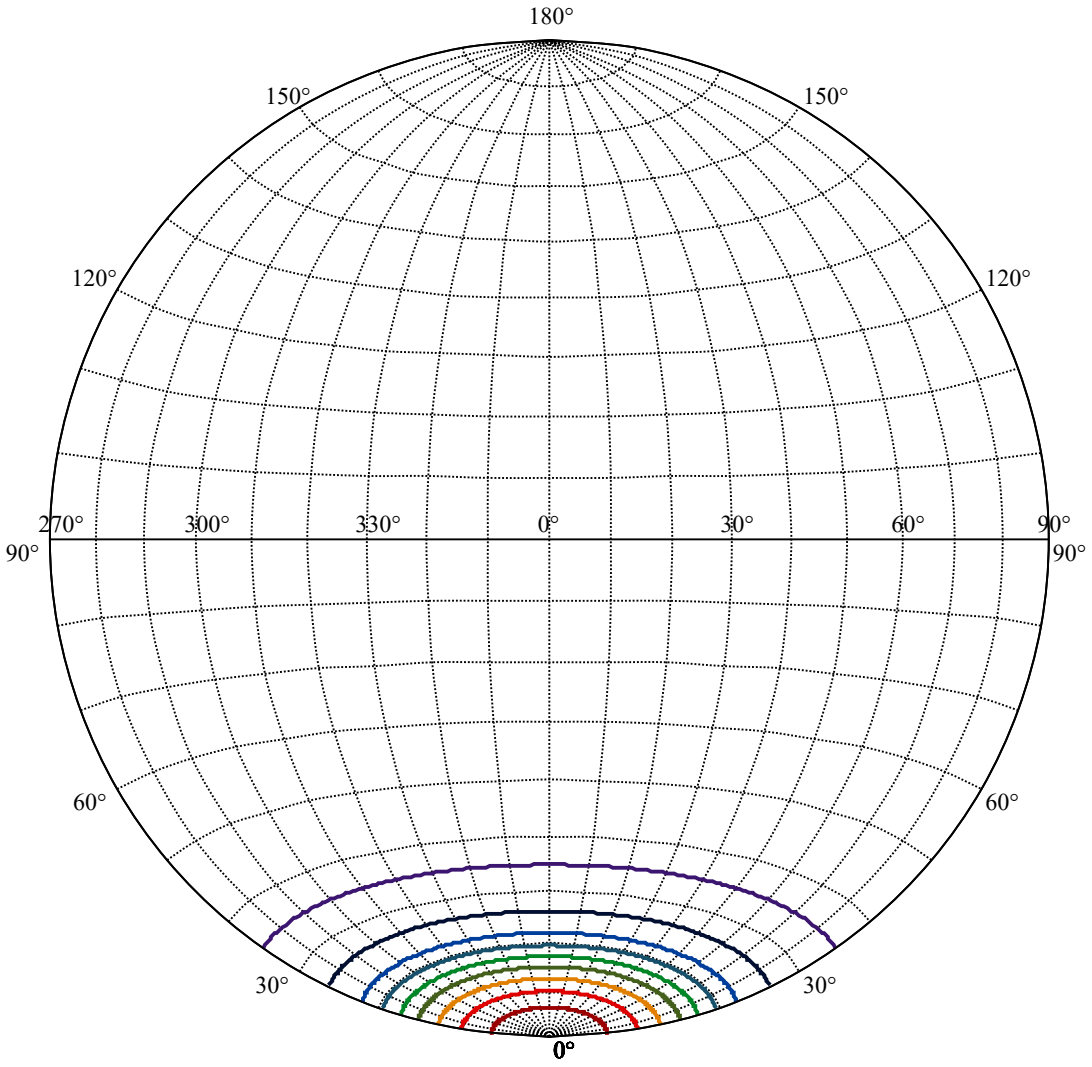


Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/4
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



