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NATA

LumCAT: 3-2042-M
Luminaire: 92.70.135.00
Report No: GC2017061704
Test No: NT-0010
LampCAT: LUXEON CoB 1208
Lamp flux(lm): 3128.0
Number of Lamps: 1
Length(mm): 84
Phm Type: C

Voltage(V): 35.3000
Current(A): 0.7000
Power (W): 24.7100
PF: 0.0000
Ballast type: DC
Width(mm): 84
Height(mm): 0

Photometric Results

Lumens(lm): 2759.96
Efficiency(%): 88.23%
Lumens(lm)/Power(W): 111.69
Central intensity(cd): 23649.480
Maximum intensity(cd): 23649.480
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=14.1
[C90/270]Total=14.1
Field angle(10%Imax): [C0/180]Total=28.2
[C90/270]Total=28.2
Maximum s/h(1/2): C0_180=0.24 C90_270=0.24
Maximum s/h(1/4): C0_180=0.24 C90_270=0.24
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.23%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.658%

Equipment: gms1980
Temperature(°C): 25.0
Date: 2017/6/10
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	23649.477	0.000	0	.000%	.000%
1.0	23477.426	22.549	22.549	.721%	.817%
2.0	22906.215	66.574	89.124	2.128%	3.229%
3.0	21609.637	106.467	195.591	3.404%	7.087%
4.0	19869.855	138.845	334.436	4.439%	12.117%
5.0	17832.768	162.195	496.631	5.185%	17.994%
6.0	14269.105	168.704	665.335	5.393%	24.107%
7.0	11895.486	162.403	827.738	5.192%	29.991%
8.0	9200.337	150.979	978.717	4.827%	35.461%
9.0	7163.801	132.622	1111.339	4.240%	40.267%
10.0	5334.965	113.109	1224.448	3.616%	44.365%
11.0	4285.865	96.132	1320.58	3.073%	47.848%
12.0	3456.991	84.641	1405.221	2.706%	50.915%
13.0	2803.197	74.293	1479.513	2.375%	53.606%
14.0	2401.835	66.624	1546.137	2.130%	56.020%
15.0	2016.716	60.660	1606.797	1.939%	58.218%
16.0	1778.459	55.610	1662.407	1.778%	60.233%
17.0	1588.652	52.435	1714.842	1.676%	62.133%
18.0	1449.910	50.099	1764.941	1.602%	63.948%
19.0	1355.489	48.808	1813.749	1.560%	65.717%
20.0	1286.255	48.351	1862.101	1.546%	67.468%
21.0	1234.364	48.401	1910.502	1.547%	69.222%
22.0	1201.468	48.949	1959.451	1.565%	70.996%
23.0	1175.179	49.868	2009.319	1.594%	72.803%
24.0	1150.816	50.855	2060.174	1.626%	74.645%
25.0	1124.279	51.731	2111.905	1.654%	76.520%
26.0	1104.087	52.601	2164.505	1.682%	78.425%
27.0	1072.953	53.262	2217.767	1.703%	80.355%
28.0	1050.724	53.767	2271.534	1.719%	82.303%
29.0	1025.632	54.323	2325.858	1.737%	84.272%
30.0	995.723	54.576	2380.434	1.745%	86.249%
31.0	943.942	53.978	2434.412	1.726%	88.205%
32.0	868.914	51.936	2486.348	1.660%	90.087%
33.0	768.835	48.249	2534.597	1.542%	91.835%
34.0	652.570	43.016	2577.613	1.375%	93.393%
35.0	536.662	36.933	2614.546	1.181%	94.731%
36.0	410.445	30.156	2644.702	.964%	95.824%
37.0	285.041	22.683	2667.385	.725%	96.646%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	192.615	15.944	2683.328	.510%	97.224%
39.0	102.006	10.056	2693.384	.321%	97.588%
40.0	54.781	5.468	2698.853	.175%	97.786%
41.0	29.538	3.003	2701.855	.096%	97.895%
42.0	23.371	1.922	2703.777	.061%	97.965%
43.0	17.962	1.531	2705.308	.049%	98.020%
44.0	14.989	1.244	2706.552	.040%	98.065%
45.0	13.558	1.097	2707.649	.035%	98.105%
46.0	12.787	1.030	2708.68	.033%	98.142%
47.0	12.484	1.005	2709.685	.032%	98.179%
48.0	12.291	1.002	2710.686	.032%	98.215%
49.0	12.126	1.003	2711.689	.032%	98.251%
50.0	11.933	1.003	2712.692	.032%	98.288%
51.0	11.796	1.004	2713.696	.032%	98.324%
52.0	11.672	1.007	2714.703	.032%	98.360%
53.0	11.589	1.012	2715.715	.032%	98.397%
54.0	11.452	1.016	2716.73	.032%	98.434%
55.0	11.355	1.018	2717.748	.033%	98.471%
56.0	11.273	1.023	2718.771	.033%	98.508%
57.0	11.176	1.026	2719.797	.033%	98.545%
58.0	11.135	1.032	2720.829	.033%	98.582%
59.0	11.080	1.039	2721.868	.033%	98.620%
60.0	10.998	1.043	2722.911	.033%	98.658%
61.0	10.956	1.048	2723.958	.033%	98.696%
62.0	10.929	1.055	2725.013	.034%	98.734%
63.0	10.874	1.060	2726.073	.034%	98.772%
64.0	10.860	1.066	2727.14	.034%	98.811%
65.0	10.846	1.074	2728.214	.034%	98.850%
66.0	10.791	1.080	2729.294	.035%	98.889%
67.0	10.791	1.085	2730.379	.035%	98.928%
68.0	10.764	1.092	2731.471	.035%	98.968%
69.0	10.764	1.098	2732.569	.035%	99.008%
70.0	10.777	1.106	2733.675	.035%	99.048%
71.0	10.777	1.114	2734.789	.036%	99.088%
72.0	10.777	1.121	2735.91	.036%	99.129%
73.0	10.860	1.131	2737.041	.036%	99.170%
74.0	11.410	1.171	2738.212	.037%	99.212%
75.0	12.374	1.257	2739.469	.040%	99.258%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	13.571	1.377	2740.846	.044%	99.308%
77.0	14.741	1.510	2742.356	.048%	99.362%
78.0	15.319	1.609	2743.965	.051%	99.421%
79.0	14.824	1.620	2745.585	.052%	99.479%
80.0	14.177	1.564	2747.148	.050%	99.536%
81.0	13.571	1.501	2748.649	.048%	99.590%
82.0	12.401	1.408	2750.057	.045%	99.641%
83.0	11.232	1.285	2751.342	.041%	99.688%
84.0	11.355	1.230	2752.572	.039%	99.732%
85.0	11.644	1.255	2753.828	.040%	99.778%
86.0	12.002	1.293	2755.12	.041%	99.825%
87.0	12.016	1.314	2756.435	.042%	99.872%
88.0	10.447	1.230	2757.665	.039%	99.917%
89.0	10.447	1.145	2758.81	.037%	99.958%
90.0	10.447	1.146	2759.956	.037%	100.000%

