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Nata

LumCAT: 3-2046-M
Luminaire: 92.70.131.00
Report No: GC2017061711
Test No: NT-0010
LampCAT: CITIZEN CLU038
Lamp flux(lm): 2365.0
Number of Lamps: 1
Length(mm): 84
Phm Type: C

Voltage(V): 34.2000
Current(A): 0.5000
Power (W): 17.1000
PF: 0.0000
Ballast type: DC
Width(mm): 84
Height(mm): 0

Photometric Results

Lumens(lm): 2108.18
Efficiency(%): 89.14%
Lumens(lm)/Power(W): 123.29
Central intensity(cd): 5080.880
Maximum intensity(cd): 5080.880
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=34.1
[C90/270]Total=34.1
Field angle(10%Imax): [C0/180]Total=67.9
[C90/270]Total=67.9
Maximum s/h(1/2): C0_180=0.56 C90_270=0.56
Maximum s/h(1/4): C0_180=0.57 C90_270=0.57
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.14%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.669%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5080.880	0.000	0	.000%	.000%
1.0	5072.897	4.858	4.858	.205%	.230%
2.0	5045.093	14.522	19.381	.614%	.919%
3.0	4998.983	24.022	43.403	1.016%	2.059%
4.0	4940.899	33.272	76.675	1.407%	3.637%
5.0	4856.250	42.147	118.822	1.782%	5.636%
6.0	4748.752	50.477	169.298	2.134%	8.031%
7.0	4616.479	58.130	227.428	2.458%	10.788%
8.0	4455.714	64.928	292.356	2.745%	13.868%
9.0	4281.599	70.811	363.167	2.994%	17.227%
10.0	4090.691	75.766	438.934	3.204%	20.821%
11.0	3888.221	79.726	518.659	3.371%	24.602%
12.0	3684.512	82.781	601.44	3.500%	28.529%
13.0	3463.736	84.832	686.272	3.587%	32.553%
14.0	3232.361	85.709	771.981	3.624%	36.618%
15.0	3021.908	85.861	857.843	3.631%	40.691%
16.0	2795.351	85.239	943.082	3.604%	44.734%
17.0	2552.139	83.275	1026.357	3.521%	48.685%
18.0	2345.403	80.750	1107.106	3.414%	52.515%
19.0	2144.447	78.114	1185.221	3.303%	56.220%
20.0	1939.775	74.753	1259.973	3.161%	59.766%
21.0	1755.198	70.951	1330.924	3.000%	63.132%
22.0	1592.093	67.265	1398.189	2.844%	66.322%
23.0	1417.358	63.146	1461.336	2.670%	69.318%
24.0	1287.563	59.139	1520.475	2.501%	72.123%
25.0	1164.223	55.748	1576.223	2.357%	74.767%
26.0	1050.063	52.268	1628.492	2.210%	77.246%
27.0	976.136	49.571	1678.063	2.096%	79.598%
28.0	901.067	47.527	1725.59	2.010%	81.852%
29.0	844.799	45.677	1771.267	1.931%	84.019%
30.0	795.758	44.295	1815.562	1.873%	86.120%
31.0	737.687	42.674	1858.235	1.804%	88.144%
32.0	670.064	40.330	1898.565	1.705%	90.057%
33.0	592.035	37.182	1935.747	1.572%	91.821%
34.0	502.431	33.122	1968.869	1.400%	93.392%
35.0	401.072	28.059	1996.929	1.186%	94.723%
36.0	314.661	22.789	2019.718	.964%	95.804%
37.0	214.004	17.242	2036.96	.729%	96.622%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	139.444	11.798	2048.757	.499%	97.182%
39.0	77.574	7.407	2056.165	.313%	97.533%
40.0	43.591	4.226	2060.391	.179%	97.733%
41.0	24.032	2.408	2062.799	.102%	97.848%
42.0	17.040	1.492	2064.291	.063%	97.918%
43.0	14.205	1.157	2065.448	.049%	97.973%
44.0	12.388	1.004	2066.452	.042%	98.021%
45.0	11.245	0.908	2067.36	.038%	98.064%
46.0	10.791	0.862	2068.222	.036%	98.105%
47.0	10.543	0.849	2069.071	.036%	98.145%
48.0	10.378	0.846	2069.916	.036%	98.185%
49.0	10.199	0.845	2070.761	.036%	98.225%
50.0	10.062	0.845	2071.606	.036%	98.265%
51.0	9.924	0.846	2072.452	.036%	98.305%
52.0	9.786	0.846	2073.297	.036%	98.346%
53.0	9.690	0.847	2074.145	.036%	98.386%
54.0	9.566	0.849	2074.993	.036%	98.426%
55.0	9.497	0.851	2075.844	.036%	98.466%
56.0	9.387	0.853	2076.698	.036%	98.507%
57.0	9.277	0.853	2077.551	.036%	98.547%
58.0	9.222	0.855	2078.406	.036%	98.588%
59.0	9.139	0.858	2079.265	.036%	98.629%
60.0	9.071	0.860	2080.125	.036%	98.669%
61.0	9.015	0.863	2080.988	.036%	98.710%
62.0	8.947	0.866	2081.854	.037%	98.751%
63.0	8.892	0.868	2082.721	.037%	98.793%
64.0	8.850	0.871	2083.592	.037%	98.834%
65.0	8.781	0.873	2084.465	.037%	98.875%
66.0	8.754	0.875	2085.339	.037%	98.917%
67.0	8.699	0.878	2086.217	.037%	98.958%
68.0	8.658	0.879	2087.096	.037%	99.000%
69.0	8.644	0.883	2087.979	.037%	99.042%
70.0	8.616	0.886	2088.865	.037%	99.084%
71.0	8.548	0.887	2089.752	.038%	99.126%
72.0	8.534	0.888	2090.641	.038%	99.168%
73.0	8.506	0.891	2091.532	.038%	99.210%
74.0	8.548	0.897	2092.428	.038%	99.253%
75.0	9.470	0.952	2093.38	.040%	99.298%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.075	1.038	2094.418	.044%	99.347%
77.0	10.626	1.104	2095.521	.047%	99.400%
78.0	10.488	1.130	2096.652	.048%	99.453%
79.0	10.048	1.103	2097.755	.047%	99.506%
80.0	9.566	1.057	2098.812	.045%	99.556%
81.0	9.002	1.004	2099.817	.042%	99.603%
82.0	8.850	0.968	2100.785	.041%	99.649%
83.0	8.726	0.955	2101.74	.040%	99.695%
84.0	8.603	0.944	2102.684	.040%	99.740%
85.0	8.492	0.933	2103.617	.039%	99.784%
86.0	8.341	0.920	2104.537	.039%	99.827%
87.0	8.327	0.912	2105.45	.039%	99.871%
88.0	8.272	0.909	2106.359	.038%	99.914%
89.0	8.300	0.908	2107.267	.038%	99.957%
90.0	8.272	0.909	2108.176	.038%	100.000%

