NATA LIGHTING CO.,LTD.
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Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

NATA

LumCAT: LM01D01538BY
Luminaire:

Report No: NATA0100	Voltage(V): 25.2000
Test No: GC2018122002	Current(A): 0.2100
LampCAT: LUMILEDS LUXEON5050	Power (W): 5.2920
Lamp flux(lm): 742.0	PF: 1.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 15	Width(mm): 15
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 726.30
Efficiency(%): 97.88%
Lumens(lm)/Power(W): 137.30
Central intensity(cd): 1251.141
Maximum intensity(cd): 1251.141
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=37.1
[C90/270]Total=37.1
Field angle(10%Imax): [C0/180]Total=72.9
[C90/270]Total=72.9
Maximum s/h(1/2): C0_180=0.60 C90_270=0.60
Maximum s/h(1/4): C0_180=0.62 C90_270=0.62
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 97.92%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 92.586%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1251.141	0.299	0.299	.040%	.041%
1.0	1249.172	2.391	2.69	.322%	.370%
2.0	1242.703	4.756	7.446	.641%	1.025%
3.0	1232.789	7.075	14.521	.954%	1.999%
4.0	1218.656	9.322	23.843	1.256%	3.283%
5.0	1197.330	11.444	35.287	1.542%	4.858%
6.0	1176.455	13.485	48.772	1.817%	6.715%
7.0	1148.273	15.346	64.118	2.068%	8.828%
8.0	1113.673	16.997	81.115	2.291%	11.168%
9.0	1074.825	18.438	99.553	2.485%	13.707%
10.0	1032.722	19.666	119.219	2.650%	16.414%
11.0	988.242	20.678	139.897	2.787%	19.261%
12.0	942.145	21.481	161.378	2.895%	22.219%
13.0	893.679	22.046	183.423	2.971%	25.254%
14.0	843.455	22.376	205.8	3.016%	28.335%
15.0	795.438	22.576	228.376	3.043%	31.444%
16.0	746.353	22.560	250.936	3.040%	34.550%
17.0	699.138	22.416	273.351	3.021%	37.636%
18.0	649.772	22.019	295.37	2.968%	40.668%
19.0	604.519	21.583	316.953	2.909%	43.639%
20.0	558.527	20.948	337.901	2.823%	46.523%
21.0	512.128	20.126	358.027	2.712%	49.294%
22.0	472.528	19.411	377.438	2.616%	51.967%
23.0	432.949	18.551	395.989	2.500%	54.521%
24.0	395.170	17.626	413.615	2.375%	56.948%
25.0	361.941	16.774	430.389	2.261%	59.257%
26.0	328.816	15.807	446.196	2.130%	61.434%
27.0	300.431	14.957	461.153	2.016%	63.493%
28.0	272.756	14.042	475.195	1.892%	65.426%
29.0	245.784	13.067	488.262	1.761%	67.226%
30.0	225.577	12.368	500.631	1.667%	68.929%
31.0	203.463	11.492	512.122	1.549%	70.511%
32.0	184.247	10.707	522.829	1.443%	71.985%
33.0	168.778	10.080	532.91	1.359%	73.373%
34.0	154.596	9.480	542.39	1.278%	74.678%
35.0	141.771	8.917	551.307	1.202%	75.906%
36.0	129.621	8.355	559.662	1.126%	77.056%
37.0	120.002	7.920	567.582	1.067%	78.147%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	110.616	7.468	575.05	1.006%	79.175%
39.0	101.630	7.014	582.063	.945%	80.140%
40.0	94.556	6.665	588.728	.898%	81.058%
41.0	87.933	6.326	595.055	.853%	81.929%
42.0	81.380	5.971	601.026	.805%	82.751%
43.0	75.755	5.666	606.692	.764%	83.531%
44.0	70.826	5.395	612.087	.727%	84.274%
45.0	66.108	5.126	617.213	.691%	84.980%
46.0	62.002	4.891	622.104	.659%	85.653%
47.0	58.113	4.661	626.765	.628%	86.295%
48.0	54.724	4.460	631.224	.601%	86.909%
49.0	51.652	4.275	635.499	.576%	87.498%
50.0	48.579	4.081	639.58	.550%	88.060%
51.0	45.914	3.913	643.493	.527%	88.598%
52.0	43.552	3.763	647.256	.507%	89.116%
53.0	41.203	3.609	650.865	.486%	89.613%
54.0	39.038	3.463	654.328	.467%	90.090%
55.0	37.139	3.336	657.664	.450%	90.549%
56.0	35.346	3.213	660.878	.433%	90.992%
57.0	33.771	3.106	663.984	.419%	91.420%
58.0	32.273	3.001	666.985	.404%	91.833%
59.0	30.938	2.908	669.893	.392%	92.233%
60.0	29.602	2.811	672.704	.379%	92.620%
61.0	28.385	2.722	675.427	.367%	92.995%
62.0	27.309	2.644	678.071	.356%	93.359%
63.0	26.339	2.574	680.645	.347%	93.713%
64.0	25.446	2.508	683.153	.338%	94.059%
65.0	24.574	2.442	685.595	.329%	94.395%
66.0	23.829	2.387	687.982	.322%	94.724%
67.0	23.140	2.336	690.318	.315%	95.045%
68.0	22.451	2.283	692.601	.308%	95.360%
69.0	21.811	2.233	694.834	.301%	95.667%
70.0	21.270	2.192	697.025	.295%	95.969%
71.0	20.679	2.144	699.17	.289%	96.264%
72.0	20.060	2.092	701.262	.282%	96.552%
73.0	19.526	2.048	703.309	.276%	96.834%
74.0	18.956	1.998	705.308	.269%	97.109%
75.0	18.323	1.941	707.249	.262%	97.376%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	17.761	1.890	709.138	.255%	97.637%
77.0	17.184	1.836	710.974	.247%	97.889%
78.0	16.601	1.781	712.755	.240%	98.135%
79.0	16.066	1.729	714.485	.233%	98.373%
80.0	15.504	1.674	716.159	.226%	98.603%
81.0	14.850	1.608	717.767	.217%	98.825%
82.0	14.098	1.531	719.298	.206%	99.035%
83.0	13.261	1.443	720.742	.195%	99.234%
84.0	12.396	1.352	722.094	.182%	99.420%
85.0	11.679	1.276	723.369	.172%	99.596%
86.0	9.745	1.066	724.436	.144%	99.743%
87.0	7.530	0.825	725.26	.111%	99.856%
88.0	4.458	0.489	725.749	.066%	99.924%
89.0	3.480	0.382	726.13	.051%	99.976%
90.0	3.171	0.174	726.304	.023%	100.000%