Zonal flux distribution table

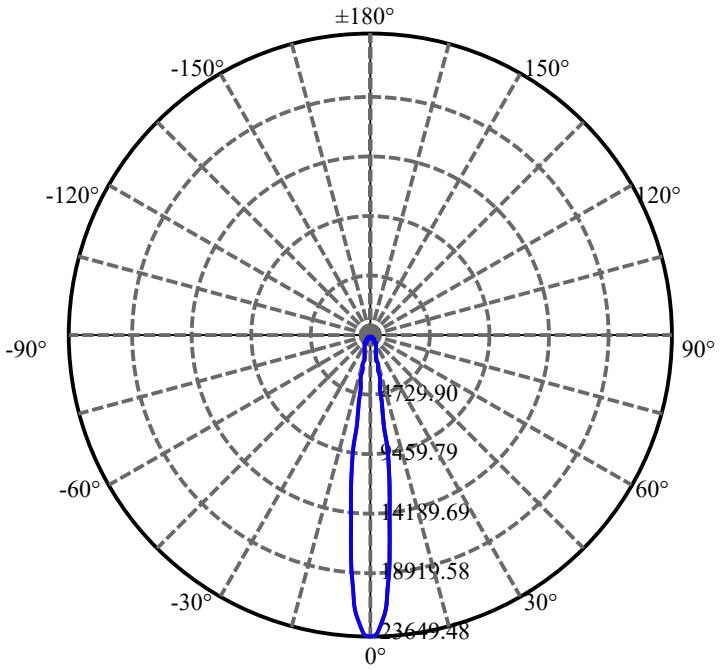
ZONAL LUMEN SUMMARY

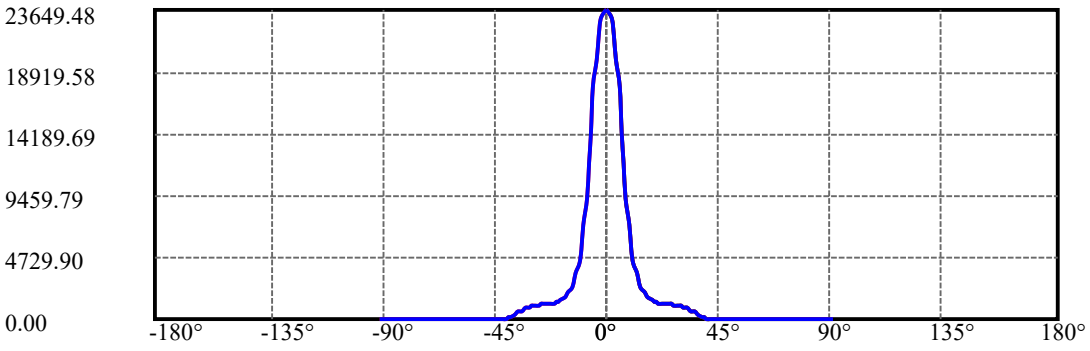
Zone	Lumens	%Lamp	%Fixt
0-30	2380.43	76.10%	86.25%
0-40	2698.85	86.28%	97.79%
0-60	2722.91	87.05%	98.66%
0-90	2758.81	88.20%	99.96%
0-120	2758.81	88.20%	99.96%
0-180	2759.96	88.23%	100.00%
60-90	36.94	1.18%	1.34%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.82	2207.97	70.59%	80.00%

ZONAL LUMEN SUMMARY

0-10	1224.45
10-20	637.65
20-30	518.33
30-40	318.42
40-50	13.84
50-60	10.22
60-70	10.76
70-80	13.47
80-90	11.66
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):

