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Nata

LumCAT: 3-2717-L
Luminaire: 99.70.131.00
Report No: 220816-B022
Test No: 220816-C022
LampCAT: CITIZEN CLU038
Lamp flux(lm): 2260.9
Number of Lamps: 1
Length(mm): 43
Phm Type: C

Voltage(V): 35.5100
Current(A): 0.4810
Power (W): 17.0800
PF: 0.0000
Ballast type: DC
Width(mm): 43
Height(mm): 0

Photometric Results

Lumens(lm): 1937.95
Efficiency(%): 85.72%
Lumens(lm)/Power(W): 113.46
Central intensity(cd): 8007.785
Maximum intensity(cd): 8007.785
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=18.8
[C90/270]Total=18.8
Field angle(10%Imax): [C0/180]Total=55.2
[C90/270]Total=55.2
Maximum s/h(1/2): C0_180=0.32 C90_270=0.32
Maximum s/h(1/4): C0_180=0.40 C90_270=0.40
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 85.72%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.933%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8007.785	0.000	0	.000%	.000%
1.0	7937.949	7.630	7.63	.337%	.394%
2.0	7713.651	22.465	30.094	.994%	1.553%
3.0	7354.835	36.039	66.133	1.594%	3.413%
4.0	6905.867	47.735	113.868	2.111%	5.876%
5.0	6372.497	57.123	170.991	2.527%	8.823%
6.0	5774.072	63.833	234.825	2.823%	12.117%
7.0	5213.142	68.197	303.022	3.016%	15.636%
8.0	4661.398	70.670	373.692	3.126%	19.283%
9.0	4181.732	71.669	445.361	3.170%	22.981%
10.0	3753.677	71.813	517.174	3.176%	26.687%
11.0	3413.608	71.616	588.79	3.168%	30.382%
12.0	3140.463	71.645	660.435	3.169%	34.079%
13.0	2872.471	71.358	731.793	3.156%	37.761%
14.0	2637.941	70.533	802.326	3.120%	41.401%
15.0	2442.848	69.751	872.077	3.085%	45.000%
16.0	2246.709	68.715	940.793	3.039%	48.546%
17.0	2063.118	67.116	1007.908	2.969%	52.009%
18.0	1915.977	65.607	1073.515	2.902%	55.394%
19.0	1769.209	64.115	1137.63	2.836%	58.703%
20.0	1633.868	62.286	1199.915	2.755%	61.917%
21.0	1520.413	60.569	1260.484	2.679%	65.042%
22.0	1391.354	58.513	1318.997	2.588%	68.061%
23.0	1282.947	56.114	1375.111	2.482%	70.957%
24.0	1158.280	53.374	1428.485	2.361%	73.711%
25.0	1043.002	50.052	1478.537	2.214%	76.294%
26.0	936.911	46.736	1525.273	2.067%	78.705%
27.0	852.360	43.775	1569.048	1.936%	80.964%
28.0	766.376	40.983	1610.031	1.813%	83.079%
29.0	689.758	38.097	1648.128	1.685%	85.045%
30.0	608.277	35.047	1683.175	1.550%	86.853%
31.0	519.462	31.383	1714.558	1.388%	88.473%
32.0	436.965	27.401	1741.958	1.212%	89.886%
33.0	358.390	23.431	1765.39	1.036%	91.096%
34.0	290.220	19.629	1785.019	.868%	92.108%
35.0	211.197	15.572	1800.591	.689%	92.912%
36.0	139.822	11.176	1811.767	.494%	93.489%
37.0	93.872	7.622	1819.389	.337%	93.882%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	72.308	5.547	1824.936	.245%	94.168%
39.0	63.398	4.632	1829.568	.205%	94.407%
40.0	59.693	4.293	1833.861	.190%	94.629%
41.0	56.496	4.137	1837.999	.183%	94.842%
42.0	53.509	3.997	1841.995	.177%	95.048%
43.0	50.566	3.855	1845.85	.171%	95.247%
44.0	48.011	3.721	1849.571	.165%	95.439%
45.0	45.651	3.600	1853.171	.159%	95.625%
46.0	43.239	3.476	1856.647	.154%	95.804%
47.0	41.327	3.363	1860.01	.149%	95.978%
48.0	39.467	3.266	1863.276	.144%	96.147%
49.0	37.726	3.170	1866.446	.140%	96.310%
50.0	36.218	3.083	1869.529	.136%	96.469%
51.0	34.866	3.007	1872.537	.133%	96.624%
52.0	33.760	2.945	1875.482	.130%	96.776%
53.0	32.909	2.900	1878.382	.128%	96.926%
54.0	32.155	2.868	1881.249	.127%	97.074%
55.0	31.662	2.849	1884.098	.126%	97.221%
56.0	31.213	2.841	1886.939	.126%	97.368%
57.0	30.616	2.827	1889.766	.125%	97.513%
58.0	29.727	2.790	1892.557	.123%	97.657%
59.0	28.607	2.727	1895.284	.121%	97.798%
60.0	26.934	2.624	1897.908	.116%	97.934%
61.0	25.141	2.485	1900.393	.110%	98.062%
62.0	23.184	2.329	1902.721	.103%	98.182%
63.0	20.928	2.145	1904.867	.095%	98.293%
64.0	18.792	1.949	1906.816	.086%	98.393%
65.0	17.000	1.771	1908.587	.078%	98.485%
66.0	15.618	1.627	1910.215	.072%	98.569%
67.0	14.557	1.517	1911.732	.067%	98.647%
68.0	13.795	1.436	1913.168	.064%	98.721%
69.0	13.228	1.379	1914.547	.061%	98.792%
70.0	12.824	1.338	1915.885	.059%	98.861%
71.0	12.473	1.308	1917.192	.058%	98.929%
72.0	12.115	1.279	1918.471	.057%	98.995%
73.0	11.839	1.253	1919.723	.055%	99.059%
74.0	11.570	1.231	1920.954	.054%	99.123%
75.0	11.316	1.209	1922.163	.053%	99.185%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	11.062	1.188	1923.351	.053%	99.246%
77.0	10.853	1.168	1924.519	.052%	99.307%
78.0	10.629	1.150	1925.669	.051%	99.366%
79.0	10.419	1.131	1926.8	.050%	99.424%
80.0	10.225	1.113	1927.913	.049%	99.482%
81.0	9.994	1.093	1929.007	.048%	99.538%
82.0	9.792	1.073	1930.08	.047%	99.594%
83.0	9.575	1.053	1931.132	.047%	99.648%
84.0	9.336	1.030	1932.163	.046%	99.701%
85.0	9.135	1.008	1933.171	.045%	99.753%
86.0	8.933	0.988	1934.158	.044%	99.804%
87.0	8.761	0.968	1935.127	.043%	99.854%
88.0	8.619	0.952	1936.079	.042%	99.903%
89.0	8.537	0.940	1937.019	.042%	99.952%
90.0	8.522	0.935	1937.955	.041%	100.000%