Zonal flux distribution table

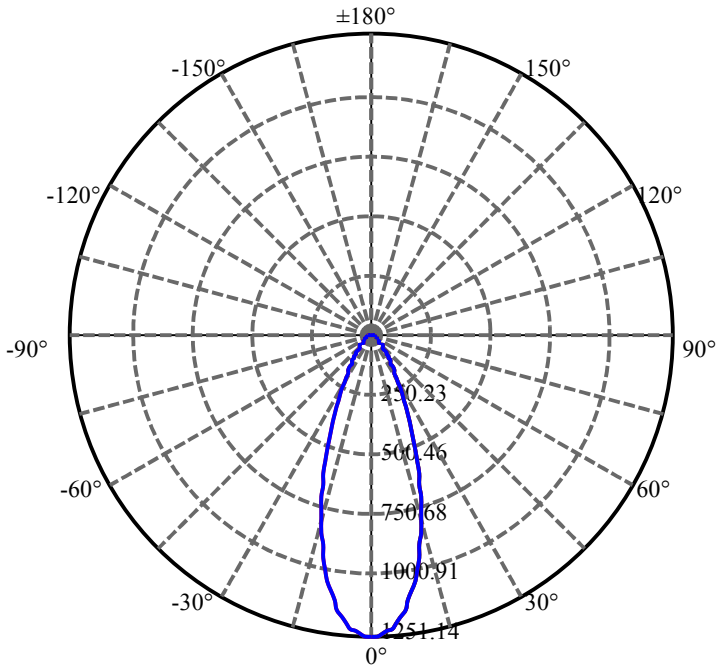
ZONAL LUMEN SUMMARY

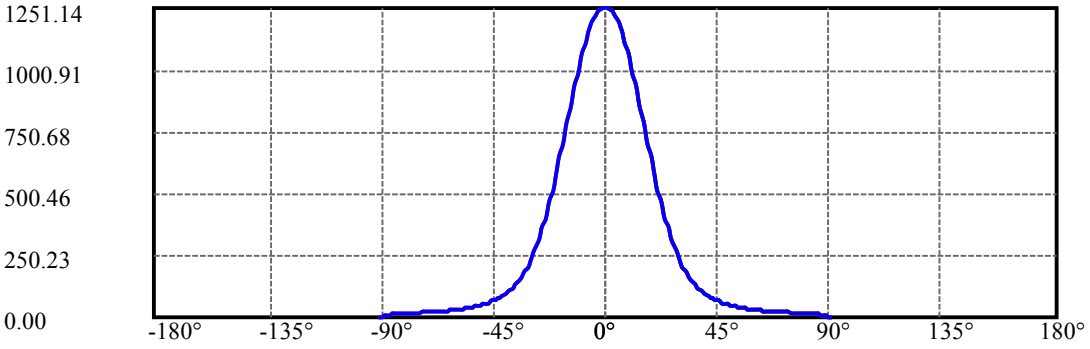
Zone	Lumens	%Lamp	%Fixt
0-30	500.63	67.47%	68.93%
0-40	588.73	79.34%	81.06%
0-60	672.70	90.66%	92.62%
0-90	726.13	97.86%	99.98%
0-120	726.13	97.86%	99.98%
0-180	726.30	97.88%	100.00%
60-90	56.24	7.58%	7.74%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-38.85	581.04	78.31%	80.00%

ZONAL LUMEN SUMMARY

0-10	119.22
10-20	218.68
20-30	162.73
30-40	88.10
40-50	50.85
50-60	33.12
60-70	24.32
70-80	19.13
80-90	9.97
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:

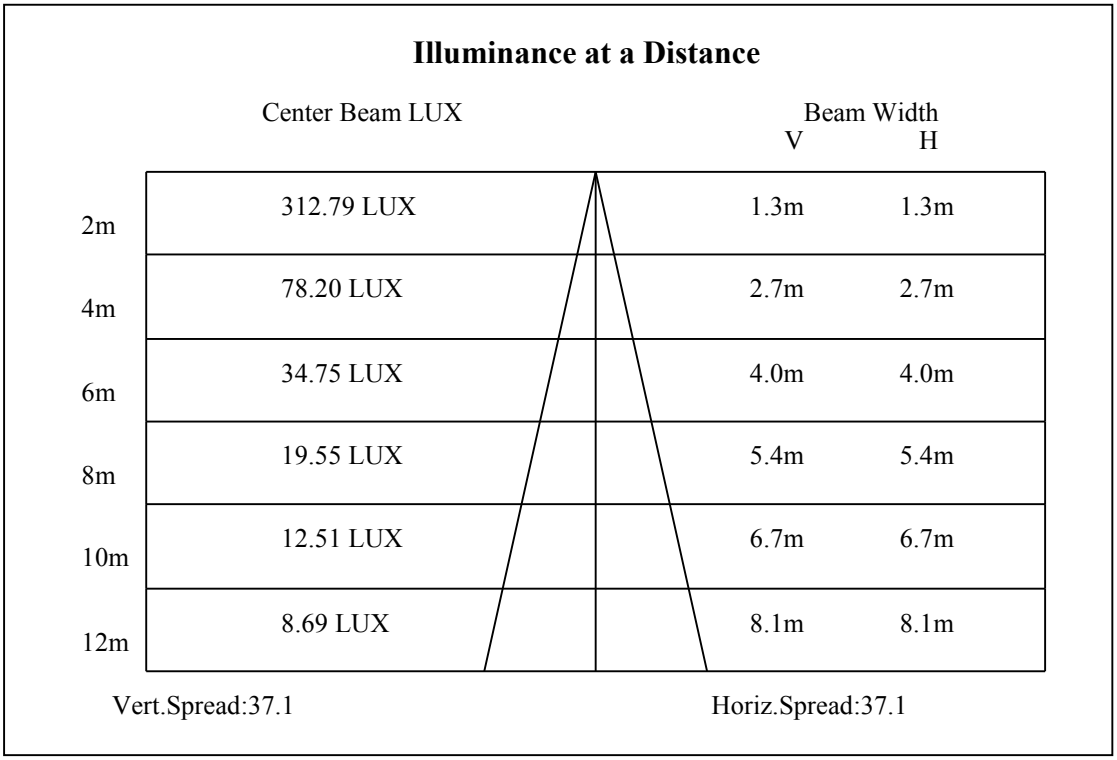
C90/C270:

Field angle(10%Imax):C0/180Left:36.5 Right:36.5
:C90/270Left:36.5 Right:36.5

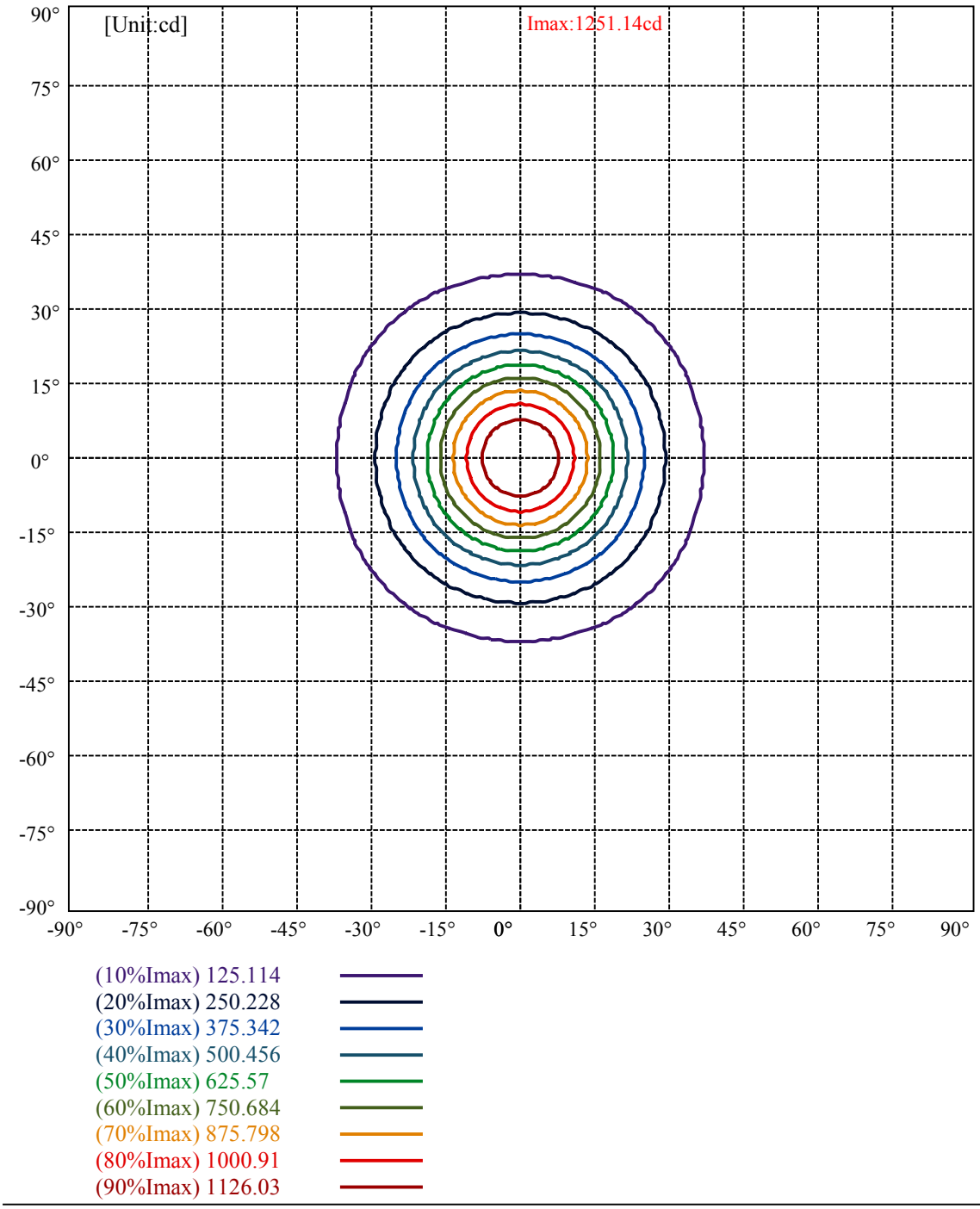
Beam Angle(50%Imax):C0/180Left:18.5 Right:18.5
:C90/270Left:18.5 Right:18.5

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

Lux distance Curve



ISO-Intensity(V-H)