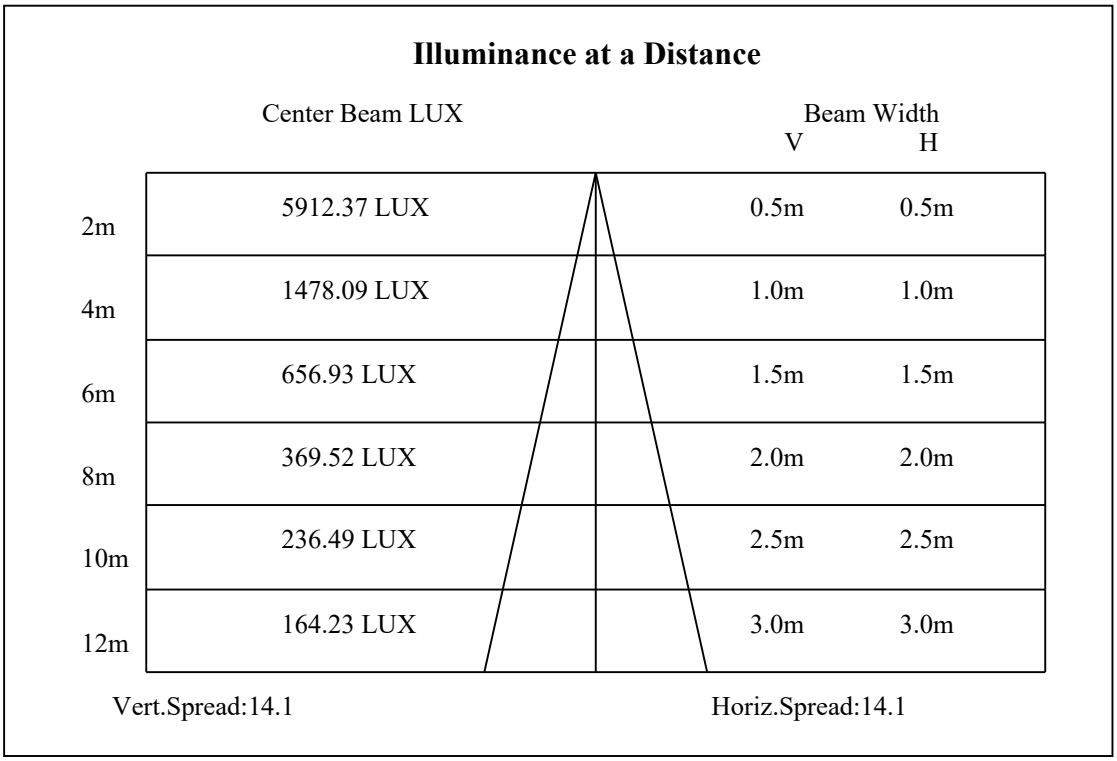
C0/C180:

C90/C270:

Field angle(10%Imax):C0/180Left:14.1 Right:14.1
:C90/270Left:14.1 Right:14.1

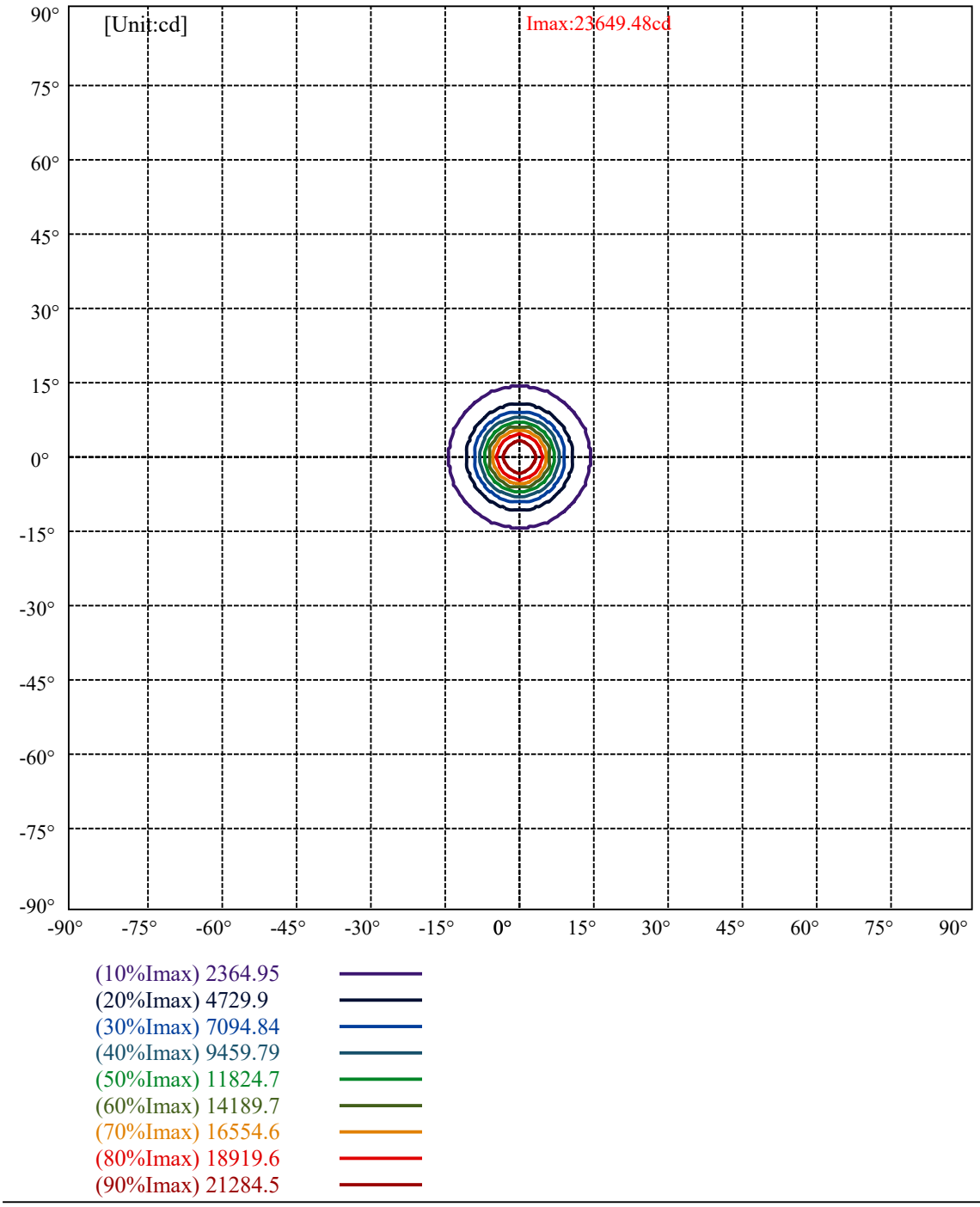
Beam Angle(50%Imax):C0/180Left:7.0 Right:7.0
:C90/270Left:7.0 Right:7.0