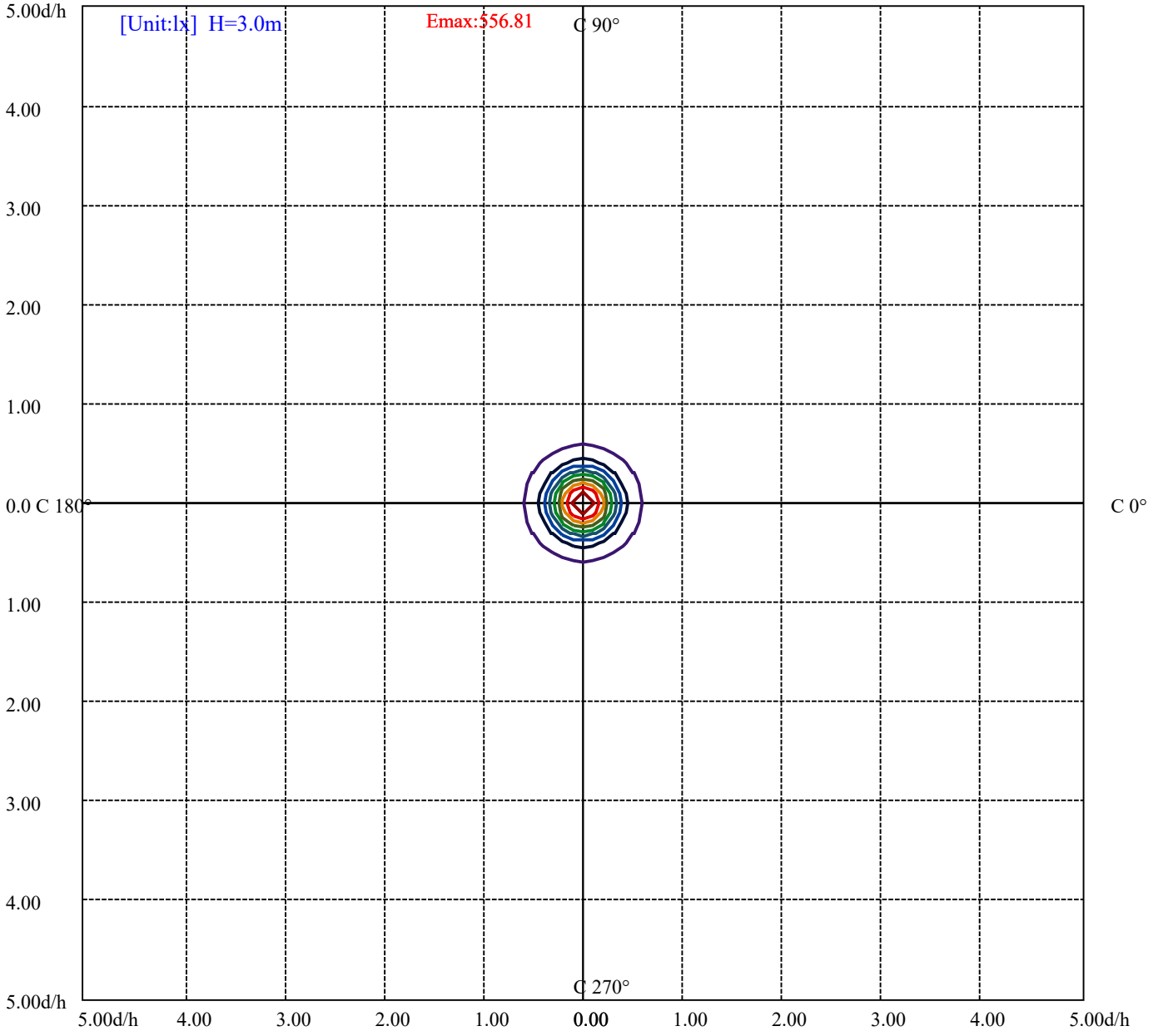
House [Unit:cd] Road

Imax:5011.23

(10%Imax) 501.123
(20%Imax) 1002.25
(30%Imax) 1503.37
(40%Imax) 2004.49
(50%Imax) 2505.62
(60%Imax) 3006.74
(70%Imax) 3507.86
(80%Imax) 4008.99
(90%Imax) 4510.11

Equipment: gms1980 Date: 2017/6/4 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