Zonal flux distribution table

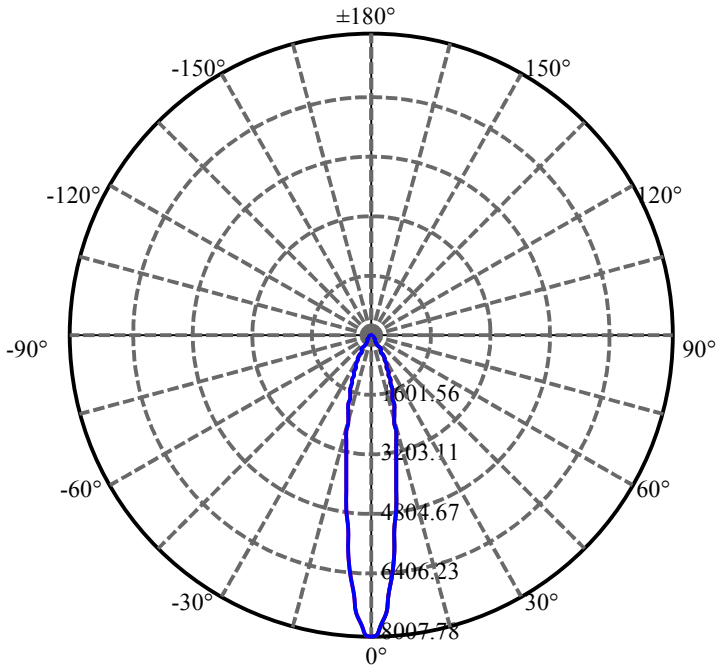
ZONAL LUMEN SUMMARY

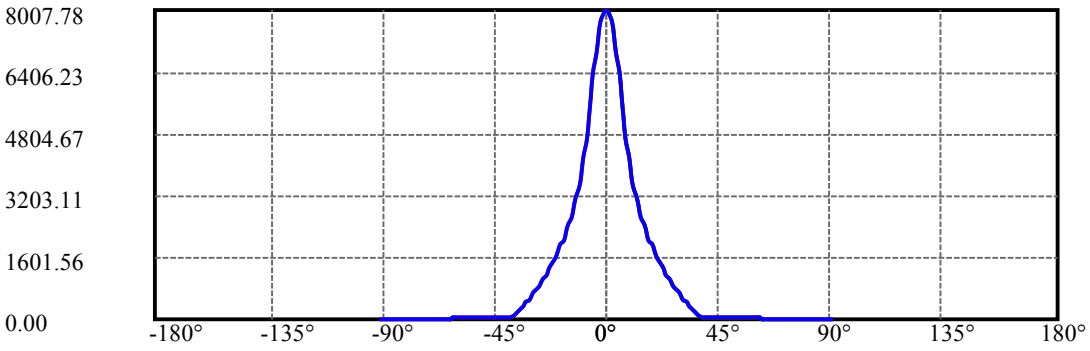
Zone	Lumens	%Lamp	%Fixt
0-30	1683.17	74.45%	86.85%
0-40	1833.86	81.11%	94.63%
0-60	1897.91	83.95%	97.93%
0-90	1937.02	85.68%	99.95%
0-120	1937.02	85.68%	99.95%
0-180	1937.95	85.72%	100.00%
60-90	41.74	1.85%	2.15%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.57	1550.36	68.57%	80.00%

ZONAL LUMEN SUMMARY

0-10	517.17
10-20	682.74
20-30	483.26
30-40	150.69
40-50	35.67
50-60	28.38
60-70	17.98
70-80	12.03
80-90	9.11
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:27.6 Right:27.6
:C90/270Left:27.6 Right:27.6

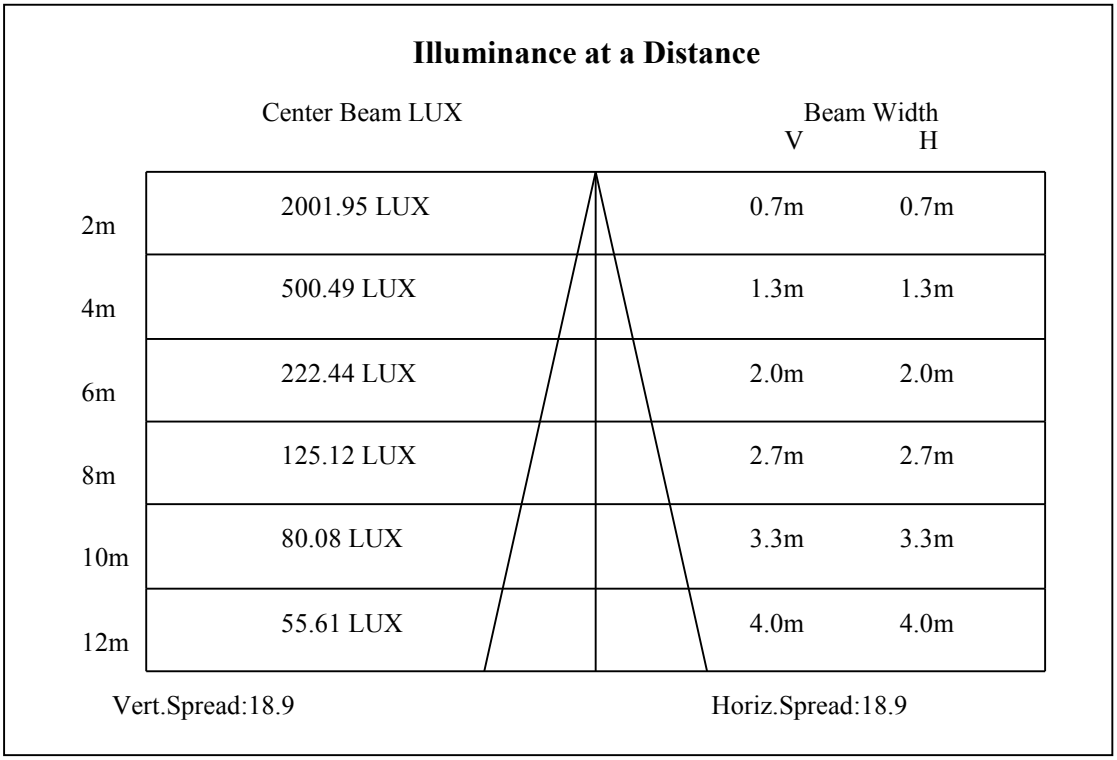
Beam Angle(50%Imax):C0/180Left:9.4 Right:9.4
:C90/270Left:9.4 Right:9.4