Lux distance Curve



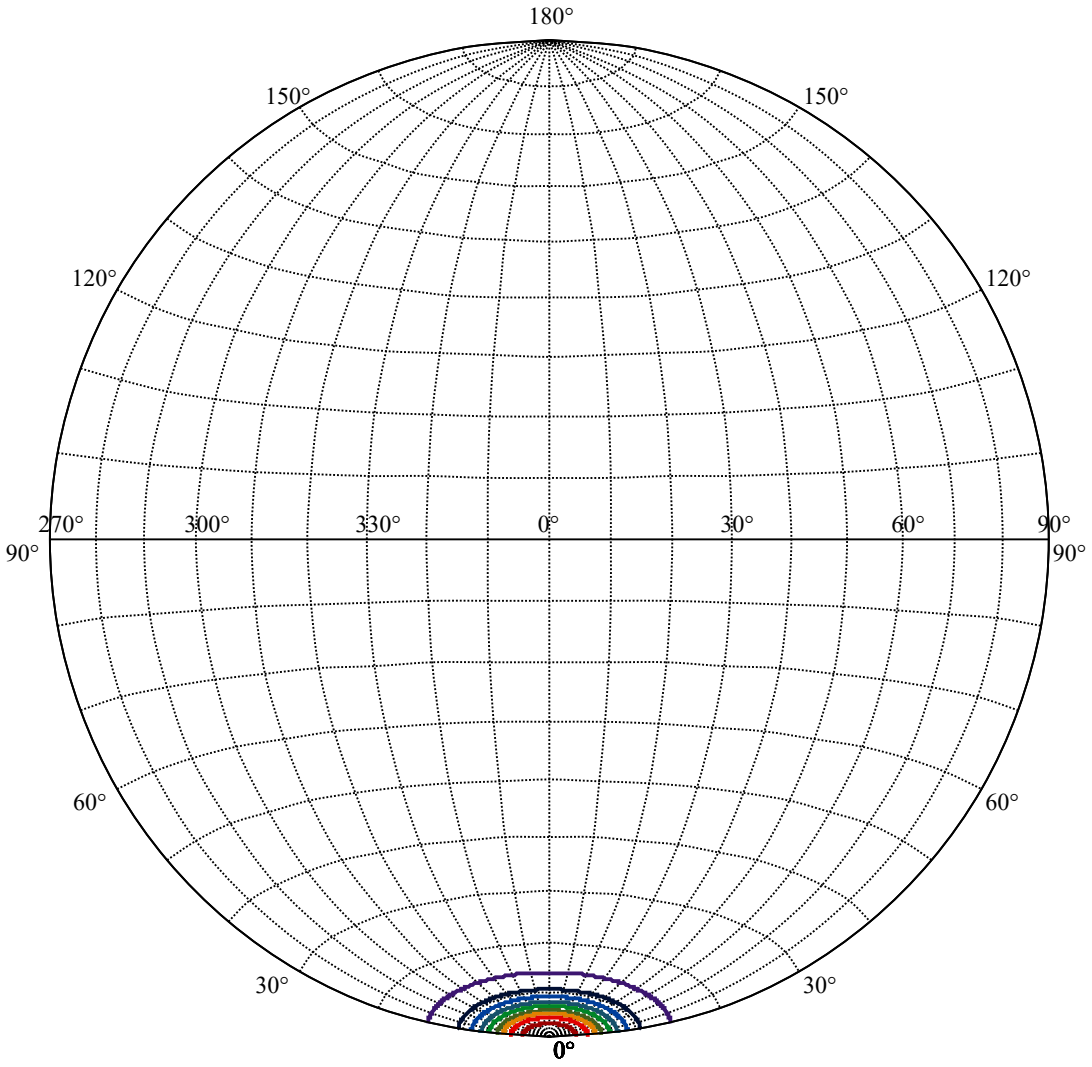
Equipment: gms1980 Date: 2017/6/10 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

ISO-Intensity(V-H)



Equipment: gms1980 Date: 2017/6/10 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:23649.48

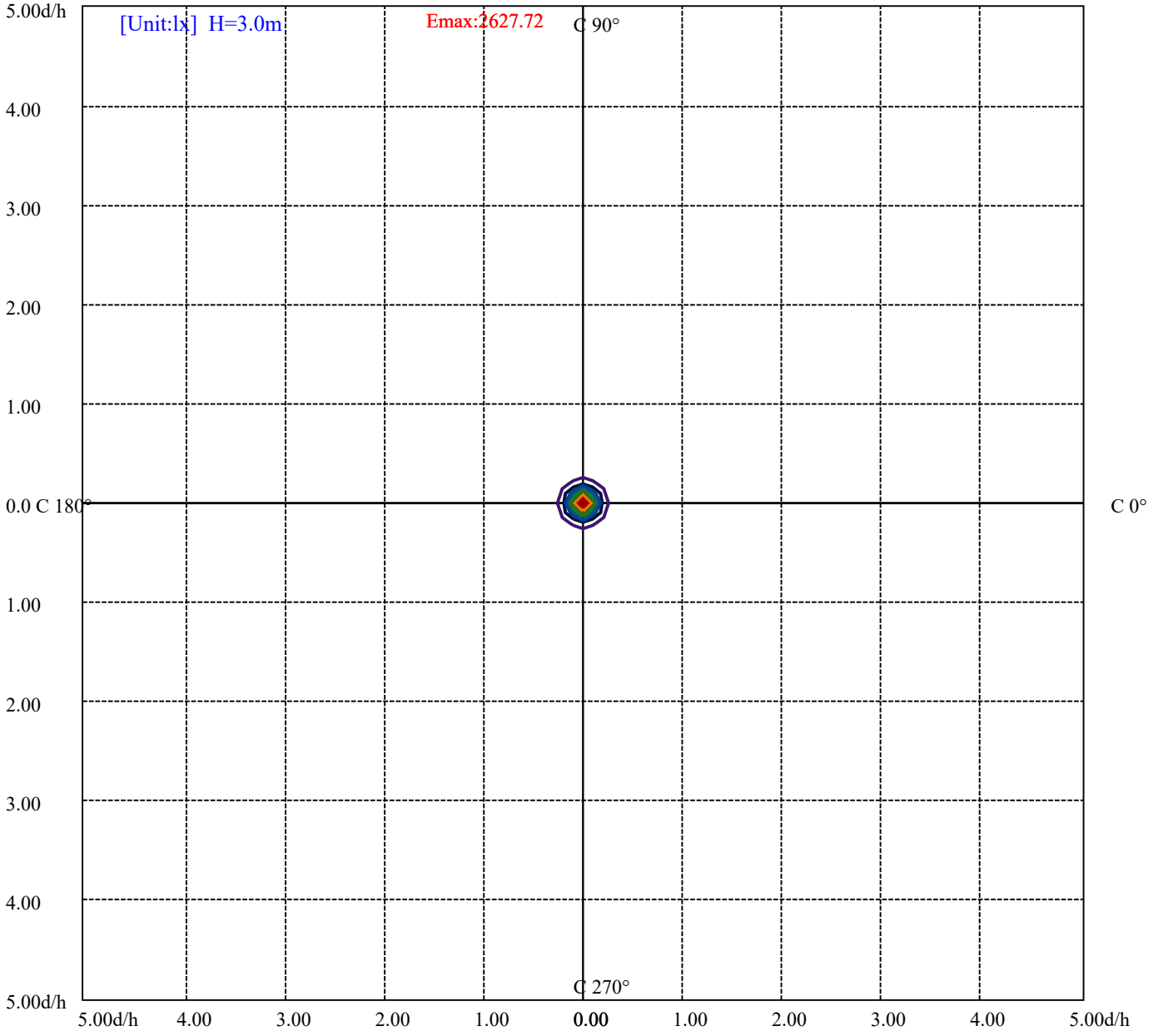
(10%Imax) 2364.95
(20%Imax) 4729.9
(30%Imax) 7094.84
(40%Imax) 9459.79
(50%Imax) 11824.7
(60%Imax) 14189.7
(70%Imax) 16554.6
(80%Imax) 18919.6
(90%Imax) 21284.5

Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/10
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

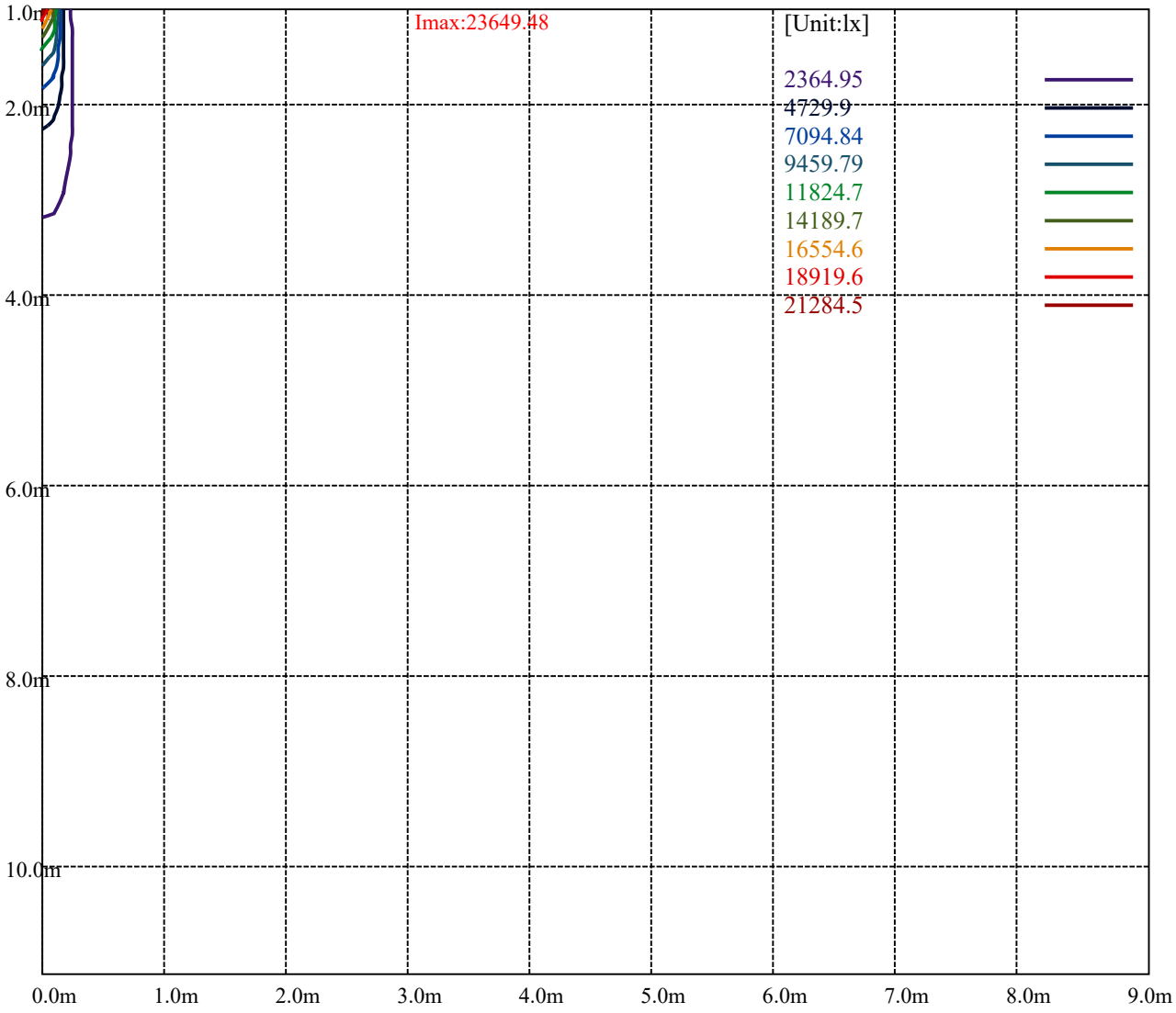
ISO illuminance diagram



(10%Emax) 262.7722
(20%Emax) 525.5433
(30%Emax) 788.3156
(40%Emax) 1051.087
(50%Emax) 1313.856
(60%Emax) 1576.633
(70%Emax) 1839.4
(80%Emax) 2102.178
(90%Emax) 2364.944