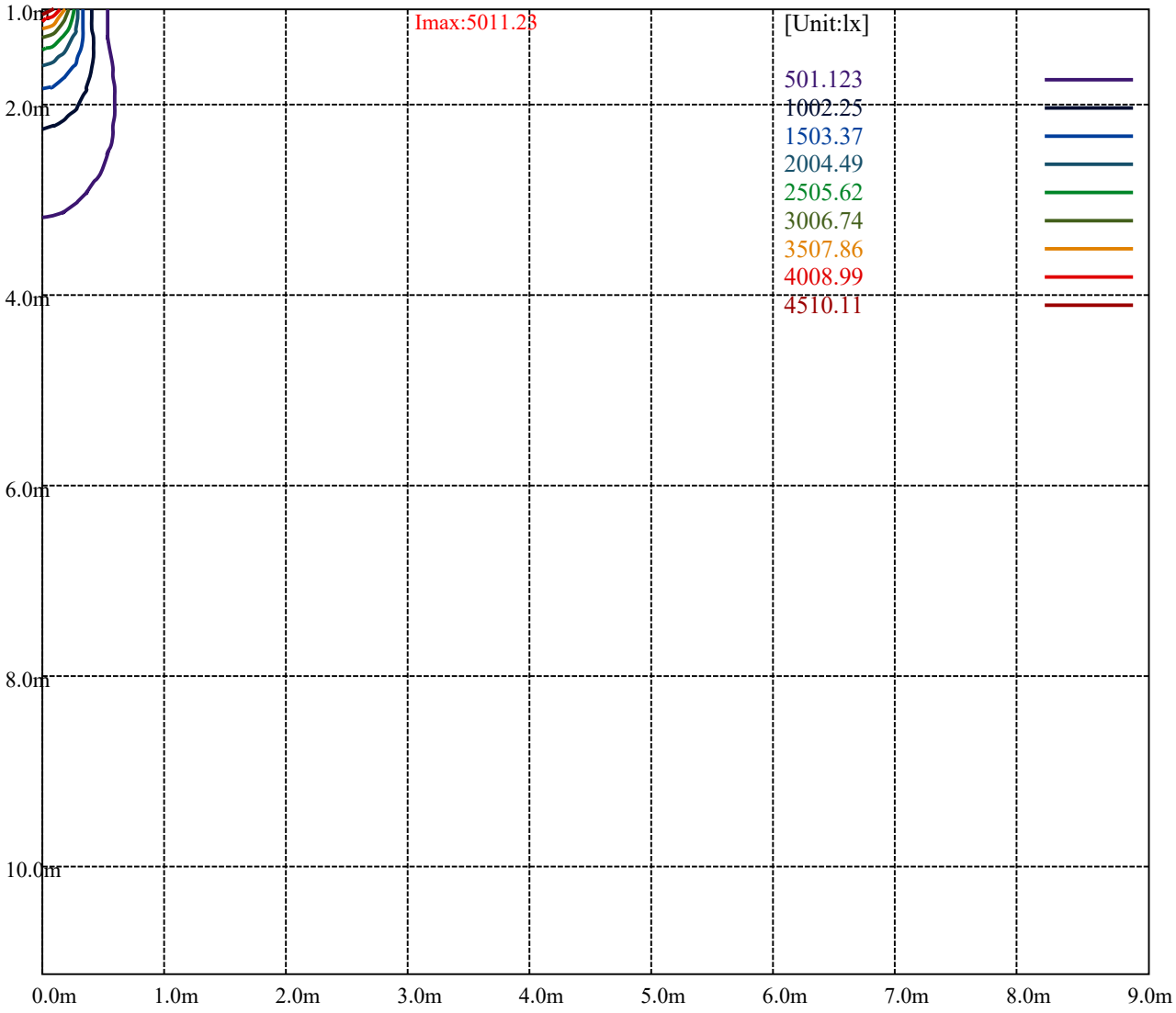
ISO illuminance diagram



(10%Emax) 55.68033
(20%Emax) 111.3611
(30%Emax) 167.0411
(40%Emax) 222.7211
(50%Emax) 278.4022
(60%Emax) 334.0822
(70%Emax) 389.7622
(80%Emax) 445.4433
(90%Emax) 501.1233

Equipment: gms1980
Temperature(°C): 25.0
Date: 2017/6/4
Humidity(%): 60.0%
Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/4
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Nata 2-1676-M

Luminance Limitting Curve(no luminous side)

