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NATA

LumCAT: LM01D05524BH
Luminaire: 92.70.132.00

Report No: NATA0100	Voltage(V): 34.7000
Test No: GC2018122006	Current(A): 0.2500
LampCAT: LUMILEDS LUXEON1203	Power (W): 8.6750
Lamp flux(lm): 1030.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 55	Width(mm): 55
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 953.10
Efficiency(%): 92.53%
Lumens(lm)/Power(W): 109.97
Central intensity(cd): 4022.859
Maximum intensity(cd): 4022.859
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=25.7
[C90/270]Total=25.7
Field angle(10%Imax): [C0/180]Total=44.3
[C90/270]Total=44.3
Maximum s/h(1/2): C0_180=0.44 C90_270=0.44
Maximum s/h(1/4): C0_180=0.43 C90_270=0.43
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 92.62%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.004%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4022.859	0.962	0.962	.093%	.101%
1.0	4007.672	7.670	8.633	.745%	.906%
2.0	3954.234	15.133	23.766	1.469%	2.494%
3.0	3866.344	22.190	45.956	2.154%	4.822%
4.0	3764.883	28.800	74.755	2.796%	7.843%
5.0	3641.695	34.806	109.561	3.379%	11.495%
6.0	3514.781	40.289	149.85	3.912%	15.722%
7.0	3350.250	44.774	194.624	4.347%	20.420%
8.0	3165.328	48.309	242.932	4.690%	25.489%
9.0	2952.563	50.650	293.583	4.918%	30.803%
10.0	2718.211	51.761	345.344	5.025%	36.234%
11.0	2474.859	51.785	397.129	5.028%	41.667%
12.0	2228.836	50.817	447.946	4.934%	46.999%
13.0	1976.977	48.769	496.714	4.735%	52.115%
14.0	1719.703	45.623	542.337	4.429%	56.902%
15.0	1503.359	42.669	585.006	4.143%	61.379%
16.0	1290.410	39.005	624.011	3.787%	65.471%
17.0	1105.235	35.436	659.446	3.440%	69.189%
18.0	947.777	32.117	691.564	3.118%	72.559%
19.0	797.098	28.458	720.022	2.763%	75.545%
20.0	648.752	24.332	744.354	2.362%	78.098%
21.0	523.202	20.561	764.915	1.996%	80.255%
22.0	416.813	17.123	782.038	1.662%	82.052%
23.0	329.006	14.097	796.135	1.369%	83.531%
24.0	253.343	11.300	807.435	1.097%	84.716%
25.0	195.441	9.058	816.493	.879%	85.667%
26.0	152.698	7.341	823.833	.713%	86.437%
27.0	111.066	5.529	829.363	.537%	87.017%
28.0	90.218	4.645	834.007	.451%	87.504%
29.0	74.412	3.956	837.963	.384%	87.919%
30.0	63.014	3.455	841.418	.335%	88.282%
31.0	55.160	3.115	844.534	.302%	88.609%
32.0	49.521	2.878	847.412	.279%	88.911%
33.0	45.450	2.715	850.126	.264%	89.196%
34.0	42.525	2.608	852.734	.253%	89.469%
35.0	40.479	2.546	855.28	.247%	89.736%
36.0	39.220	2.528	857.808	.245%	90.001%
37.0	38.721	2.555	860.363	.248%	90.270%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	38.693	2.612	862.976	.254%	90.544%
39.0	39.009	2.692	865.668	.261%	90.826%
40.0	39.368	2.775	868.443	.269%	91.117%
41.0	39.600	2.849	871.292	.277%	91.416%
42.0	39.593	2.905	874.197	.282%	91.721%
43.0	39.199	2.932	877.129	.285%	92.029%
44.0	38.433	2.928	880.056	.284%	92.336%
45.0	37.048	2.873	882.929	.279%	92.637%
46.0	35.641	2.812	885.741	.273%	92.932%
47.0	34.102	2.735	888.476	.266%	93.219%
48.0	32.463	2.646	891.121	.257%	93.497%
49.0	30.811	2.550	893.671	.248%	93.764%
50.0	29.257	2.458	896.129	.239%	94.022%
51.0	27.766	2.366	898.495	.230%	94.270%
52.0	26.416	2.283	900.778	.222%	94.510%
53.0	24.933	2.184	902.961	.212%	94.739%
54.0	23.548	2.089	905.051	.203%	94.958%
55.0	22.380	2.010	907.061	.195%	95.169%
56.0	21.234	1.930	908.991	.187%	95.372%
57.0	20.095	1.848	910.84	.179%	95.566%
58.0	18.984	1.766	912.605	.171%	95.751%
59.0	17.993	1.691	914.296	.164%	95.928%
60.0	17.009	1.615	915.912	.157%	96.098%
61.0	16.088	1.543	917.455	.150%	96.260%
62.0	15.279	1.479	918.934	.144%	96.415%
63.0	14.491	1.416	920.35	.137%	96.563%
64.0	13.788	1.359	921.709	.132%	96.706%
65.0	13.120	1.304	923.013	.127%	96.843%
66.0	12.516	1.254	924.267	.122%	96.974%
67.0	11.967	1.208	925.475	.117%	97.101%
68.0	11.496	1.169	926.644	.113%	97.224%
69.0	11.095	1.136	927.78	.110%	97.343%
70.0	10.786	1.111	928.891	.108%	97.460%
71.0	10.526	1.091	929.982	.106%	97.574%
72.0	10.259	1.070	931.052	.104%	97.686%
73.0	10.048	1.054	932.106	.102%	97.797%
74.0	9.844	1.038	933.144	.101%	97.906%
75.0	9.682	1.026	934.169	.100%	98.013%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	9.703	1.032	935.202	.100%	98.122%
77.0	9.710	1.038	936.239	.101%	98.231%
78.0	9.626	1.033	937.272	.100%	98.339%
79.0	9.591	1.032	938.304	.100%	98.447%
80.0	9.682	1.046	939.35	.102%	98.557%
81.0	10.132	1.097	940.447	.107%	98.672%
82.0	11.095	1.205	941.652	.117%	98.798%
83.0	12.333	1.342	942.994	.130%	98.939%
84.0	13.732	1.498	944.492	.145%	99.096%
85.0	14.892	1.627	946.119	.158%	99.267%
86.0	14.934	1.634	947.753	.159%	99.439%
87.0	14.393	1.576	949.329	.153%	99.604%
88.0	14.070	1.542	950.871	.150%	99.766%
89.0	13.697	1.502	952.372	.146%	99.923%
90.0	13.345	0.732	953.104	.071%	100.000%