Equipment: gms1980
Temperature(°C): 25.0
Date: 2017/6/10
Humidity(%): 60.0%
Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/6/10
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

NATA 3-2042-M

Luminance Limitting Curve(no luminous side)

Luminance Table

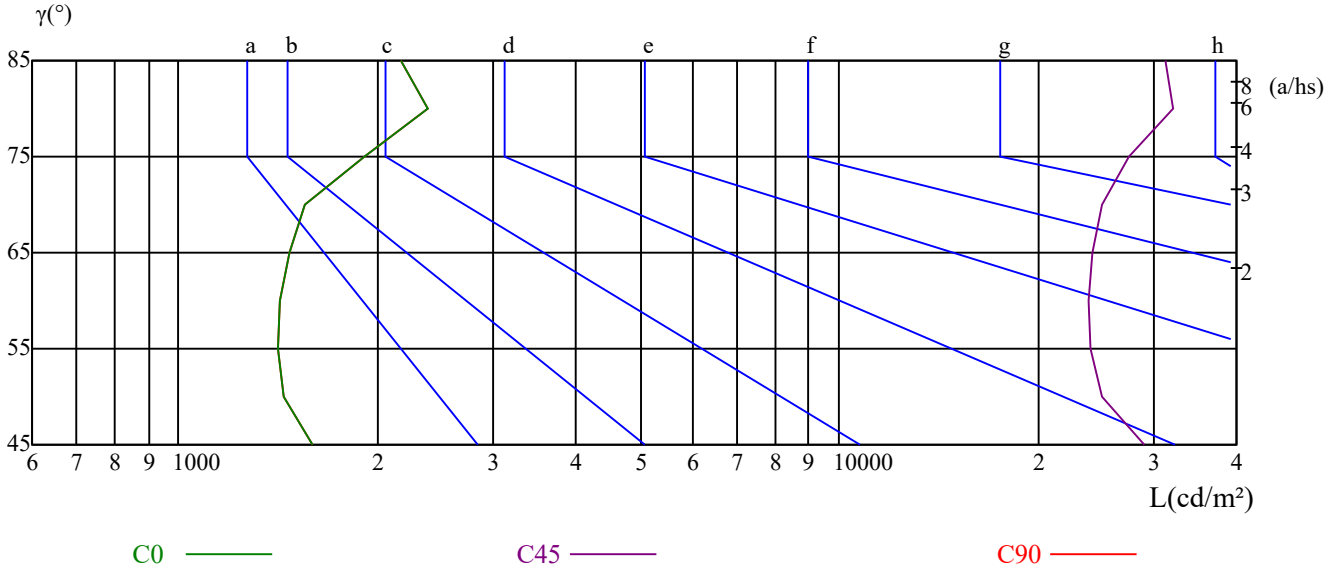
γ	45	50	55	60	65	70	75	80	85
C0	1600	1439	1412	1422	1472	1552	1913	2386	2168
C45	29019	25068	24046	23886	24222	24988	27410	32039	31211
C90	1600	1439	1412	1422	1472	1552	1913	2386	2168

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3552	3552	72618	6617	6617	122720	18492	18492	363600

Glare Table

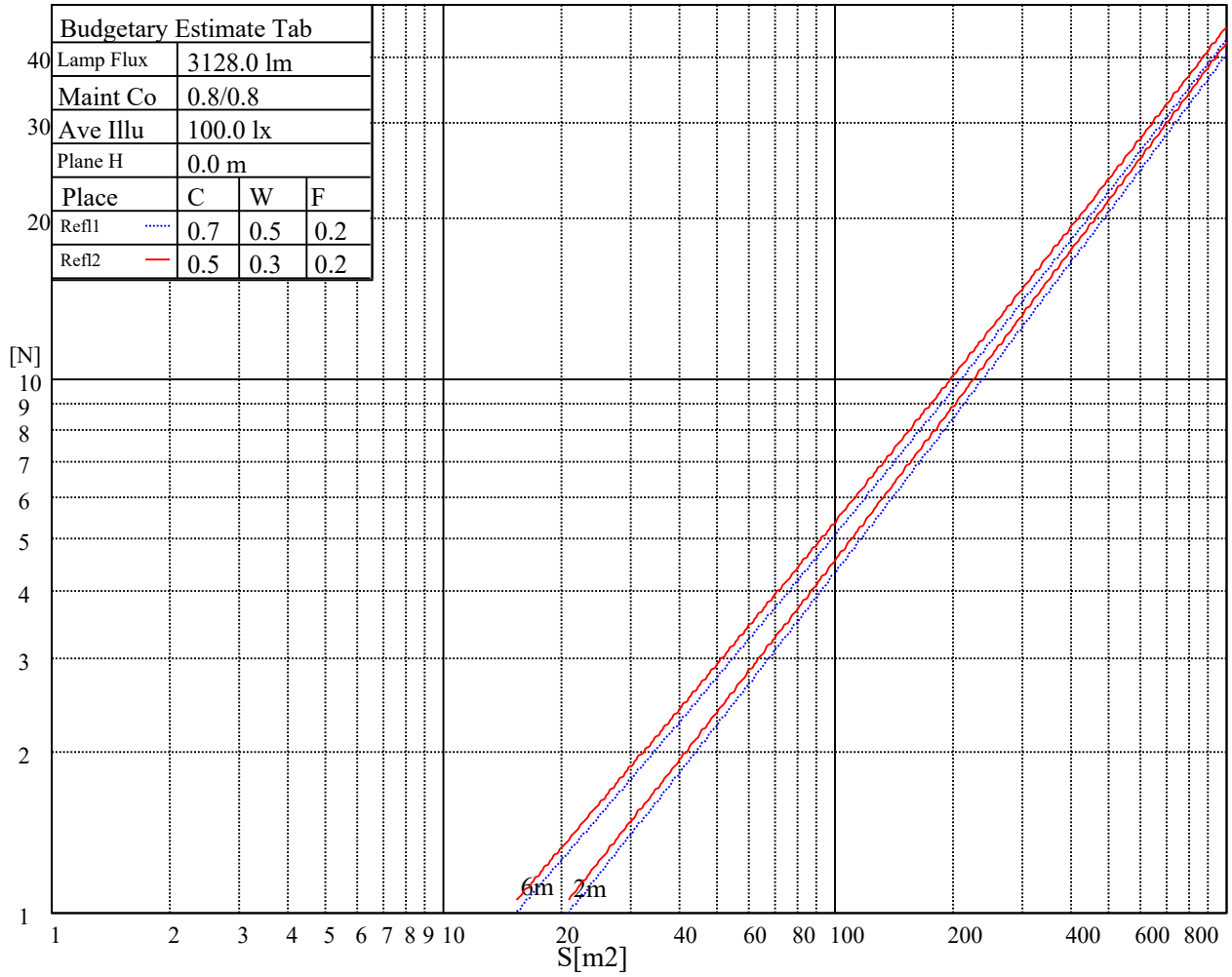
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limitting Curve



