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Nata

LumCAT: 1-0918-M
Luminaire: 92.70.132.00

Report No: NATA0100	Voltage(V): 35.5800
Test No: GC2019091816	Current(A): 0.3000
LampCAT: LUMILEDS LUXEON 1203	Power (W): 10.6740
Lamp flux(lm): 1342.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 39	Width(mm): 39
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1043.45
Efficiency(%): 77.75%
Lumens(lm)/Power(W): 97.76
Central intensity(cd): 7016.063
Maximum intensity(cd): 7016.063
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=19.2
[C90/270]Total=19.2
Field angle(10%Imax): [C0/180]Total=39.7
[C90/270]Total=39.7
Maximum s/h(1/2): C0_180=0.33 C90_270=0.33
Maximum s/h(1/4): C0_180=0.35 C90_270=0.35
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 77.75%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.528%

Equipment: GMS1980	Date: 2019/9/18	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7016.063	0.000	0	.000%	.000%
1.0	6969.305	6.692	6.692	.499%	.641%
2.0	6837.961	19.817	26.509	1.477%	2.541%
3.0	6572.742	32.074	58.583	2.390%	5.614%
4.0	6237.773	42.881	101.464	3.195%	9.724%
5.0	5816.109	51.855	153.319	3.864%	14.693%
6.0	5334.820	58.601	211.92	4.367%	20.310%
7.0	4791.023	62.851	274.771	4.683%	26.333%
8.0	4311.563	65.145	339.917	4.854%	32.576%
9.0	3789.844	65.657	405.574	4.893%	38.868%
10.0	3311.859	64.268	469.842	4.789%	45.028%
11.0	2911.430	62.183	532.026	4.634%	50.987%
12.0	2524.359	59.421	591.447	4.428%	56.682%
13.0	2171.391	55.727	647.173	4.153%	62.022%
14.0	1880.719	51.867	699.04	3.865%	66.993%
15.0	1621.055	48.074	747.114	3.582%	71.600%
16.0	1355.027	43.608	790.722	3.249%	75.779%
17.0	1177.270	39.435	830.156	2.939%	79.559%
18.0	981.745	35.597	865.754	2.653%	82.970%
19.0	827.037	31.469	897.223	2.345%	85.986%
20.0	679.465	27.573	924.796	2.055%	88.628%
21.0	532.111	23.265	948.061	1.734%	90.858%
22.0	401.618	18.764	966.825	1.398%	92.656%
23.0	300.466	14.732	981.556	1.098%	94.068%
24.0	205.755	11.068	992.624	.825%	95.129%
25.0	132.623	7.694	1000.318	.573%	95.866%
26.0	66.902	4.710	1005.028	.351%	96.317%
27.0	36.415	2.528	1007.556	.188%	96.560%
28.0	22.113	1.482	1009.037	.110%	96.702%
29.0	17.634	1.040	1010.077	.077%	96.801%
30.0	15.708	0.900	1010.977	.067%	96.888%
31.0	14.210	0.833	1011.81	.062%	96.967%
32.0	12.994	0.779	1012.589	.058%	97.042%
33.0	12.030	0.737	1013.327	.055%	97.113%
34.0	11.187	0.703	1014.029	.052%	97.180%
35.0	10.427	0.671	1014.7	.050%	97.244%
36.0	9.816	0.645	1015.345	.048%	97.306%
37.0	9.309	0.624	1015.969	.046%	97.366%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	8.810	0.605	1016.574	.045%	97.424%
39.0	8.402	0.588	1017.161	.044%	97.480%
40.0	8.044	0.574	1017.735	.043%	97.535%
41.0	7.727	0.562	1018.296	.042%	97.589%
42.0	7.467	0.552	1018.848	.041%	97.642%
43.0	7.228	0.544	1019.393	.041%	97.694%
44.0	6.996	0.537	1019.93	.040%	97.746%
45.0	6.820	0.531	1020.461	.040%	97.796%
46.0	6.616	0.525	1020.986	.039%	97.847%
47.0	6.455	0.520	1021.506	.039%	97.897%
48.0	6.328	0.517	1022.023	.039%	97.946%
49.0	6.180	0.514	1022.536	.038%	97.995%
50.0	6.075	0.511	1023.047	.038%	98.044%
51.0	5.970	0.510	1023.557	.038%	98.093%
52.0	5.843	0.507	1024.064	.038%	98.142%
53.0	5.766	0.505	1024.569	.038%	98.190%
54.0	5.674	0.504	1025.073	.038%	98.238%
55.0	5.618	0.504	1025.577	.038%	98.287%
56.0	5.527	0.504	1026.081	.038%	98.335%
57.0	5.477	0.503	1026.584	.037%	98.383%
58.0	5.414	0.504	1027.087	.038%	98.431%
59.0	5.365	0.504	1027.591	.038%	98.480%
60.0	5.316	0.505	1028.096	.038%	98.528%
61.0	5.266	0.505	1028.601	.038%	98.577%
62.0	5.217	0.505	1029.106	.038%	98.625%
63.0	5.175	0.505	1029.611	.038%	98.673%
64.0	5.126	0.505	1030.117	.038%	98.722%
65.0	5.091	0.506	1030.623	.038%	98.770%
66.0	5.063	0.507	1031.129	.038%	98.819%
67.0	5.034	0.508	1031.637	.038%	98.867%
68.0	4.985	0.508	1032.144	.038%	98.916%
69.0	4.964	0.508	1032.652	.038%	98.965%
70.0	4.943	0.509	1033.161	.038%	99.014%
71.0	4.922	0.510	1033.671	.038%	99.062%
72.0	4.901	0.511	1034.181	.038%	99.111%
73.0	4.873	0.511	1034.692	.038%	99.160%
74.0	4.852	0.511	1035.204	.038%	99.209%
75.0	4.830	0.512	1035.715	.038%	99.258%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	4.830	0.513	1036.228	.038%	99.307%
77.0	4.809	0.514	1036.742	.038%	99.357%
78.0	4.795	0.514	1037.256	.038%	99.406%
79.0	4.781	0.515	1037.771	.038%	99.455%
80.0	4.781	0.516	1038.286	.038%	99.505%
81.0	4.781	0.517	1038.803	.039%	99.554%
82.0	4.760	0.517	1039.321	.039%	99.604%
83.0	4.767	0.518	1039.839	.039%	99.654%
84.0	4.739	0.518	1040.357	.039%	99.703%
85.0	4.725	0.517	1040.873	.038%	99.753%
86.0	4.725	0.517	1041.39	.038%	99.802%
87.0	4.711	0.516	1041.906	.038%	99.852%
88.0	4.711	0.516	1042.422	.038%	99.901%
89.0	4.704	0.516	1042.938	.038%	99.951%
90.0	4.704	0.516	1043.454	.038%	100.000%