Zonal flux distribution table

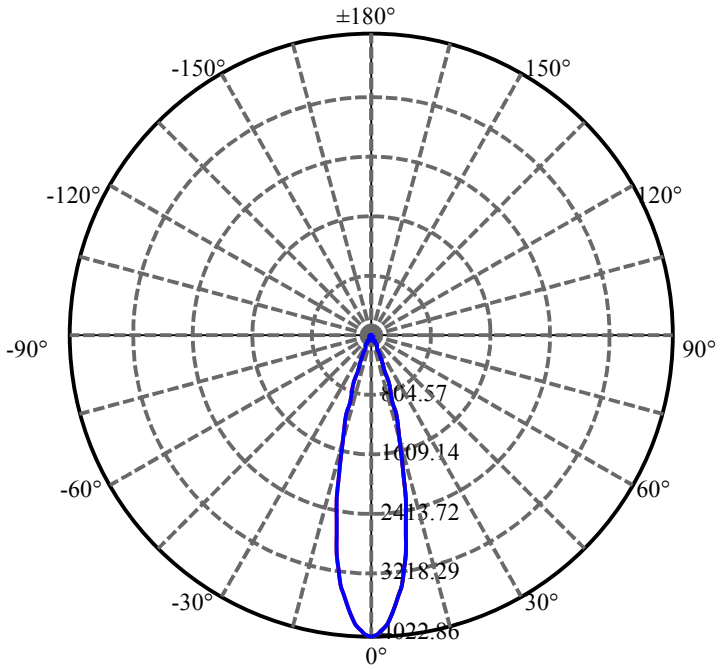
ZONAL LUMEN SUMMARY

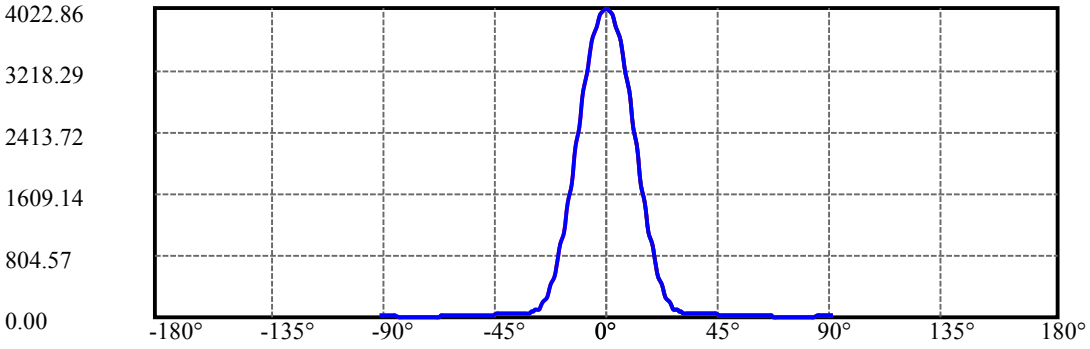
Zone	Lumens	%Lamp	%Fixt
0-30	841.42	81.69%	88.28%
0-40	868.44	84.31%	91.12%
0-60	915.91	88.92%	96.10%
0-90	952.37	92.46%	99.92%
0-120	952.37	92.46%	99.92%
0-180	953.10	92.53%	100.00%
60-90	38.08	3.70%	3.99%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-20.88	762.48	74.03%	80.00%

ZONAL LUMEN SUMMARY

0-10	345.34
10-20	399.01
20-30	97.06
30-40	27.02
40-50	27.69
50-60	19.78
60-70	12.98
70-80	10.46
80-90	13.02
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:22.2 Right:22.2
:C90/270Left:22.2 Right:22.2

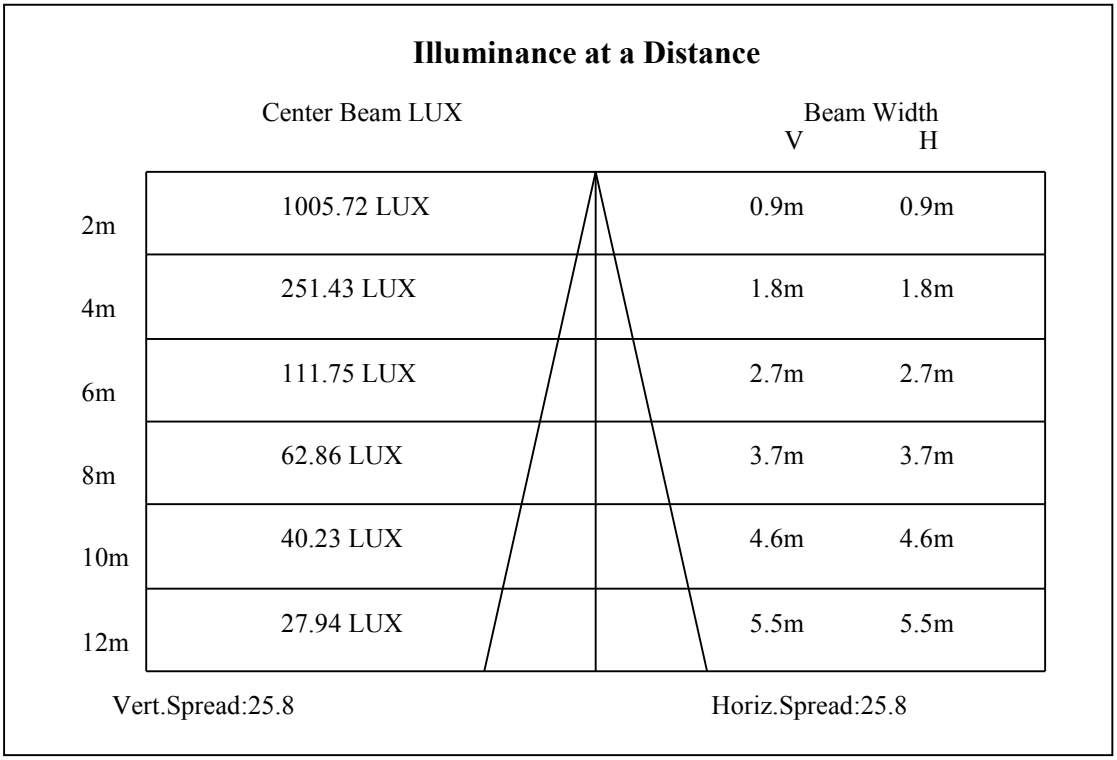
Beam Angle(50%Imax):C0/180Left:12.9 Right:12.9
:C90/270Left:12.9 Right:12.9

