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Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

NATA

LumCAT: 4-2275-M
Luminaire: 92.70.131.00
Report No: NATA0100
Test No: GC2018111305
LampCAT: OSRAM SOLERIQ S15
Lamp flux(lm): 2619.0
Number of Lamps: 1
Length(mm): 100
Phm Type: C

Voltage(V): 36.2000
Current(A): 0.5500
Power (W): 19.9100
PF: 0.0000
Ballast type: DC
Width(mm): 100
Height(mm): 0

Photometric Results

Lumens(lm): 2342.05
Efficiency(%): 89.43%
Lumens(lm)/Power(W): 117.77
Central intensity(cd): 12078.280
Maximum intensity(cd): 12078.280
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=19.6
[C90/270]Total=19.6
Field angle(10%Imax): [C0/180]Total=39.2
[C90/270]Total=39.2
Maximum s/h(1/2): C0_180=0.34 C90_270=0.34
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(%): 89.53%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.601%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	12078.281	2.890	2.89	.110%	.123%
1.0	12005.859	22.977	25.867	.877%	1.104%
2.0	11768.133	45.038	70.905	1.720%	3.027%
3.0	11389.008	65.364	136.269	2.496%	5.818%
4.0	10954.477	83.797	220.066	3.200%	9.396%
5.0	10336.359	98.791	318.856	3.772%	13.614%
6.0	9547.734	109.443	428.299	4.179%	18.287%
7.0	8721.070	116.551	544.85	4.450%	23.264%
8.0	7788.305	118.864	663.714	4.539%	28.339%
9.0	6782.836	116.358	780.072	4.443%	33.307%
10.0	5835.938	111.130	891.202	4.243%	38.052%
11.0	4927.781	103.110	994.312	3.937%	42.455%
12.0	4142.602	94.450	1088.763	3.606%	46.488%
13.0	3433.359	84.695	1173.458	3.234%	50.104%
14.0	2895.469	76.815	1250.273	2.933%	53.384%
15.0	2383.383	67.646	1317.919	2.583%	56.272%
16.0	2070.703	62.590	1380.509	2.390%	58.944%
17.0	1708.453	54.776	1435.285	2.091%	61.283%
18.0	1476.984	50.051	1485.336	1.911%	63.420%
19.0	1304.747	46.582	1531.918	1.779%	65.409%
20.0	1148.977	43.094	1575.012	1.645%	67.249%
21.0	1056.902	41.535	1616.547	1.586%	69.023%
22.0	991.076	40.713	1657.26	1.555%	70.761%
23.0	938.939	40.232	1697.492	1.536%	72.479%
24.0	904.641	40.350	1737.841	1.541%	74.202%
25.0	882.204	40.885	1778.727	1.561%	75.947%
26.0	864.070	41.538	1820.265	1.586%	77.721%
27.0	849.305	42.283	1862.547	1.614%	79.526%
28.0	835.763	43.027	1905.574	1.643%	81.364%
29.0	822.565	43.731	1949.306	1.670%	83.231%
30.0	809.339	44.376	1993.682	1.694%	85.126%
31.0	797.189	45.025	2038.707	1.719%	87.048%
32.0	782.311	45.461	2084.168	1.736%	88.989%
33.0	753.588	45.009	2129.177	1.719%	90.911%
34.0	694.048	42.560	2171.737	1.625%	92.728%
35.0	591.912	37.231	2208.968	1.422%	94.318%
36.0	468.745	30.214	2239.181	1.154%	95.608%
37.0	350.325	23.120	2262.301	.883%	96.595%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	232.587	15.703	2278.004	.600%	97.265%
39.0	135.211	9.331	2287.335	.356%	97.664%
40.0	53.438	3.767	2291.102	.144%	97.825%
41.0	27.717	1.994	2293.096	.076%	97.910%
42.0	19.097	1.401	2294.497	.054%	97.970%
43.0	15.778	1.180	2295.677	.045%	98.020%
44.0	13.704	1.044	2296.721	.040%	98.065%
45.0	12.593	0.976	2297.698	.037%	98.106%
46.0	12.136	0.957	2298.655	.037%	98.147%
47.0	11.869	0.952	2299.607	.036%	98.188%
48.0	11.651	0.949	2300.557	.036%	98.228%
49.0	11.447	0.947	2301.504	.036%	98.269%
50.0	11.285	0.948	2302.452	.036%	98.309%
51.0	11.130	0.949	2303.401	.036%	98.350%
52.0	11.011	0.951	2304.352	.036%	98.390%
53.0	10.891	0.954	2305.306	.036%	98.431%
54.0	10.751	0.954	2306.26	.036%	98.472%
55.0	10.652	0.957	2307.217	.037%	98.513%
56.0	10.561	0.960	2308.177	.037%	98.554%
57.0	10.477	0.964	2309.14	.037%	98.595%
58.0	10.378	0.965	2310.105	.037%	98.636%
59.0	10.315	0.970	2311.075	.037%	98.677%
60.0	10.238	0.972	2312.047	.037%	98.719%
61.0	10.167	0.975	2313.022	.037%	98.761%
62.0	10.104	0.978	2314.001	.037%	98.802%
63.0	10.055	0.982	2314.983	.038%	98.844%
64.0	10.005	0.986	2315.969	.038%	98.886%
65.0	9.963	0.990	2316.959	.038%	98.929%
66.0	9.921	0.994	2317.953	.038%	98.971%
67.0	9.907	1.000	2318.953	.038%	99.014%
68.0	9.851	1.002	2319.955	.038%	99.057%
69.0	9.816	1.005	2320.96	.038%	99.099%
70.0	9.802	1.010	2321.97	.039%	99.143%
71.0	9.738	1.010	2322.98	.039%	99.186%
72.0	9.724	1.014	2323.994	.039%	99.229%
73.0	9.703	1.018	2325.011	.039%	99.272%
74.0	9.682	1.021	2326.032	.039%	99.316%
75.0	9.654	1.023	2327.055	.039%	99.360%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	9.626	1.024	2328.079	.039%	99.403%
77.0	9.619	1.028	2329.107	.039%	99.447%
78.0	9.598	1.029	2330.136	.039%	99.491%
79.0	9.584	1.032	2331.168	.039%	99.535%
80.0	9.563	1.033	2332.2	.039%	99.579%
81.0	9.563	1.036	2333.236	.040%	99.624%
82.0	9.555	1.038	2334.274	.040%	99.668%
83.0	9.570	1.042	2335.315	.040%	99.712%
84.0	9.548	1.041	2336.357	.040%	99.757%
85.0	9.520	1.040	2337.397	.040%	99.801%
86.0	9.471	1.036	2338.433	.040%	99.846%
87.0	9.443	1.034	2339.467	.039%	99.890%
88.0	9.436	1.034	2340.501	.039%	99.934%
89.0	9.415	1.032	2341.533	.039%	99.978%
90.0	9.429	0.517	2342.05	.020%	100.000%