Zonal flux distribution table

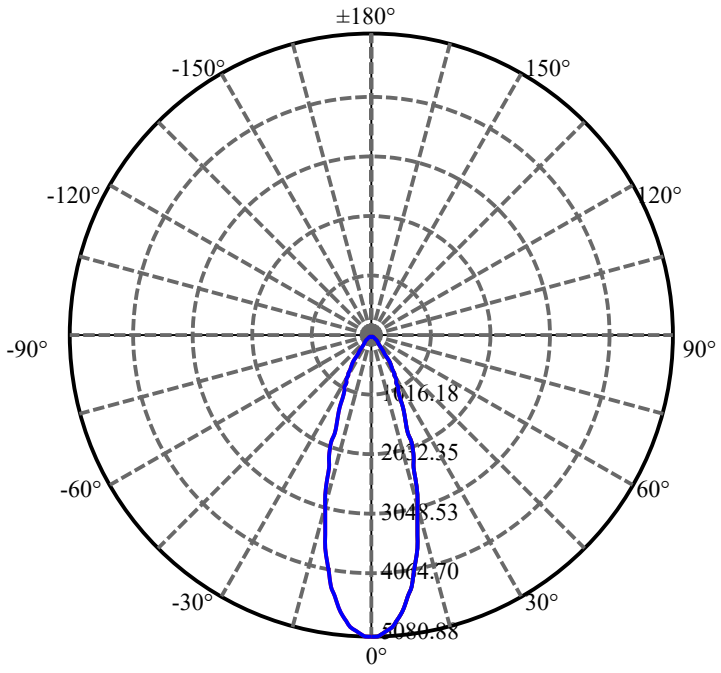
ZONAL LUMEN SUMMARY

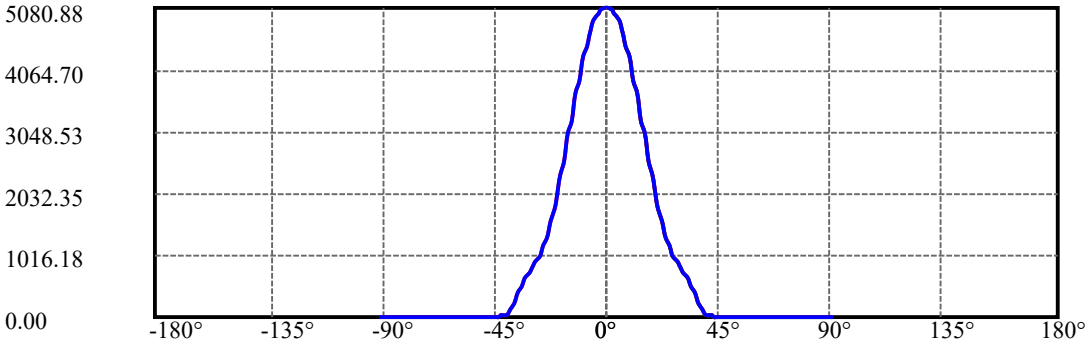
Zone	Lumens	%Lamp	%Fixt
0-30	1815.56	76.77%	86.12%
0-40	2060.39	87.12%	97.73%
0-60	2080.13	87.95%	98.67%
0-90	2107.27	89.10%	99.96%
0-120	2107.27	89.10%	99.96%
0-180	2108.18	89.14%	100.00%
60-90	28.00	1.18%	1.33%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.18	1686.54	71.31%	80.00%

ZONAL LUMEN SUMMARY

0-10	438.93
10-20	821.04
20-30	555.59
30-40	244.83
40-50	11.22
50-60	8.52
60-70	8.74
70-80	9.95
80-90	8.45
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):