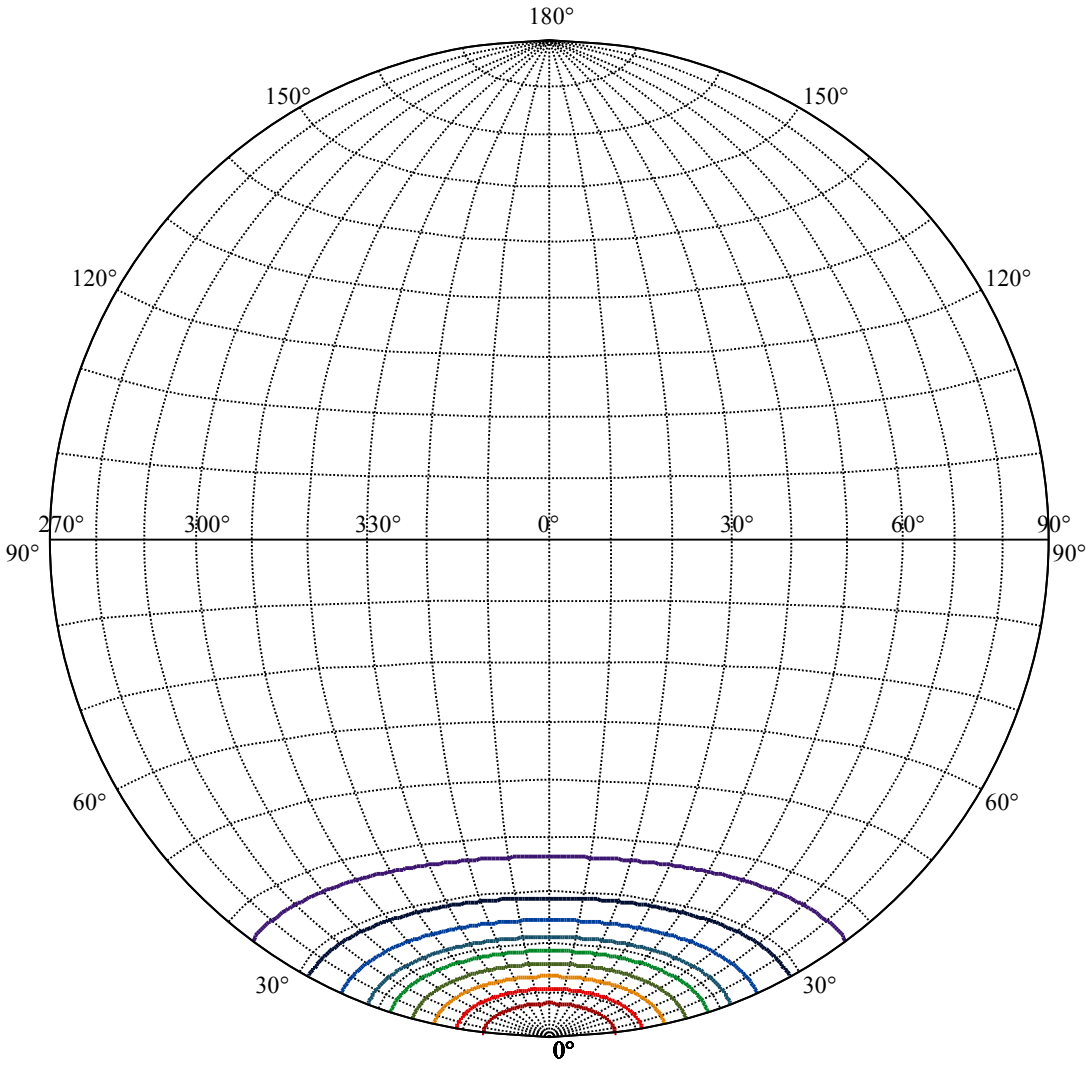


Equipment: GMS1980
Temperature(°C): 25.0

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

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:1251.14

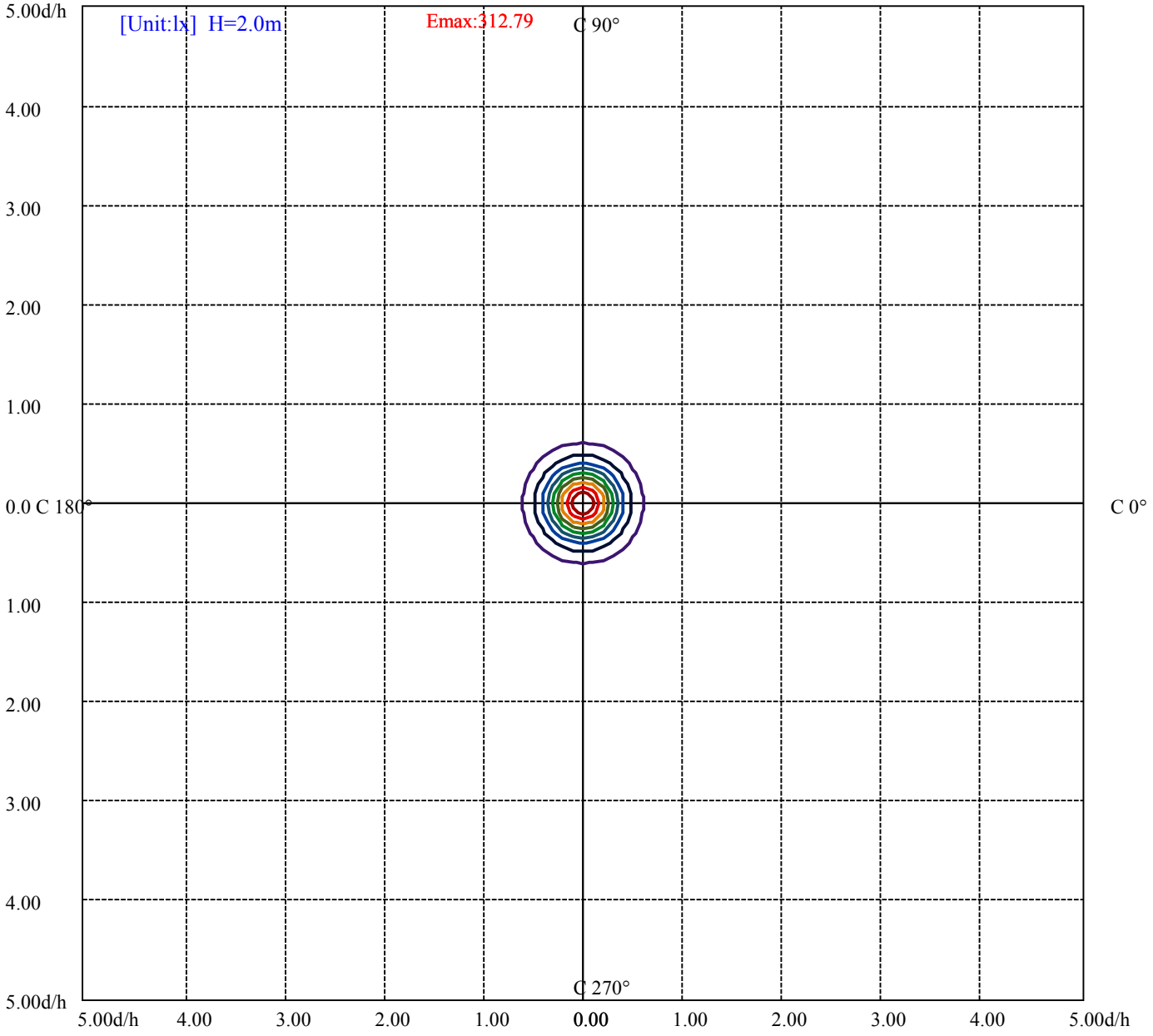
(10%Imax) 125.114
(20%Imax) 250.228
(30%Imax) 375.342
(40%Imax) 500.456
(50%Imax) 625.57
(60%Imax) 750.684
(70%Imax) 875.798
(80%Imax) 1000.91
(90%Imax) 1126.03