Zonal flux distribution table

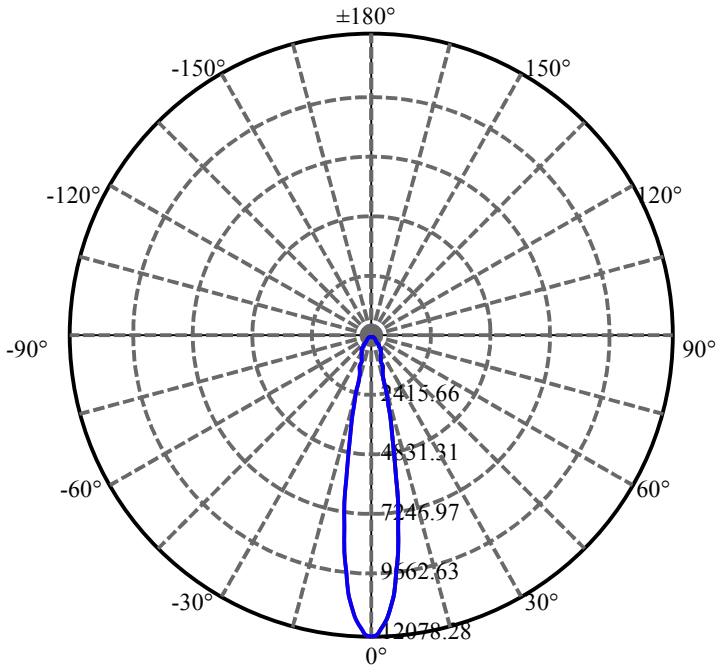
ZONAL LUMEN SUMMARY

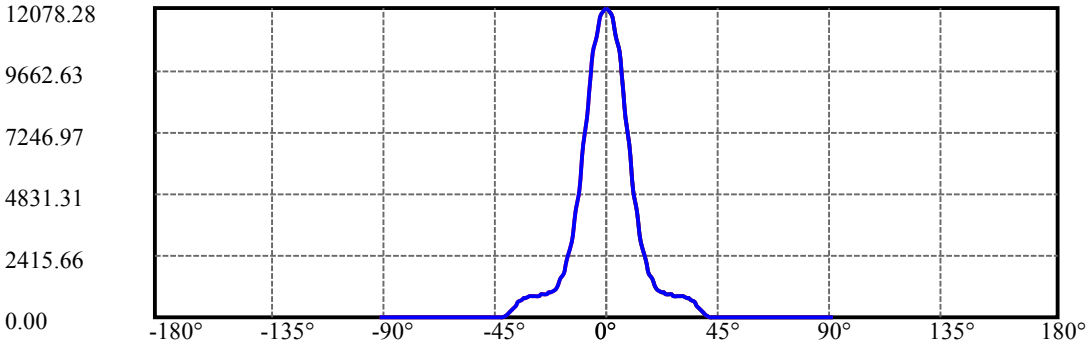
Zone	Lumens	%Lamp	%Fixt
0-30	1993.68	76.12%	85.13%
0-40	2291.10	87.48%	97.82%
0-60	2312.05	88.28%	98.72%
0-90	2341.53	89.41%	99.98%
0-120	2341.53	89.41%	99.98%
0-180	2342.05	89.43%	100.00%
60-90	30.46	1.16%	1.30%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.26	1873.64	71.54%	80.00%

ZONAL LUMEN SUMMARY

0-10	891.20
10-20	683.81
20-30	418.67
30-40	297.42
40-50	11.35
50-60	9.60
60-70	9.92
70-80	10.23
80-90	9.33
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):

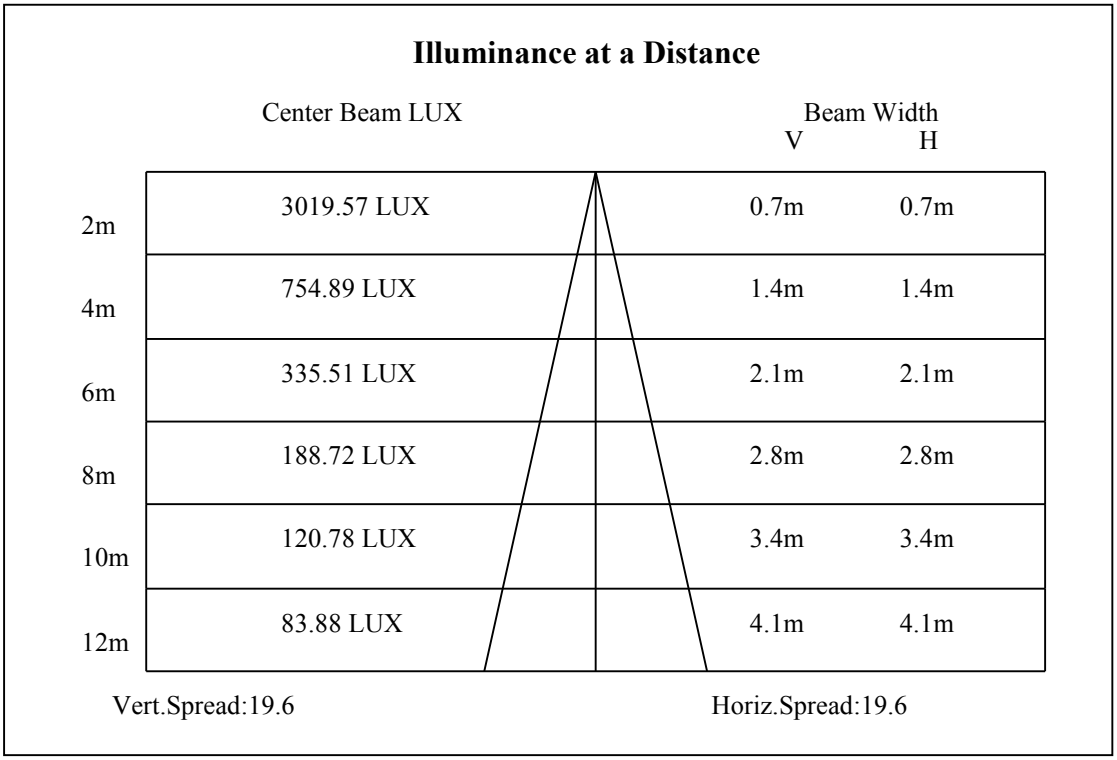
C0/C180:

C90/C270:

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

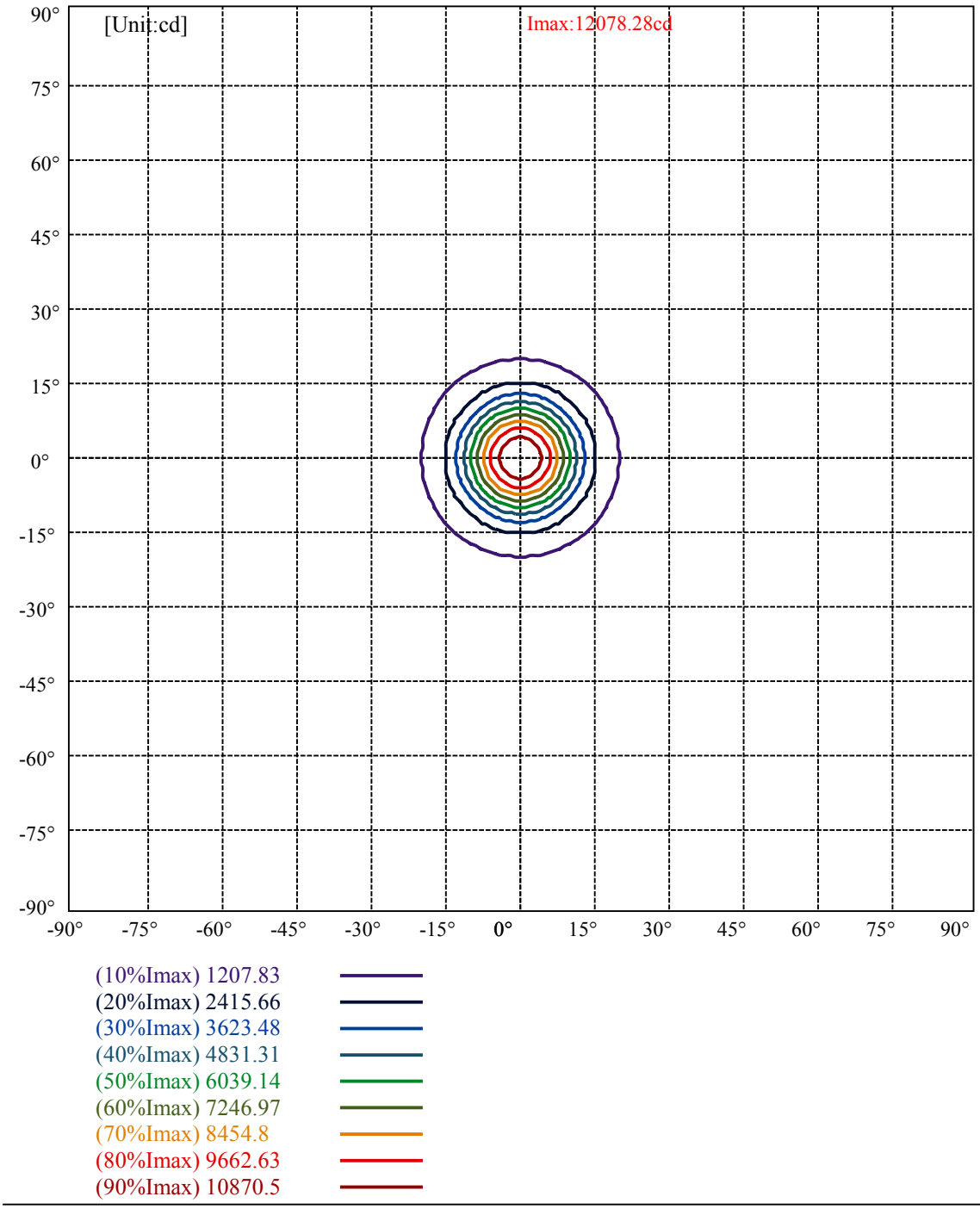
Beam Angle(50%Imax):C0/180Left:9.8 Right:9.8
:C90/270Left:9.8 Right:9.8

Lux distance Curve



Equipment: GMS1980 Date: 2018/11/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO-Intensity(V-H)