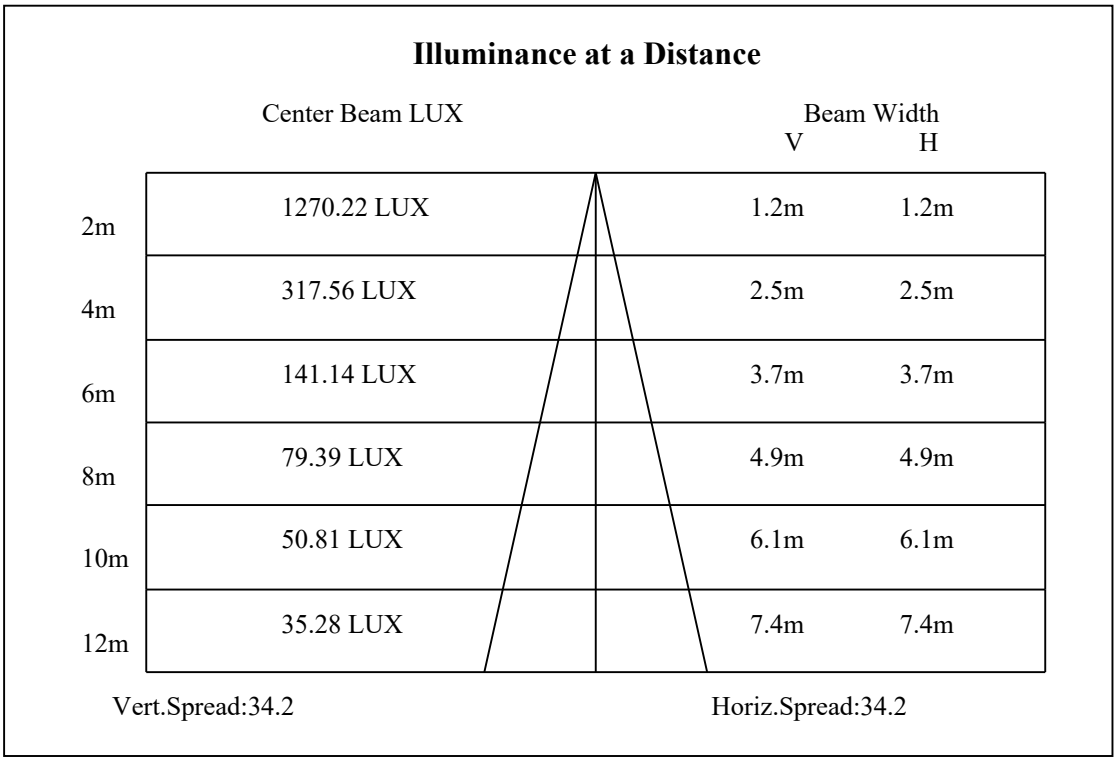
C0/C180:

C90/C270:

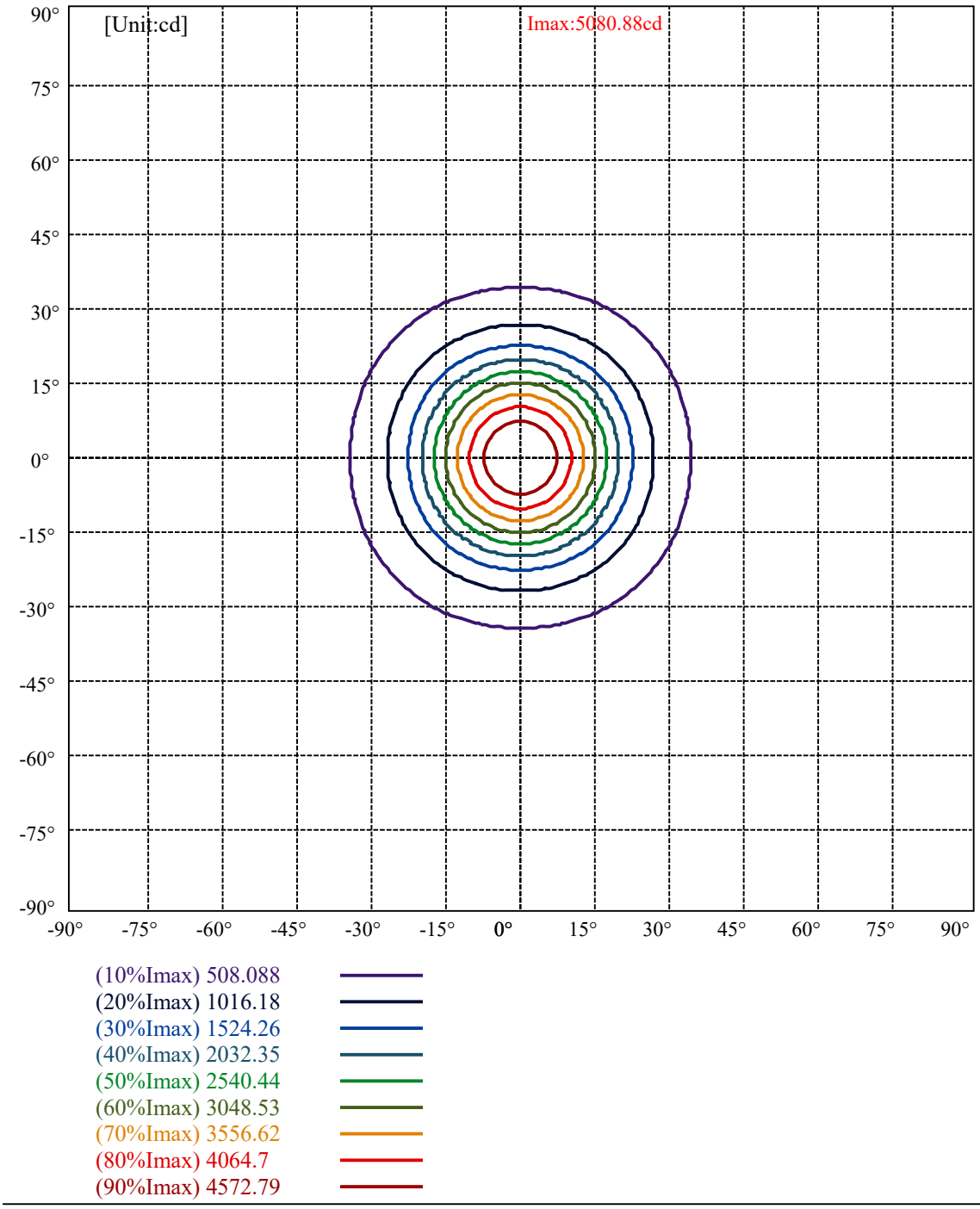
Field angle(10%Imax):C0/180Left:33.9 Right:33.9
:C90/270Left:33.9 Right:33.9