Luminance Table

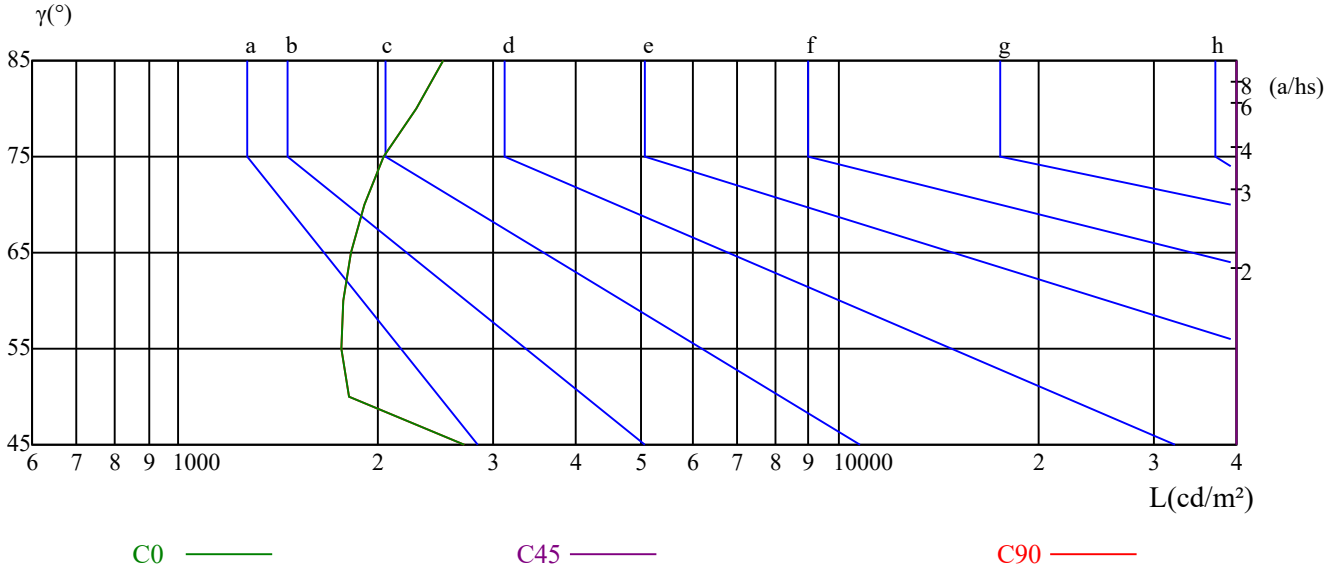
γ	45	50	55	60	65	70	75	80	85
C0	2716	1807	1760	1774	1821	1917	2044	2298	2513
C45	78001	45820	41852	40571	40502	41071	42592	44790	48142
C90	2716	1807	1760	1774	1821	1917	2044	2298	2513

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4108	4108	112448	6512	6512	174258	19338	19338	503943