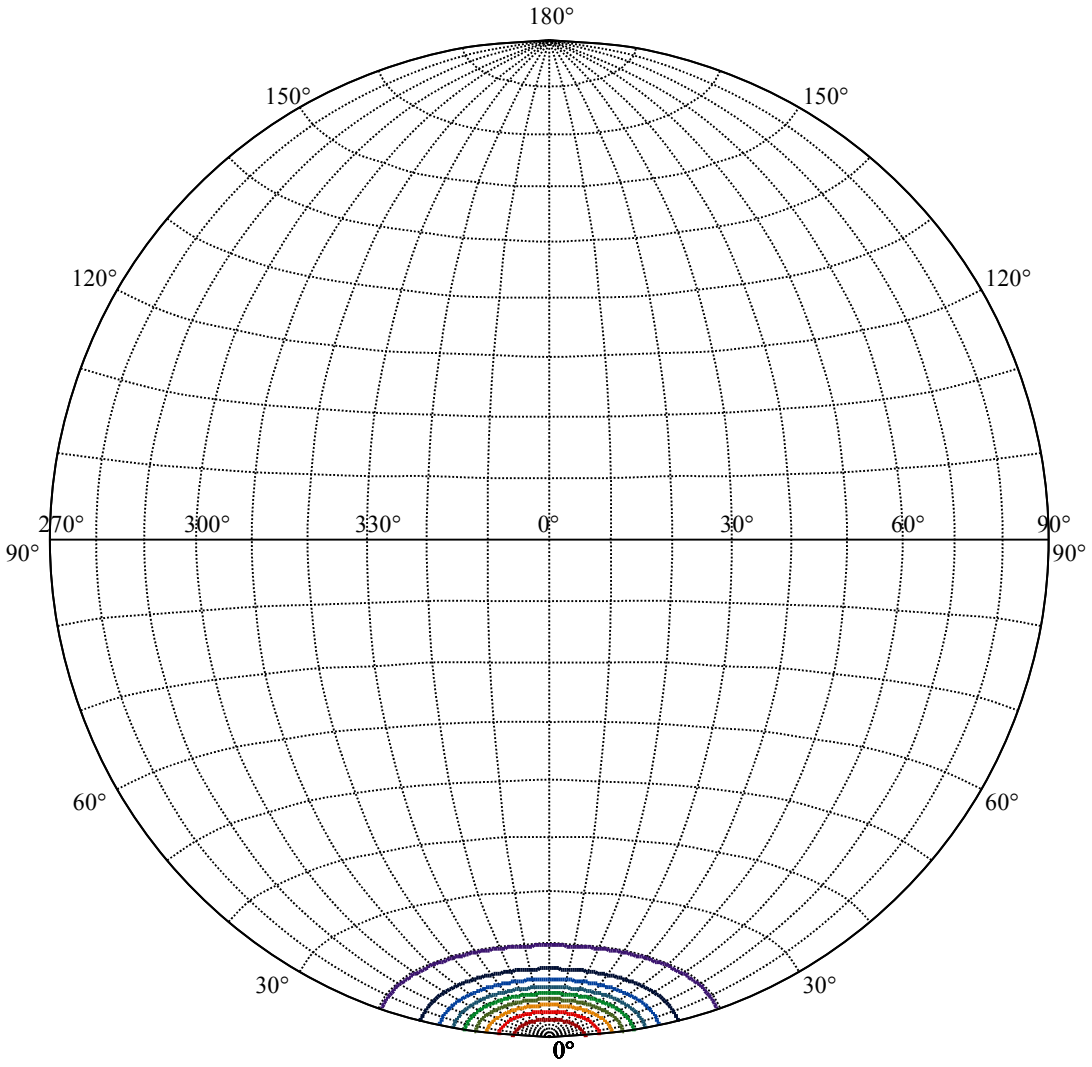


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/11/13
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:12078.28

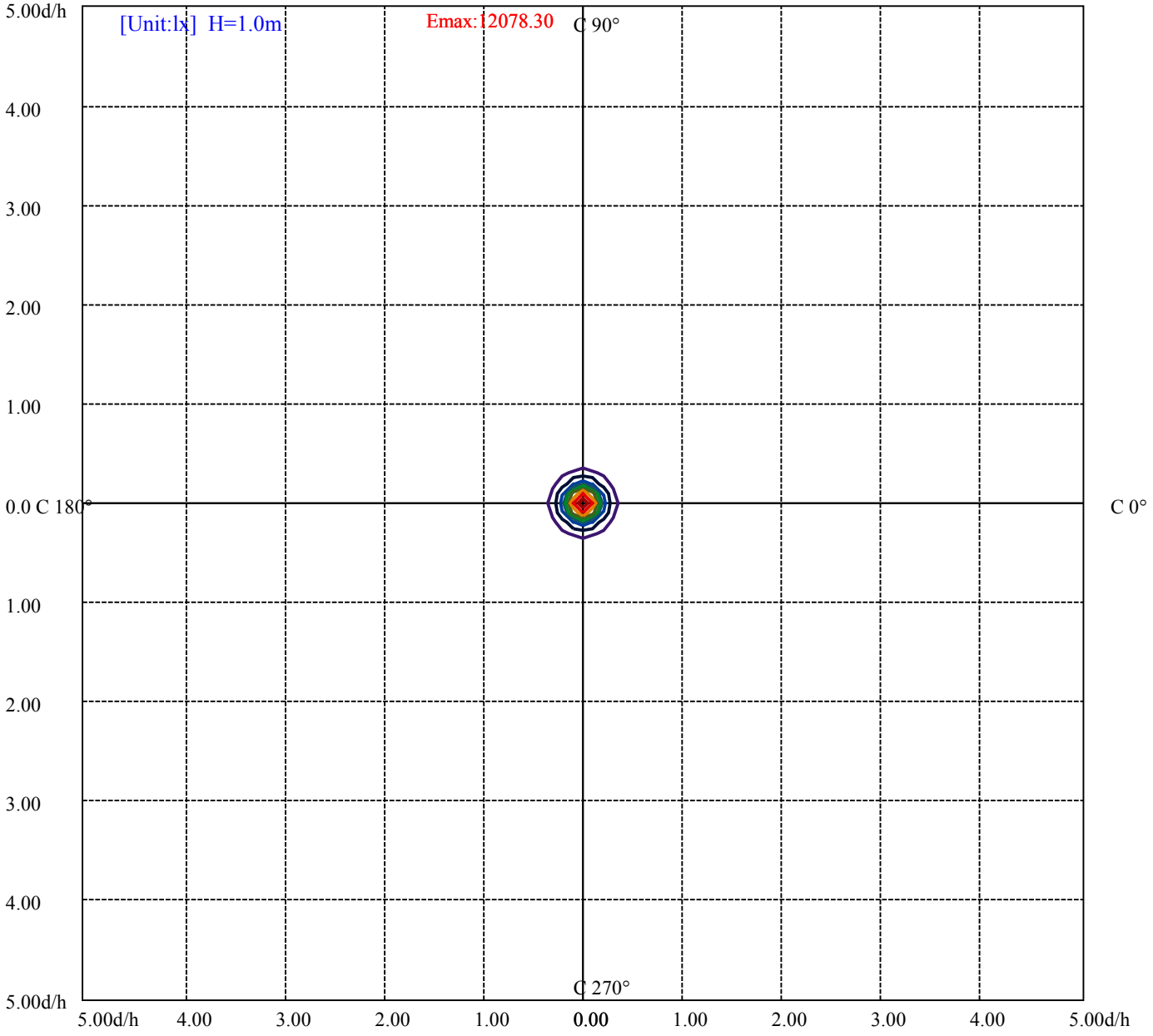
(10%Imax) 1207.83
(20%Imax) 2415.66
(30%Imax) 3623.48
(40%Imax) 4831.31
(50%Imax) 6039.14
(60%Imax) 7246.97
(70%Imax) 8454.8
(80%Imax) 9662.63
(90%Imax) 10870.5

