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Nata

LumCAT: 4-2275-M
Luminaire: 92.70.135.00
Report No: GC2017122802
Test No: NT-0010
LampCAT: NICHIA NVEWJ048Z-V1
Lamp flux(lm): 3051.0
Number of Lamps: 1
Length(mm): 100
Phm Type: C

Voltage(V): 43.4000
Current(A): 0.5000
Power (W): 21.7000
PF: 0.0000
Ballast type: DC
Width(mm): 100
Height(mm): 0

Photometric Results

Lumens(lm): 2724.12
Efficiency(%): 89.29%
Lumens(lm)/Power(W): 125.54
Central intensity(cd): 14501.860
Maximum intensity(cd): 14501.860
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=18.7
[C90/270]Total=18.7
Field angle(10%Imax): [C0/180]Total=39.2
[C90/270]Total=39.2
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(%): 89.29%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.489%

Equipment: GMS1980 Date: 2017/12/28 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	14501.856	0.000	0	.000%	.000%
1.0	14401.378	13.830	13.83	.453%	.508%
2.0	14083.427	40.884	54.714	1.340%	2.008%
3.0	13510.841	65.996	120.71	2.163%	4.431%
4.0	12710.665	87.772	208.482	2.877%	7.653%
5.0	11970.913	106.179	314.661	3.480%	11.551%
6.0	10887.472	120.127	434.788	3.937%	15.961%
7.0	9841.882	128.667	563.454	4.217%	20.684%
8.0	8793.126	133.367	696.822	4.371%	25.580%
9.0	7643.274	133.208	830.03	4.366%	30.470%
10.0	6472.224	127.740	957.77	4.187%	35.159%
11.0	5548.653	120.113	1077.883	3.937%	39.568%
12.0	4735.401	112.419	1190.303	3.685%	43.695%
13.0	3890.079	102.363	1292.665	3.355%	47.452%
14.0	3304.003	92.084	1384.749	3.018%	50.833%
15.0	2857.358	84.586	1469.335	2.772%	53.938%
16.0	2385.869	76.828	1546.163	2.518%	56.758%
17.0	2109.073	69.998	1616.161	2.294%	59.328%
18.0	1786.030	64.222	1680.383	2.105%	61.685%
19.0	1548.874	58.021	1738.403	1.902%	63.815%
20.0	1379.232	53.592	1791.996	1.757%	65.782%
21.0	1249.161	50.470	1842.466	1.654%	67.635%
22.0	1152.007	48.252	1890.719	1.582%	69.406%
23.0	1103.027	47.317	1938.035	1.551%	71.143%
24.0	1067.420	47.454	1985.489	1.555%	72.885%
25.0	1039.561	47.908	2033.397	1.570%	74.644%
26.0	1020.608	48.631	2082.028	1.594%	76.429%
27.0	1003.933	49.531	2131.559	1.623%	78.247%
28.0	985.943	50.379	2181.938	1.651%	80.097%
29.0	969.715	51.166	2233.104	1.677%	81.975%
30.0	954.891	51.964	2285.068	1.703%	83.883%
31.0	937.122	52.652	2337.72	1.726%	85.815%
32.0	910.475	52.931	2390.651	1.735%	87.759%
33.0	867.235	52.372	2443.023	1.717%	89.681%
34.0	779.839	49.845	2492.868	1.634%	91.511%
35.0	662.074	44.780	2537.649	1.468%	93.155%
36.0	531.095	37.991	2575.64	1.245%	94.549%
37.0	392.077	30.109	2605.748	.987%	95.655%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	271.538	22.151	2627.899	.726%	96.468%
39.0	151.997	14.456	2642.355	.474%	96.998%
40.0	79.612	8.078	2650.433	.265%	97.295%
41.0	40.921	4.292	2654.725	.141%	97.452%
42.0	28.767	2.532	2657.257	.083%	97.545%
43.0	23.248	1.927	2659.184	.063%	97.616%
44.0	20.027	1.633	2660.817	.054%	97.676%
45.0	18.664	1.487	2662.304	.049%	97.731%
46.0	17.900	1.430	2663.734	.047%	97.783%
47.0	17.453	1.406	2665.14	.046%	97.835%
48.0	17.088	1.396	2666.536	.046%	97.886%
49.0	16.716	1.388	2667.925	.046%	97.937%
50.0	16.407	1.381	2669.306	.045%	97.988%
51.0	16.145	1.377	2670.683	.045%	98.038%
52.0	15.877	1.374	2672.057	.045%	98.089%
53.0	15.629	1.371	2673.427	.045%	98.139%
54.0	15.402	1.368	2674.795	.045%	98.189%
55.0	15.175	1.365	2676.16	.045%	98.239%
56.0	14.975	1.362	2677.523	.045%	98.289%
57.0	14.810	1.362	2678.884	.045%	98.339%
58.0	14.652	1.362	2680.247	.045%	98.389%
59.0	14.514	1.364	2681.61	.045%	98.439%
60.0	14.370	1.365	2682.975	.045%	98.489%
61.0	14.218	1.364	2684.339	.045%	98.540%
62.0	14.101	1.365	2685.704	.045%	98.590%
63.0	13.977	1.366	2687.069	.045%	98.640%
64.0	13.867	1.366	2688.436	.045%	98.690%
65.0	13.778	1.368	2689.804	.045%	98.740%
66.0	13.675	1.370	2691.174	.045%	98.790%
67.0	13.585	1.371	2692.544	.045%	98.841%
68.0	13.489	1.371	2693.916	.045%	98.891%
69.0	13.406	1.372	2695.288	.045%	98.941%
70.0	13.331	1.373	2696.661	.045%	98.992%
71.0	13.255	1.374	2698.035	.045%	99.042%
72.0	13.179	1.374	2699.41	.045%	99.093%
73.0	13.103	1.374	2700.784	.045%	99.143%
74.0	13.035	1.374	2702.158	.045%	99.194%
75.0	12.986	1.375	2703.533	.045%	99.244%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	12.931	1.376	2704.909	.045%	99.295%
77.0	12.876	1.376	2706.285	.045%	99.345%
78.0	12.814	1.375	2707.66	.045%	99.396%
79.0	12.780	1.375	2709.035	.045%	99.446%
80.0	12.739	1.376	2710.411	.045%	99.497%
81.0	12.704	1.376	2711.787	.045%	99.547%
82.0	12.670	1.376	2713.163	.045%	99.598%
83.0	12.615	1.375	2714.537	.045%	99.648%
84.0	12.594	1.373	2715.911	.045%	99.698%
85.0	12.580	1.374	2717.285	.045%	99.749%
86.0	12.532	1.373	2718.657	.045%	99.799%
87.0	12.505	1.370	2720.028	.045%	99.850%
88.0	12.457	1.367	2721.395	.045%	99.900%
89.0	12.457	1.366	2722.76	.045%	99.950%
90.0	12.429	1.364	2724.125	.045%	100.000%