Glare Table

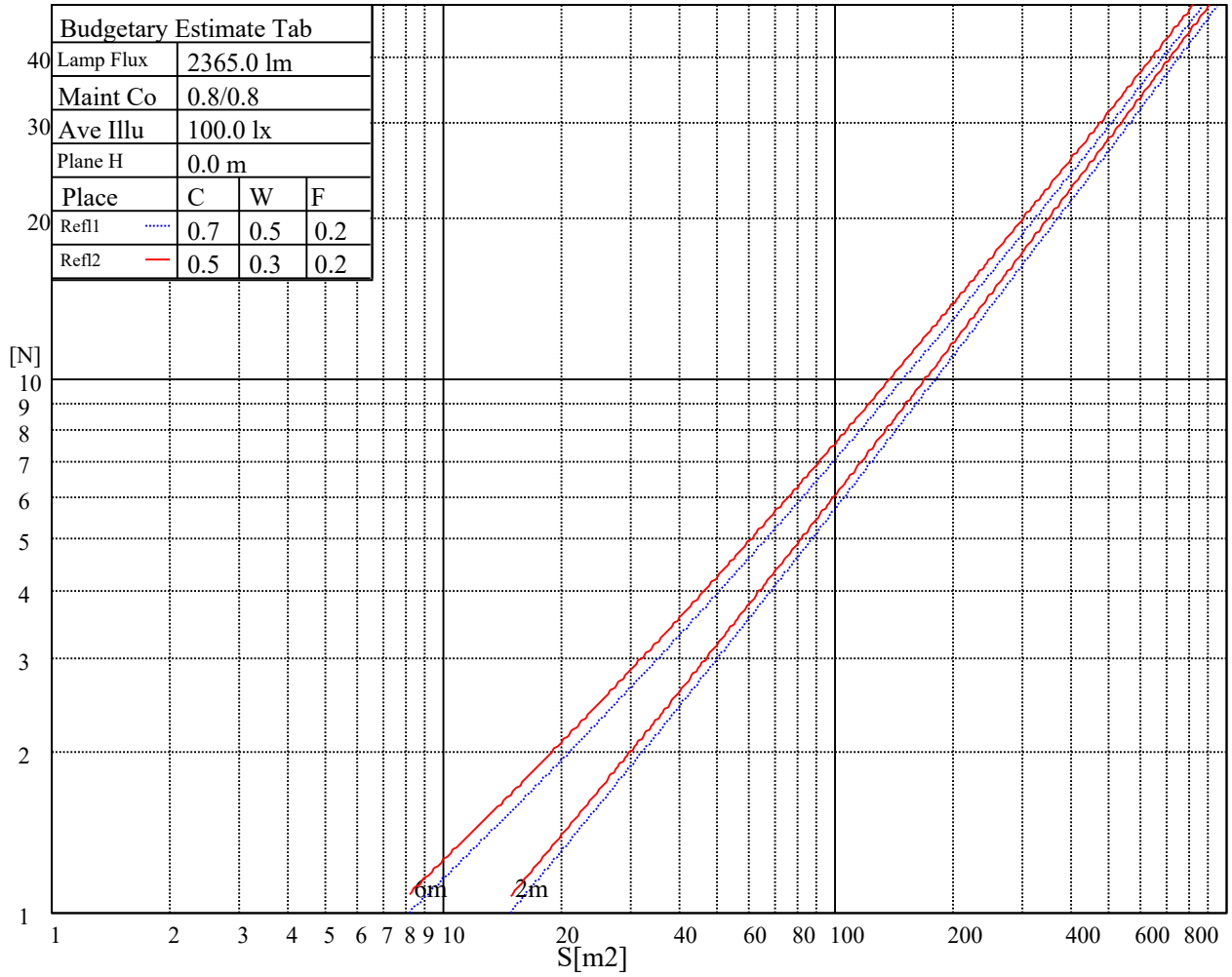
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limitting Curve



Equipment: gms1980 Date: 2017/6/4 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Budgetary Estimate Table