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/11/13
Humidity(%): 65.0%

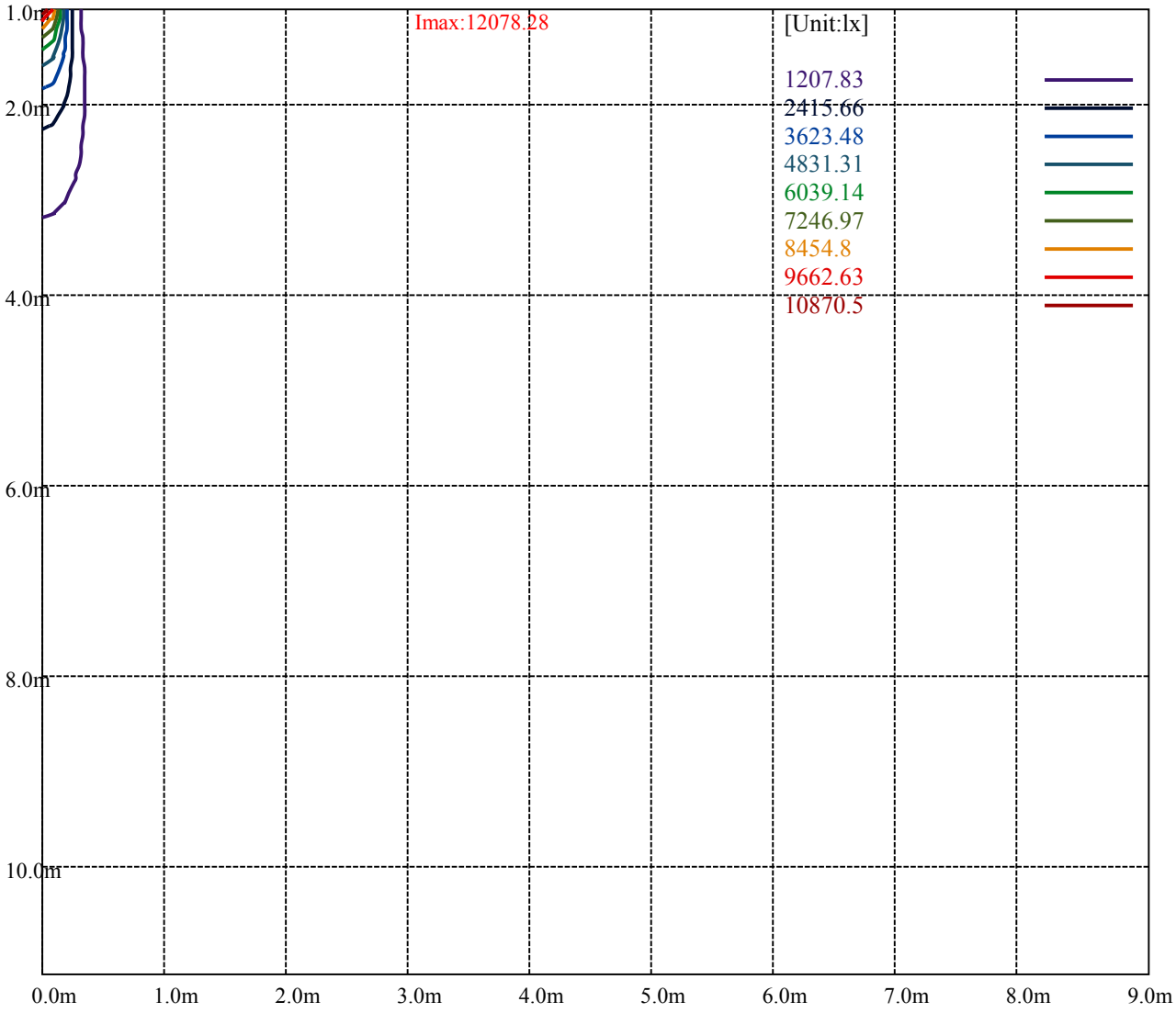
Operator: NT07
Distance(m): 7.50

ISO illuminance diagram



Equipment: GMS1980	Date: 2018/11/13	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/11/13
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

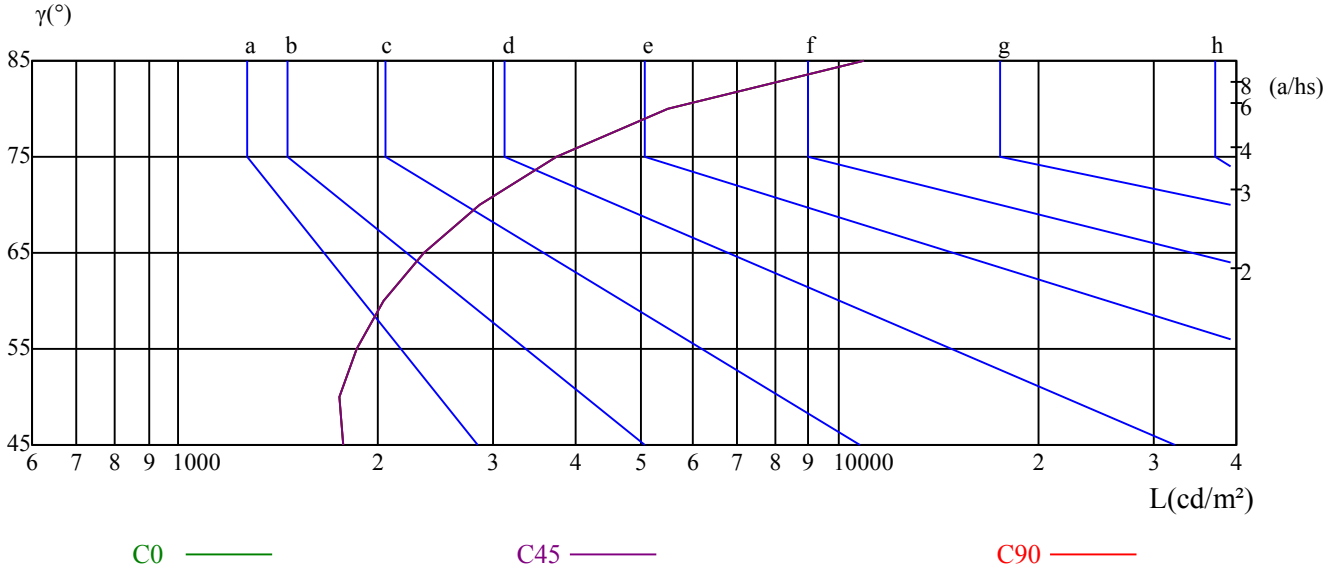
γ	45	50	55	60	65	70	75	80	85
C0	1781	1756	1857	2048	2358	2866	3730	5507	10923
C45	1781	1756	1857	2048	2358	2866	3730	5507	10923
C90	1781	1756	1857	2048	2358	2866	3730	5507	10923