Beam Angle(50%Imax):C0/180Left:17.1 Right:17.1
:C90/270Left:17.1 Right:17.1

Lux distance Curve



ISO-Intensity(V-H)

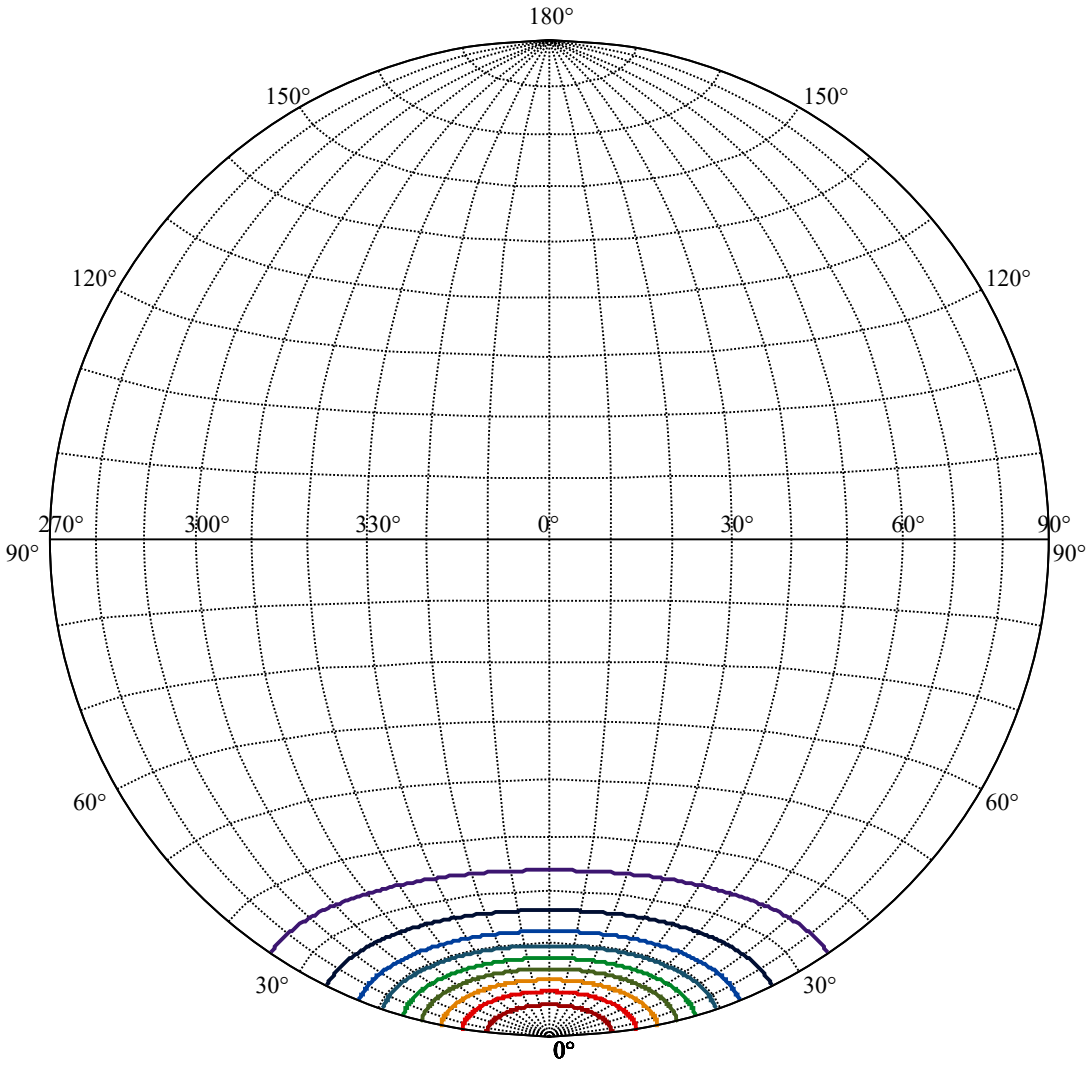


Equipment: gms1980
Temperature(°C): 25.0

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

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



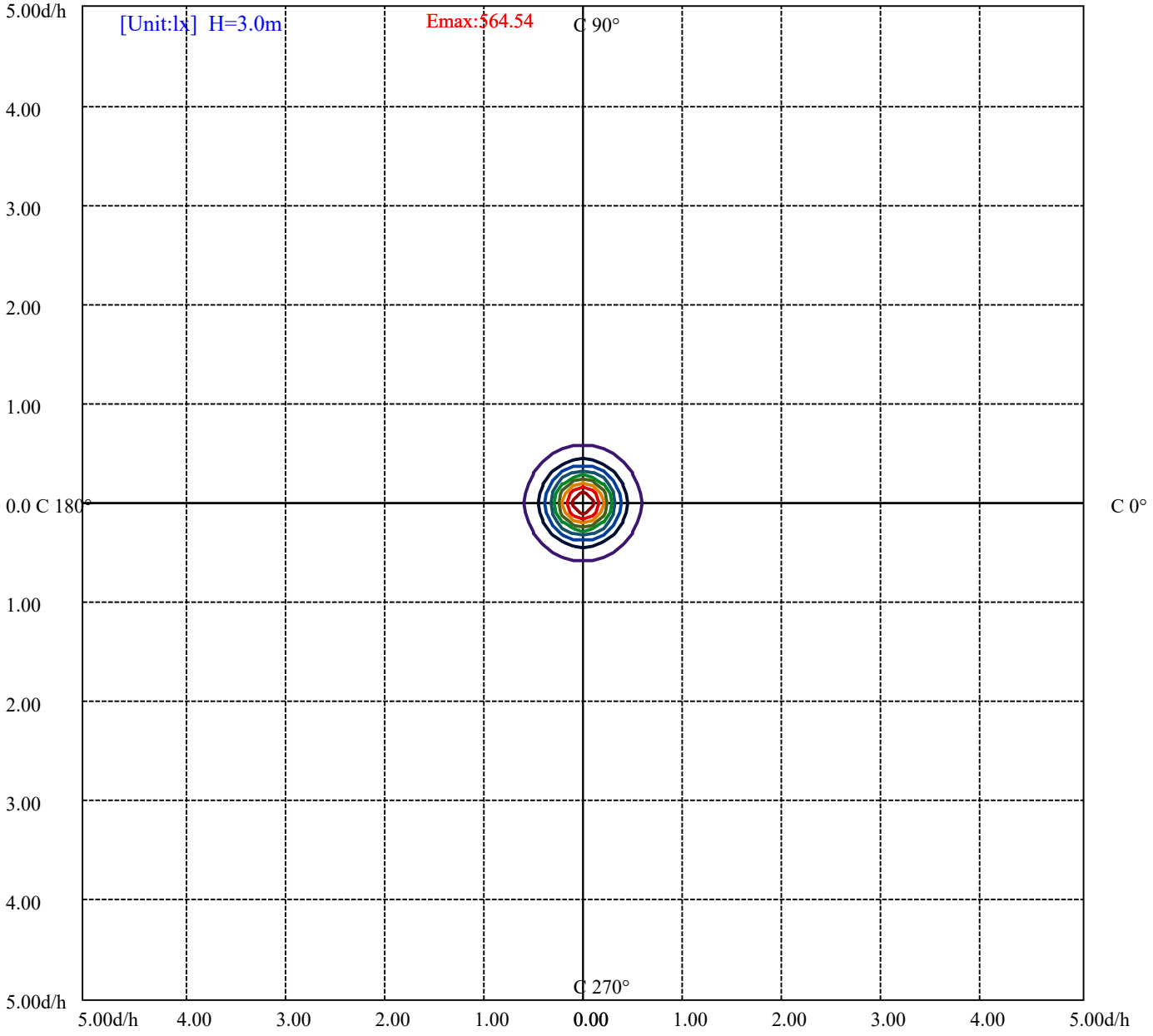
House [Unit:cd] Road

Imax:5080.88

(10%Imax) 508.088
(20%Imax) 1016.18