Zonal flux distribution table

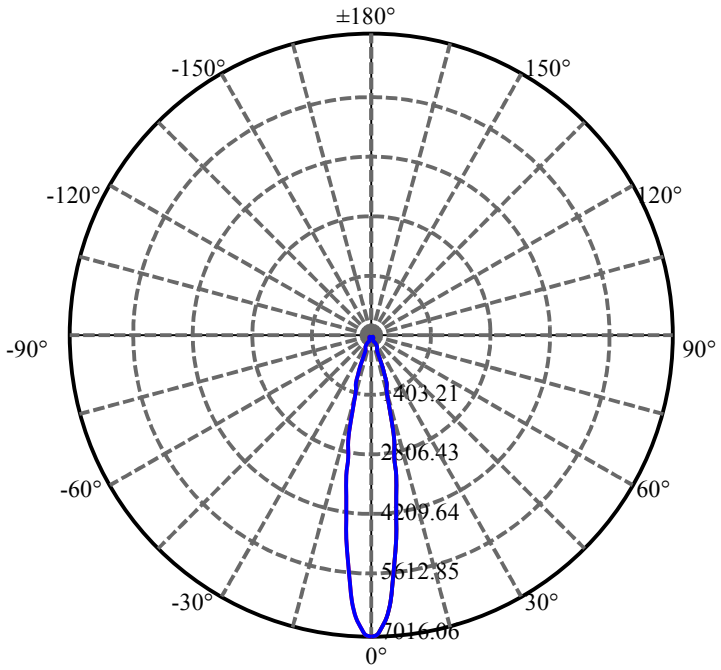
ZONAL LUMEN SUMMARY

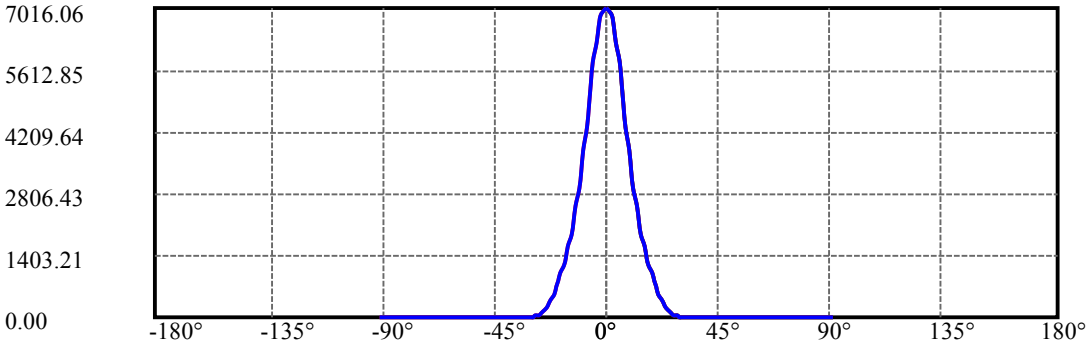
Zone	Lumens	%Lamp	%Fixt
0-30	1010.98	75.33%	96.89%
0-40	1017.73	75.84%	97.54%
0-60	1028.10	76.61%	98.53%
0-90	1042.94	77.72%	99.95%
0-120	1042.94	77.72%	99.95%
0-180	1043.45	77.75%	100.00%
60-90	15.35	1.14%	1.47%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-17.13	834.76	62.20%	80.00%

ZONAL LUMEN SUMMARY

0-10	469.84
10-20	454.95
20-30	86.18
30-40	6.76
40-50	5.31
50-60	5.05
60-70	5.06
70-80	5.13
80-90	4.65
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):

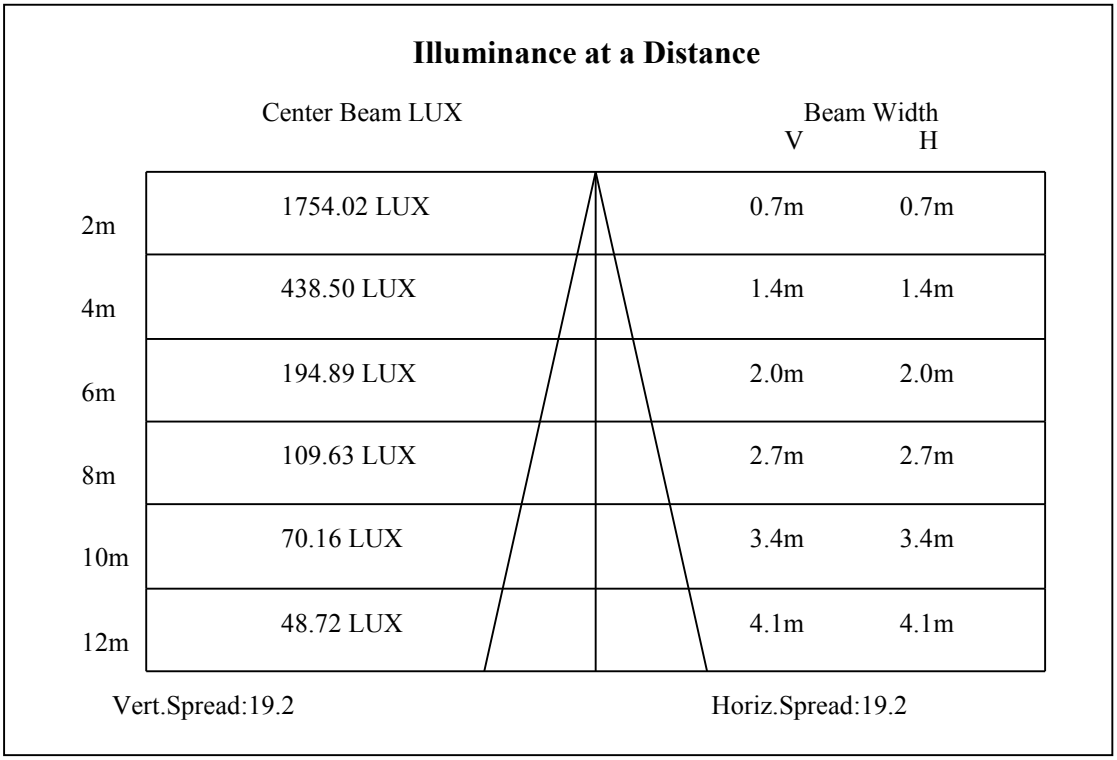
C0/C180:

C90/C270:

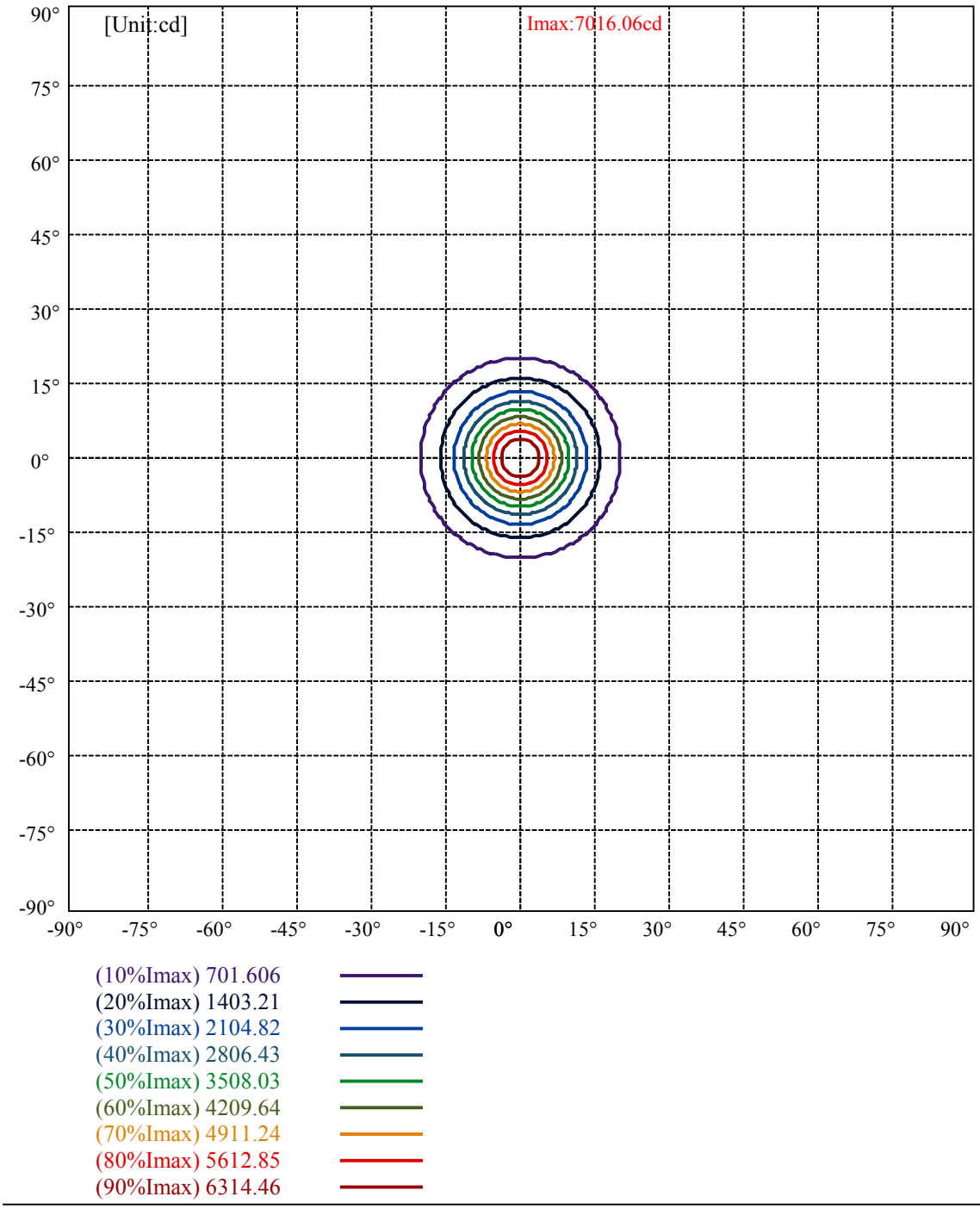
Field angle(10%Imax):C0/180Left:19.8 Right:19.8
:C90/270Left:19.8 Right:19.8

Beam Angle(50%Imax):C0/180Left:9.6 Right:9.6
:C90/270Left:9.6 Right:9.6

Lux distance Curve



ISO-Intensity(V-H)