Equipment: GMS1980
Temperature(°C): 25.0

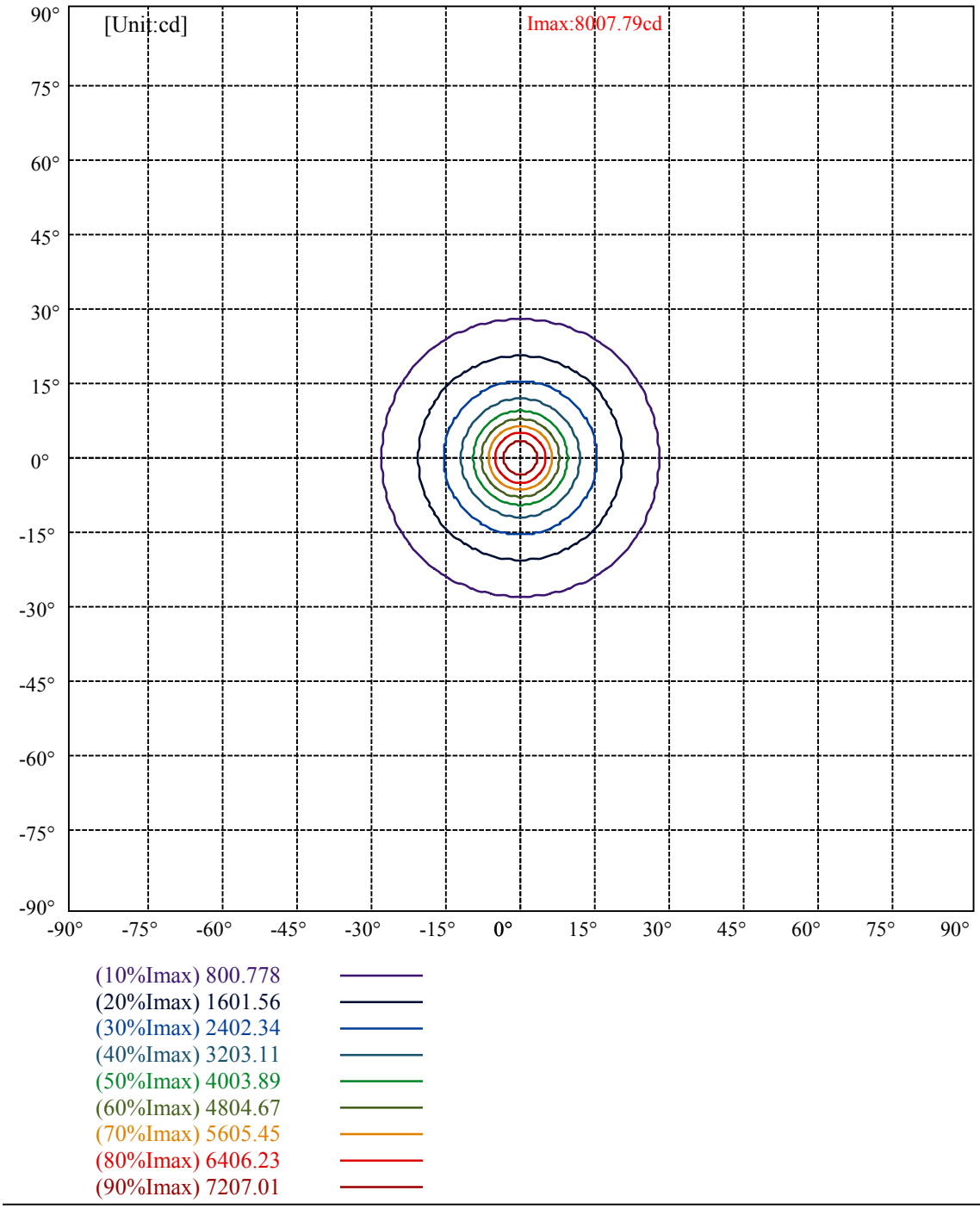
Date: 2022/8/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

Lux distance Curve



ISO-Intensity(V-H)