(30%Imax) 1524.26
(40%Imax) 2032.35
(50%Imax) 2540.44
(60%Imax) 3048.53
(70%Imax) 3556.62
(80%Imax) 4064.7
(90%Imax) 4572.79

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

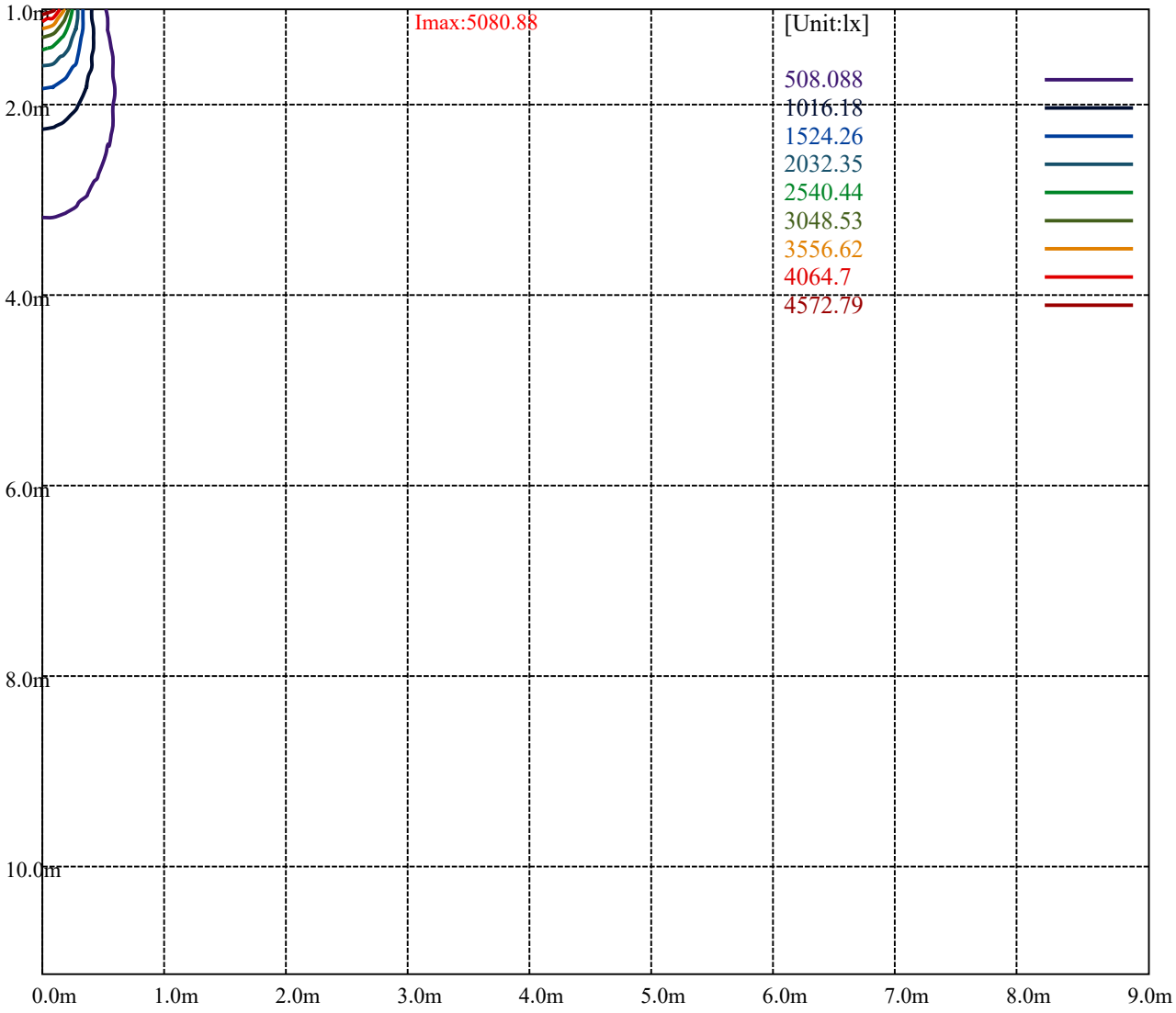
ISO illuminance diagram



(10%Emax) 56.45422
(20%Emax) 112.9089
(30%Emax) 169.3622
(40%Emax) 225.8167
(50%Emax) 282.2711
(60%Emax) 338.7256
(70%Emax) 395.18
(80%Emax) 451.6333
(90%Emax) 508.0878