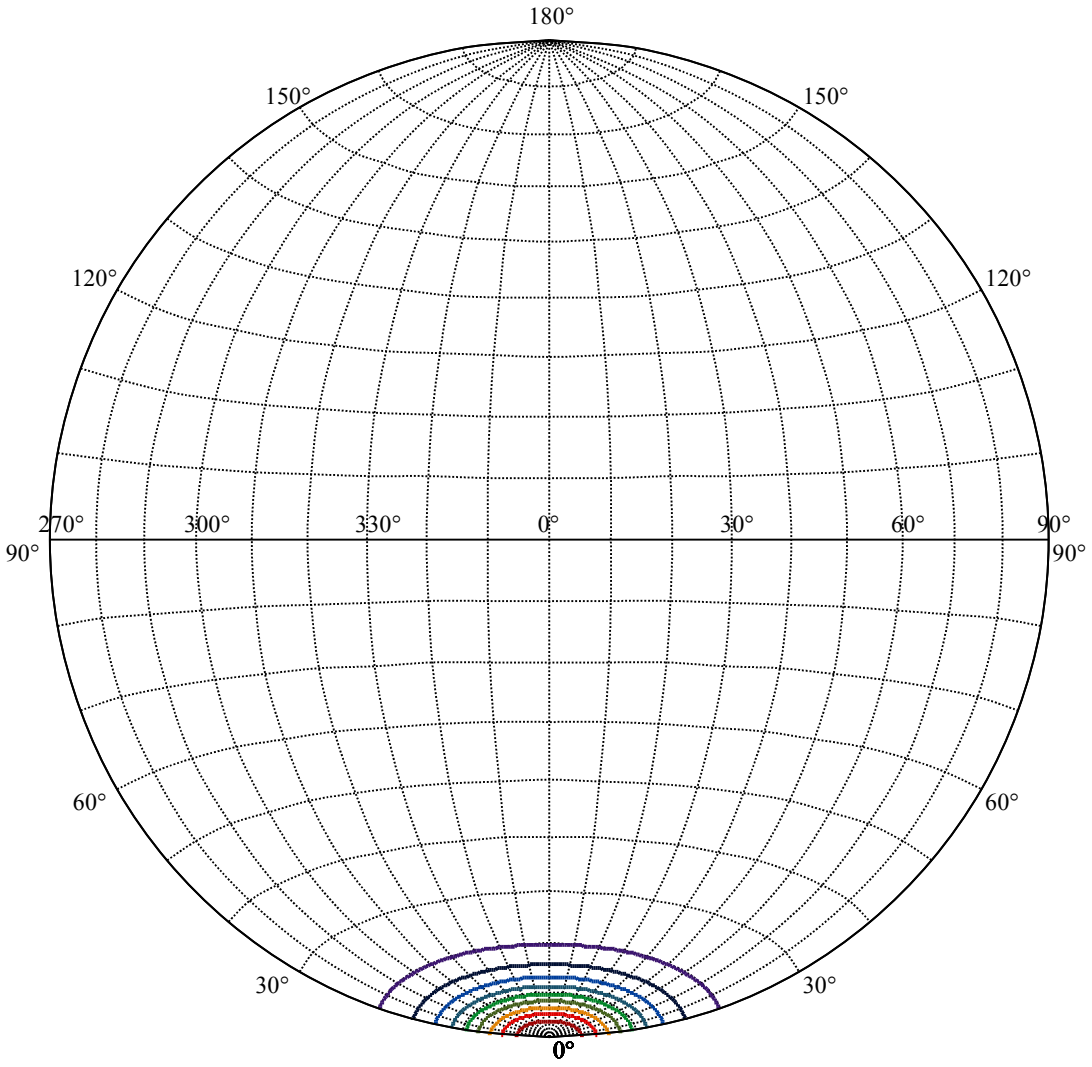


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/9/18
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



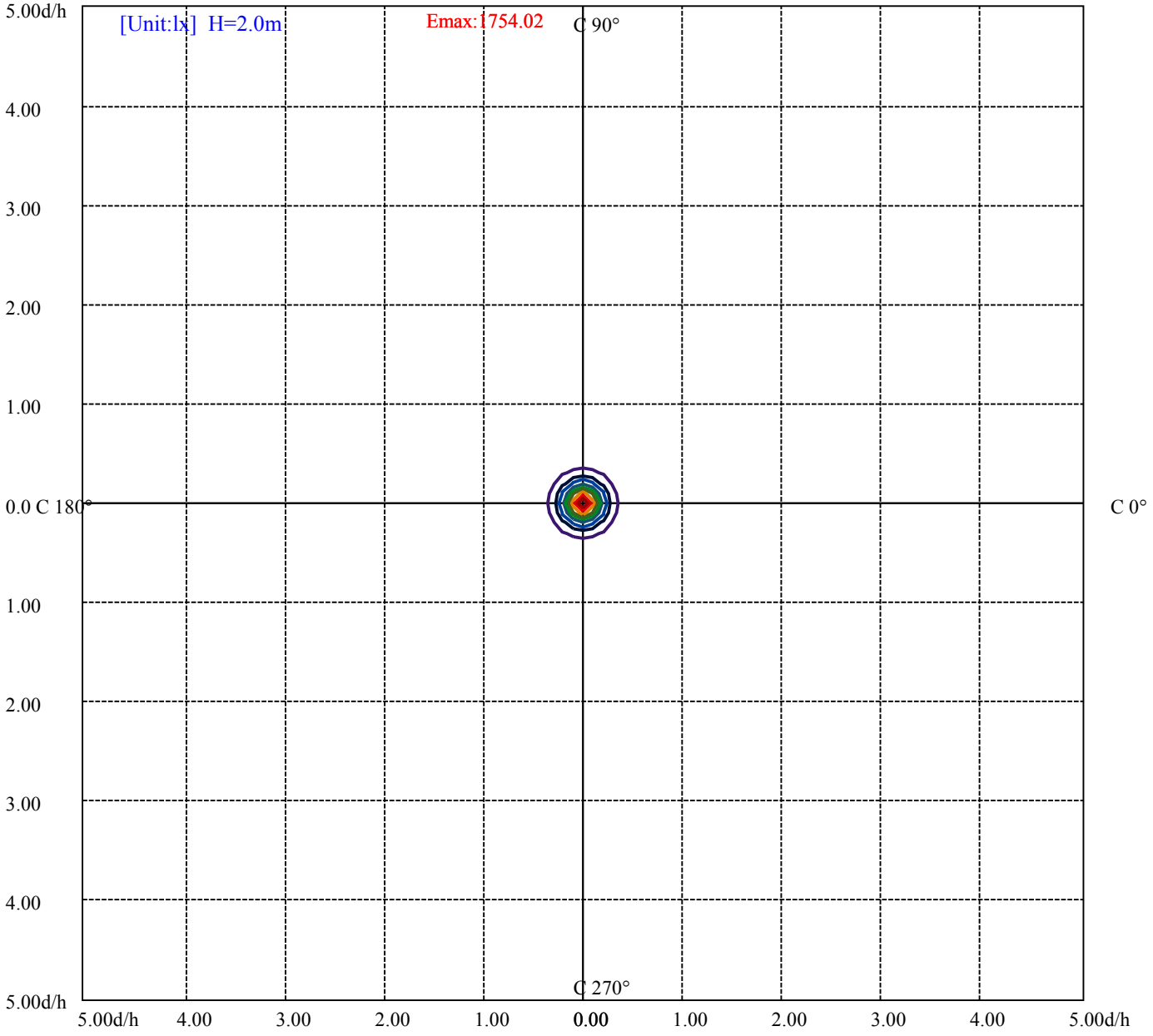
House [Unit:cd] Road

Imax:7016.06

(10%Imax) 701.606
(20%Imax) 1403.21
(30%Imax) 2104.82
(40%Imax) 2806.43
(50%Imax) 3508.03
(60%Imax) 4209.64
(70%Imax) 4911.24
(80%Imax) 5612.85
(90%Imax) 6314.46

Equipment: GMS1980 Date: 2019/9/18 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