Zonal flux distribution table

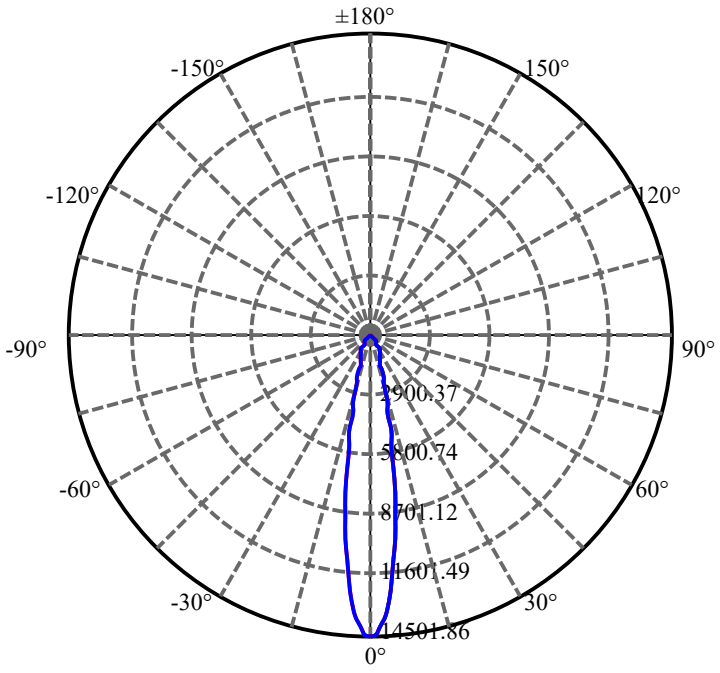
ZONAL LUMEN SUMMARY

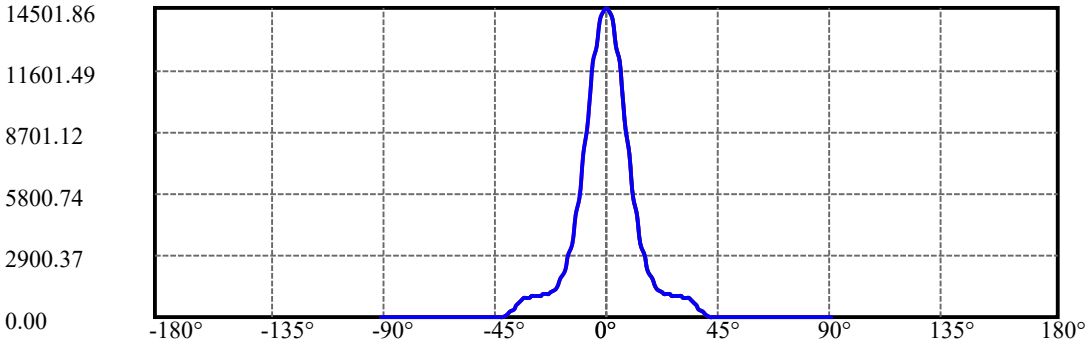
Zone	Lumens	%Lamp	%Fixt
0-30	2285.07	74.90%	83.88%
0-40	2650.43	86.87%	97.29%
0-60	2682.97	87.94%	98.49%
0-90	2722.76	89.24%	99.95%
0-120	2722.76	89.24%	99.95%
0-180	2724.12	89.29%	100.00%
60-90	41.15	1.35%	1.51%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.95	2179.30	71.43%	80.00%

ZONAL LUMEN SUMMARY

0-10	957.77
10-20	834.23
20-30	493.07
30-40	365.37
40-50	18.87
50-60	13.67
60-70	13.69
70-80	13.75
80-90	12.35
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):

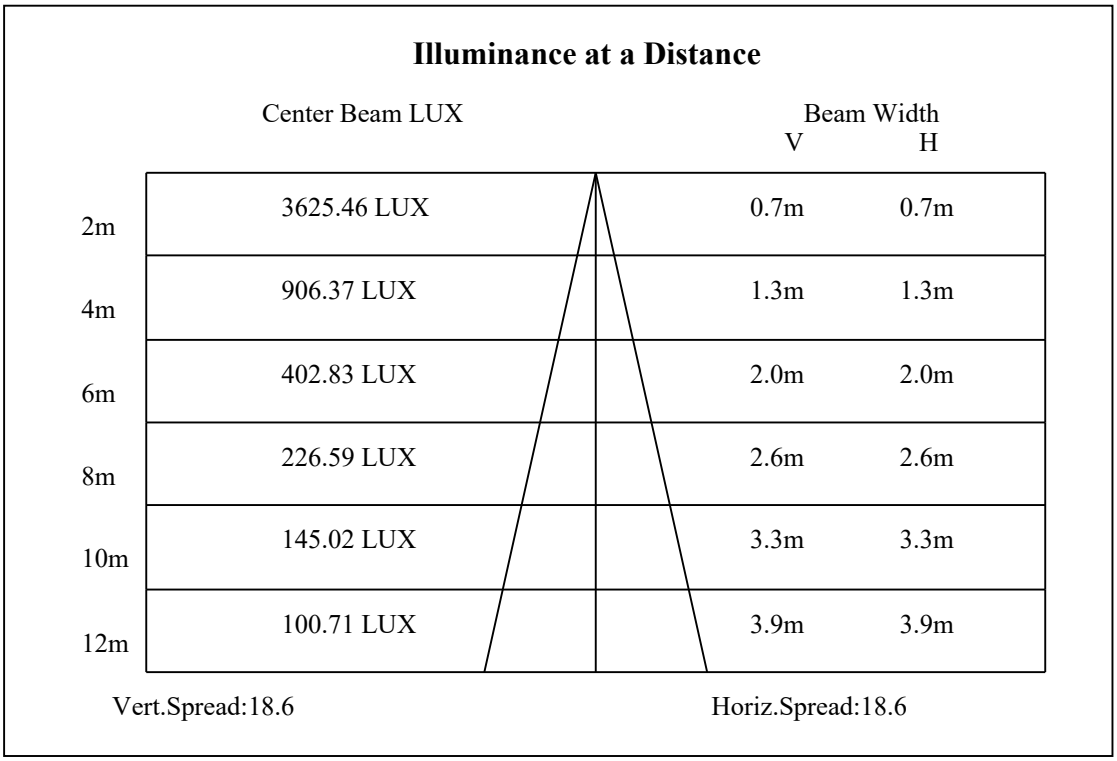
C0/C180:

C90/C270:

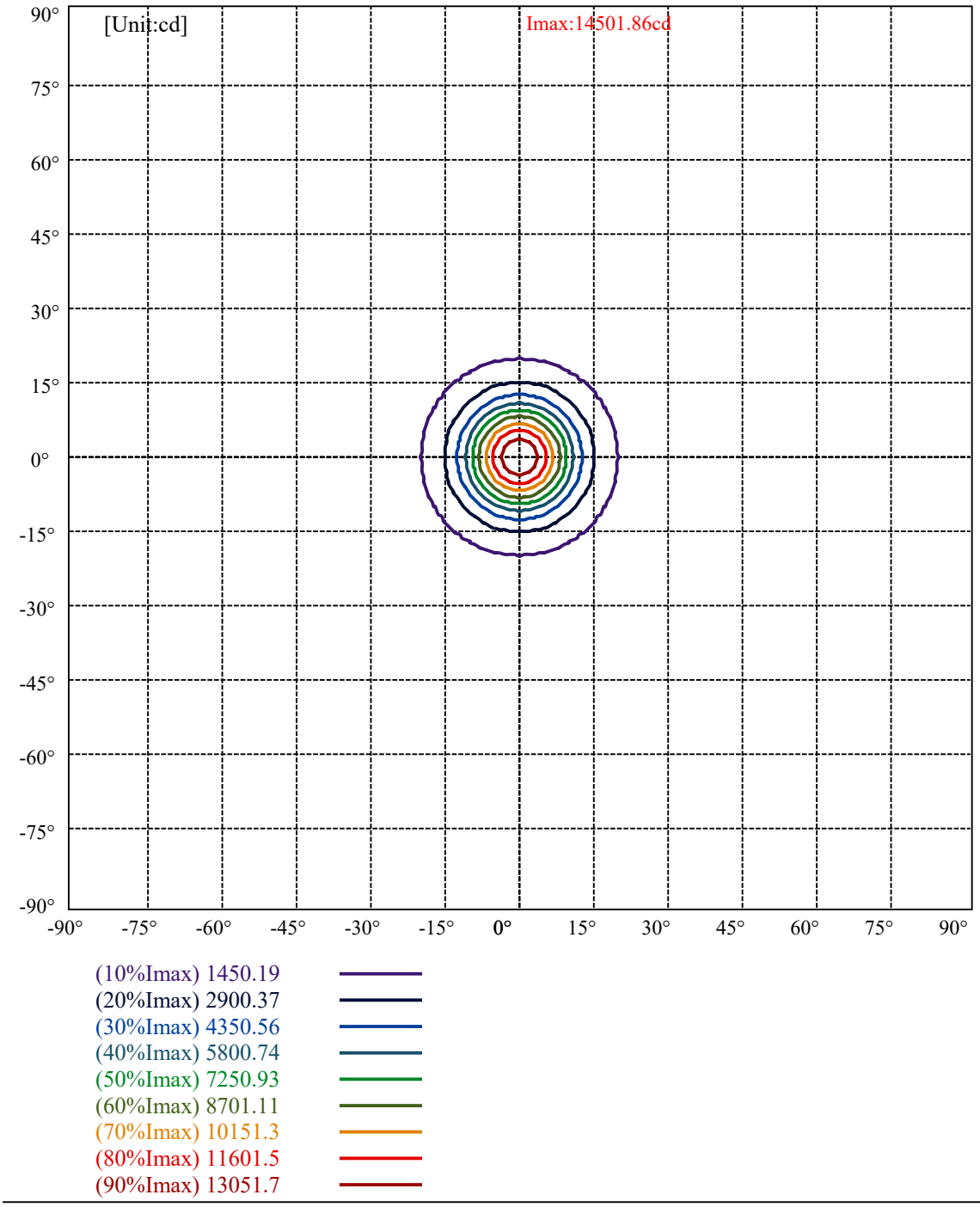
Field angle(10%Imax):C0/180Left:19.6 Right:19.6
:C90/270Left:19.6 Right:19.6

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)