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/12/20
Humidity(%): 65.0%

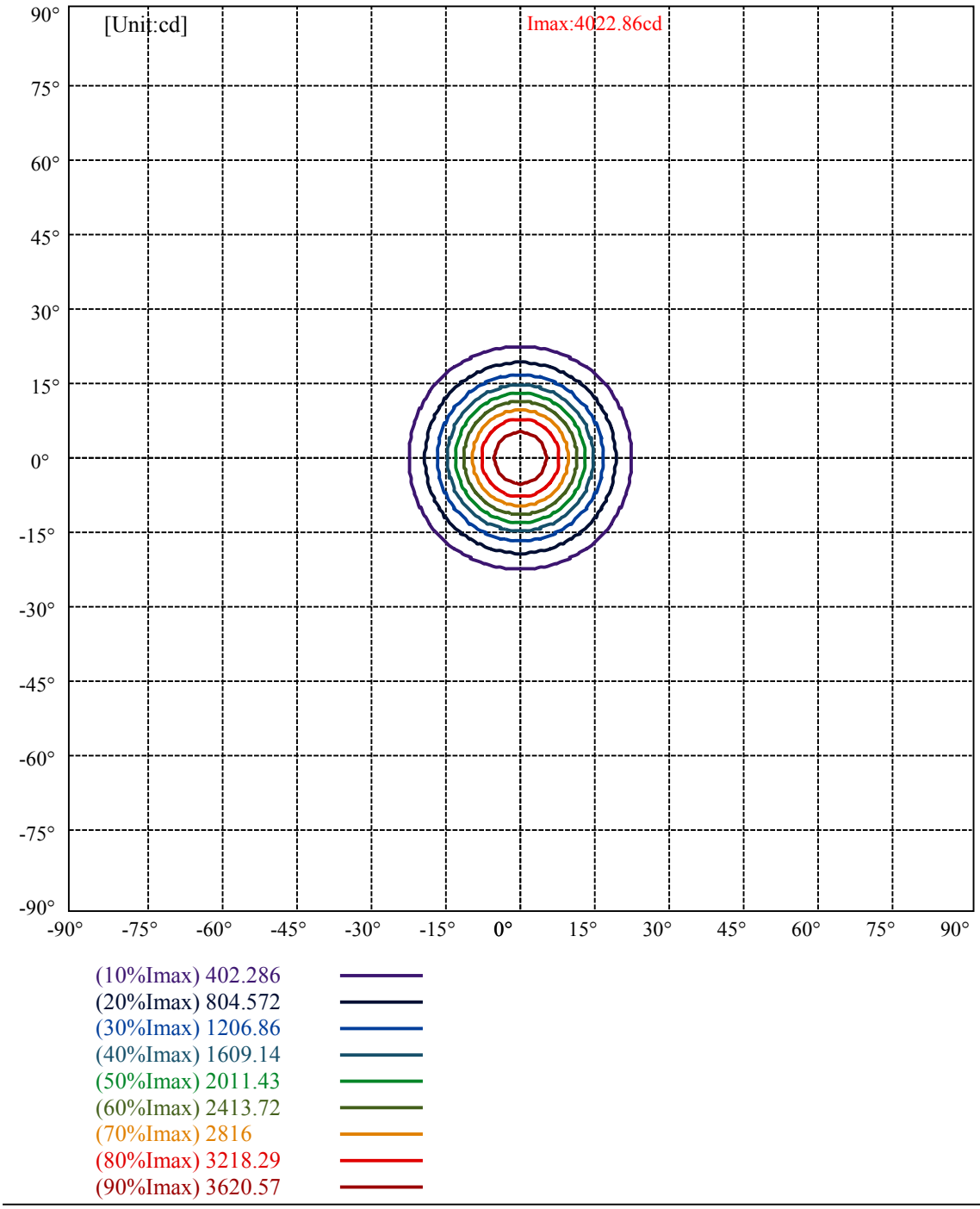
Operator: NT07
Distance(m): 7.50

Lux distance Curve



Equipment: GMS1980 Date: 2018/12/20 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)