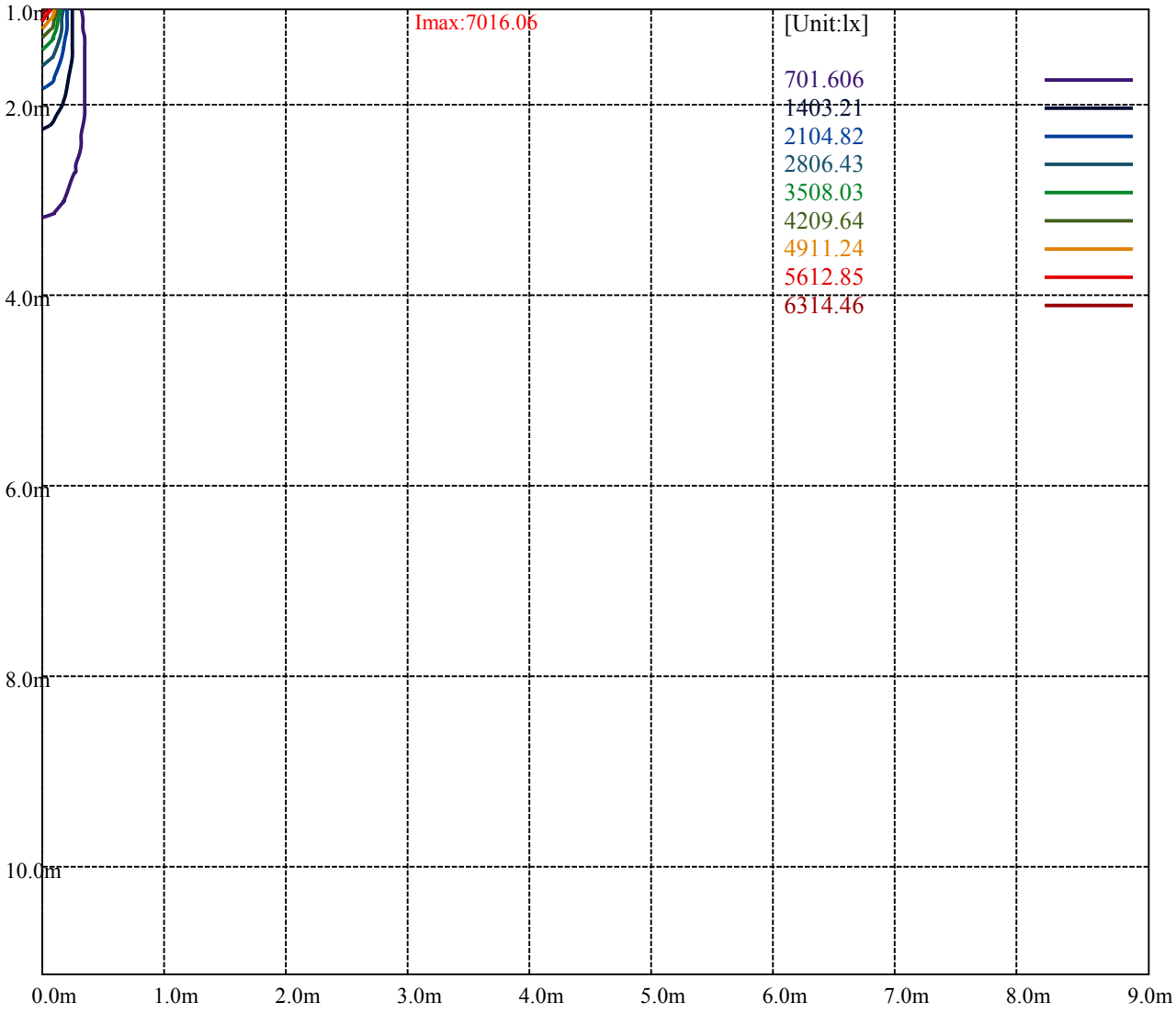
ISO illuminance diagram



(10%Emax) 175.4015
(20%Emax) 350.8025
(30%Emax) 526.205
(40%Emax) 701.605
(50%Emax) 877.0075
(60%Emax) 1052.407
(70%Emax) 1227.81
(80%Emax) 1403.21
(90%Emax) 1578.613

Equipment: GMS1980
Temperature(°C): 25.0
Date: 2019/9/18
Humidity(%): 65.0%
Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/9/18
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

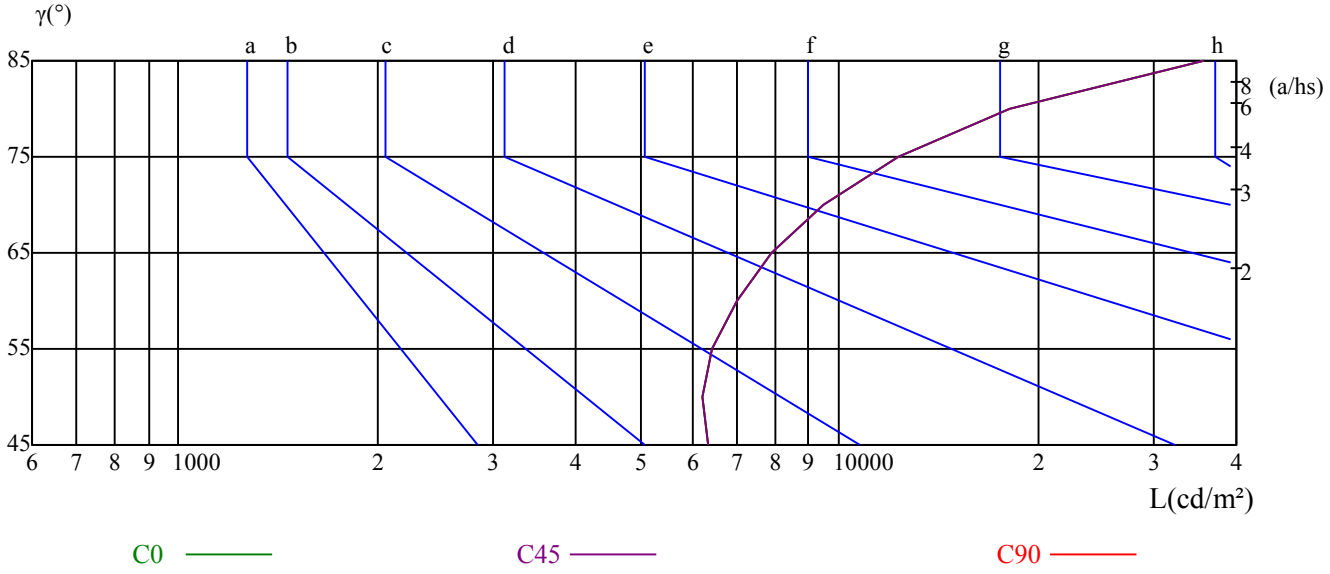
γ	45	50	55	60	65	70	75	80	85
C0	6341	6214	6440	6990	7919	9502	12271	18103	35643
C45	6341	6214	6440	6990	7919	9502	12271	18103	35643
C90	6341	6214	6440	6990	7919	9502	12271	18103	35643