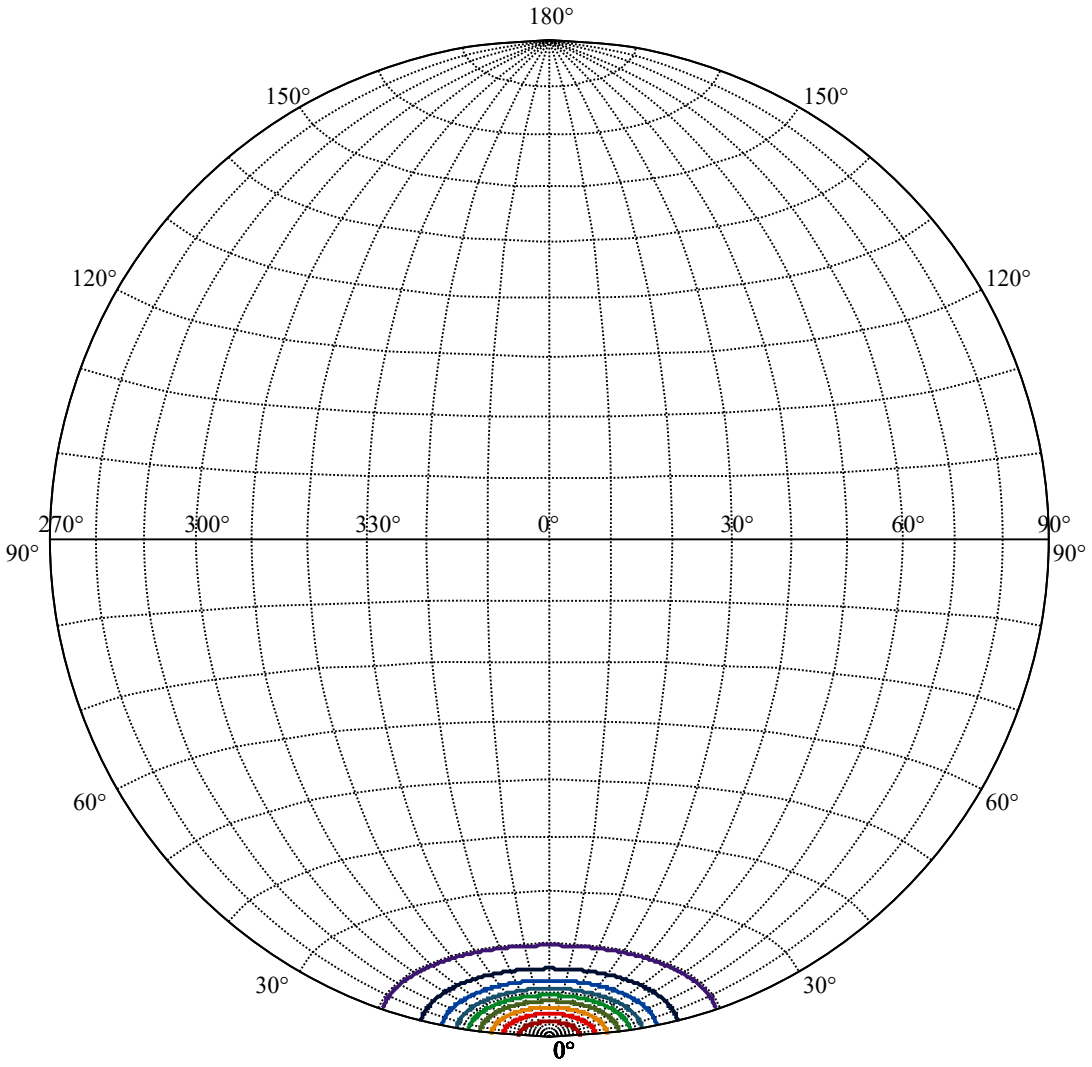


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/12/28
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



[Unit:cd]

Imax:14501.86

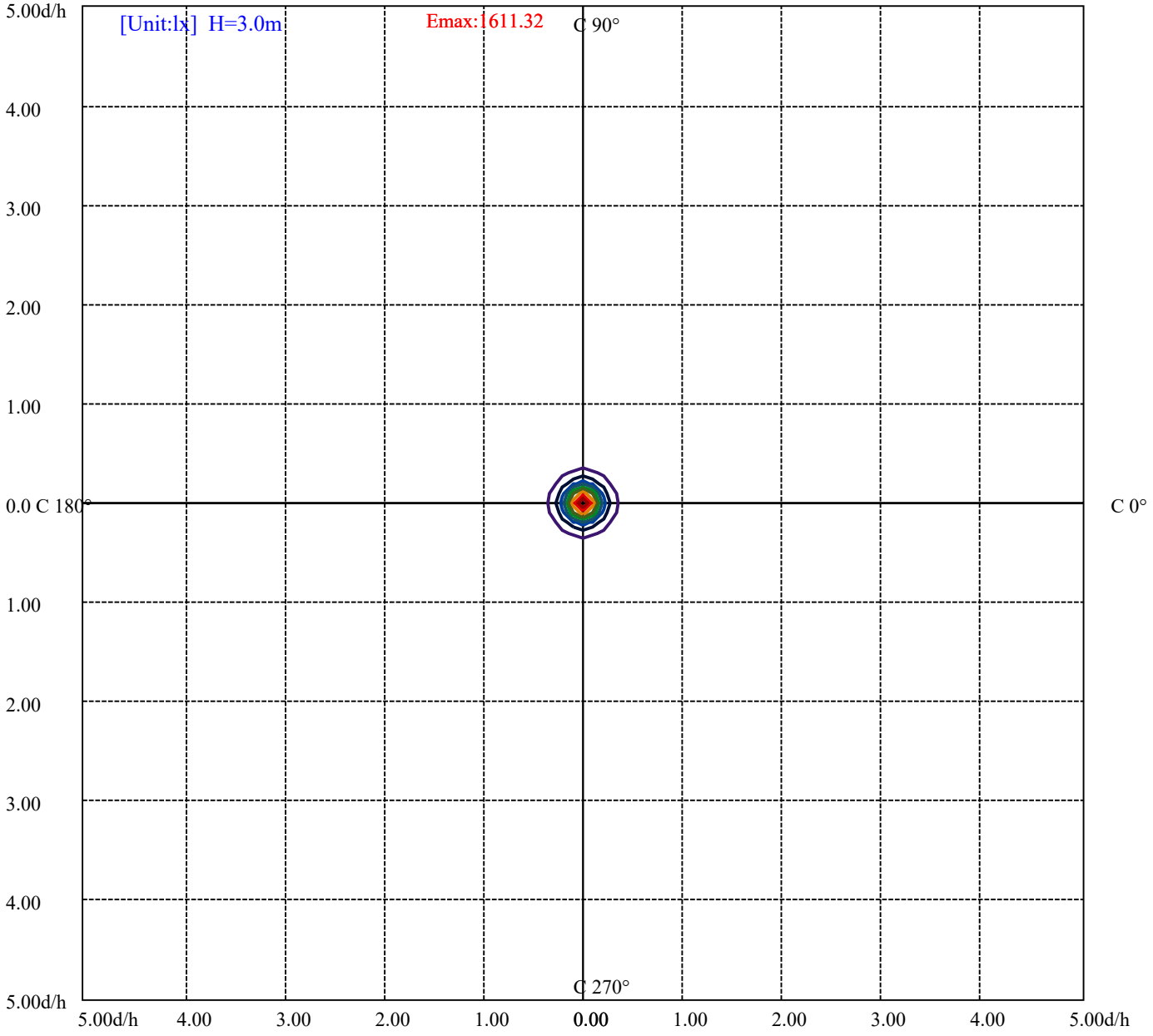
(10%Imax) 1450.19
(20%Imax) 2900.37
(30%Imax) 4350.56
(40%Imax) 5800.74
(50%Imax) 7250.93
(60%Imax) 8701.11
(70%Imax) 10151.3
(80%Imax) 11601.5
(90%Imax) 13051.7