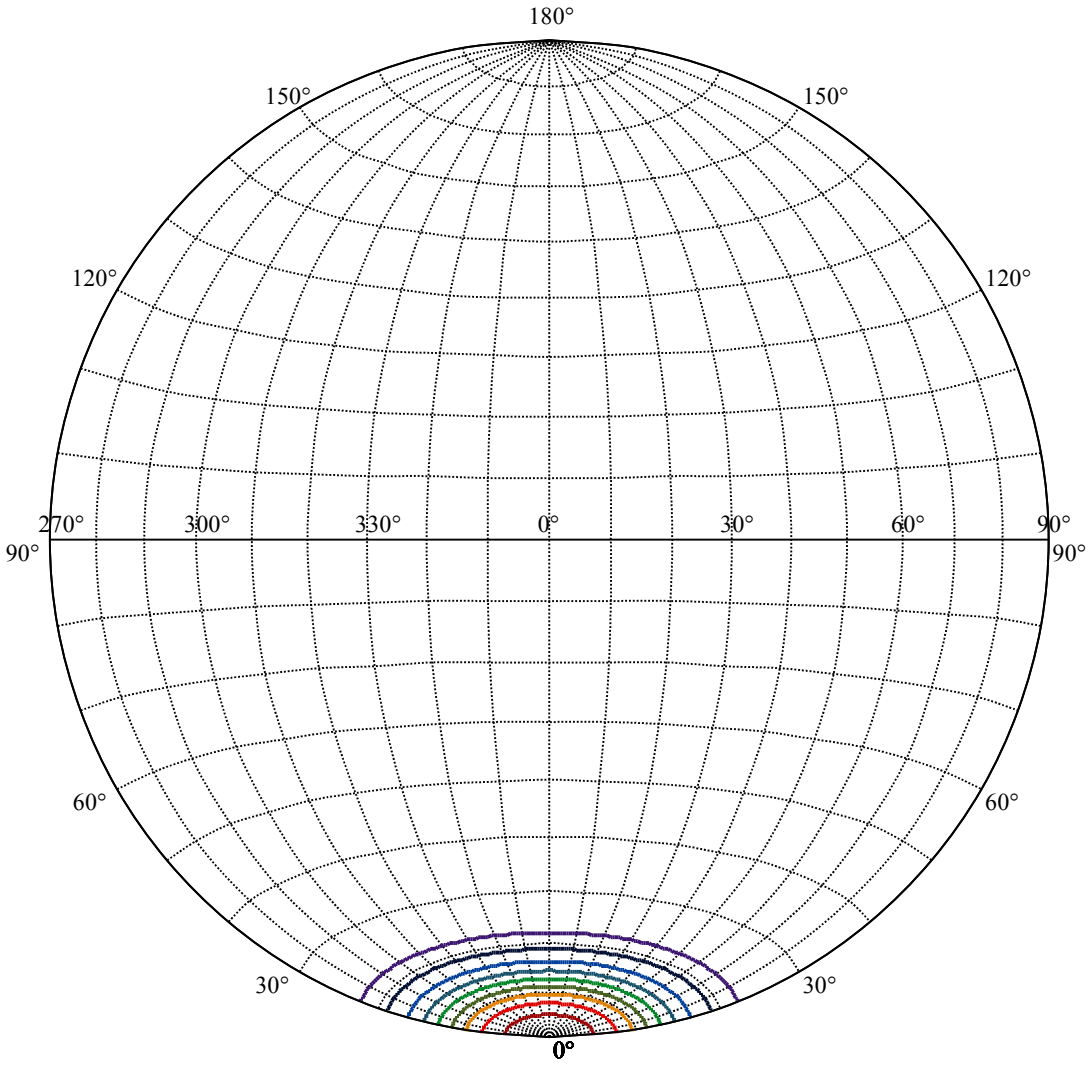


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/12/20
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:4022.86

(10%Imax) 402.286
(20%Imax) 804.572
(30%Imax) 1206.86
(40%Imax) 1609.14
(50%Imax) 2011.43
(60%Imax) 2413.72
(70%Imax) 2816
(80%Imax) 3218.29
(90%Imax) 3620.57

Equipment: GMS1980 Date: 2018/12/20 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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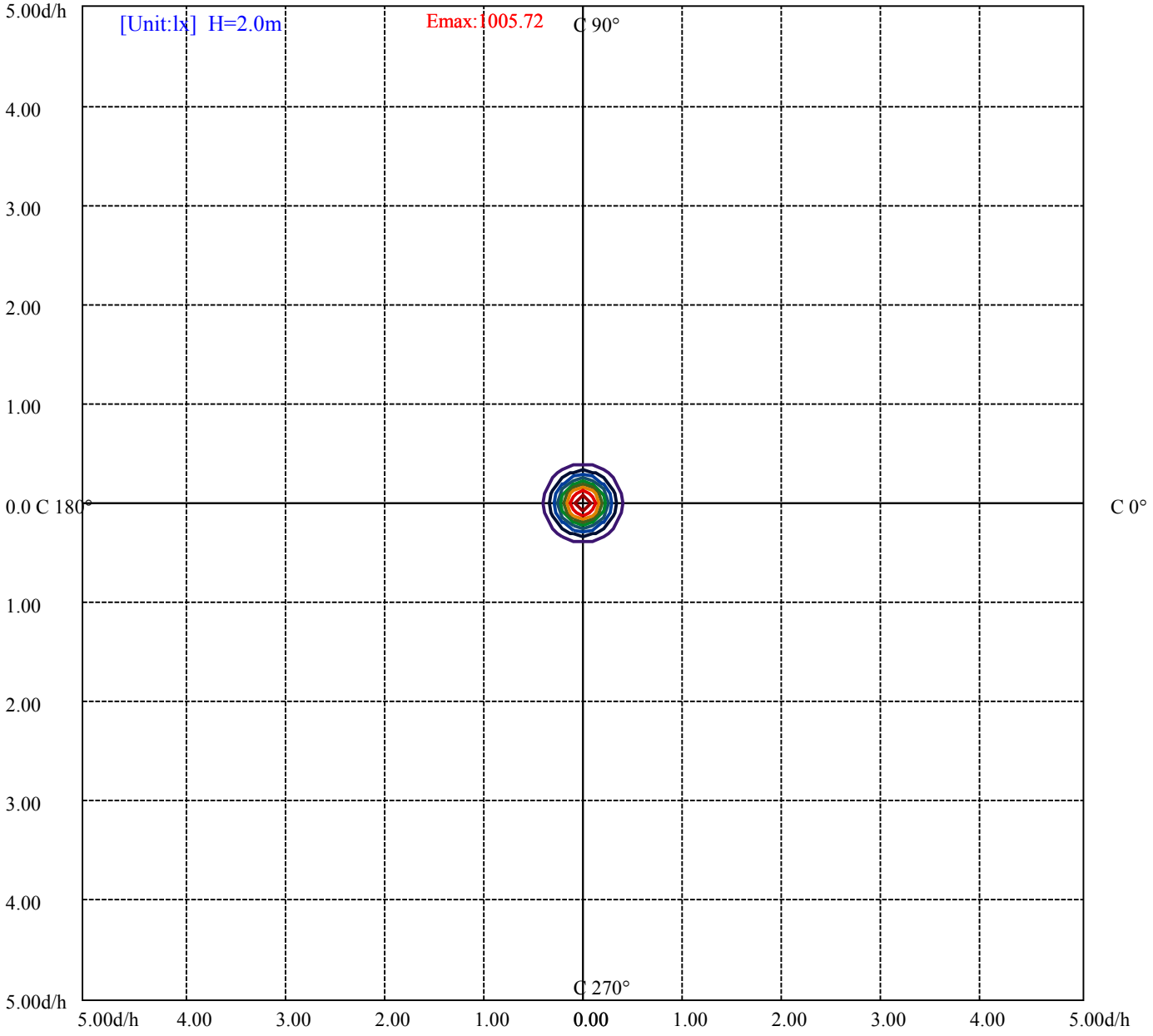
ISO illuminance diagram