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
7919	7919	7919	12271	12271	12271	35643	35643	35643

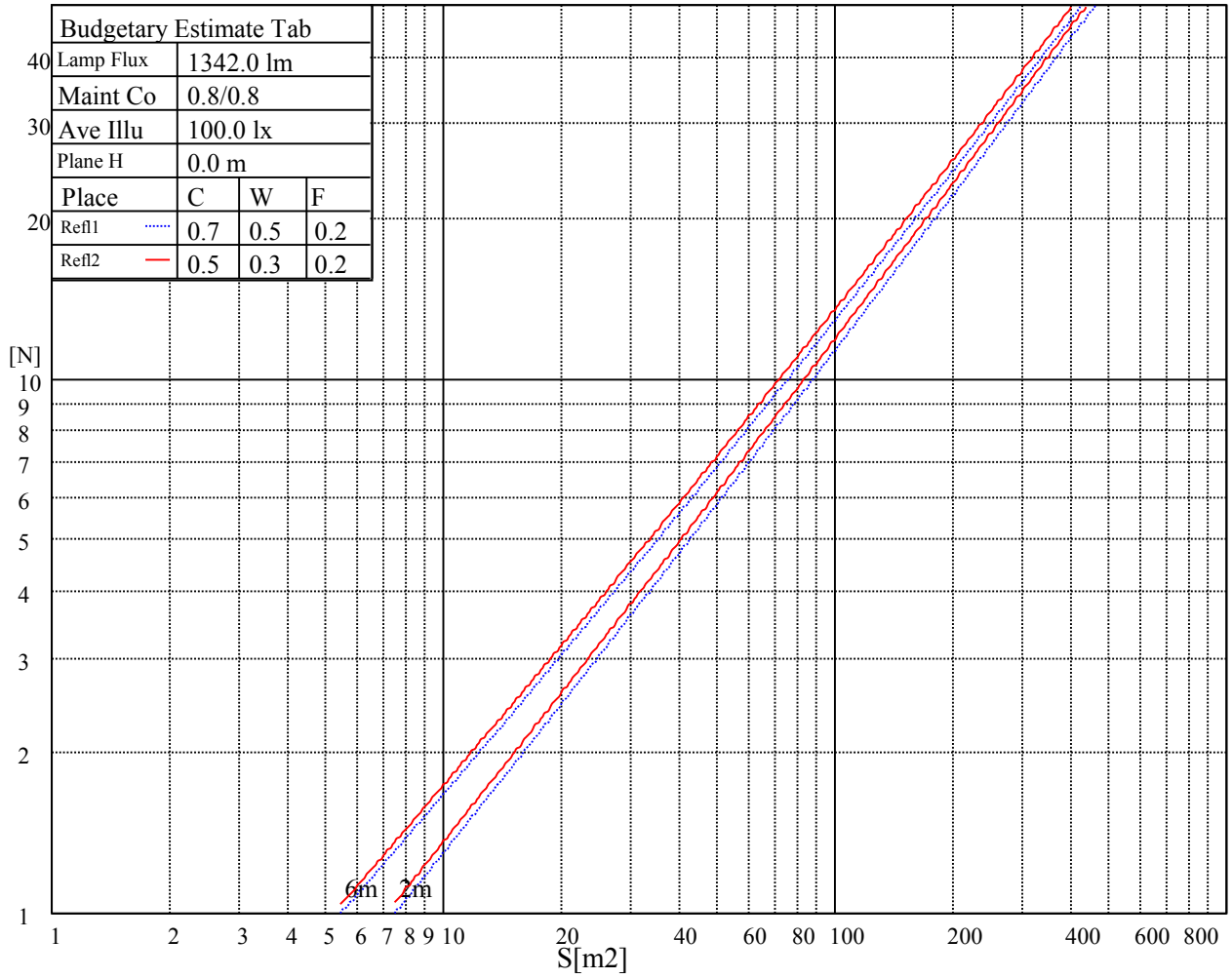
Glare Table

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

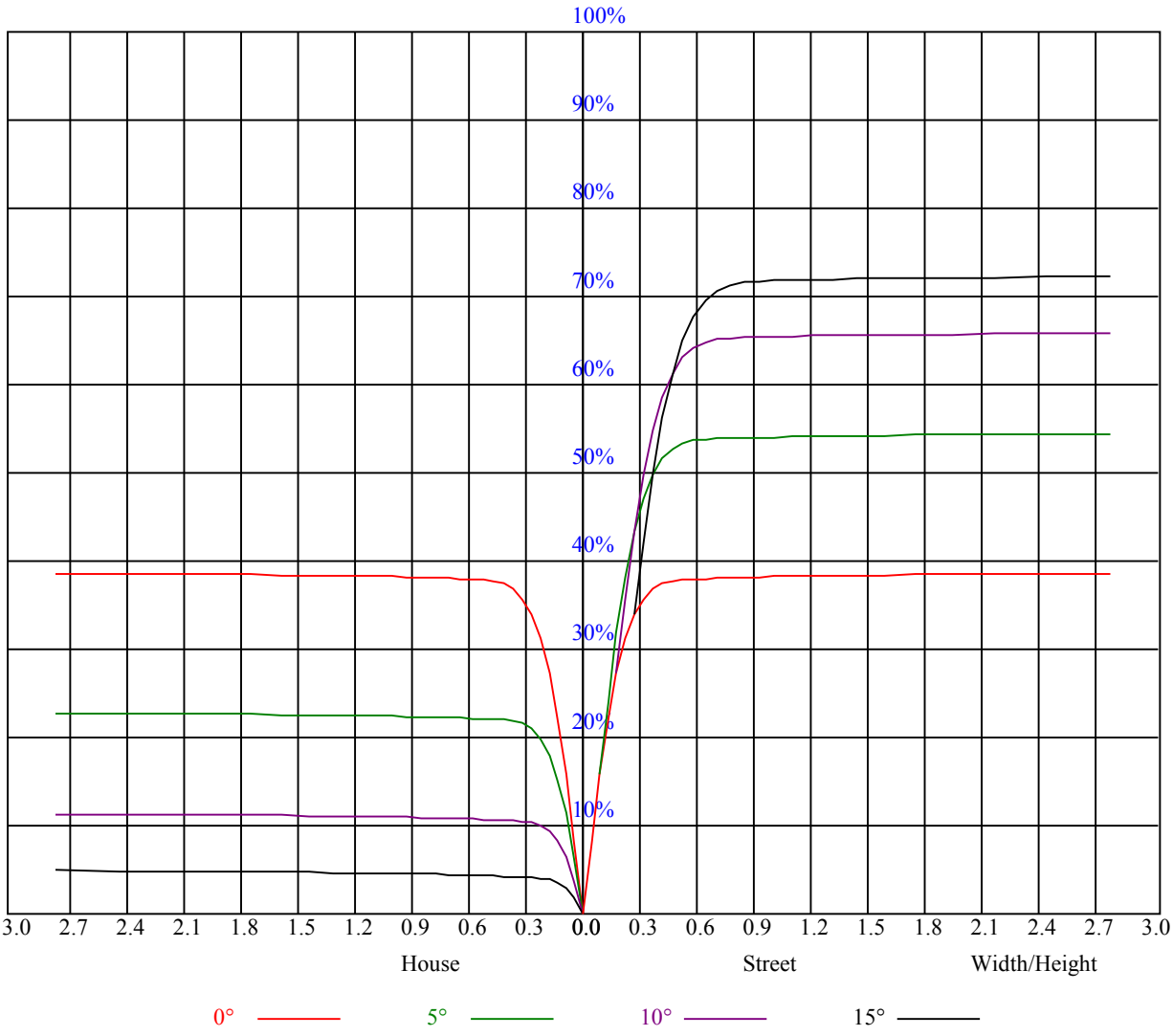


Equipment: GMS1980 Date: 2019/9/18 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	0.93	0.93	0.93	0.90	0.90	0.90	0.86	0.86	0.86	0.83	0.83	0.83	0.79	0.79	0.79	0.78
1	0.88	0.86	0.85	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79	0.79	0.78	0.77	0.76	0.75
2	0.84	0.82	0.80	0.83	0.81	0.79	0.80	0.79	0.77	0.78	0.77	0.76	0.76	0.75	0.74	0.73
3	0.81	0.78	0.76	0.80	0.77	0.75	0.78	0.76	0.74	0.76	0.75	0.73	0.75	0.73	0.72	0.71
4	0.78	0.75	0.73	0.77	0.75	0.73	0.76	0.74	0.72	0.74	0.73	0.71	0.73	0.72	0.70	0.69
5	0.76	0.73	0.71	0.75	0.72	0.70	0.74	0.72	0.70	0.73	0.71	0.69	0.72	0.70	0.69	0.68
6	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.71	0.69	0.67	0.70	0.68	0.67	0.66
7	0.72	0.69	0.67	0.71	0.68	0.66	0.70	0.68	0.66	0.70	0.67	0.66	0.69	0.67	0.66	0.65
8	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.65	0.68	0.66	0.64	0.68	0.66	0.64	0.64
9	0.68	0.65	0.64	0.68	0.65	0.63	0.67	0.65	0.63	0.67	0.65	0.63	0.66	0.64	0.63	0.62
10	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.66	0.63	0.62	0.65	0.63	0.62	0.61

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2019/9/18	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

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	7010.44	7047.00	7008.19	6868.13	6652.69	6279.19	5833.13	5385.38	4913.44
45.0	7018.31	7008.19	6908.06	6740.44	6418.13	5994.00	5540.06	4985.44	4469.06
90.0	7000.88	6894.56	6701.63	6297.75	5907.38	5449.50	4877.44	4289.63	3795.75
135.0	7034.63	6949.69	6739.31	6383.25	5987.81	5491.13	4908.38	4376.81	3896.44