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/12/28
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO illuminance diagram

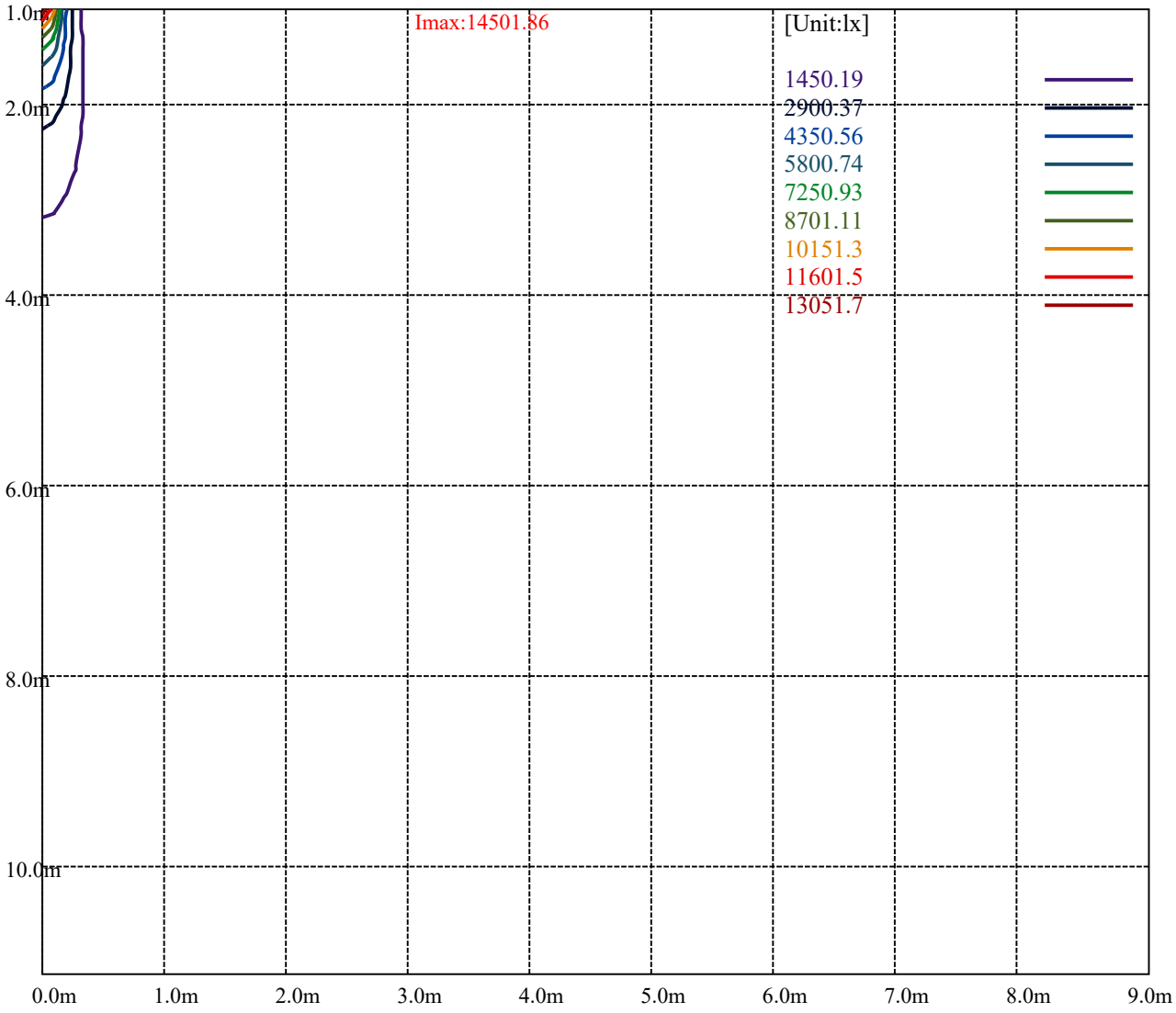


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/12/28
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/12/28
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Luminance Limitting Curve(no luminous side)

Luminance Table

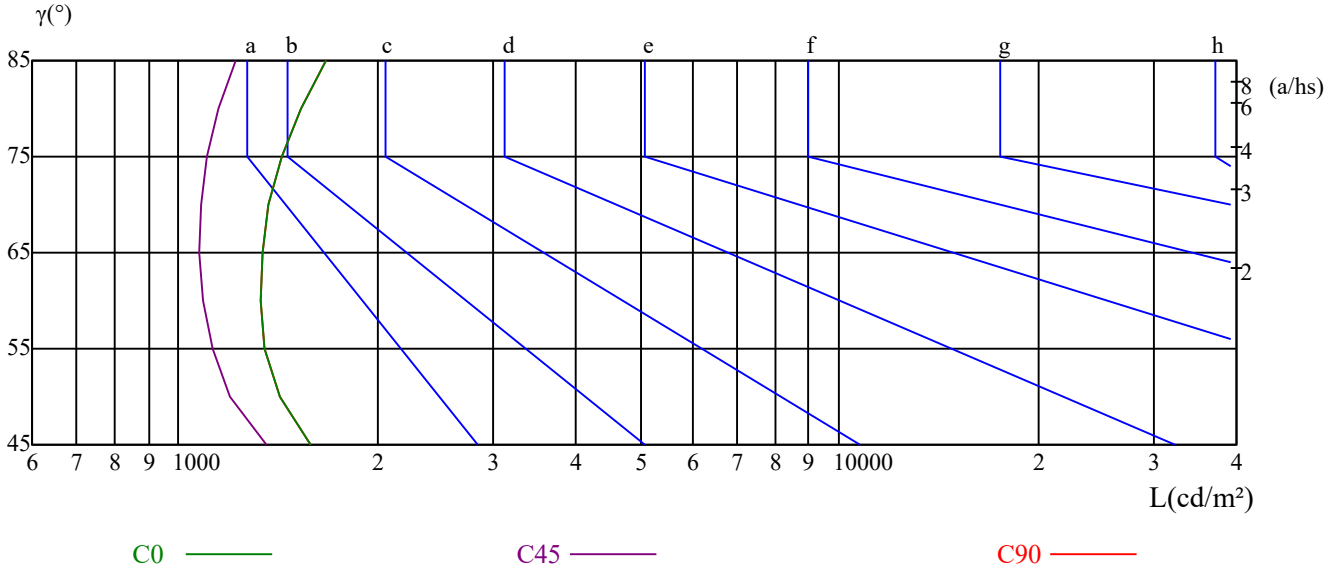
γ	45	50	55	60	65	70	75	80	85
C0	1581	1419	1352	1330	1338	1372	1433	1528	1667
C45	1355	1199	1124	1088	1075	1082	1106	1151	1220
C90	1581	1419	1352	1330	1338	1372	1433	1528	1667