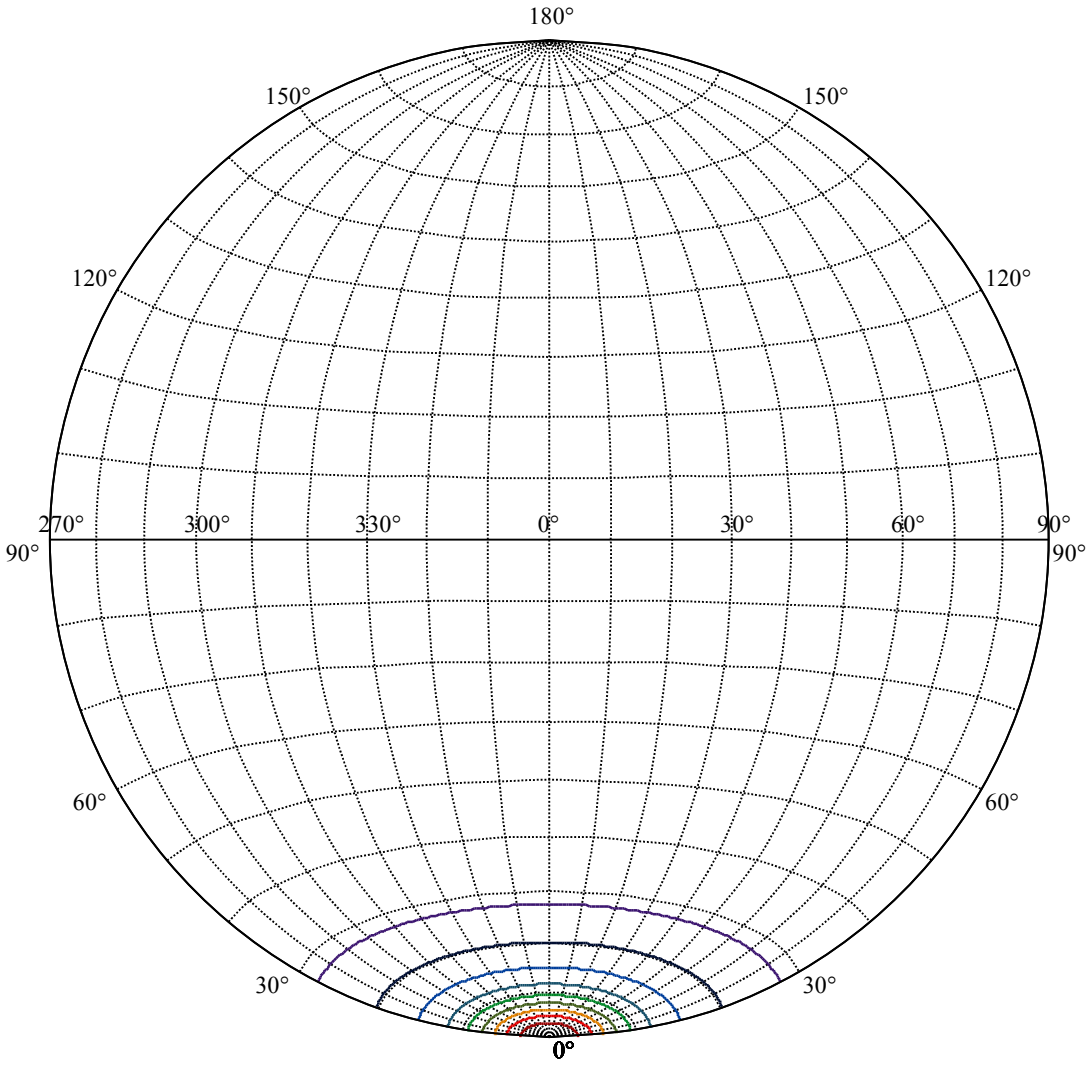


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2022/8/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:8007.79

(10%Imax) 800.778
(20%Imax) 1601.56
(30%Imax) 2402.34
(40%Imax) 3203.11
(50%Imax) 4003.89
(60%Imax) 4804.67
(70%Imax) 5605.45
(80%Imax) 6406.23
(90%Imax) 7207.01

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2022/8/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

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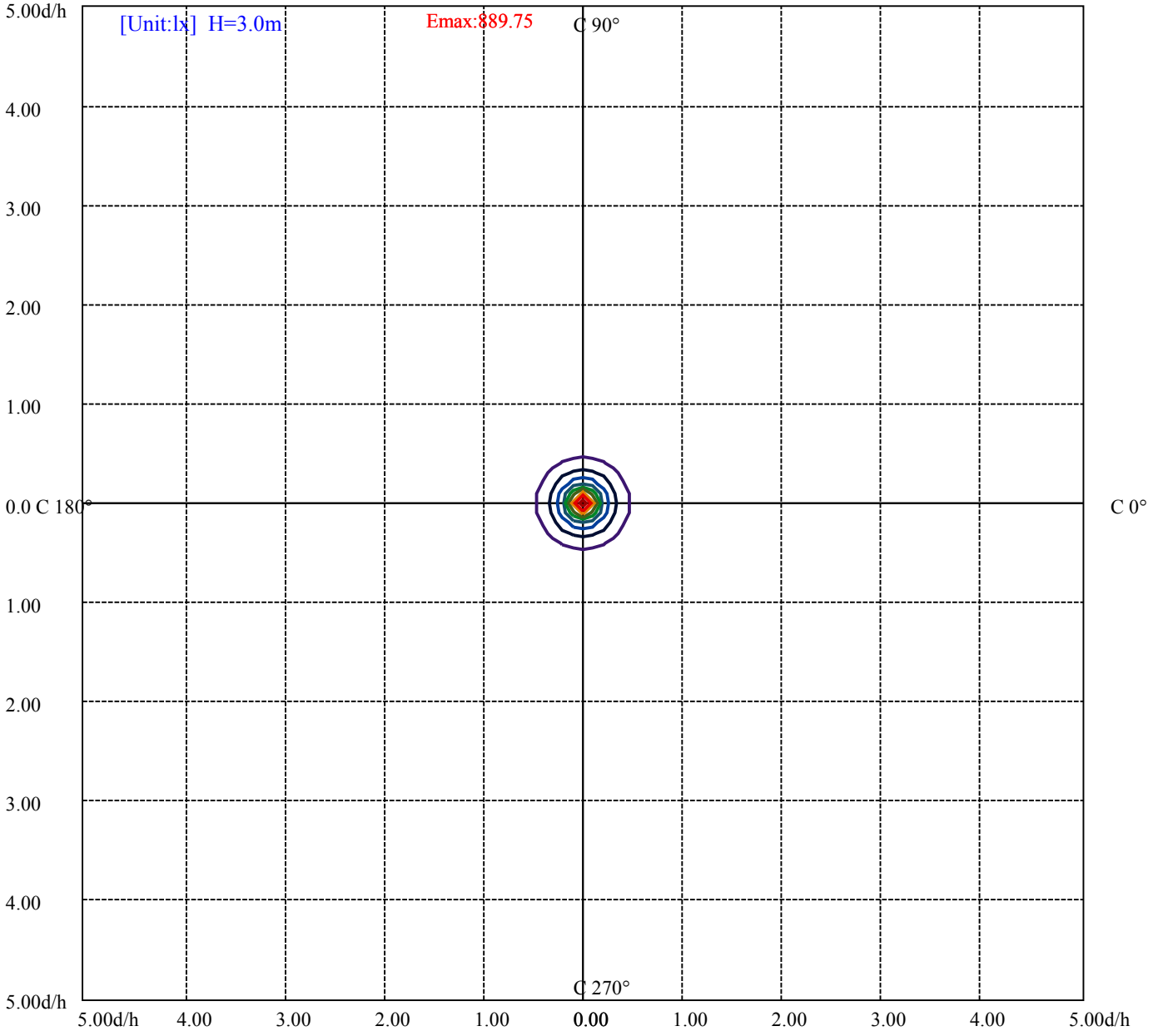
ISO illuminance diagram