180.0	7010.44	6869.81	6640.88	6248.81	5790.38	5329.13	4813.31	4166.44	3695.63
225.0	7018.31	6933.94	6782.63	6442.31	6077.25	5647.50	5141.81	4595.63	4113.56
270.0	7000.88	7023.38	6954.19	6809.63	6544.69	6158.25	5768.44	5279.06	4823.44
315.0	7034.63	7027.88	6968.81	6791.63	6523.88	6180.19	5796.00	5249.81	4785.19
360.0	7010.44	7047.00	7008.19	6868.13	6652.69	6279.19	5833.13	5385.38	4913.44

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4307.06	3843.00	3411.00	2961.56	2557.13	2233.69	1917.56	1639.13	1416.94
45.0	3920.06	3416.06	3005.44	2629.69	2220.75	1941.19	1694.25	1424.81	1234.13
90.0	3288.38	2884.50	2482.31	2131.88	1859.06	1620.56	1356.19	1102.89	1000.97
135.0	3328.88	2916.56	2548.13	2178.00	1857.38	1613.25	1396.69	1161.00	999.56
180.0	3250.13	2749.50	2400.19	2085.19	1784.25	1522.13	1315.13	1086.64	924.13
225.0	3598.88	3129.75	2745.00	2354.06	2051.44	1756.69	1497.38	1226.81	1105.31
270.0	4305.94	3799.69	3376.69	2926.69	2519.44	2194.31	1905.75	1592.44	1375.31
315.0	4319.44	3755.81	3322.69	2927.81	2521.69	2163.94	1885.50	1606.50	1361.81
360.0	4307.06	3843.00	3411.00	2961.56	2557.13	2233.69	1917.56	1639.13	1416.94

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1200.94	1033.88	857.81	698.63	565.88	443.25	301.50	289.13	126.51
45.0	1054.13	883.69	726.19	591.75	441.56	332.44	293.63	137.03	71.66
90.0	810.68	670.67	540.34	391.05	283.61	191.98	111.09	54.68	28.24
135.0	838.69	686.25	542.25	417.38	286.88	232.43	113.06	54.96	27.73
180.0	775.58	606.32	495.28	363.66	238.67	167.12	100.91	41.34	24.47
225.0	890.38	760.05	624.04	451.24	351.45	249.30	153.68	83.64	42.75
270.0	1182.38	993.94	821.81	678.38	529.31	392.63	286.31	226.29	107.55
315.0	1101.21	981.51	828.00	664.82	515.59	394.59	285.86	173.93	106.31
360.0	1200.94	1033.88	857.81	698.63	565.88	443.25	301.50	289.13	126.51