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3260	3260	3260	5018	5018	5018	14434	14434	14434

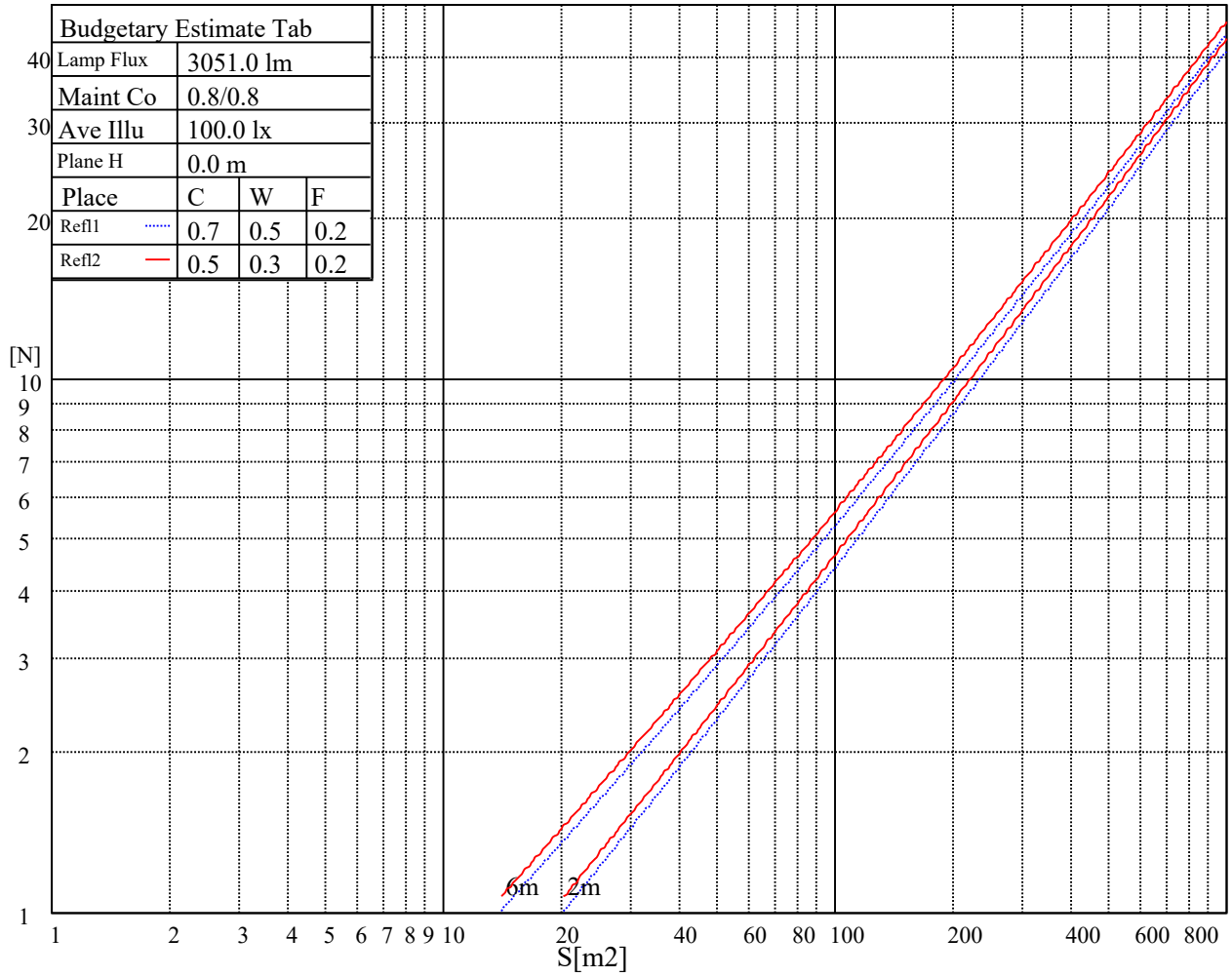
Glare Table

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

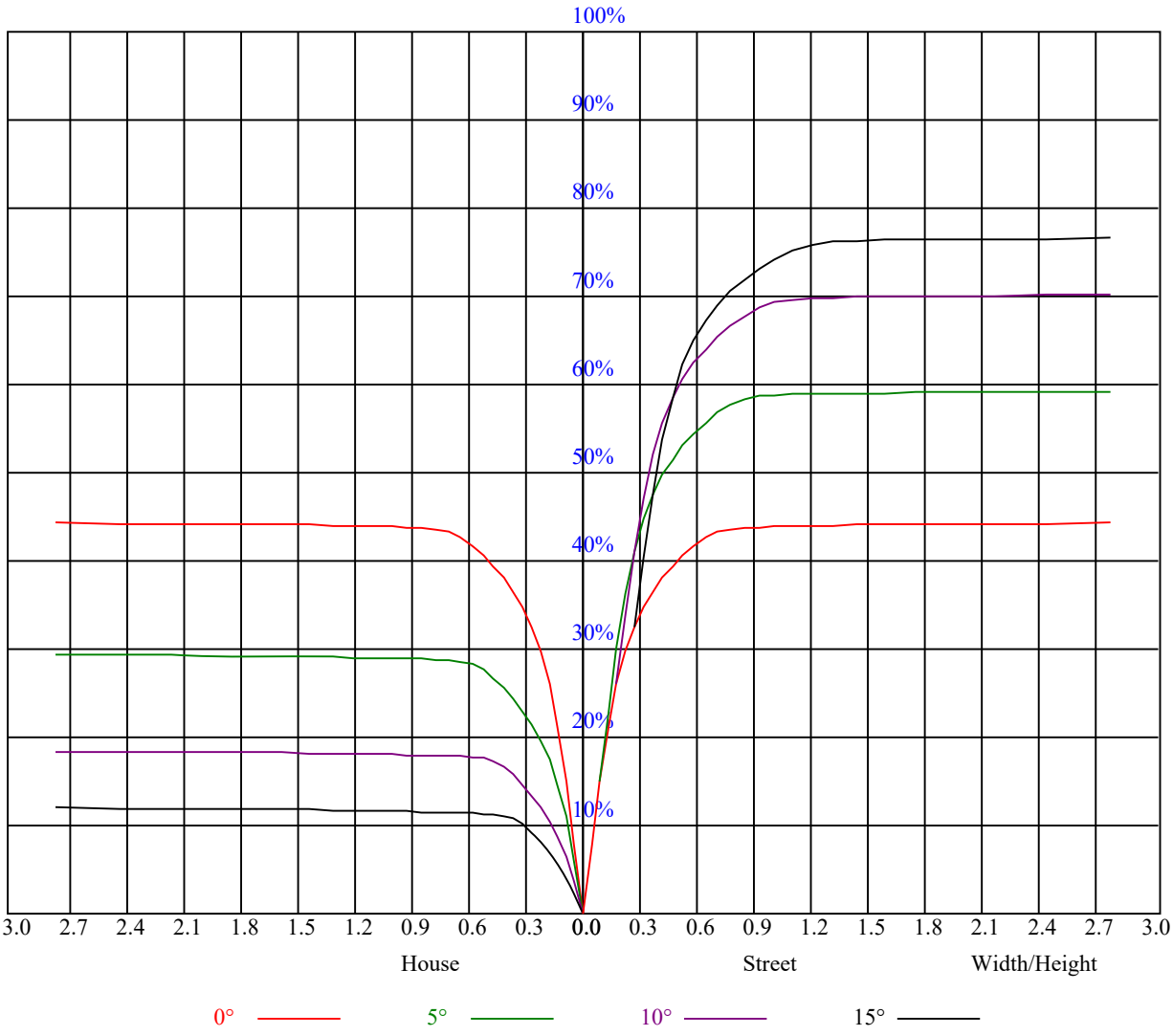


Equipment: GMS1980 Date: 2017/12/28 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.00	0.98	0.96	0.98	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	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	0.83	0.81
3	0.90	0.86	0.83	0.89	0.85	0.83	0.87	0.84	0.82	0.84	0.82	0.80	0.83	0.81	0.79	0.78
4	0.86	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.78	0.81	0.79	0.77	0.80	0.78	0.76	0.75
5	0.82	0.78	0.75	0.81	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.75	0.73	0.72
6	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.72	0.70	0.69
7	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.73	0.70	0.68	0.67
8	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.65	0.65
9	0.71	0.67	0.64	0.70	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.68	0.65	0.63	0.62
10	0.69	0.65	0.62	0.68	0.64	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.61	0.61

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2017/12/28	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	14408.26	14606.46	14567.92	14342.19	13857.70	13241.06	12393.20	11413.19	10444.20
45.0	14529.38	14639.50	14534.89	14210.06	13709.04	12976.79	12057.35	11143.42	10135.88
90.0	14545.90	14441.29	14155.00	13598.93	12855.67	12068.36	10917.68	9872.16	8790.30
135.0	14523.88	14369.72	13951.29	13318.14	12618.93	11793.08	10609.37	9552.29	8478.69
180.0	14408.26	14039.38	13477.81	12602.41	10919.34	10792.71	9469.15	8365.27	7282.86
225.0	14529.38	14193.54	13665.00	12899.71	11969.26	10885.20	9974.02	8632.84	7563.65