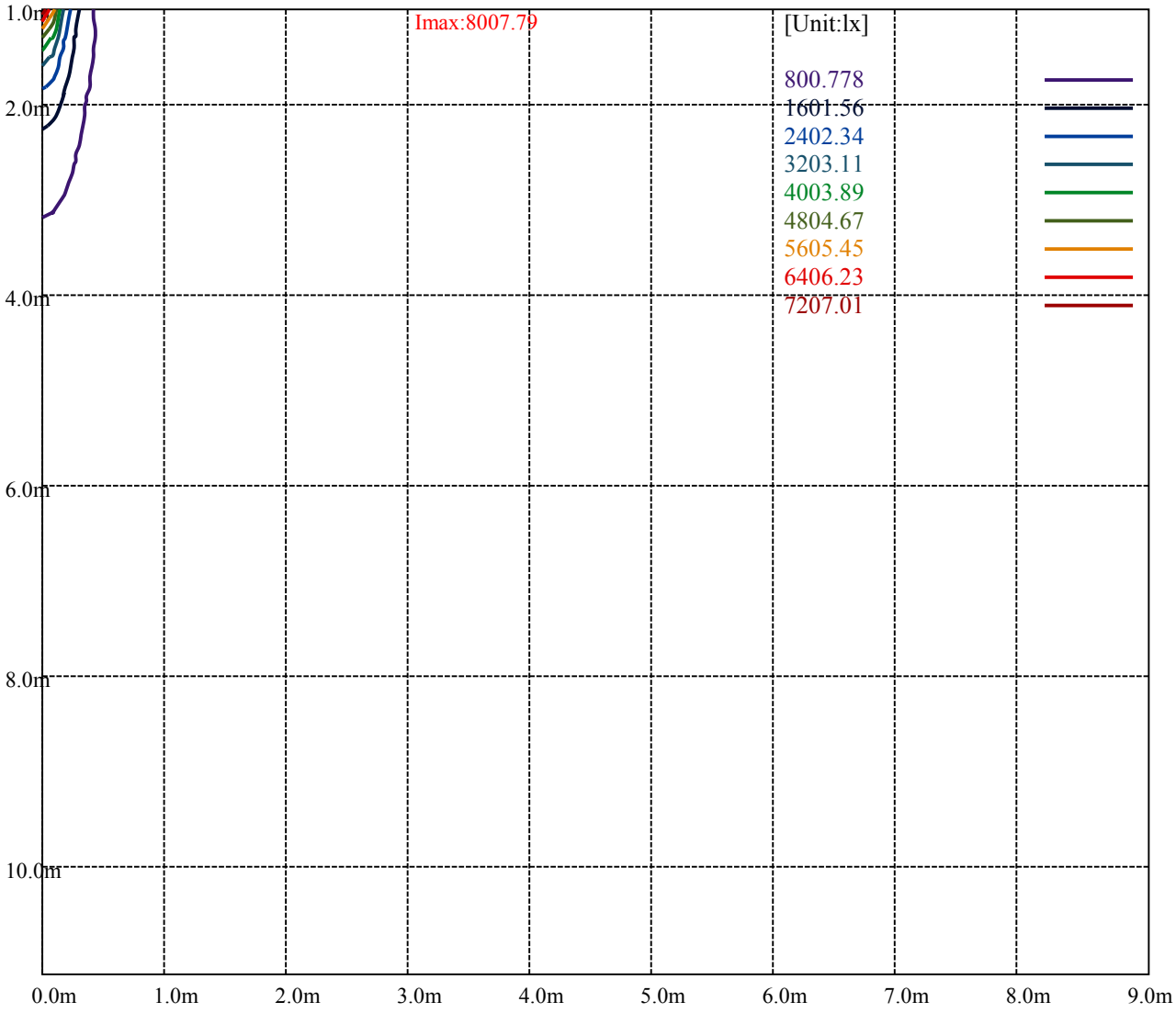


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2022/8/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2022/8/16
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.73

Luminance Limitting Curve(no luminous side)

Luminance Table

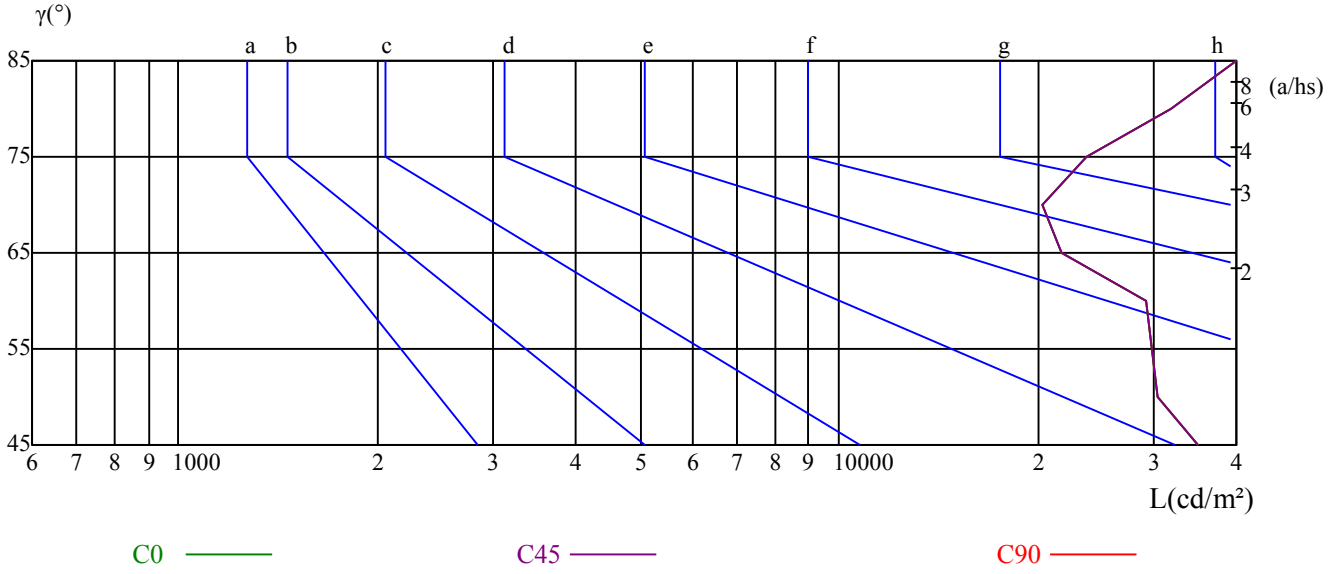
γ	45	50	55	60	65	70	75	80	85
C0	34916	30473	29854	29133	21755	20279	23645	31847	56684
C45	34916	30473	29854	29133	21755	20279	23645	31847	56684
C90	34916	30473	29854	29133	21755	20279	23645	31847	56684