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

Luminance Limitting Curve(no luminous side)

Luminance Table

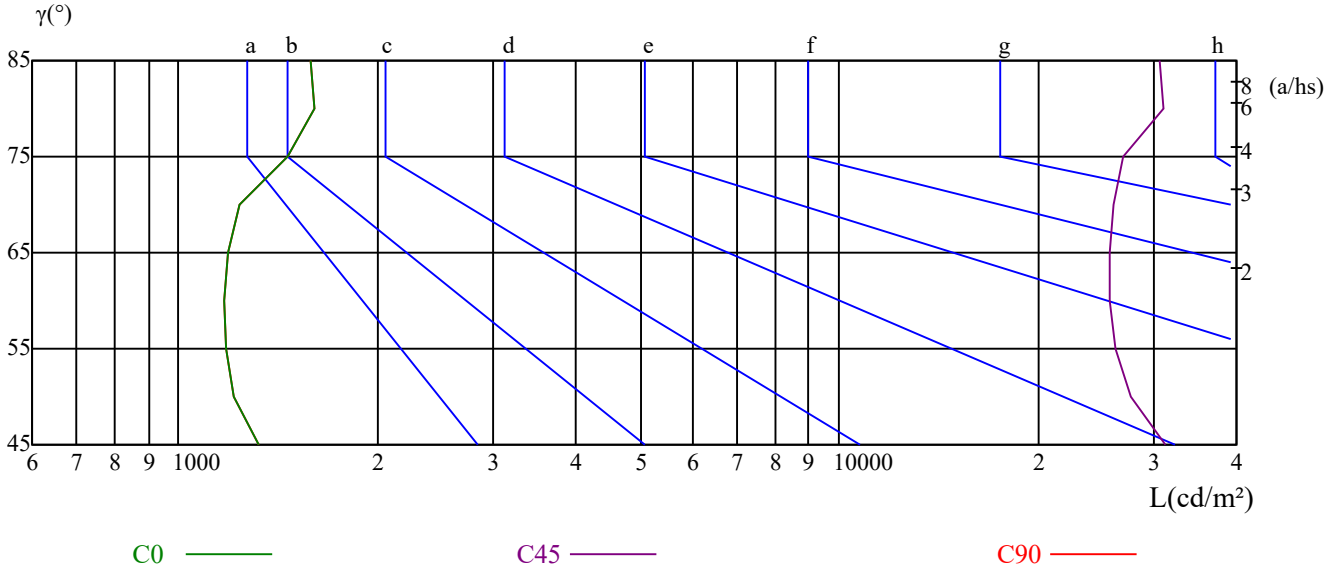
γ	45	50	55	60	65	70	75	80	85
C0	1327	1214	1181	1173	1192	1241	1464	1610	1581
C45	31210	27592	26223	25622	25642	26120	26992	31057	30689
C90	1327	1214	1181	1173	1192	1241	1464	1610	1581

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2876	2876	76878	5064	5064	120850	13486	13486	357512