270.0	14545.90	14446.80	14088.93	13466.80	12762.07	11798.59	10719.48	9684.42	8627.34
315.0	14523.88	14474.33	14226.57	13648.48	12993.31	12211.51	10959.53	10071.47	9022.09
360.0	14408.26	14606.46	14567.92	14342.19	13857.70	13241.06	12393.20	11413.19	10444.20

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	9271.50	8076.77	7030.70	6155.31	4949.57	4200.80	3573.16	2989.56	2829.90
45.0	8814.53	7729.92	6667.33	5582.72	4646.76	3953.05	3308.89	2791.36	2584.90
90.0	7697.44	6388.74	5450.03	4641.25	3870.46	3240.07	2792.46	2380.09	2071.22
135.0	7294.97	6138.79	5230.36	4454.06	3639.23	3110.69	2829.90	2295.30	1958.36
180.0	6252.20	5112.54	4356.06	3722.36	3072.70	2653.72	2304.11	1972.67	1694.64
225.0	6537.95	5363.04	4564.18	3882.03	3243.92	2724.74	2345.95	1986.43	1729.32
270.0	7317.00	6309.46	5401.03	4602.72	3749.34	3187.77	2829.90	2251.81	1944.04
315.0	7960.60	6658.52	5689.53	4842.76	3948.65	3361.19	2874.49	2419.73	2060.21
360.0	9271.50	8076.77	7030.70	6155.31	4949.57	4200.80	3573.16	2989.56	2829.90

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2200.05	1890.09	1643.43	1461.20	1298.78	1197.48	1121.50	1078.55	1052.68
45.0	2115.27	1816.86	1575.71	1395.68	1240.42	1141.87	1091.77	1055.43	1031.21
90.0	1777.22	1516.25	1367.60	1223.90	1097.93	1083.29	1053.50	1024.10	1005.83
135.0	1706.75	1488.17	1314.20	1201.33	1125.90	1085.71	1055.43	1030.66	1012.49
180.0	1489.28	1311.99	1201.88	1097.82	1076.90	1051.52	1028.95	1010.84	996.03
225.0	1498.08	1326.31	1220.60	1144.62	1096.78	1070.24	1049.49	1030.38	1013.37
270.0	1700.69	1482.12	1319.15	1218.40	1141.32	1098.38	1072.50	1048.27	1030.66
315.0	1800.89	1559.20	1391.28	1250.33	1138.02	1095.73	1066.22	1038.25	1022.62
360.0	2200.05	1890.09	1643.43	1461.20	1298.78	1197.48	1121.50	1078.55	1052.68