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2358	2358	2358	3730	3730	3730	10923	10923	10923

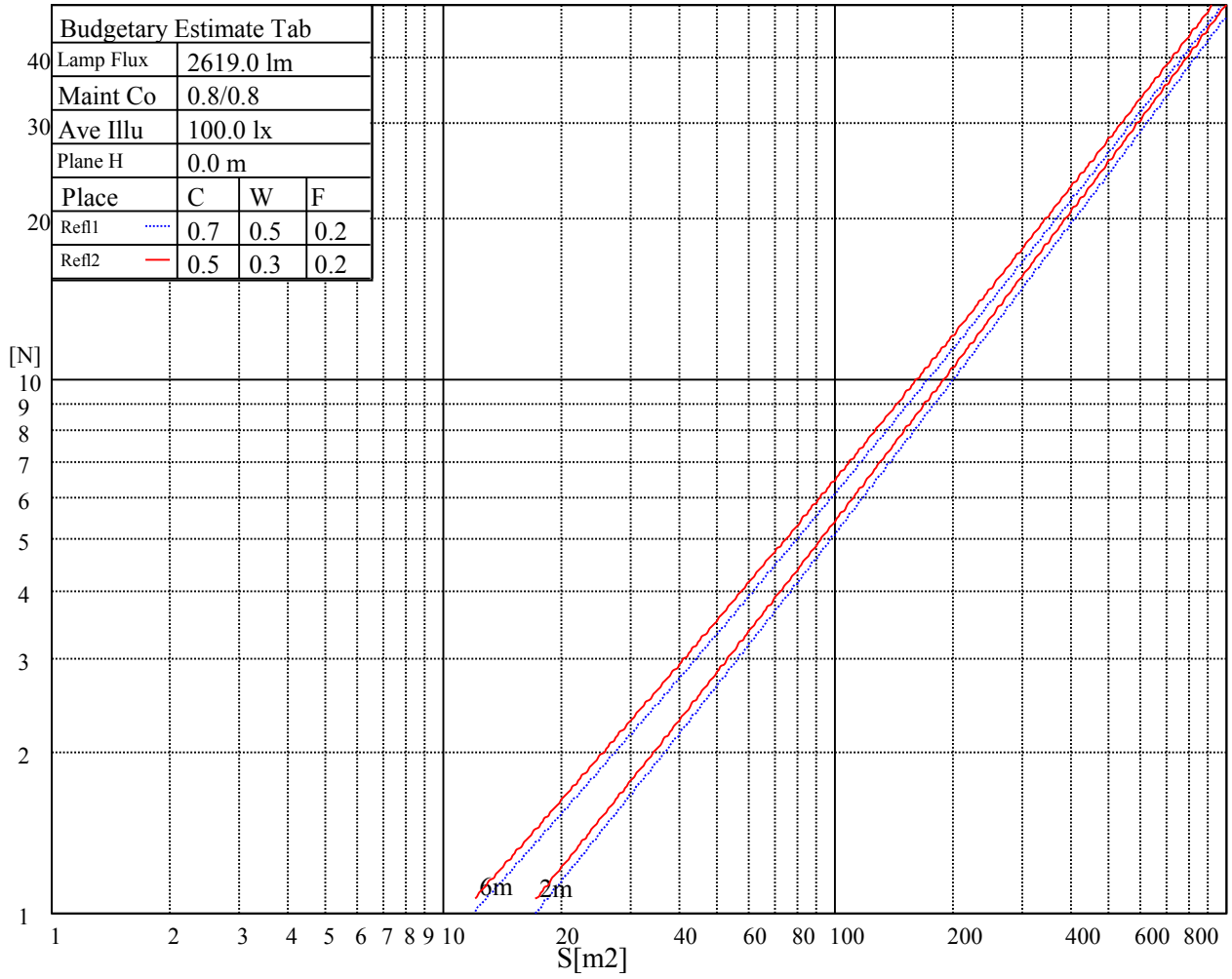
Glare Table

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

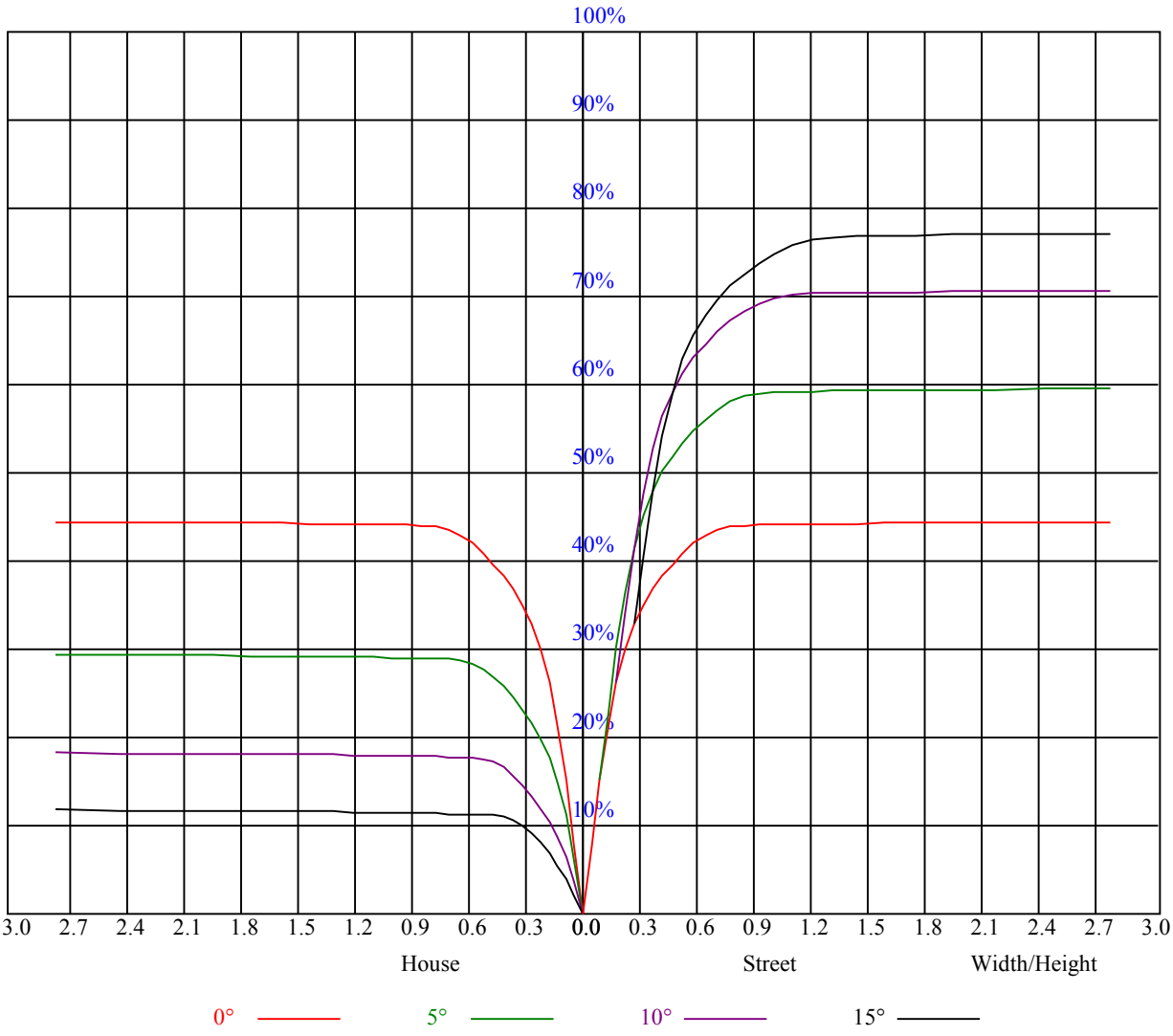


Equipment: GMS1980 Date: 2018/11/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.07	1.07	1.07	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.90
1	1.00	0.98	0.97	0.98	0.97	0.95	0.95	0.93	0.92	0.92	0.90	0.89	0.88	0.88	0.87	0.85
2	0.95	0.92	0.90	0.94	0.91	0.89	0.91	0.89	0.87	0.88	0.86	0.85	0.86	0.84	0.83	0.82
3	0.91	0.87	0.84	0.89	0.86	0.84	0.87	0.84	0.82	0.85	0.83	0.81	0.83	0.81	0.80	0.79
4	0.87	0.83	0.80	0.86	0.82	0.79	0.84	0.81	0.78	0.82	0.80	0.78	0.81	0.78	0.77	0.76
5	0.83	0.79	0.76	0.82	0.79	0.76	0.81	0.78	0.75	0.79	0.77	0.74	0.78	0.76	0.74	0.73
6	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.73	0.71	0.70
7	0.77	0.73	0.70	0.76	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.74	0.71	0.69	0.68
8	0.74	0.70	0.68	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.66
9	0.72	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.64
10	0.70	0.66	0.63	0.69	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2018/11/13	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	11975.63	12088.13	12082.50	11930.63	11683.13	11165.63	10535.63	9939.38	8960.63
45.0	12121.88	12031.88	11778.75	11424.38	10929.38	10141.88	9382.50	8544.38	7531.88
90.0	12110.63	11970.00	11677.50	11149.31	10594.13	9906.75	8883.00	7996.50	7080.75
135.0	12105.00	11981.25	11683.13	11317.50	10760.63	10141.88	9286.88	8330.63	7430.63
180.0	11975.63	11722.50	11215.69	10788.19	10200.38	9501.75	8484.75	7576.31	6649.31
225.0	12121.88	12060.00	11829.38	11208.94	11035.69	10443.38	9809.44	8966.81	7903.13