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	64.97	30.38	21.54	18.73	16.31	14.96	13.89	12.54	11.64
45.0	33.81	22.39	18.45	16.82	15.24	13.95	12.94	12.15	11.14
90.0	21.15	18.00	16.26	14.68	13.73	12.71	11.59	10.97	10.35
135.0	20.19	17.44	15.92	14.68	13.28	12.38	11.59	10.80	10.13
180.0	19.29	16.65	14.74	13.61	12.54	11.42	10.69	10.13	9.51
225.0	22.67	17.66	15.64	13.95	12.71	11.59	10.74	9.96	9.39
270.0	52.26	28.52	18.79	16.03	14.57	13.05	12.04	11.19	10.29
315.0	56.98	25.88	19.74	17.16	15.30	13.89	12.77	11.76	10.97
360.0	64.97	30.38	21.54	18.73	16.31	14.96	13.89	12.54	11.64

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	11.03	10.24	9.56	9.17	8.61	8.27	7.99	7.65	7.43
45.0	10.46	10.01	9.34	8.89	8.55	8.10	7.76	7.54	7.20
90.0	9.68	9.23	8.83	8.44	8.04	7.71	7.48	7.20	6.98
135.0	9.62	9.17	8.66	8.33	7.99	7.71	7.43	7.14	6.98
180.0	9.00	8.61	8.21	7.82	7.54	7.31	7.09	6.92	6.69
225.0	8.78	8.38	8.04	7.65	7.37	7.14	6.92	6.75	6.58
270.0	9.73	9.28	8.66	8.33	8.04	7.65	7.43	7.26	6.98
315.0	10.24	9.56	9.17	8.61	8.21	7.93	7.65	7.37	7.14
360.0	11.03	10.24	9.56	9.17	8.61	8.27	7.99	7.65	7.43

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	7.20	6.92	6.75	6.58	6.41	6.30	6.19	6.08	5.96
45.0	7.03	6.81	6.64	6.53	6.30	6.19	6.08	5.96	5.85
90.0	6.81	6.58	6.41	6.30	6.19	6.08	5.96	5.79	5.74
135.0	6.75	6.58	6.41	6.30	6.13	6.08	5.96	5.85	5.79
180.0	6.58	6.41	6.24	6.13	6.08	5.96	5.85	5.74	5.68
225.0	6.41	6.30	6.13	6.02	5.91	5.85	5.74	5.63	5.57
270.0	6.81	6.64	6.47	6.36	6.19	6.02	5.96	5.85	5.74
315.0	6.98	6.69	6.58	6.41	6.24	6.13	6.02	5.85	5.79
360.0	7.20	6.92	6.75	6.58	6.41	6.30	6.19	6.08	5.96

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.85	5.79	5.68	5.68	5.57	5.51	5.46	5.40	5.34
45.0	5.74	5.68	5.57	5.51	5.46	5.40	5.34	5.29	5.23
90.0	5.63	5.57	5.51	5.46	5.40	5.34	5.29	5.23	5.18
135.0	5.68	5.63	5.51	5.46	5.40	5.40	5.34	5.29	5.23
180.0	5.57	5.57	5.51	5.46	5.40	5.34	5.29	5.29	5.18
225.0	5.51	5.46	5.34	5.29	5.23	5.18	5.18	5.12	5.12
270.0	5.68	5.63	5.51	5.46	5.40	5.34	5.29	5.23	5.23
315.0	5.74	5.63	5.57	5.51	5.46	5.40	5.34	5.29	5.23
360.0	5.85	5.79	5.68	5.68	5.57	5.51	5.46	5.40	5.34

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.29	5.23	5.23	5.18	5.12	5.12	5.06	5.06	5.06
45.0	5.18	5.12	5.06	5.06	5.01	4.95	4.95	4.89	4.89
90.0	5.12	5.12	5.06	5.06	5.01	4.95	4.95	4.89	4.89
135.0	5.18	5.12	5.12	5.06	5.06	4.95	4.95	4.95	4.95
180.0	5.18	5.12	5.12	5.06	5.06	5.01	5.01	5.01	4.95
225.0	5.06	5.01	4.95	4.95	4.95	4.89	4.84	4.84	4.84
270.0	5.18	5.12	5.06	5.06	5.01	5.01	4.95	4.95	4.89
315.0	5.23	5.18	5.12	5.06	5.06	5.01	5.01	4.95	4.89
360.0	5.29	5.23	5.23	5.18	5.12	5.12	5.06	5.06	5.06

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.01	4.95	4.95	4.95	4.95	4.95	4.89	4.84	4.89
45.0	4.84	4.84	4.84	4.78	4.78	4.78	4.73	4.78	4.73
90.0	4.89	4.84	4.84	4.78	4.78	4.78	4.78	4.73	4.73
135.0	4.95	4.89	4.84	4.84	4.84	4.78	4.78	4.78	4.78
180.0	4.89	4.89	4.89	4.89	4.89	4.84	4.84	4.84	4.84
225.0	4.78	4.78	4.78	4.73	4.73	4.73	4.73	4.73	4.73
270.0	4.89	4.89	4.84	4.84	4.84	4.78	4.78	4.78	4.78
315.0	4.95	4.89	4.84	4.84	4.84	4.84	4.84	4.78	4.78
360.0	5.01	4.95	4.95	4.95	4.95	4.95	4.89	4.84	4.89

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	4.89	4.84	4.84	4.84	4.84	4.78	4.78	4.78	4.78
45.0	4.73	4.73	4.73	4.73	4.67	4.67	4.67	4.67	4.67
90.0	4.73	4.73	4.78	4.73	4.67	4.73	4.67	4.67	4.67
135.0	4.78	4.73	4.78	4.73	4.73	4.73	4.73	4.73	4.73
180.0	4.84	4.84	4.78	4.78	4.78	4.78	4.78	4.78	4.78
225.0	4.73	4.73	4.67	4.67	4.67	4.67	4.67	4.67	4.61
270.0	4.78	4.78	4.78	4.73	4.73	4.73	4.67	4.67	4.67
315.0	4.78	4.73	4.78	4.73	4.73	4.73	4.73	4.73	4.73
360.0	4.89	4.84	4.84	4.84	4.84	4.78	4.78	4.78	4.78

Intensity data(cd)

C/γ(°)	90.0
0.0	4.78
45.0	4.67
90.0	4.67
135.0	4.73
180.0	4.78
225.0	4.61
270.0	4.67
315.0	4.73
360.0	4.78