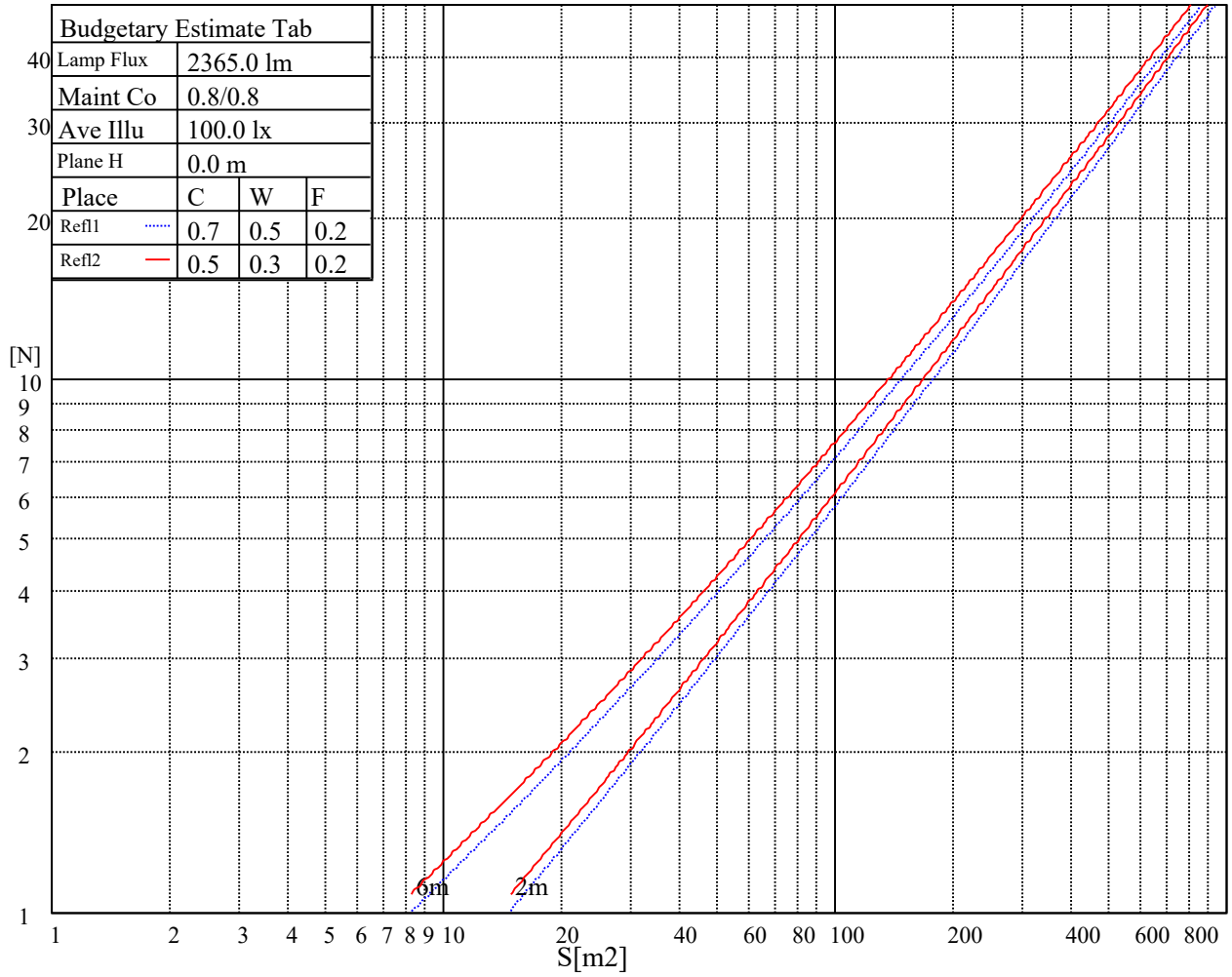
Glare Table

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

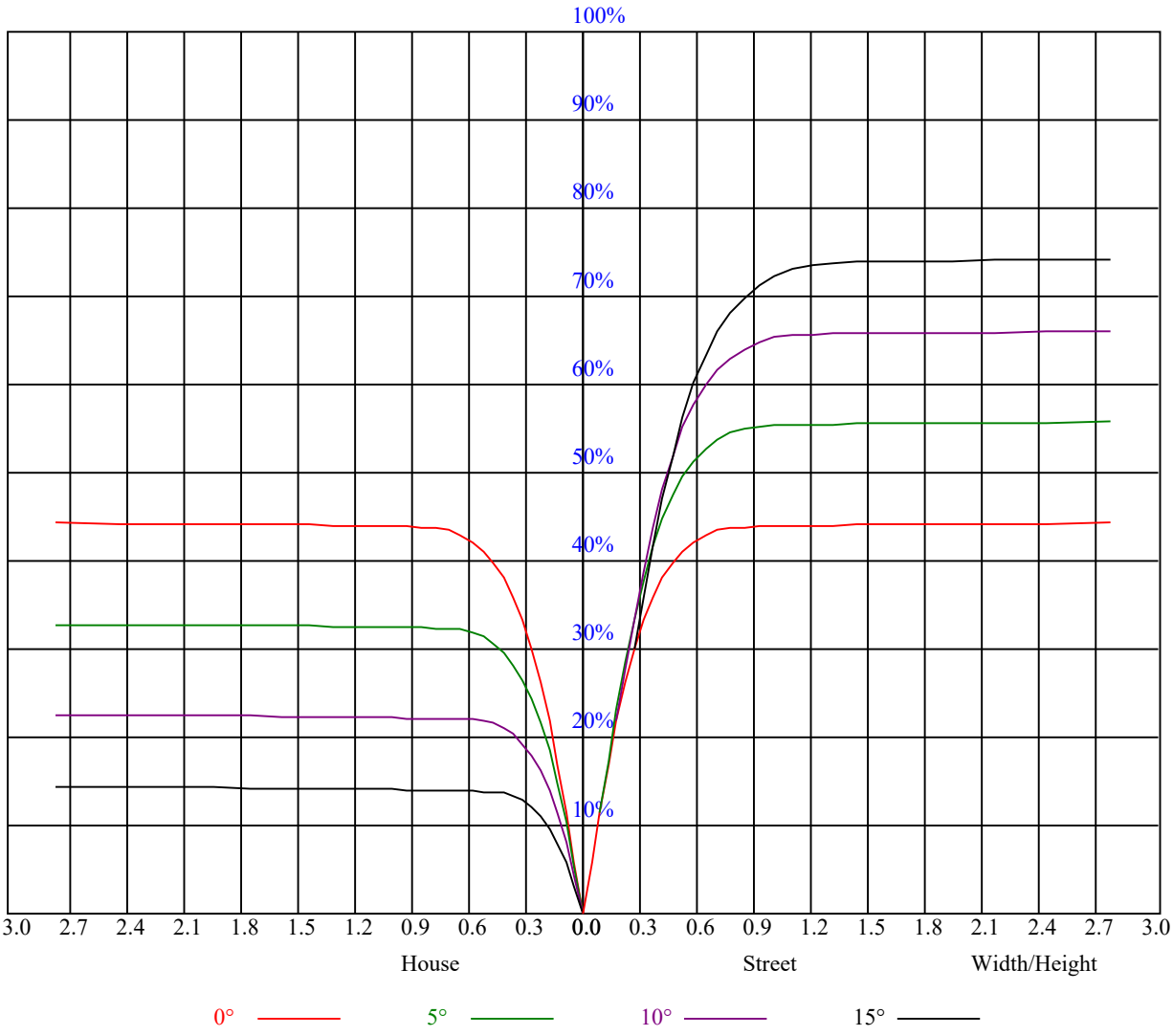


Equipment: gms1980 Date: 2017/6/4 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	0.99	0.97	0.96	0.98	0.96	0.94	0.94	0.93	0.91	0.91	0.90	0.89	0.88	0.87	0.86	0.84
2	0.94	0.91	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.77	0.76
4	0.84	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.74	0.78	0.76	0.74	0.72
5	0.80	0.76	0.72	0.79	0.75	0.72	0.78	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
6	0.76	0.72	0.69	0.76	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
7	0.73	0.68	0.65	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.63
8	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	0.61	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	0.64	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	0.57	0.56