270.0	12110.63	12110.63	11958.75	11671.88	11227.50	10670.63	10068.75	9253.13	8437.50
315.0	12105.00	12082.50	11919.38	11621.25	11205.00	10719.00	9930.94	9161.44	8312.63
360.0	11975.63	12088.13	12082.50	11930.63	11683.13	11165.63	10535.63	9939.38	8960.63

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7981.88	7205.63	6063.75	5208.75	4421.25	3555.00	2958.75	2891.25	2029.50
45.0	6463.13	5540.63	4601.25	3881.25	3166.88	2891.25	2199.94	1857.38	1582.88
90.0	5911.31	5018.63	4228.31	3402.56	2917.69	2397.94	1948.50	1711.13	1496.25
135.0	6384.38	5366.25	4516.88	3768.75	3009.38	2874.38	2176.88	1904.06	1566.56
180.0	5642.44	4703.63	3955.50	3239.44	2677.50	2286.00	1934.44	1678.50	1449.00
225.0	7121.25	6120.56	5059.13	4368.94	3664.13	2880.56	2499.75	2149.88	1828.13
270.0	7458.75	6463.13	5613.75	4809.38	3875.63	3234.38	2840.63	2233.69	1916.44
315.0	7299.56	6269.06	5383.69	4461.75	3734.44	3044.25	2508.19	2139.75	1798.88
360.0	7981.88	7205.63	6063.75	5208.75	4421.25	3555.00	2958.75	2891.25	2029.50

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1748.81	1519.31	1296.56	1166.63	1069.88	992.81	942.19	911.81	888.19
45.0	1385.44	1226.25	1079.44	999.56	946.13	903.94	883.13	866.25	852.75
90.0	1263.38	1114.93	1041.08	964.52	918.45	892.35	872.27	852.81	839.48
135.0	1385.44	1257.75	1099.13	1014.19	963.00	914.63	888.19	871.31	850.50
180.0	1268.44	1109.42	1039.16	958.73	919.01	892.18	867.43	852.24	839.36
225.0	1573.31	1399.50	1245.94	1118.64	1032.98	972.39	927.56	898.71	879.98
270.0	1662.75	1465.88	1279.69	1165.50	1073.25	988.88	944.44	915.19	890.44
315.0	1528.31	1344.94	1110.83	1067.46	1005.92	954.34	911.93	889.31	871.88
360.0	1748.81	1519.31	1296.56	1166.63	1069.88	992.81	942.19	911.81	888.19