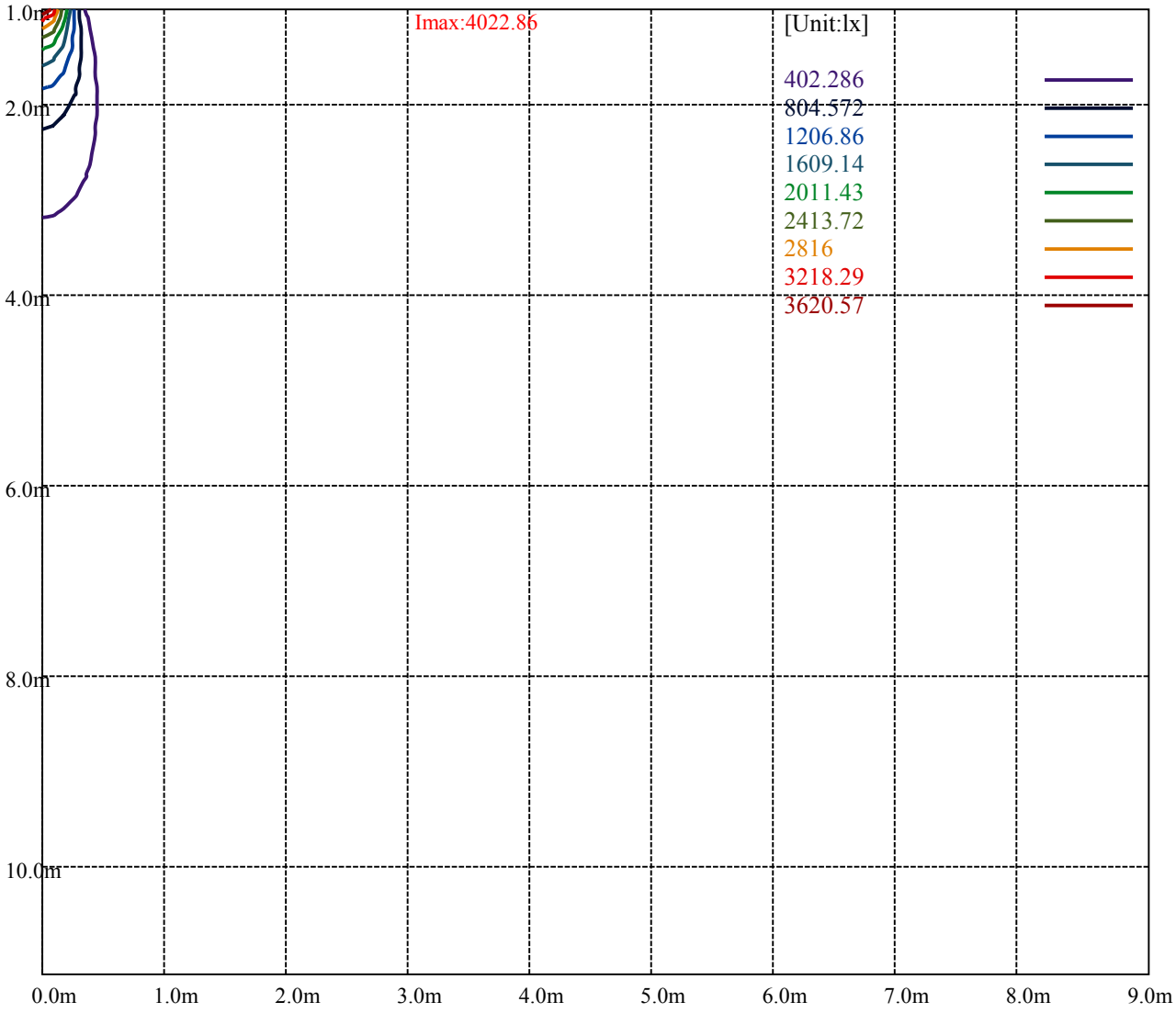


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/12/20
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/12/20
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

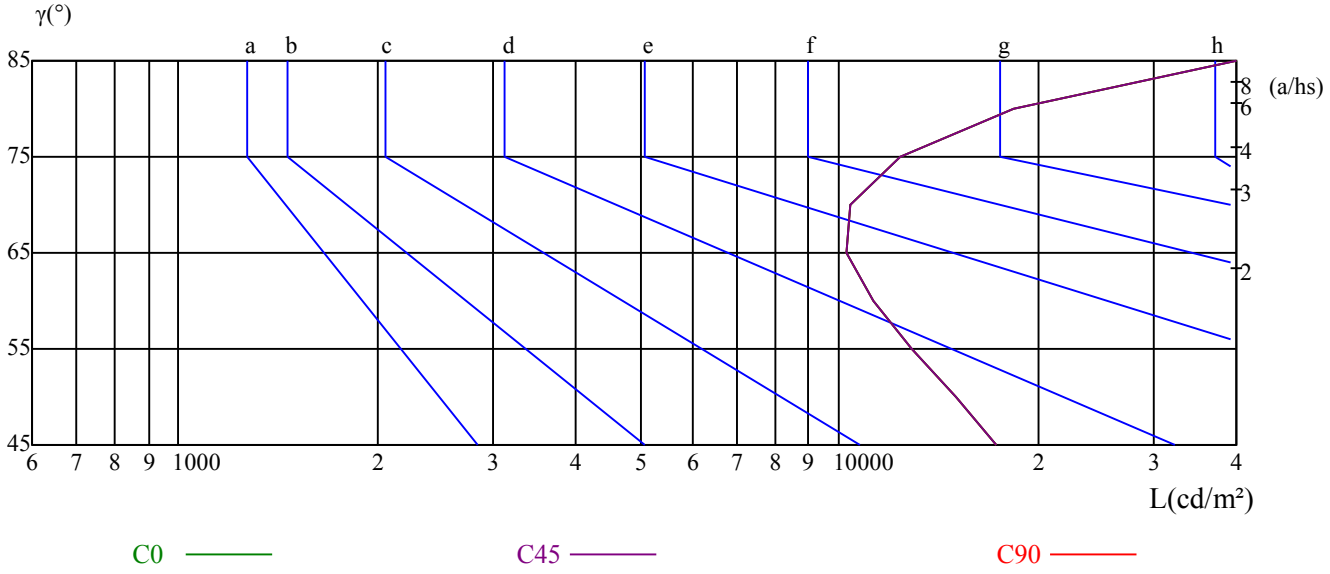
γ	45	50	55	60	65	70	75	80	85
C0	17320	15047	12899	11245	10263	10425	12366	18432	56486
C45	17320	15047	12899	11245	10263	10425	12366	18432	56486
C90	17320	15047	12899	11245	10263	10425	12366	18432	56486