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
21755	21755	21755	23645	23645	23645	56684	56684	56684

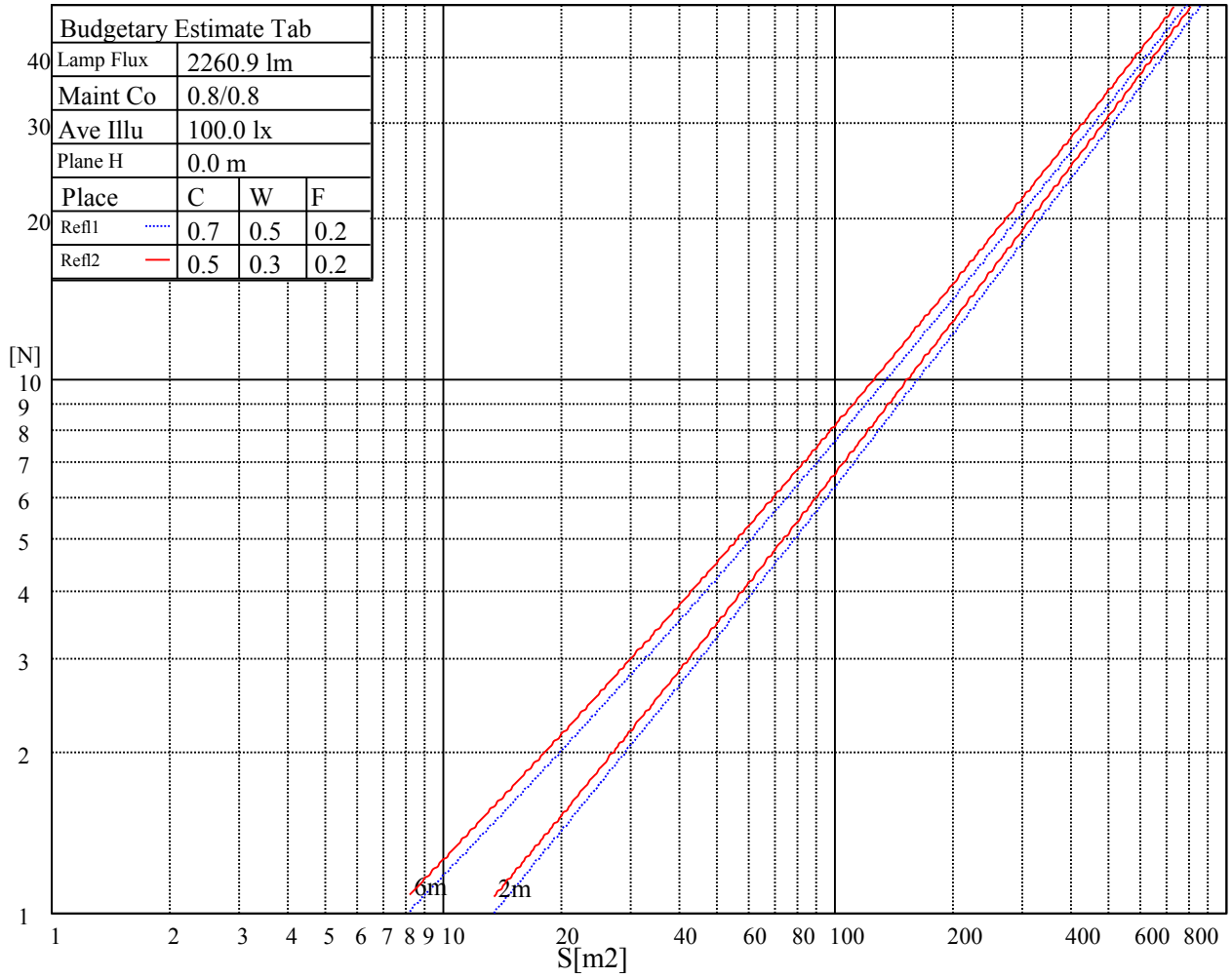
Glare Table

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

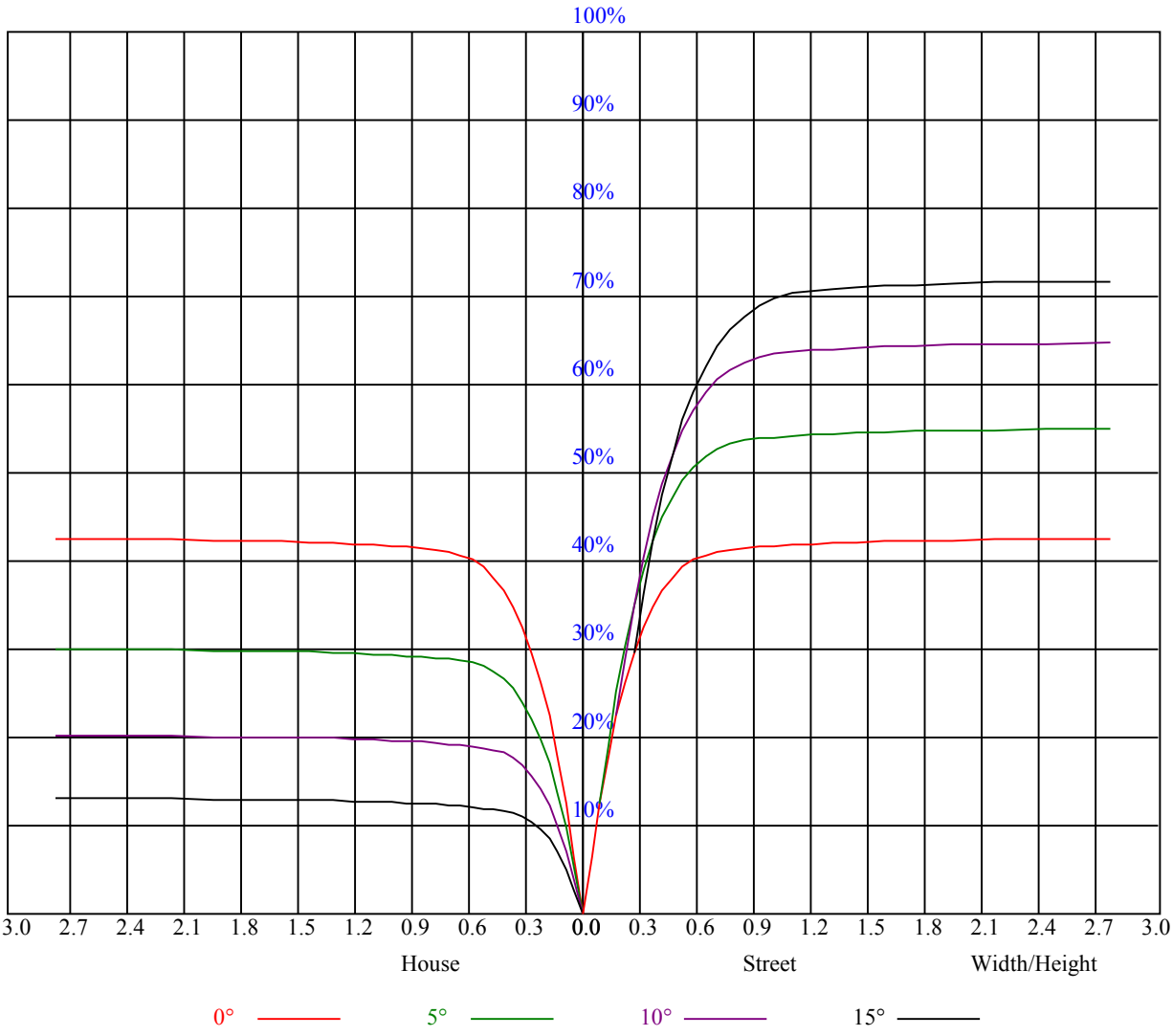


Equipment: GMS1980 Date: 2022/8/16 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.73

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	1.02	1.02	1.02	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.87	0.87	0.87	0.86
1	0.96	0.94	0.92	0.94	0.92	0.90	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.83	0.81
2	0.90	0.87	0.85	0.89	0.86	0.84	0.86	0.84	0.82	0.83	0.82	0.80	0.81	0.80	0.78	0.77
3	0.85	0.82	0.79	0.84	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.78	0.76	0.75	0.73
4	0.81	0.77	0.74	0.80	0.76	0.74	0.78	0.75	0.73	0.77	0.74	0.72	0.75	0.73	0.71	0.70
5	0.77	0.73	0.70	0.77	0.73	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.67
6	0.74	0.70	0.67	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.64
7	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62
8	0.68	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.65	0.62	0.60	0.59
9	0.66	0.61	0.59	0.65	0.61	0.59	0.64	0.61	0.58	0.64	0.61	0.58	0.63	0.60	0.58	0.57
10	0.63	0.59	0.56	0.63	0.59	0.56	0.62	0.59	0.56	0.62	0.58	0.56	0.61	0.58	0.56	0.55

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2022/8/16	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.73

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	7943.55	8029.00	7962.07	7778.63	7438.64	6924.17	6361.89	5836.07	5217.03
45.0	8035.57	7913.67	7568.30	7188.27	6722.80	6146.18	5541.48	5006.70	4453.38
90.0	8018.24	7837.19	7539.02	7071.76	6594.93	6005.17	5394.49	4864.48	4317.15
135.0	8033.78	7945.34	7669.28	7291.05	6783.15	6291.98	5612.59	5074.22	4563.93
180.0	7943.55	7716.49	7316.74	6807.05	6301.54	5705.80	5073.62	4543.01	4032.72