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	871.31	855.00	841.50	830.25	816.75	805.50	794.25	781.31	727.31
45.0	837.00	825.75	813.38	801.56	790.31	777.38	752.63	664.88	556.88
90.0	827.55	815.74	802.52	792.28	779.23	765.56	723.15	627.64	516.09
135.0	838.13	825.75	809.44	798.19	787.50	772.31	744.75	664.31	527.06
180.0	826.48	811.74	799.43	784.91	773.44	747.84	667.29	565.48	432.17
225.0	863.38	850.33	837.28	819.84	808.43	793.91	778.44	737.04	643.73
270.0	872.44	858.94	845.44	830.81	816.19	803.25	789.75	764.44	685.13
315.0	858.15	842.85	831.54	816.86	805.67	792.73	778.44	747.28	646.93
360.0	871.31	855.00	841.50	830.25	816.75	805.50	794.25	781.31	727.31

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	641.25	528.19	381.94	286.31	127.46	53.27	23.18	19.74	16.09
45.0	425.25	307.69	224.27	73.69	30.60	23.01	17.38	14.68	12.49
90.0	379.86	247.11	144.39	56.87	24.64	20.81	16.20	12.99	12.26
135.0	409.50	292.50	163.63	62.33	27.90	21.38	16.76	14.18	12.32
180.0	293.74	180.51	91.69	29.31	23.68	19.18	14.85	12.38	12.21
225.0	500.68	382.89	265.95	128.76	50.06	27.34	22.67	17.72	14.85
270.0	581.63	464.63	307.69	292.50	90.23	32.85	22.44	18.79	15.53
315.0	518.06	399.09	281.14	151.93	52.93	23.91	19.29	15.75	13.89
360.0	641.25	528.19	381.94	286.31	127.46	53.27	23.18	19.74	16.09

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	13.95	12.38	12.09	11.87	11.59	11.42	11.19	11.08	10.97
45.0	12.21	11.98	11.76	11.59	11.42	11.25	11.14	11.03	10.86
90.0	12.04	11.81	11.59	11.48	11.31	11.19	11.03	10.91	10.80
135.0	12.04	11.87	11.59	11.48	11.31	11.14	11.03	10.91	10.80
180.0	11.87	11.64	11.48	11.31	11.14	11.03	10.86	10.74	10.63
225.0	13.05	12.77	12.43	12.04	11.87	11.70	11.53	11.42	11.31
270.0	13.16	12.60	12.26	11.93	11.59	11.36	11.19	11.08	10.97
315.0	12.43	12.04	11.76	11.53	11.36	11.19	11.08	10.91	10.80
360.0	13.95	12.38	12.09	11.87	11.59	11.42	11.19	11.08	10.97

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	10.80	10.69	10.58	10.52	10.41	10.35	10.24	10.18	10.13
45.0	10.74	10.63	10.58	10.46	10.41	10.35	10.24	10.18	10.13
90.0	10.69	10.58	10.52	10.46	10.35	10.29	10.24	10.18	10.13
135.0	10.69	10.63	10.52	10.41	10.35	10.29	10.24	10.13	10.07
180.0	10.52	10.46	10.35	10.29	10.24	10.18	10.13	10.07	10.01
225.0	11.14	10.97	10.86	10.74	10.58	10.46	10.35	10.24	10.13
270.0	10.80	10.69	10.58	10.52	10.41	10.35	10.29	10.24	10.18
315.0	10.63	10.58	10.52	10.41	10.29	10.24	10.18	10.13	10.07
360.0	10.80	10.69	10.58	10.52	10.41	10.35	10.24	10.18	10.13

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.07	10.01	9.96	9.90	9.90	9.84	9.84	9.79	9.73
45.0	10.13	10.01	10.01	9.96	9.96	9.90	9.84	9.84	9.73
90.0	10.07	10.01	10.01	9.96	9.96	9.90	9.84	9.84	9.79
135.0	10.07	10.01	9.96	9.90	9.90	9.84	9.84	9.79	9.73
180.0	9.96	9.96	9.90	9.84	9.84	9.79	9.73	9.73	9.68
225.0	10.07	10.01	9.96	9.90	9.90	9.84	9.79	9.79	9.73
270.0	10.07	10.07	10.01	10.01	9.96	9.90	9.90	9.90	9.84
315.0	10.01	9.96	9.90	9.90	9.84	9.79	9.73	9.73	9.68
360.0	10.07	10.01	9.96	9.90	9.90	9.84	9.84	9.79	9.73

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	9.68	9.68	9.68	9.62	9.62	9.62	9.56	9.56	9.51
45.0	9.73	9.73	9.68	9.68	9.62	9.62	9.56	9.56	9.56
90.0	9.79	9.73	9.73	9.73	9.68	9.68	9.68	9.68	9.68
135.0	9.73	9.68	9.68	9.68	9.62	9.62	9.56	9.56	9.56
180.0	9.68	9.68	9.62	9.56	9.56	9.56	9.56	9.51	9.51
225.0	9.73	9.68	9.68	9.62	9.62	9.56	9.56	9.56	9.51
270.0	9.79	9.79	9.79	9.73	9.73	9.73	9.73	9.73	9.68
315.0	9.68	9.68	9.62	9.62	9.56	9.56	9.56	9.51	9.51
360.0	9.68	9.68	9.68	9.62	9.62	9.62	9.56	9.56	9.51

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	9.51	9.51	9.51	9.51	9.51	9.45	9.45	9.45	9.45
45.0	9.51	9.51	9.51	9.51	9.51	9.45	9.45	9.45	9.45
90.0	9.73	9.73	9.79	9.62	9.45	9.45	9.45	9.45	9.39
135.0	9.51	9.51	9.45	9.51	9.45	9.39	9.45	9.39	9.39
180.0	9.51	9.45	9.51	9.51	9.45	9.45	9.39	9.39	9.39
225.0	9.51	9.51	9.51	9.51	9.51	9.51	9.45	9.45	9.39
270.0	9.73	9.73	9.79	9.79	9.84	9.62	9.45	9.45	9.45
315.0	9.51	9.51	9.51	9.45	9.45	9.45	9.45	9.45	9.39
360.0	9.51	9.51	9.51	9.51	9.51	9.45	9.45	9.45	9.45

Intensity data(cd)

C/γ(°)	90.0
0.0	9.45
45.0	9.45
90.0	9.45
135.0	9.39
180.0	9.39
225.0	9.45
270.0	9.45
315.0	9.39
360.0	9.45