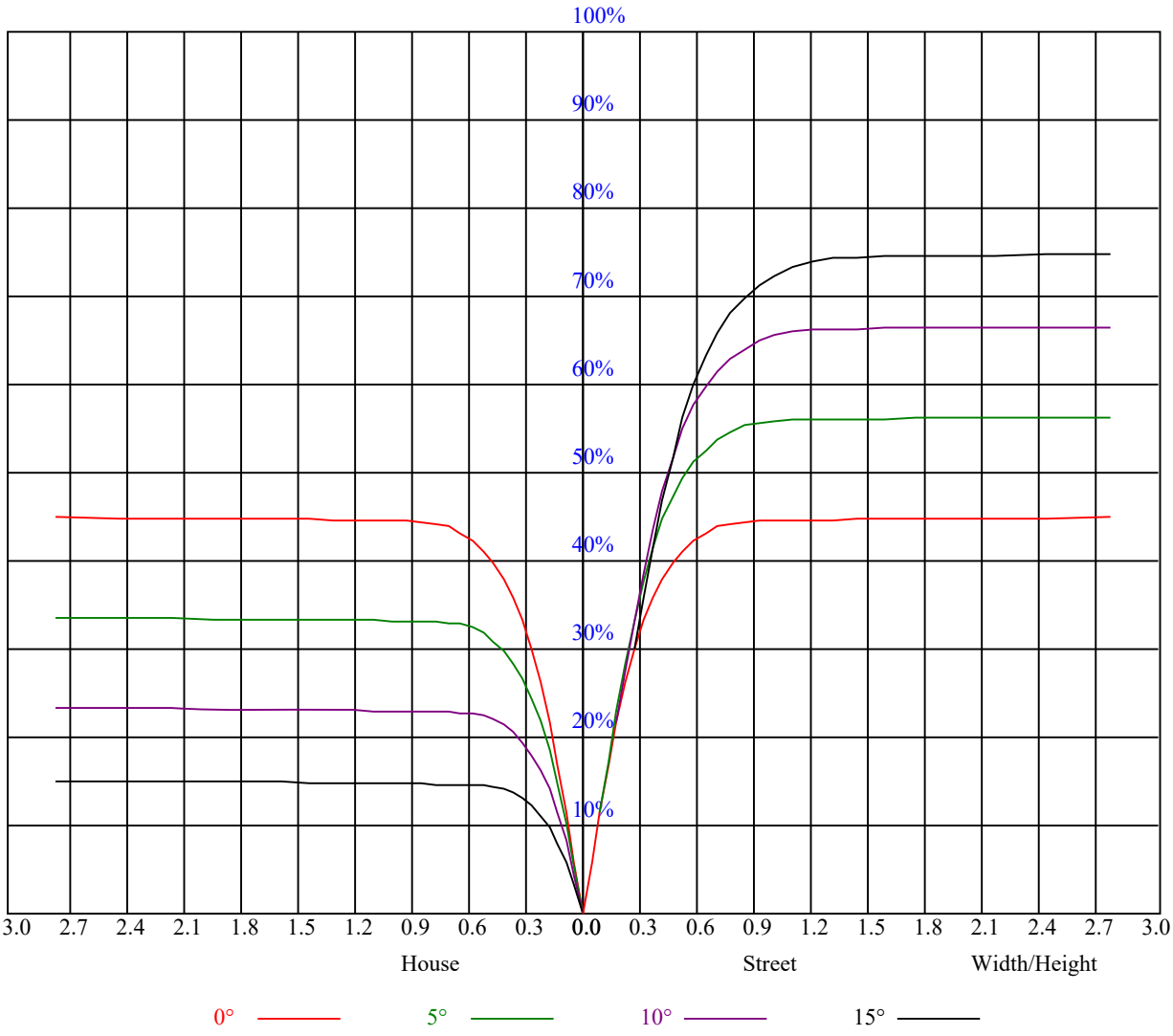


Equipment: gms1980 Date: 2017/6/4 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.08	1.08	1.08	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	0.97	0.99	0.97	0.95	0.95	0.94	0.92	0.92	0.91	0.90	0.89	0.88	0.87	0.85
2	0.95	0.92	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.82	0.81
3	0.90	0.86	0.83	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.81	0.79	0.82	0.80	0.78	0.77
4	0.85	0.81	0.77	0.84	0.80	0.77	0.82	0.79	0.76	0.80	0.77	0.75	0.79	0.76	0.74	0.73
5	0.81	0.76	0.73	0.80	0.76	0.72	0.78	0.75	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.69
6	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.66
7	0.73	0.69	0.65	0.73	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.64	0.63
8	0.70	0.66	0.62	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.61	0.60
9	0.67	0.63	0.60	0.67	0.62	0.59	0.66	0.62	0.59	0.65	0.62	0.59	0.65	0.61	0.59	0.58
10	0.64	0.60	0.57	0.64	0.60	0.57	0.63	0.59	0.57	0.63	0.59	0.57	0.62	0.59	0.56	0.55

Coefficient Utilization Curve



Equipment: gms1980	Date: 2017/6/4	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 60.0%	Distance(m): 7.42

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	5023.90	5043.72	5022.80	4976.55	4904.97	4814.68	4718.33	4607.67	4484.34
90.0	4998.57	5027.20	5033.81	5011.23	4959.48	4897.27	4800.92	4700.72	4569.68
180.0	5023.90	4980.95	4899.47	4813.58	4700.16	4594.46	4460.12	4311.47	4167.77
270.0	4998.57	4927.55	4856.53	4769.54	4645.66	4535.00	4418.28	4277.33	4120.42
360.0	5023.90	5043.72	5022.80	4976.55	4904.97	4814.68	4718.33	4607.67	4484.34

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4367.07	4259.16	4072.52	3927.17	3746.04	3545.63	3349.08	3164.09	2892.66
90.0	4432.04	4296.05	4147.40	3953.05	3787.33	3589.13	3377.16	3171.25	2928.45
180.0	4015.26	3819.81	3649.14	3465.80	3218.05	3038.01	2794.11	2517.73	2295.30
270.0	3971.77	3791.73	3612.25	3392.58	3163.54	2953.23	2739.61	2457.17	2231.99
360.0	4367.07	4259.16	4072.52	3927.17	3746.04	3545.63	3349.08	3164.09	2892.66