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	5093.27	5074.55	5032.71	4984.26	4925.90	4840.01	4721.09	4586.75	4405.61
90.0	5068.49	5093.27	5095.47	5078.95	5043.17	4989.76	4926.45	4836.15	4732.10
180.0	5093.27	5094.92	5070.69	5030.50	4977.10	4891.21	4802.02	4690.25	4518.48
270.0	5068.49	5028.85	4981.50	4902.22	4817.44	4704.02	4545.46	4352.76	4166.67
360.0	5093.27	5074.55	5032.71	4984.26	4925.90	4840.01	4721.09	4586.75	4405.61

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4210.71	4029.03	3818.16	3613.35	3373.31	3121.70	2899.27	2671.89	2398.81
90.0	4587.30	4418.83	4249.80	4044.44	3835.23	3643.63	3442.68	3185.01	2976.90
180.0	4380.29	4191.99	3967.36	3802.75	3585.82	3340.82	3163.54	2955.43	2668.58
270.0	3948.09	3722.91	3517.55	3277.51	3060.59	2823.29	2582.15	2369.08	2164.27
360.0	4210.71	4029.03	3818.16	3613.35	3373.31	3121.70	2899.27	2671.89	2398.81

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2196.75	2006.81	1782.73	1618.66	1467.80	1310.34	1170.50	1066.99	971.75
90.0	2767.69	2529.84	2310.72	2124.08	1926.42	1736.48	1576.26	1403.39	1276.21
180.0	2486.90	2287.59	2077.83	1879.07	1712.80	1536.07	1374.21	1247.03	1076.85
270.0	1930.28	1753.55	1587.83	1398.98	1261.34	1086.54	1029.28	939.48	875.45
360.0	2196.75	2006.81	1782.73	1618.66	1467.80	1310.34	1170.50	1066.99	971.75

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	901.82	841.81	795.01	763.08	712.98	628.74	542.31	449.26	329.24
90.0	1148.48	1040.02	957.43	891.91	829.15	788.96	750.97	670.59	586.90
180.0	1033.90	938.99	876.88	822.60	783.95	736.05	656.00	569.67	464.57
270.0	820.34	783.45	749.87	705.44	624.67	526.50	418.87	320.21	223.58
360.0	901.82	841.81	795.01	763.08	712.98	628.74	542.31	449.26	329.24

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	281.89	143.04	66.12	30.50	22.19	17.40	13.60	11.78	11.18
90.0	491.10	389.25	283.54	175.96	96.90	41.68	22.79	18.88	14.65
180.0	357.54	264.93	177.28	82.53	38.10	23.01	19.05	14.92	12.77
270.0	128.12	58.80	30.83	21.31	17.18	14.04	12.72	11.23	10.96
360.0	281.89	143.04	66.12	30.50	22.19	17.40	13.60	11.78	11.18

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	10.85	10.63	10.41	10.24	10.08	9.91	9.80	9.63	9.58
90.0	12.39	11.29	11.01	10.79	10.63	10.46	10.30	10.13	9.97
180.0	11.01	10.74	10.52	10.30	10.13	10.02	9.86	9.74	9.63
270.0	10.74	10.52	10.24	10.19	9.97	9.86	9.74	9.63	9.58
360.0	10.85	10.63	10.41	10.24	10.08	9.91	9.80	9.63	9.58

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	9.47	9.41	9.30	9.14	9.14	9.08	8.97	8.92	8.86
90.0	9.86	9.80	9.63	9.52	9.41	9.36	9.30	9.25	9.14
180.0	9.47	9.41	9.30	9.25	9.19	9.08	9.03	8.92	8.86
270.0	9.47	9.36	9.30	9.19	9.14	9.03	8.97	8.97	8.92
360.0	9.47	9.41	9.30	9.14	9.14	9.08	8.97	8.92	8.86

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.75	8.75	8.70	8.70	8.64	8.59	8.53	8.53	8.48
90.0	9.14	9.03	8.92	8.92	8.86	8.81	8.81	8.75	8.64
180.0	8.81	8.81	8.75	8.70	8.64	8.59	8.59	8.53	8.48
270.0	8.86	8.81	8.75	8.70	8.64	8.64	8.64	8.64	8.59
360.0	8.75	8.75	8.70	8.70	8.64	8.59	8.53	8.53	8.48

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	8.48	8.48	8.42	10.52	12.94	12.77	12.28	11.34	10.63
90.0	8.64	8.59	8.59	8.53	8.53	8.53	8.92	9.86	9.52
180.0	8.42	8.42	8.37	8.42	8.59	11.45	11.56	10.19	9.30
270.0	8.59	8.53	8.81	10.41	10.24	9.74	9.19	8.81	8.81
360.0	8.48	8.48	8.42	10.52	12.94	12.77	12.28	11.34	10.63

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.58	9.58	9.36	8.97	8.75	8.31	8.20	8.20	8.26
90.0	8.97	8.70	8.53	8.53	8.48	8.42	8.48	8.37	8.37
180.0	8.70	8.53	8.42	8.37	8.37	8.31	8.31	8.20	8.20
270.0	8.75	8.59	8.59	8.53	8.37	8.31	8.31	8.31	8.37
360.0	9.58	9.58	9.36	8.97	8.75	8.31	8.20	8.20	8.26

C/γ(°)	90.0
0.0	8.20
90.0	8.31
180.0	8.20
270.0	8.37
360.0	8.20