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
10263	10263	10263	12366	12366	12366	56486	56486	56486

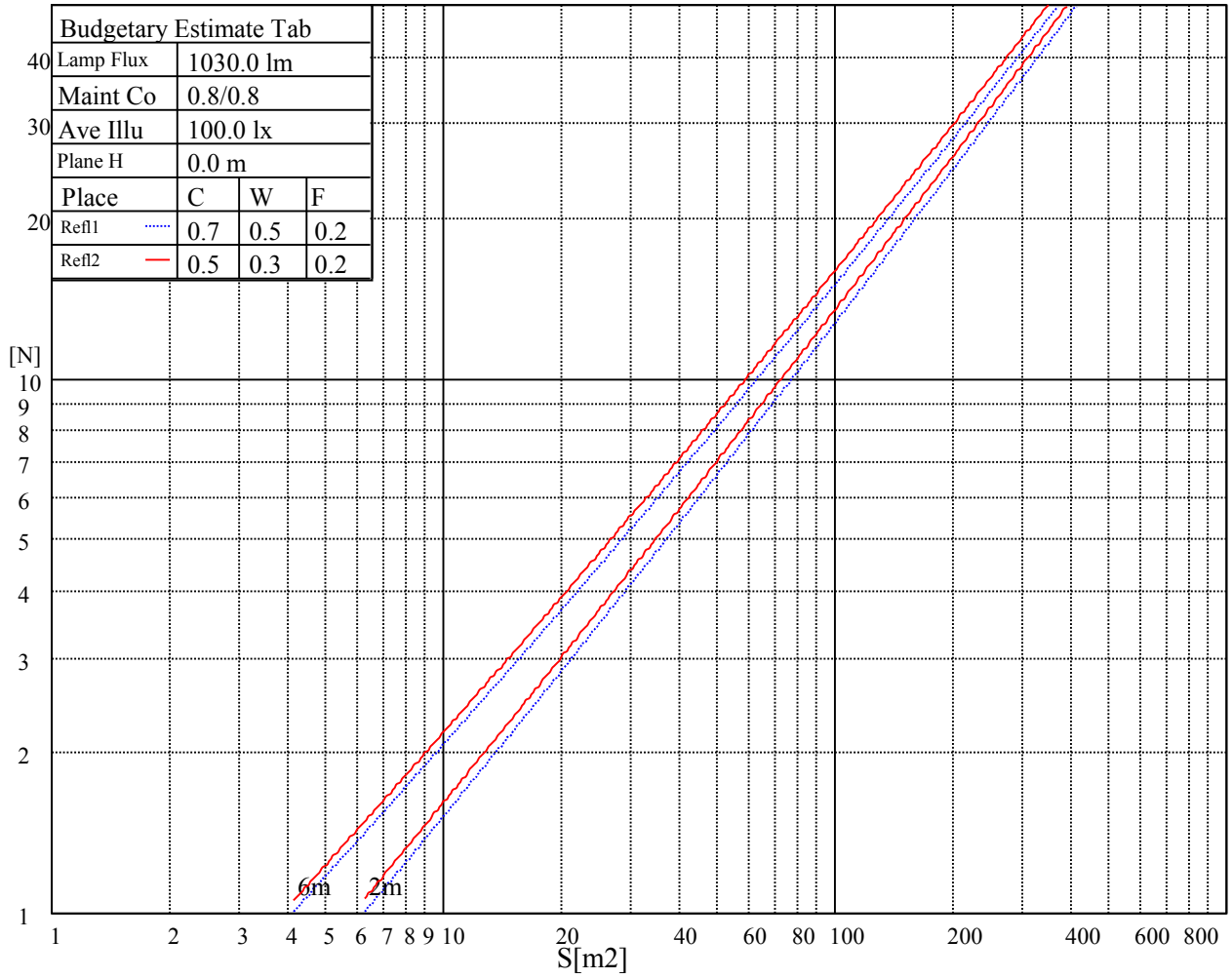
Glare Table

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

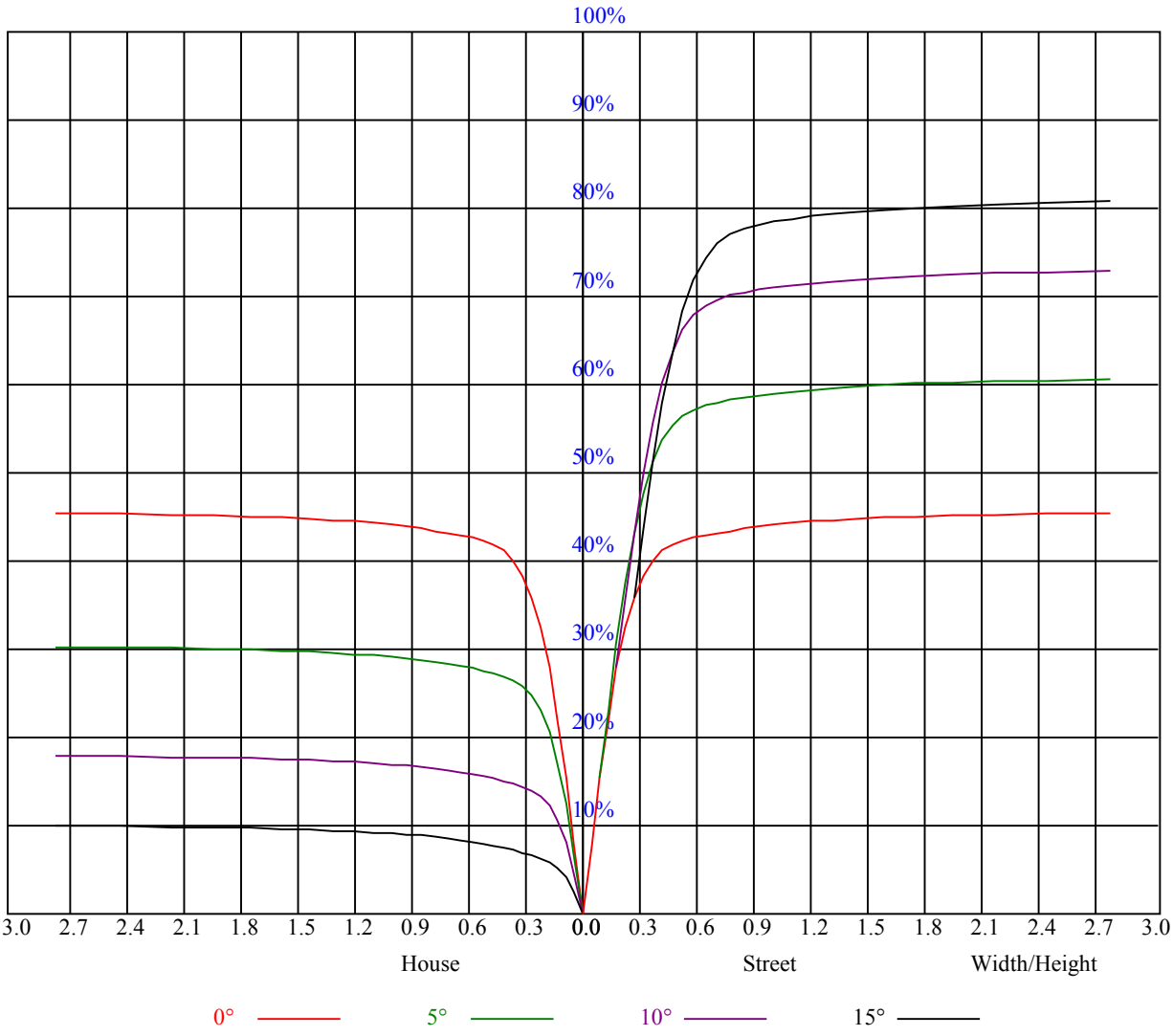


Equipment: GMS1980 Date: 2018/12/20 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.10	1.10	1.10	1.08	1.08	1.08	1.03	1.03	1.03	0.99	0.99	0.99	0.95	0.95	0.95	0.93
1	1.03	1.01	0.99	1.01	0.99	0.97	0.97	0.96	0.94	0.94	0.93	0.92	0.91	0.90	0.89	0.87
2	0.98	0.94	0.92	0.96	0.93	0.91	0.93	0.91	0.89	0.90	0.88	0.87	0.88	0.86	0.85	0.83
3	0.93	0.89	0.86	0.92	0.88	0.85	0.89	0.86	0.84	0.87	0.85	0.83	0.85	0.83	0.82	0.80
4	0.89	0.85	0.82	0.88	0.84	0.81	0.86	0.83	0.80	0.84	0.82	0.79	0.83	0.80	0.79	0.77
5	0.86	0.81	0.78	0.85	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.77	0.80	0.78	0.76	0.75
6	0.82	0.78	0.75	0.82	0.78	0.75	0.81	0.77	0.74	0.79	0.76	0.74	0.78	0.76	0.74	0.72
7	0.80	0.76	0.73	0.79	0.75	0.72	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.74	0.71	0.70
8	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.72	0.69	0.68
9	0.75	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.73	0.70	0.68	0.67
10	0.73	0.69	0.67	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.71	0.68	0.66	0.65

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2018/12/20	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	4035.38	4056.75	4039.88	3993.75	3911.63	3816.00	3720.38	3591.56	3448.13
45.0	3989.25	4034.25	4045.50	4029.19	3990.94	3929.06	3861.56	3767.63	3638.25
90.0	4026.38	4028.06	4002.19	3948.75	3886.88	3785.63	3691.13	3538.69	3355.31
135.0	4040.44	4025.81	3972.94	3901.50	3803.06	3686.63	3564.00	3393.56	3215.81
180.0	4035.38	3984.19	3902.63	3765.38	3644.44	3511.69	3340.13	3137.63	2937.94