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2639.95	2442.30	2164.82	1947.90	1744.74	1515.70	1361.54	1215.65	1101.68
90.0	2702.72	2474.79	2222.63	1984.23	1756.85	1571.31	1409.44	1245.38	1136.91
180.0	2080.03	1848.24	1651.69	1463.40	1304.84	1164.44	1097.11	1001.92	942.57
270.0	2020.57	1768.96	1576.82	1414.40	1262.99	1092.81	1049.87	967.89	908.60
360.0	2639.95	2442.30	2164.82	1947.90	1744.74	1515.70	1361.54	1215.65	1101.68

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1015.79	948.62	882.00	837.96	798.87	760.33	715.73	659.58	584.70
90.0	1051.58	967.34	909.53	859.43	813.73	775.19	736.10	672.79	607.82
180.0	891.25	832.62	792.76	755.76	704.17	633.97	564.22	481.14	406.21
270.0	853.70	807.90	778.55	739.52	691.07	632.87	565.65	471.89	391.34
360.0	1015.79	948.62	882.00	837.96	798.87	760.33	715.73	659.58	584.70

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	503.77	427.79	340.80	281.89	186.48	107.75	59.57	32.21	20.70
90.0	526.89	438.80	347.96	279.69	188.90	116.17	66.18	31.00	19.93
180.0	319.99	234.54	164.62	95.36	44.49	25.16	19.82	16.19	13.60
270.0	309.53	213.89	146.95	88.53	38.98	22.79	19.27	16.13	14.04
360.0	503.77	427.79	340.80	281.89	186.48	107.75	59.57	32.21	20.70

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	18.28	15.69	13.87	11.34	9.97	9.74	9.63	9.47	9.30
90.0	17.01	13.76	11.34	10.63	10.02	9.80	9.63	9.52	9.41
180.0	11.84	10.57	10.08	9.91	9.80	9.63	9.52	9.41	9.25
270.0	12.55	11.23	10.02	9.80	9.58	9.47	9.36	9.19	9.14
360.0	18.28	15.69	13.87	11.34	9.97	9.74	9.63	9.47	9.30

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	9.25	9.14	9.08	8.97	8.92	8.81	8.75	8.75	8.70
90.0	9.30	9.19	9.08	9.03	8.97	8.92	8.86	8.75	8.70
180.0	9.19	9.08	9.03	8.97	8.86	8.81	8.75	8.75	8.70
270.0	9.03	8.92	8.86	8.81	8.75	8.70	8.64	8.59	8.53
360.0	9.25	9.14	9.08	8.97	8.92	8.81	8.75	8.75	8.70

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.64	8.59	8.53	8.53	8.53	8.48	8.48	8.42	8.37
90.0	8.64	8.59	8.59	8.53	8.48	8.42	8.42	8.42	8.37
180.0	8.64	8.59	8.48	8.48	8.42	8.42	8.42	8.42	8.31
270.0	8.53	8.48	8.42	8.42	8.37	8.37	8.31	8.26	8.26
360.0	8.64	8.59	8.53	8.53	8.53	8.48	8.48	8.42	8.37

Intensity data(cd)

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.37	8.37	8.31	8.31	8.26	8.26	8.26	8.31	8.26
90.0	8.37	8.26	8.26	8.26	8.31	8.31	8.59	8.92	9.03
180.0	8.31	8.26	8.26	8.26	8.26	8.26	8.31	8.31	8.31
270.0	8.26	8.26	8.26	8.20	8.15	8.15	8.20	8.20	8.20
360.0	8.37	8.37	8.31	8.31	8.26	8.26	8.26	8.31	8.26

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	8.31	8.20	8.26	8.26	8.20	8.20	8.20	8.15	8.15
90.0	9.03	8.70	8.37	8.37	8.42	8.48	8.70	8.15	8.09
180.0	8.26	8.26	8.26	8.26	8.31	8.15	8.09	8.09	8.15
270.0	8.15	8.15	8.20	8.20	8.09	8.09	8.04	8.04	8.04
360.0	8.31	8.20	8.26	8.26	8.20	8.20	8.20	8.15	8.15

C/γ(°)	90.0
0.0	8.09
90.0	8.09
180.0	8.15
270.0	8.09
360.0	8.09