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1030.66	1009.18	993.77	979.45	958.53	944.77	930.45	906.23	829.70
45.0	1009.73	991.57	977.80	962.39	943.12	928.25	912.84	876.50	785.10
90.0	990.08	976.48	957.38	941.46	925.99	908.21	879.58	790.00	681.49
135.0	997.62	980.55	962.94	948.62	931.55	913.94	862.73	758.68	622.69
180.0	983.20	961.95	947.52	932.38	911.18	843.57	743.76	605.62	461.43
225.0	1000.04	981.99	963.87	950.55	935.30	885.58	800.41	684.90	535.53
270.0	1013.04	997.62	980.00	965.69	948.62	933.21	905.13	793.91	681.60
315.0	1007.09	988.21	974.44	958.59	942.68	926.27	902.98	822.87	699.05
360.0	1030.66	1009.18	993.77	979.45	958.53	944.77	930.45	906.23	829.70

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	721.79	576.44	442.10	290.15	215.22	72.84	37.66	31.16	24.56
45.0	676.64	538.45	389.80	288.50	132.91	59.30	35.13	27.64	22.57
90.0	540.49	410.28	266.03	155.04	57.48	35.02	28.19	21.86	18.77
135.0	491.10	348.51	281.34	100.81	42.06	32.37	24.56	20.81	18.61
180.0	312.33	190.50	94.04	40.85	31.99	25.27	21.36	18.55	18.11
225.0	382.48	252.27	130.26	52.14	36.23	28.24	23.40	19.05	18.50
270.0	551.67	398.06	278.59	131.81	53.24	36.12	28.08	22.96	19.27
315.0	572.26	422.12	290.15	156.69	67.77	38.21	31.77	23.95	19.82
360.0	721.79	576.44	442.10	290.15	215.22	72.84	37.66	31.16	24.56

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	21.25	18.77	18.22	17.78	17.34	16.90	16.57	16.30	15.97
45.0	18.94	18.39	17.95	17.51	17.07	16.79	16.52	16.24	15.97
90.0	18.17	17.73	17.29	16.90	16.63	16.30	16.02	15.80	15.58
135.0	18.00	17.45	17.07	16.74	16.41	16.13	15.91	15.69	15.42
180.0	17.73	17.23	16.90	16.63	16.30	16.08	15.86	15.58	15.42
225.0	18.06	17.62	17.12	16.85	16.52	16.19	15.97	15.69	15.47
270.0	18.44	17.89	17.45	17.07	16.63	16.35	16.08	15.80	15.53
315.0	18.72	18.11	17.62	17.23	16.85	16.52	16.24	15.91	15.69
360.0	21.25	18.77	18.22	17.78	17.34	16.90	16.57	16.30	15.97

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	15.75	15.53	15.31	15.09	14.92	14.76	14.53	14.42	14.26
45.0	15.75	15.47	15.25	15.09	14.92	14.76	14.59	14.48	14.31
90.0	15.31	15.14	14.92	14.76	14.59	14.48	14.37	14.20	14.09
135.0	15.25	15.03	14.87	14.70	14.59	14.48	14.31	14.15	14.04
180.0	15.20	14.92	14.81	14.65	14.48	14.37	14.26	14.09	13.98
225.0	15.20	15.03	14.87	14.70	14.53	14.37	14.26	14.09	13.98
270.0	15.36	15.09	14.87	14.70	14.53	14.42	14.26	14.09	14.04
315.0	15.42	15.20	14.92	14.81	14.65	14.48	14.37	14.20	14.09
360.0	15.75	15.53	15.31	15.09	14.92	14.76	14.53	14.42	14.26

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	14.15	14.04	13.93	13.82	13.76	13.65	13.54	13.49	13.43
45.0	14.20	14.04	13.98	13.87	13.76	13.65	13.54	13.43	13.38
90.0	13.98	13.87	13.76	13.65	13.54	13.49	13.38	13.32	13.21
135.0	13.93	13.82	13.71	13.65	13.54	13.43	13.38	13.27	13.21
180.0	13.87	13.76	13.65	13.54	13.49	13.43	13.32	13.27	13.21
225.0	13.87	13.76	13.71	13.60	13.49	13.38	13.32	13.27	13.16
270.0	13.87	13.76	13.71	13.60	13.54	13.43	13.38	13.27	13.21
315.0	13.93	13.87	13.76	13.65	13.54	13.43	13.38	13.32	13.21
360.0	14.15	14.04	13.93	13.82	13.76	13.65	13.54	13.49	13.43

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	13.32	13.27	13.16	13.10	13.05	12.99	12.94	12.88	12.83
45.0	13.32	13.21	13.16	13.10	13.05	12.94	12.88	12.88	12.83
90.0	13.10	13.05	12.99	12.94	12.88	12.83	12.77	12.72	12.72
135.0	13.16	13.05	12.94	12.94	12.88	12.83	12.77	12.72	12.66
180.0	13.10	13.05	12.99	12.94	12.88	12.83	12.77	12.77	12.72
225.0	13.10	13.05	12.99	12.94	12.88	12.83	12.77	12.72	12.72
270.0	13.16	13.05	12.99	12.99	12.88	12.88	12.77	12.77	12.72
315.0	13.16	13.10	13.05	12.94	12.94	12.88	12.83	12.77	12.72
360.0	13.32	13.27	13.16	13.10	13.05	12.99	12.94	12.88	12.83

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	12.83	12.77	12.72	12.66	12.66	12.61	12.61	12.55	12.55
45.0	12.77	12.72	12.66	12.66	12.61	12.55	12.55	12.50	12.50
90.0	12.61	12.61	12.55	12.55	12.55	12.50	12.44	12.44	12.39
135.0	12.61	12.61	12.55	12.55	12.55	12.50	12.44	12.39	12.39
180.0	12.72	12.66	12.61	12.61	12.61	12.50	12.50	12.44	12.50
225.0	12.66	12.66	12.61	12.55	12.55	12.55	12.50	12.44	12.44
270.0	12.72	12.66	12.61	12.61	12.55	12.50	12.50	12.44	12.44
315.0	12.72	12.66	12.61	12.55	12.55	12.55	12.50	12.44	12.44
360.0	12.83	12.77	12.72	12.66	12.66	12.61	12.61	12.55	12.55

Intensity data(cd)

C/γ(°)	90.0
0.0	12.50
45.0	12.44
90.0	12.39
135.0	12.39
180.0	12.44
225.0	12.44
270.0	12.39
315.0	12.44
360.0	12.50