Equipment: gms1980 Date: 2017/6/10 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Budgetary Estimate Table

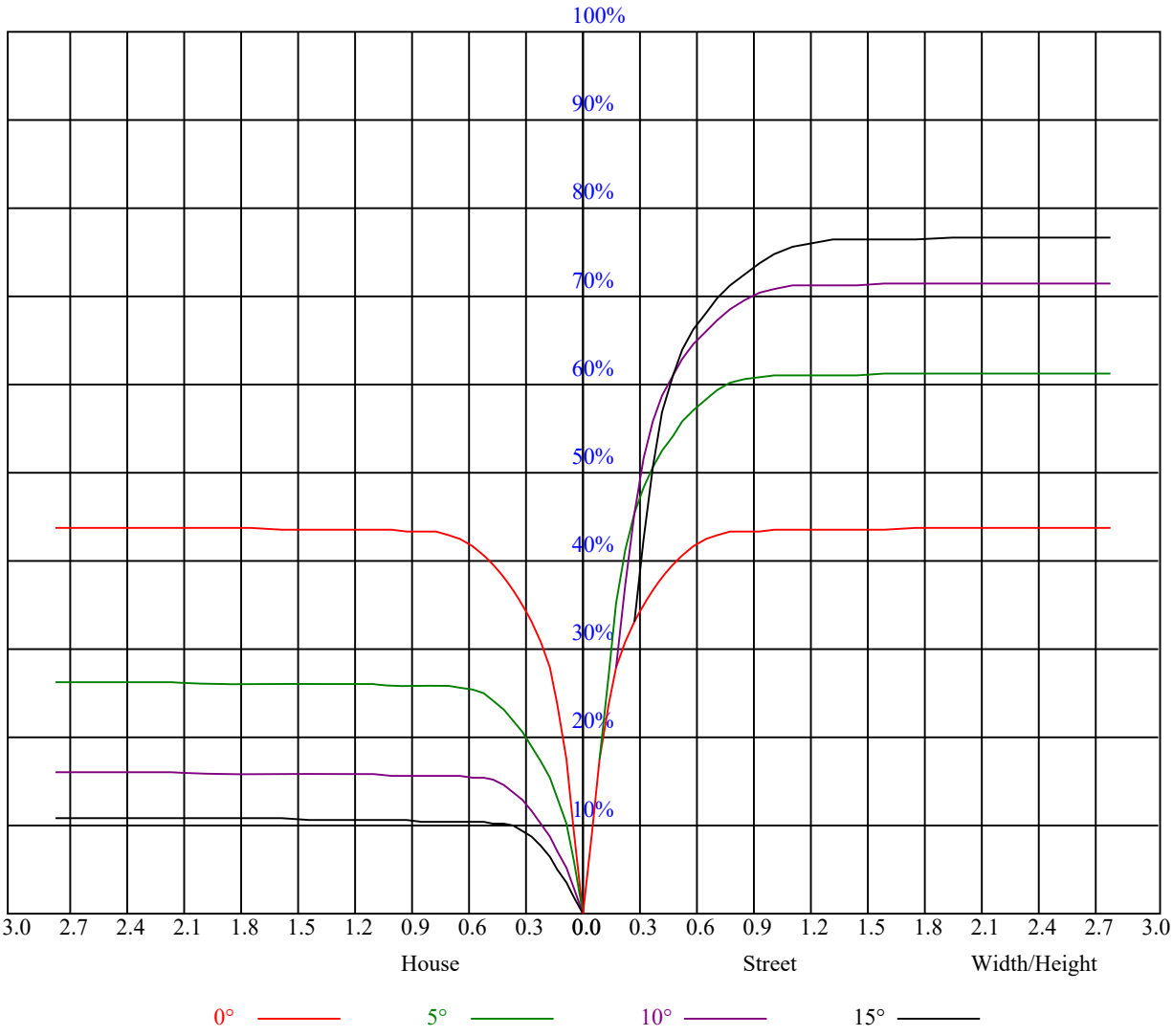


Equipment: gms1980	Date: 2017/6/10	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 60.0%	Distance(m): 7.42

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	1.05	1.05	1.05	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.88
1	0.99	0.97	0.96	0.97	0.96	0.94	0.94	0.92	0.91	0.90	0.90	0.89	0.88	0.87	0.86	0.85
2	0.94	0.91	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.87	0.86	0.84	0.85	0.84	0.83	0.81
3	0.90	0.87	0.84	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.82	0.81	0.83	0.81	0.79	0.78
4	0.86	0.83	0.80	0.85	0.82	0.79	0.83	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.77	0.76
5	0.83	0.79	0.76	0.82	0.79	0.76	0.81	0.78	0.75	0.79	0.77	0.75	0.78	0.76	0.74	0.73
6	0.80	0.76	0.73	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.76	0.74	0.72	0.71
7	0.77	0.73	0.71	0.77	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.70	0.69
8	0.75	0.71	0.68	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67
9	0.73	0.69	0.66	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65
10	0.71	0.67	0.65	0.70	0.67	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.69	0.66	0.64	0.63