Equipment: GMS1980
Temperature(°C): 25.0

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

Operator: NT07
Distance(m): 7.50

ISO illuminance diagram

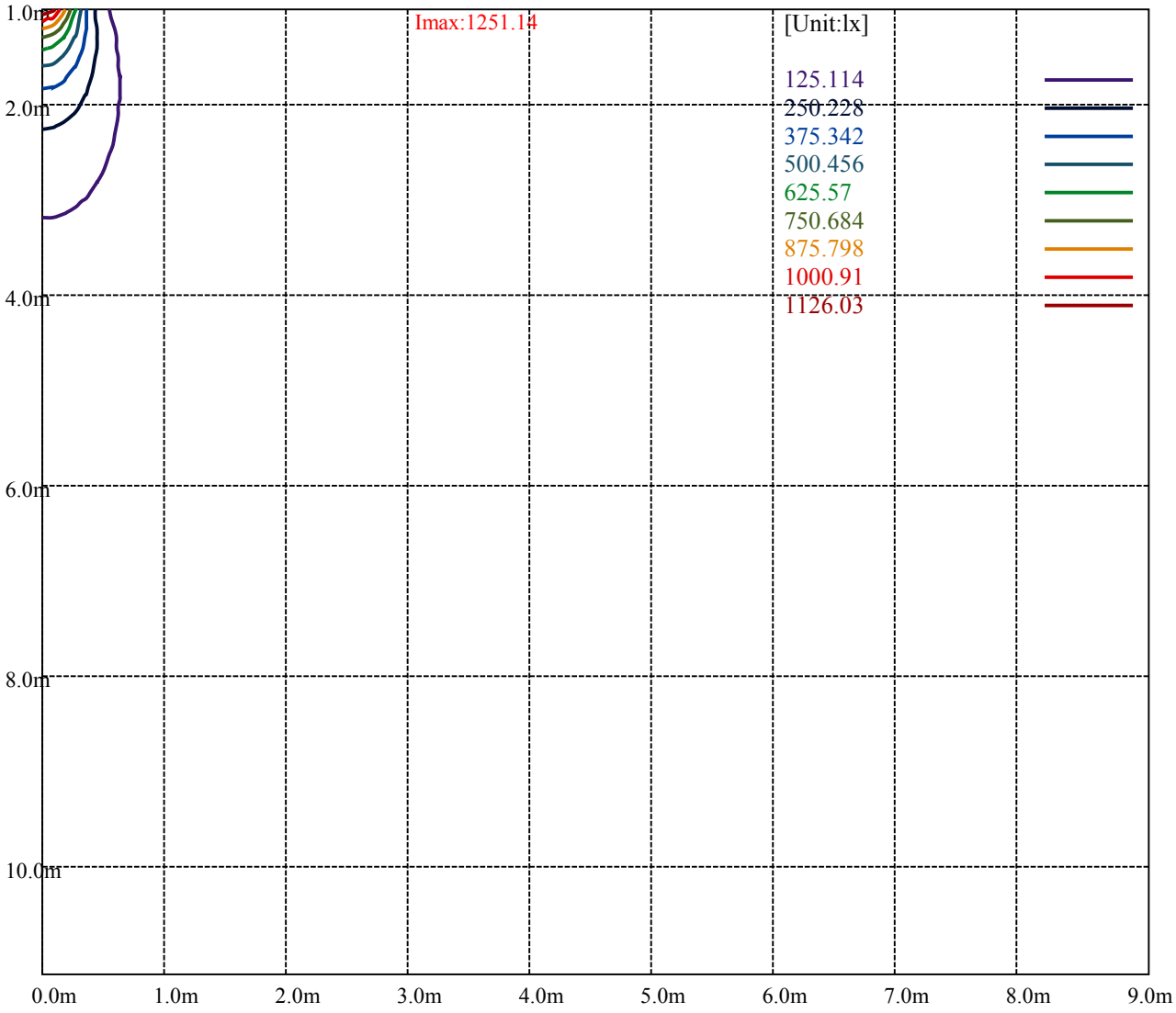


Equipment: GMS1980
Temperature(°C): 25.0

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

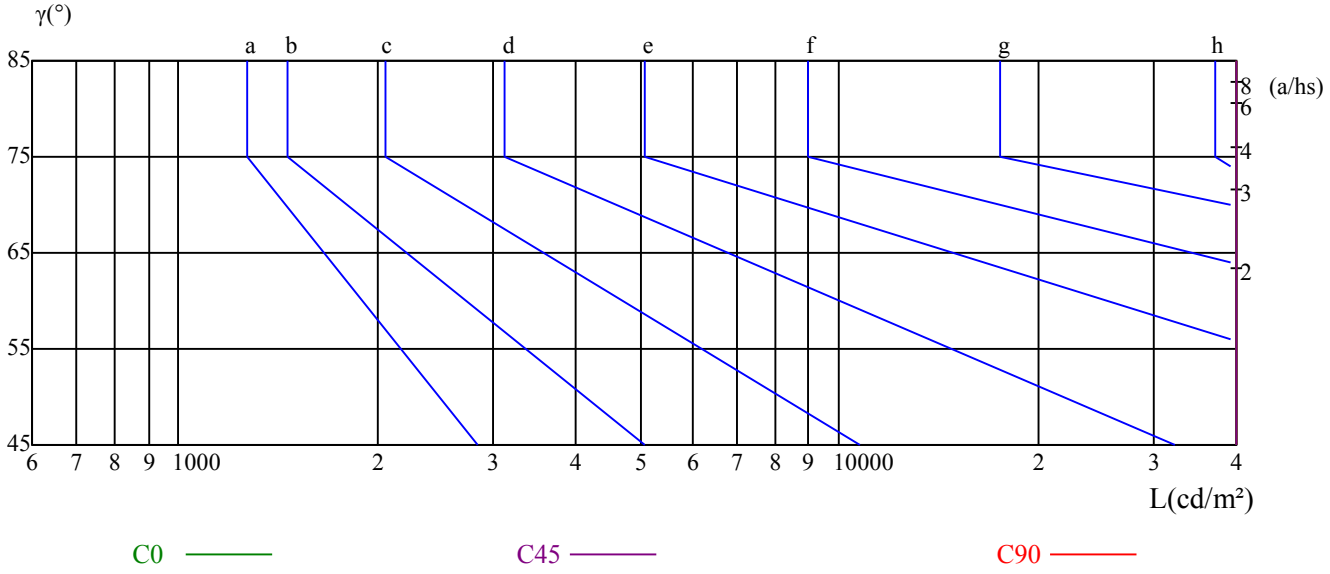
γ	45	50	55	60	65	70	75	80	85
C0	415514	335891	287778	263125	258434	276391	314650	396815	595557
C45	415514	335891	287778	263125	258434	276391	314650	396815	595557
C90	415514	335891	287778	263125	258434	276391	314650	396815	595557