225.0	8035.57	8025.41	7861.69	7536.63	7120.75	6582.38	5998.59	5459.62	4859.11
270.0	8018.24	8039.75	7941.16	7718.28	7255.20	6783.15	6336.80	5591.08	5045.53
315.0	8033.78	7996.73	7850.93	7447.00	7029.93	6541.15	5873.11	5329.96	4802.34
360.0	7943.55	8029.00	7962.07	7778.63	7438.64	6924.17	6361.89	5836.07	5217.03

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4630.25	4169.56	3748.30	3438.18	3132.25	2869.33	2655.42	2461.22	2240.73
45.0	3973.57	3610.27	3280.43	3027.68	2768.35	2535.32	2352.47	2177.99	1992.76
90.0	3862.43	3522.43	3233.83	2927.29	2707.40	2508.43	2324.99	2113.46	1957.51
135.0	4056.03	3638.95	3335.41	3067.12	2780.90	2574.75	2385.34	2182.77	2011.88
180.0	3662.26	3319.27	3037.84	2813.17	2605.23	2372.19	2205.48	2043.55	1867.88
225.0	4365.55	3899.47	3527.81	3242.19	2984.66	2710.39	2510.22	2323.79	2118.84
270.0	4594.40	4048.86	3655.68	3392.17	3062.93	2840.65	2619.57	2382.95	2209.66
315.0	4309.38	3820.60	3489.57	3215.90	2938.05	2692.47	2489.31	2287.94	2105.69
360.0	4630.25	4169.56	3748.30	3438.18	3132.25	2869.33	2655.42	2461.22	2240.73

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2080.00	1931.21	1772.27	1656.95	1542.82	1436.46	1299.63	1190.88	1065.99
45.0	1848.75	1710.73	1578.67	1470.52	1364.16	1247.64	1105.43	997.28	899.28
90.0	1821.87	1668.30	1554.17	1441.84	1306.20	1179.34	1082.13	960.11	866.06
135.0	1870.86	1722.68	1590.02	1481.87	1357.59	1246.45	1119.17	994.29	896.89
180.0	1735.82	1618.71	1475.90	1367.15	1180.18	1138.89	1017.35	908.72	823.16
225.0	1967.07	1829.63	1676.07	1563.14	1454.98	1319.94	1188.84	1093.12	969.31
270.0	2047.73	1867.28	1743.59	1627.07	1489.64	1368.34	1270.94	1130.52	1015.80
315.0	1955.71	1805.14	1680.25	1554.77	1435.26	1326.51	1182.75	1069.10	958.80
360.0	2080.00	1931.21	1772.27	1656.95	1542.82	1436.46	1299.63	1190.88	1065.99