Coefficient Utilization Curve



Equipment: gms1980	Date: 2017/6/10	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	23580.66	23013.58	21780.31	19732.21	17298.72	14958.82	11231.51	8742.96	6920.59
90.0	23718.30	23773.35	23591.67	22699.75	21405.93	19765.25	16781.19	13725.56	11314.09
180.0	23580.66	23773.35	23690.77	23255.82	22193.23	20602.10	18119.06	15135.00	10911.63
270.0	23718.30	23349.42	22562.11	20750.76	18581.54	16004.90	10944.66	9978.42	7655.04
360.0	23580.66	23013.58	21780.31	19732.21	17298.72	14958.82	11231.51	8742.96	6920.59

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4927.55	3931.03	3259.34	2813.38	2139.49	1869.72	1645.64	1484.87	1384.67
90.0	8225.43	6105.75	4933.05	3749.34	3083.16	2818.89	2165.37	1913.76	1717.21
180.0	9613.40	6906.27	5408.19	4356.06	3582.52	2859.63	2429.09	2104.81	1796.49
270.0	5888.83	4396.80	3542.88	2909.18	2407.62	2059.11	1826.77	1610.40	1456.24
360.0	4927.55	3931.03	3259.34	2813.38	2139.49	1869.72	1645.64	1484.87	1384.67

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1306.49	1258.59	1216.75	1185.36	1162.24	1140.22	1113.79	1090.67	1063.14
90.0	1527.26	1415.50	1337.32	1269.60	1231.61	1203.53	1175.45	1151.78	1129.21
180.0	1599.94	1455.69	1347.78	1277.86	1236.57	1203.53	1180.41	1158.39	1137.47
270.0	1365.95	1292.17	1243.17	1204.63	1175.45	1153.43	1133.61	1096.28	1086.54
360.0	1306.49	1258.59	1216.75	1185.36	1162.24	1140.22	1113.79	1090.67	1063.14

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1031.76	1009.73	987.16	943.67	867.14	757.58	636.45	522.49	405.77
90.0	1103.33	1069.75	1043.87	1014.69	990.46	933.76	834.66	723.44	617.73
180.0	1096.78	1090.45	1060.88	1037.21	1011.88	972.46	899.57	804.04	668.33
270.0	1059.95	1032.97	1010.62	987.33	906.28	811.86	704.67	560.31	454.82
360.0	1031.76	1009.73	987.16	943.67	867.14	757.58	636.45	522.49	405.77

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	291.25	157.68	77.52	33.86	27.80	21.53	16.85	14.04	13.32
90.0	472.38	351.81	282.44	136.15	56.93	31.77	25.33	17.89	15.03
180.0	552.22	435.44	293.40	189.94	102.85	38.87	31.11	23.78	17.67
270.0	325.93	195.23	117.10	48.06	31.55	25.99	20.21	16.13	13.93
360.0	291.25	157.68	77.52	33.86	27.80	21.53	16.85	14.04	13.32

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	12.77	12.50	12.28	12.11	11.95	11.78	11.62	11.51	11.45
90.0	13.60	12.99	12.66	12.44	12.28	12.06	11.95	11.78	11.67
180.0	14.70	12.99	12.50	12.28	12.17	11.95	11.78	11.73	11.67
270.0	13.16	12.66	12.50	12.33	12.11	11.95	11.84	11.67	11.56
360.0	12.77	12.50	12.28	12.11	11.95	11.78	11.62	11.51	11.45

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	11.34	11.23	11.18	11.07	11.07	11.01	10.90	10.90	10.85
90.0	11.56	11.45	11.34	11.29	11.23	11.12	11.07	11.01	10.96
180.0	11.45	11.40	11.29	11.18	11.12	11.07	11.01	10.96	10.96
270.0	11.45	11.34	11.29	11.18	11.12	11.12	11.01	10.96	10.96
360.0	11.34	11.23	11.18	11.07	11.07	11.01	10.90	10.90	10.85

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.79	10.79	10.79	10.68	10.74	10.68	10.68	10.68	10.74
90.0	10.90	10.90	10.90	10.85	10.79	10.79	10.79	10.85	10.79
180.0	10.90	10.85	10.85	10.85	10.85	10.79	10.79	10.79	10.79
270.0	10.90	10.90	10.85	10.79	10.79	10.79	10.79	10.79	10.79
360.0	10.79	10.79	10.79	10.68	10.74	10.68	10.68	10.68	10.74

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	10.74	11.01	12.33	14.26	14.15	12.72	11.62	10.85	10.63
90.0	10.79	10.79	10.85	11.18	12.55	13.93	14.70	14.37	13.27
180.0	10.79	10.79	10.90	12.06	15.20	19.21	21.97	22.30	21.69
270.0	10.79	10.85	11.56	12.00	12.39	13.10	12.99	11.78	11.12
360.0	10.74	11.01	12.33	14.26	14.15	12.72	11.62	10.85	10.63

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.63	10.57	10.63	10.63	10.68	10.46	10.41	10.41	10.41
90.0	12.44	11.51	11.45	11.45	11.40	11.34	10.52	10.52	10.52
180.0	20.04	16.35	11.62	12.11	13.21	14.92	16.63	10.41	10.41
270.0	11.18	11.18	11.23	11.23	11.29	11.29	10.52	10.46	10.46
360.0	10.63	10.57	10.63	10.63	10.68	10.46	10.41	10.41	10.41

C/γ(°)	90.0
0.0	10.46
90.0	10.46
180.0	10.41
270.0	10.46
360.0	10.46