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
258434	258434	258434	314650	314650	314650	595557	595557	595557

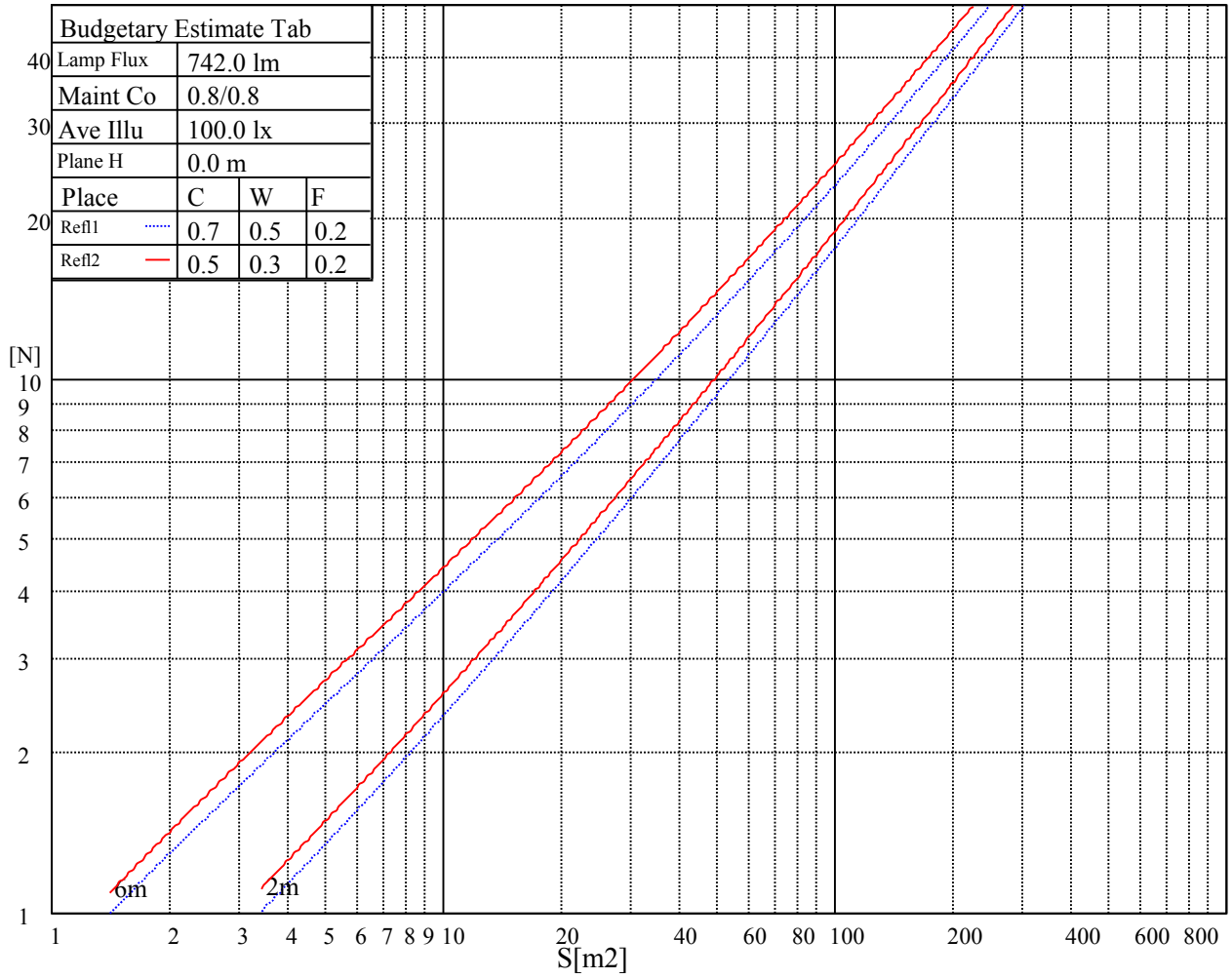
Glare Table

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

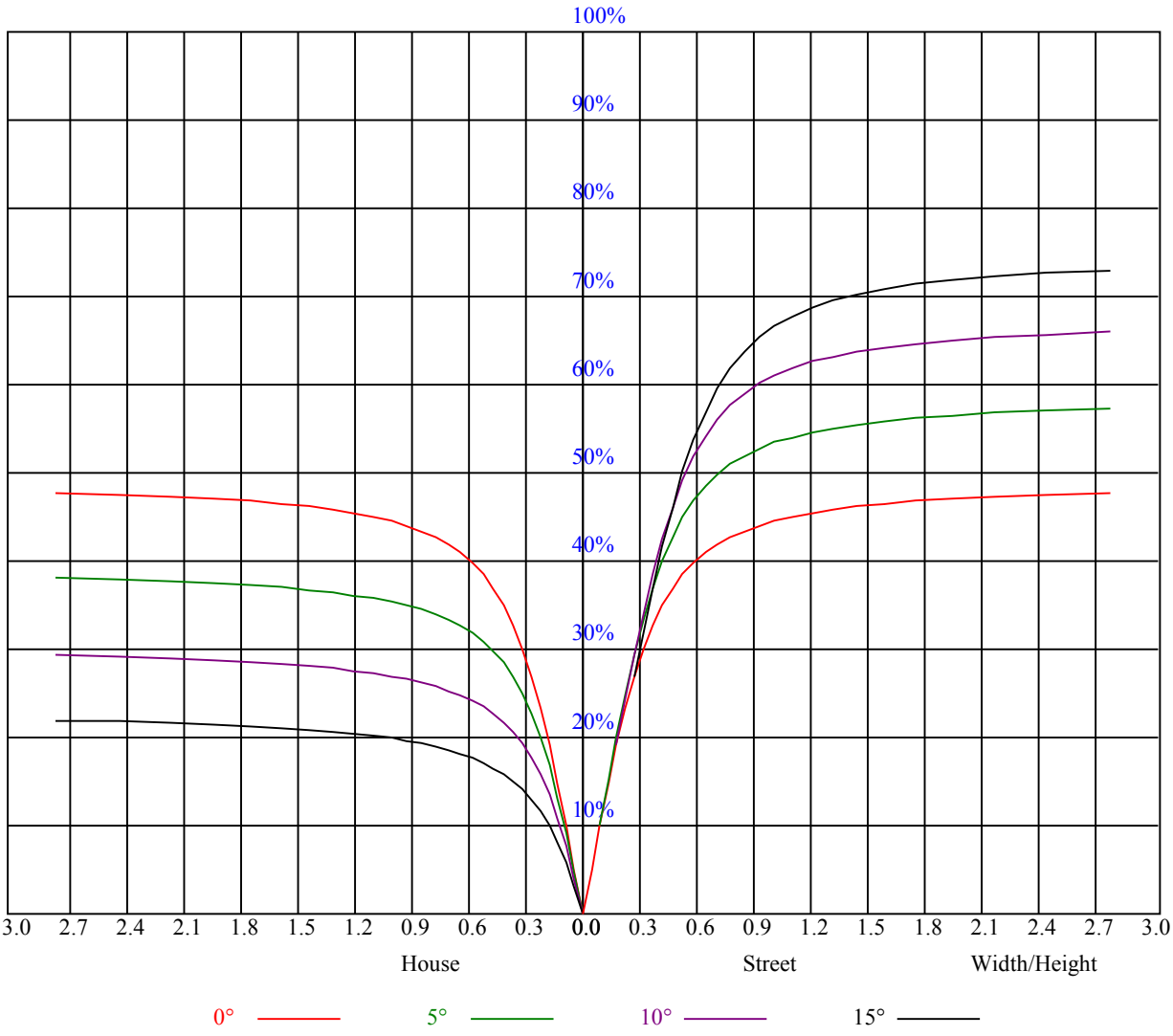


Equipment: GMS1980	Date: 2018/12/20	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

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	1.17	1.17	1.17	1.14	1.14	1.14	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.98
1	1.07	1.04	1.01	1.05	1.02	1.00	1.01	0.98	0.97	0.97	0.95	0.94	0.93	0.92	0.91	0.89
2	0.98	0.94	0.90	0.97	0.93	0.89	0.94	0.90	0.87	0.91	0.88	0.85	0.88	0.86	0.83	0.82
3	0.91	0.86	0.82	0.90	0.85	0.81	0.87	0.83	0.80	0.85	0.81	0.78	0.83	0.80	0.77	0.76
4	0.85	0.80	0.75	0.84	0.79	0.75	0.82	0.77	0.74	0.80	0.76	0.73	0.78	0.75	0.72	0.70
5	0.80	0.74	0.70	0.79	0.74	0.69	0.77	0.72	0.69	0.76	0.71	0.68	0.74	0.70	0.67	0.66
6	0.75	0.69	0.65	0.75	0.69	0.65	0.73	0.68	0.64	0.72	0.67	0.64	0.70	0.67	0.63	0.62
7	0.71	0.65	0.61	0.71	0.65	0.61	0.69	0.64	0.61	0.68	0.64	0.60	0.67	0.63	0.60	0.59
8	0.68	0.62	0.58	0.67	0.61	0.58	0.66	0.61	0.57	0.65	0.60	0.57	0.64	0.60	0.57	0.55
9	0.64	0.59	0.55	0.64	0.58	0.55	0.63	0.58	0.54	0.62	0.58	0.54	0.61	0.57	0.54	0.53
10	0.61	0.56	0.52	0.61	0.56	0.52	0.60	0.55	0.52	0.59	0.55	0.52	0.59	0.55	0.52	0.50

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	1239.19	1229.63	1212.19	1193.63	1170.00	1135.13	1102.50	1064.25	1019.81
45.0	1263.94	1260.56	1251.56	1242.56	1226.25	1203.75	1172.81	1140.75	1101.38
90.0	1254.94	1254.94	1252.69	1246.50	1232.44	1218.38	1195.31	1162.69	1119.66
135.0	1246.50	1252.13	1256.06	1257.19	1253.81	1244.25	1235.25	1219.50	1197.00