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	958.44	853.27	785.75	707.47	622.03	542.56	452.33	372.26	305.34
45.0	816.82	745.72	663.26	576.62	491.17	410.50	325.06	305.34	179.86
90.0	799.61	708.25	638.64	546.08	459.08	382.96	309.22	225.81	164.74
135.0	833.55	742.73	663.85	586.18	487.58	409.90	342.38	307.13	179.02
180.0	758.98	675.33	588.63	511.19	432.97	334.97	261.30	190.19	118.79
225.0	873.89	796.75	718.17	639.12	558.33	462.91	387.02	312.03	221.44
270.0	909.44	823.39	746.31	665.65	571.84	494.75	410.50	325.06	305.93
315.0	868.15	785.57	713.45	633.92	532.70	457.17	379.31	283.95	214.45
360.0	958.44	853.27	785.75	707.47	622.03	542.56	452.33	372.26	305.34

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	203.10	140.48	94.89	68.30	63.58	60.05	56.65	53.84	50.91
45.0	117.12	81.32	68.18	62.92	59.45	56.47	53.00	50.43	47.74
90.0	113.29	77.14	66.80	62.80	59.10	55.75	52.88	50.13	47.50
135.0	118.97	78.87	65.73	62.56	59.22	56.11	52.52	49.89	47.56
180.0	80.25	65.67	61.61	57.84	55.15	51.87	49.71	46.91	44.52
225.0	156.49	103.49	72.78	64.47	60.65	57.12	54.32	51.39	48.70
270.0	178.06	114.13	76.54	64.35	60.17	56.94	54.26	51.09	48.52
315.0	151.29	89.87	71.94	63.94	60.23	57.66	54.73	50.85	48.64
360.0	203.10	140.48	94.89	68.30	63.58	60.05	56.65	53.84	50.91

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	48.28	45.77	44.10	41.53	39.62	37.76	36.21	35.19	34.12
45.0	45.29	42.84	41.05	39.56	37.64	36.39	34.48	33.64	33.10
90.0	45.29	43.02	41.11	39.26	37.52	36.33	34.96	33.64	32.86
135.0	45.59	42.78	40.93	39.14	37.17	36.03	34.96	33.64	32.57
180.0	42.54	40.39	38.84	36.93	35.67	34.36	33.28	32.51	31.91
225.0	46.07	43.92	41.35	39.80	38.30	36.21	34.90	33.64	32.98
270.0	46.01	43.86	41.65	39.80	38.12	36.51	35.19	34.00	32.92
315.0	46.13	43.32	41.59	39.74	37.76	36.15	34.96	33.82	32.80
360.0	48.28	45.77	44.10	41.53	39.62	37.76	36.21	35.19	34.12

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	32.80	32.03	31.49	31.25	30.83	30.18	28.62	27.73	25.93
45.0	32.57	32.03	31.55	30.77	29.88	28.68	26.41	24.50	23.18
90.0	32.27	31.79	31.25	30.59	29.22	27.96	25.99	23.72	22.05
135.0	31.91	31.61	31.31	30.77	29.40	28.38	26.83	24.50	22.83
180.0	31.37	31.19	30.71	29.58	28.38	27.31	24.62	23.18	20.44
225.0	32.27	31.73	31.13	30.65	30.12	28.74	27.67	25.57	23.72
270.0	32.27	31.73	31.25	30.77	30.23	29.22	27.96	26.77	23.90
315.0	31.79	31.19	31.01	30.53	29.76	28.38	27.37	25.16	23.42
360.0	32.80	32.03	31.49	31.25	30.83	30.18	28.62	27.73	25.93

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	23.60	21.21	19.00	17.33	15.54	14.64	13.74	13.21	12.79
45.0	19.66	18.16	16.19	15.06	14.28	13.50	13.09	12.73	12.43
90.0	19.36	17.69	15.83	15.00	14.04	13.44	13.09	12.73	12.37
135.0	20.08	18.28	16.31	15.24	14.40	13.56	13.21	12.73	12.37
180.0	18.52	16.85	15.12	14.34	13.50	13.03	12.61	12.31	12.01
225.0	21.81	19.18	17.63	15.77	14.82	13.86	13.27	12.91	12.55
270.0	22.77	20.02	18.34	16.49	15.18	14.52	13.62	13.21	12.85
315.0	21.63	18.94	17.57	15.72	14.70	13.80	13.21	12.79	12.43
360.0	23.60	21.21	19.00	17.33	15.54	14.64	13.74	13.21	12.79

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	12.37	12.07	11.83	11.47	11.29	11.05	10.82	10.58	10.40
45.0	12.07	11.77	11.53	11.23	10.99	10.76	10.58	10.40	10.16
90.0	12.01	11.77	11.47	11.23	10.93	10.76	10.52	10.34	10.16
135.0	12.07	11.83	11.53	11.29	10.99	10.76	10.58	10.34	10.16
180.0	11.65	11.41	11.17	10.93	10.70	10.52	10.28	10.10	9.92
225.0	12.13	11.89	11.59	11.35	11.11	10.93	10.70	10.46	10.28
270.0	12.49	12.19	11.89	11.65	11.41	11.23	10.93	10.76	10.52
315.0	12.13	11.77	11.53	11.35	11.05	10.82	10.64	10.40	10.22
360.0	12.37	12.07	11.83	11.47	11.29	11.05	10.82	10.58	10.40

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.16	9.98	9.80	9.50	9.32	9.14	8.96	8.78	8.60
45.0	9.92	9.74	9.56	9.32	9.14	8.96	8.72	8.60	8.54
90.0	9.92	9.68	9.44	9.20	9.02	8.90	8.72	8.60	8.48
135.0	9.92	9.74	9.50	9.32	9.08	8.84	8.66	8.54	8.43
180.0	9.68	9.50	9.26	9.02	8.84	8.66	8.54	8.43	8.48
225.0	10.10	9.86	9.62	9.38	9.20	8.96	8.84	8.66	8.60
270.0	10.28	10.10	9.86	9.62	9.32	9.02	8.84	8.72	8.60
315.0	9.98	9.74	9.56	9.32	9.14	8.96	8.78	8.60	8.54
360.0	10.16	9.98	9.80	9.50	9.32	9.14	8.96	8.78	8.60

Intensity data(cd)

C/γ(°)	90.0
0.0	8.54
45.0	8.54
90.0	8.54
135.0	8.48
180.0	8.48
225.0	8.54
270.0	8.54
315.0	8.48
360.0	8.54