225.0	3989.25	3909.94	3783.38	3633.19	3490.31	3315.38	3144.38	2926.69	2693.25
270.0	4026.38	3999.38	3915.00	3801.94	3658.50	3481.88	3332.25	3160.69	2939.06
315.0	4040.44	4023.00	3972.38	3857.06	3733.31	3607.31	3464.44	3285.56	3094.88
360.0	4035.38	4056.75	4039.88	3993.75	3911.63	3816.00	3720.38	3591.56	3448.13

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3255.19	3028.50	2807.44	2568.94	2260.69	2014.31	1778.63	1510.88	1310.06
45.0	3475.69	3303.00	3071.25	2845.13	2574.00	2289.94	2038.50	1779.75	1544.06
90.0	3164.63	2921.63	2659.50	2416.50	2172.38	1873.13	1647.56	1436.63	1121.85
135.0	2994.75	2755.13	2525.06	2289.38	1992.94	1762.88	1551.94	1314.56	1139.63
180.0	2694.94	2437.88	2205.00	1914.75	1719.56	1491.75	1229.63	1117.74	964.41
225.0	2473.31	2212.31	1942.31	1708.88	1496.25	1216.69	1104.24	949.33	785.48
270.0	2702.25	2481.75	2220.19	1987.31	1732.50	1487.25	1285.88	1093.50	932.06
315.0	2859.75	2605.50	2368.13	2099.81	1867.50	1621.69	1390.50	1120.89	1044.34
360.0	3255.19	3028.50	2807.44	2568.94	2260.69	2014.31	1778.63	1510.88	1310.06

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1132.31	952.88	788.63	655.88	525.38	422.44	324.00	285.75	182.59
45.0	1337.63	1150.31	937.13	781.31	640.13	498.94	384.75	302.06	292.50
90.0	1010.64	840.38	690.41	533.19	430.26	344.98	267.41	205.54	161.33
135.0	973.69	799.31	649.13	532.13	415.13	326.81	289.13	196.65	144.17
180.0	792.45	666.11	554.34	438.69	336.88	264.21	205.09	148.61	116.83
225.0	667.13	556.20	433.63	343.97	269.10	197.94	156.94	117.62	88.99
270.0	803.25	678.94	531.56	432.00	344.25	285.75	190.52	146.76	110.59
315.0	865.13	732.66	605.19	468.45	373.39	290.98	208.91	160.54	124.59
360.0	1132.31	952.88	788.63	655.88	525.38	422.44	324.00	285.75	182.59