180.0	1239.19	1245.38	1247.06	1245.94	1241.44	1234.69	1224.56	1207.13	1185.75
225.0	1263.94	1264.50	1261.69	1252.13	1239.75	1225.13	1209.38	1184.63	1154.81
270.0	1254.94	1252.13	1244.81	1231.31	1216.69	1197.00	1167.19	1143.00	1111.50
315.0	1246.50	1234.13	1215.56	1193.06	1168.88	1120.33	1104.64	1064.25	1019.48
360.0	1239.19	1229.63	1212.19	1193.63	1170.00	1135.13	1102.50	1064.25	1019.81

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	973.69	929.25	879.19	829.69	777.94	727.31	677.81	623.81	572.63
45.0	1051.31	1007.44	963.56	906.75	861.19	813.94	759.38	705.94	661.50
90.0	1092.38	1048.16	999.00	952.09	898.48	845.16	799.99	756.62	703.35
135.0	1163.25	1130.63	1092.38	1047.94	1000.69	956.81	903.38	852.75	810.56
180.0	1156.50	1116.73	1071.84	1039.50	1001.76	945.79	906.19	860.91	808.03
225.0	1120.95	1073.59	1032.86	987.47	931.95	887.40	840.99	782.78	743.40
270.0	1065.38	1029.94	992.25	943.88	891.56	840.94	789.19	744.75	699.75
315.0	975.15	926.04	874.86	829.86	785.87	730.29	686.59	643.28	593.89
360.0	973.69	929.25	879.19	829.69	777.94	727.31	677.81	623.81	572.63

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	531.56	492.19	445.50	407.81	374.06	334.13	305.44	285.19	247.73
45.0	609.75	563.63	516.94	469.13	431.44	395.44	353.81	324.00	294.75
90.0	657.96	612.06	561.21	513.62	471.32	427.67	389.53	356.96	322.59
135.0	759.94	709.88	660.94	611.44	563.63	522.00	474.75	438.19	406.13
180.0	755.61	709.76	659.19	609.92	567.90	523.01	484.88	444.04	405.17
225.0	694.46	643.84	601.59	555.36	511.37	473.51	436.67	393.64	360.96
270.0	642.94	598.50	558.00	507.38	471.94	436.50	394.31	361.69	329.63
315.0	545.96	506.31	464.85	422.38	388.58	351.34	321.98	291.83	263.59
360.0	531.56	492.19	445.50	407.81	374.06	334.13	305.44	285.19	247.73