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	136.74	105.98	87.98	75.43	64.52	58.33	53.44	48.49	45.62
45.0	167.01	130.56	106.88	85.33	72.23	65.81	58.67	53.66	50.57
90.0	123.58	99.90	81.79	70.14	62.66	56.36	51.58	48.26	45.96
135.0	110.53	92.70	74.31	63.96	56.53	49.61	45.68	42.92	40.50
180.0	94.33	75.54	63.68	54.73	47.76	42.75	39.60	37.41	36.00
225.0	75.66	64.80	53.38	45.90	41.18	36.73	35.16	34.03	32.91
270.0	86.40	71.89	59.74	51.58	44.78	40.05	37.01	34.93	33.41
315.0	94.28	80.38	67.56	57.04	51.64	46.52	42.47	40.50	38.87
360.0	136.74	105.98	87.98	75.43	64.52	58.33	53.44	48.49	45.62

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	43.71	42.36	41.51	41.63	42.02	42.47	42.69	42.08	41.23
45.0	47.64	46.13	45.45	45.23	45.23	45.23	45.11	44.66	43.71
90.0	44.49	44.10	44.21	44.55	44.89	44.89	44.55	43.54	42.24
135.0	39.49	39.09	39.38	39.94	40.50	40.78	40.56	40.05	38.98
180.0	35.49	35.55	36.00	36.79	37.69	38.31	38.53	38.36	37.74
225.0	32.68	33.02	33.69	34.37	34.71	34.76	34.76	34.71	34.31
270.0	32.63	32.29	32.23	32.46	32.63	32.91	33.08	33.02	32.85
315.0	37.63	37.24	37.07	37.13	37.29	37.46	37.46	37.18	36.39
360.0	43.71	42.36	41.51	41.63	42.02	42.47	42.69	42.08	41.23

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	39.49	37.80	36.17	34.54	32.63	31.16	29.70	28.46	26.66
45.0	41.74	40.11	38.48	36.34	34.31	32.51	30.71	29.31	27.51
90.0	40.39	38.64	36.84	34.93	33.19	31.50	29.81	28.29	26.83
135.0	37.35	35.83	34.26	32.79	31.16	29.48	27.96	26.49	24.75
180.0	36.90	35.61	34.14	32.51	30.77	29.25	27.79	26.27	24.92
225.0	33.47	32.34	30.77	29.42	28.13	26.49	25.20	23.96	22.67
270.0	32.06	31.28	30.26	28.80	27.39	26.27	24.98	23.85	22.56
315.0	34.99	33.53	31.89	30.38	28.91	27.39	25.99	24.69	23.57
360.0	39.49	37.80	36.17	34.54	32.63	31.16	29.70	28.46	26.66

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	25.37	24.30	22.67	21.71	20.81	19.46	18.39	17.61	16.54
45.0	25.88	24.53	23.12	21.83	20.93	19.97	18.73	17.78	16.88
90.0	25.14	23.85	22.61	21.32	20.14	19.07	18.23	17.16	16.31
135.0	23.34	22.16	20.70	19.74	18.73	17.72	16.76	15.86	15.02
180.0	23.51	22.16	21.38	20.42	18.68	17.66	16.71	15.53	14.68
225.0	21.49	20.48	19.97	18.28	17.04	16.09	15.19	14.40	13.78
270.0	21.49	20.53	19.41	18.28	17.44	16.71	15.64	14.91	14.23
315.0	22.16	21.04	20.03	19.18	18.11	17.27	16.43	15.47	14.79
360.0	25.37	24.30	22.67	21.71	20.81	19.46	18.39	17.61	16.54

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	15.69	14.96	14.06	13.50	12.94	12.32	11.93	11.59	11.25
45.0	15.98	15.13	14.40	13.61	12.94	12.38	11.87	11.48	11.14
90.0	15.30	14.51	13.67	12.88	12.32	11.81	11.31	10.97	10.74
135.0	14.29	13.50	12.83	12.21	11.64	11.14	10.86	10.63	10.35
180.0	13.95	13.22	12.60	12.09	11.53	11.14	10.80	10.52	10.35
225.0	13.05	12.49	11.87	11.42	11.03	10.69	10.35	10.07	9.84
270.0	13.50	12.88	12.49	11.87	11.31	10.91	10.52	10.24	9.96
315.0	14.18	13.61	13.05	12.54	12.04	11.59	11.14	10.80	10.58
360.0	15.69	14.96	14.06	13.50	12.94	12.32	11.93	11.59	11.25

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	11.14	10.91	10.69	10.52	10.41	10.24	10.29	10.18	10.01
45.0	10.91	10.69	10.46	10.18	10.07	9.90	9.84	10.29	10.18
90.0	10.52	10.29	10.07	9.90	9.79	9.73	9.68	9.68	9.68
135.0	10.13	9.96	9.73	9.56	9.45	9.34	9.39	9.34	9.34
180.0	10.01	9.79	9.62	9.45	9.68	10.24	9.84	9.45	9.68
225.0	9.51	9.34	9.17	9.17	9.84	9.56	9.28	9.28	10.13
270.0	9.62	9.45	9.23	9.06	9.00	9.23	9.17	9.06	9.11
315.0	10.24	9.96	9.79	9.62	9.39	9.45	9.51	9.45	9.34
360.0	11.14	10.91	10.69	10.52	10.41	10.24	10.29	10.18	10.01

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.96	10.35	11.81	13.50	14.96	15.86	14.85	14.63	14.40
45.0	9.96	10.01	10.63	12.21	13.84	15.41	15.02	14.68	14.34
90.0	9.84	10.58	11.70	13.56	15.36	15.58	15.41	15.08	14.46
135.0	9.62	10.74	12.26	13.89	15.36	15.02	14.34	13.95	13.56
180.0	10.69	12.38	13.89	15.24	15.98	14.34	14.06	13.84	13.39
225.0	11.53	12.77	14.06	14.96	15.30	13.84	13.33	13.11	12.94
270.0	9.79	11.08	12.26	13.33	14.12	14.51	13.67	13.05	12.49
315.0	9.68	10.86	12.04	13.16	14.23	14.91	14.46	14.23	14.01
360.0	9.96	10.35	11.81	13.50	14.96	15.86	14.85	14.63	14.40

Intensity data(cd)

C/γ(°)	90.0
0.0	14.18
45.0	13.89
90.0	14.01
135.0	13.39
180.0	13.33
225.0	12.88
270.0	12.15
315.0	12.94
360.0	14.18