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	223.93	205.54	188.21	171.45	156.60	142.99	132.19	121.67	113.18
45.0	284.06	237.83	217.46	199.29	180.11	165.38	151.65	137.03	127.18
90.0	293.06	264.04	238.05	217.97	199.46	177.98	164.19	151.59	137.42
135.0	360.56	329.63	304.88	286.88	241.59	220.33	199.13	180.23	165.09
180.0	372.71	340.88	304.88	278.21	254.31	226.97	207.34	189.62	174.09
225.0	330.30	301.39	269.83	246.54	225.45	202.39	185.91	171.11	155.87
270.0	298.13	284.63	244.29	222.08	202.67	186.58	170.10	156.54	142.99
315.0	240.69	218.14	198.68	182.19	167.51	151.37	139.73	128.98	118.35
360.0	223.93	205.54	188.21	171.45	156.60	142.99	132.19	121.67	113.18

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	103.78	96.75	89.89	83.36	77.79	73.18	67.89	63.79	60.19
45.0	117.34	108.51	99.90	93.04	86.57	80.94	74.98	69.81	65.93
90.0	126.73	117.28	108.11	99.90	93.26	86.12	80.10	74.59	69.69
135.0	150.30	138.49	126.96	115.76	106.93	99.06	90.45	84.04	78.69
180.0	156.77	144.68	133.54	120.66	111.38	103.11	94.67	87.24	80.38
225.0	142.48	132.02	120.71	111.09	103.56	95.57	89.33	82.74	76.95
270.0	130.89	121.16	112.50	102.60	95.63	89.83	82.46	77.29	72.73
315.0	108.68	101.14	93.32	86.63	81.34	75.66	71.16	66.54	62.04
360.0	103.78	96.75	89.89	83.36	77.79	73.18	67.89	63.79	60.19

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	56.14	52.93	49.95	47.14	44.72	42.64	40.39	38.53	36.62
45.0	61.59	57.71	54.68	52.26	48.54	46.13	44.38	41.96	39.49
90.0	65.25	60.81	57.26	54.17	51.53	48.26	45.90	43.54	41.29
135.0	72.45	67.95	63.90	59.91	56.19	53.04	49.89	47.42	44.44
180.0	75.15	70.26	65.48	60.86	57.49	54.06	50.34	47.48	45.06
225.0	72.00	67.61	62.61	58.95	55.69	51.64	48.71	46.18	43.88
270.0	67.61	63.28	59.46	55.52	52.48	49.22	46.13	43.82	41.40
315.0	58.67	55.46	51.58	48.99	46.58	43.65	41.57	39.49	37.46
360.0	56.14	52.93	49.95	47.14	44.72	42.64	40.39	38.53	36.62

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	34.99	33.58	32.12	31.05	29.93	29.14	27.84	27.00	26.33
45.0	37.97	35.89	34.14	33.02	31.50	30.38	29.36	28.24	27.45
90.0	39.09	37.18	35.38	33.75	32.46	31.05	29.87	28.58	27.56
135.0	42.08	39.94	37.91	35.89	34.31	32.85	31.16	30.04	28.74
180.0	42.19	40.16	38.25	36.28	34.37	32.85	31.33	29.81	28.63
225.0	41.06	38.70	36.84	35.10	33.24	31.61	30.26	28.74	27.39
270.0	39.09	37.24	35.44	33.58	32.12	30.66	28.97	27.79	26.61
315.0	35.83	34.43	32.68	31.50	30.26	28.97	28.01	26.89	25.76
360.0	34.99	33.58	32.12	31.05	29.93	29.14	27.84	27.00	26.33

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	25.43	24.81	24.30	23.68	23.12	22.50	21.77	21.15	20.48
45.0	26.72	25.88	25.31	24.64	23.96	23.40	22.95	22.44	21.88
90.0	26.72	25.93	24.92	24.30	23.63	22.84	22.28	21.77	21.15
135.0	27.56	26.33	25.31	24.36	23.46	22.73	22.05	21.43	20.87
180.0	27.39	26.33	25.20	24.19	23.40	22.67	21.88	21.32	20.76
225.0	26.21	25.20	24.02	23.23	22.50	21.71	21.04	20.53	20.03
270.0	25.54	24.64	23.79	23.01	22.33	21.66	21.04	20.53	19.86
315.0	25.14	24.47	23.74	23.23	22.73	22.11	21.49	20.98	20.42
360.0	25.43	24.81	24.30	23.68	23.12	22.50	21.77	21.15	20.48

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	19.63	18.96	18.39	17.49	16.93	16.31	15.58	14.96	14.46
45.0	21.38	20.76	20.19	19.63	19.01	18.45	17.83	17.33	16.71
90.0	20.59	20.08	19.52	18.90	18.39	17.78	17.21	16.65	16.09
135.0	20.31	19.74	19.24	18.62	18.11	17.55	17.04	16.65	16.20
180.0	20.08	19.63	19.07	18.51	17.94	17.44	16.93	16.59	16.14
225.0	19.46	19.01	18.39	17.89	17.33	16.76	16.26	15.69	15.13
270.0	19.18	18.62	18.06	17.27	16.71	16.14	15.47	14.68	14.06
315.0	19.86	19.41	18.79	18.28	17.66	17.04	16.48	15.98	15.24
360.0	19.63	18.96	18.39	17.49	16.93	16.31	15.58	14.96	14.46

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	13.67	12.99	12.43	11.42	10.58	5.85	3.88	3.21	3.04
45.0	16.09	15.47	14.96	14.40	13.73	12.99	9.28	4.50	3.38
90.0	15.53	14.96	14.34	13.78	13.28	12.60	11.53	5.01	3.71
135.0	15.58	15.19	14.79	14.23	13.73	12.38	11.76	7.59	4.56
180.0	15.64	15.13	14.68	14.18	13.67	12.88	11.48	5.46	3.88
225.0	14.68	14.18	13.73	12.88	12.38	9.96	4.56	3.54	3.09
270.0	13.44	12.66	11.98	10.97	10.07	6.47	4.22	3.26	3.09
315.0	14.18	12.21	9.17	7.31	6.02	4.84	3.54	3.09	3.09
360.0	13.67	12.99	12.43	11.42	10.58	5.85	3.88	3.21	3.04

Intensity data(cd)

C/γ(°)	90.0
0.0	3.09
45.0	3.09
90.0	3.09
135.0	3.43
180.0	3.32
225.0	3.09
270.0	3.09
315.0	3.15
360.0	3.09