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Nata

LumCAT:LN01D03524DA-N
Luminaire: 97.70.267.00

Report No: 200623-B002	Voltage(V): 35.9700
Test No: 200623-C002	Current(A): 0.1500
LampCAT: CITIZEN CLU7A2	Power (W): 5.3960
Lamp flux(lm): 535.8	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 470.33
Efficiency(%): 87.78%
Lumens(lm)/Power(W): 87.16
Central intensity(cd): 1863.563
Maximum intensity(cd): 1863.563
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=27.6
[C90/270]Total=27.6
Field angle(10%Imax): [C0/180]Total=42.6
[C90/270]Total=42.6
Maximum s/h(1/2): C0_180=0.47 C90_270=0.47
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(%): 87.78%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.524%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1863.563	0.000	0	.000%	.000%
1.0	1862.859	1.783	1.783	.333%	.379%
2.0	1859.555	5.343	7.126	.997%	1.515%
3.0	1851.398	8.875	16.001	1.656%	3.402%
4.0	1838.672	12.352	28.353	2.305%	6.028%
5.0	1811.883	15.704	44.058	2.931%	9.367%
6.0	1771.734	18.833	62.89	3.515%	13.371%
7.0	1723.289	21.694	84.584	4.049%	17.984%
8.0	1652.977	24.163	108.747	4.510%	23.121%
9.0	1566.211	26.090	134.837	4.869%	28.668%
10.0	1460.813	27.393	162.23	5.112%	34.493%
11.0	1316.967	27.756	189.986	5.180%	40.394%
12.0	1183.444	27.333	217.319	5.101%	46.205%
13.0	1049.203	26.496	243.815	4.945%	51.839%
14.0	904.366	25.006	268.821	4.667%	57.155%
15.0	777.101	23.084	291.905	4.308%	62.063%
16.0	657.084	21.015	312.919	3.922%	66.531%
17.0	522.527	18.370	331.289	3.428%	70.437%
18.0	423.443	15.597	346.886	2.911%	73.753%
19.0	339.195	13.268	360.154	2.476%	76.574%
20.0	267.265	11.100	371.254	2.072%	78.934%
21.0	198.963	8.953	380.207	1.671%	80.838%
22.0	154.941	7.112	387.319	1.327%	82.350%
23.0	122.885	5.830	393.148	1.088%	83.589%
24.0	97.706	4.823	397.971	.900%	84.615%
25.0	83.018	4.109	402.08	.767%	85.488%
26.0	71.740	3.653	405.734	.682%	86.265%
27.0	63.105	3.299	409.033	.616%	86.967%
28.0	55.927	3.014	412.046	.562%	87.607%
29.0	50.280	2.779	414.825	.519%	88.198%
30.0	45.492	2.586	417.411	.483%	88.748%
31.0	41.379	2.417	419.828	.451%	89.262%
32.0	37.666	2.265	422.093	.423%	89.743%
33.0	34.636	2.130	424.223	.398%	90.196%
34.0	32.105	2.020	426.243	.377%	90.626%
35.0	29.355	1.909	428.151	.356%	91.031%
36.0	27.218	1.801	429.953	.336%	91.414%
37.0	25.313	1.713	431.666	.320%	91.779%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	23.393	1.626	433.292	.303%	92.124%
39.0	21.445	1.530	434.822	.286%	92.450%
40.0	19.941	1.443	436.265	.269%	92.757%
41.0	18.443	1.367	437.632	.255%	93.047%
42.0	17.030	1.289	438.921	.241%	93.321%
43.0	15.813	1.217	440.138	.227%	93.580%
44.0	14.674	1.151	441.288	.215%	93.825%
45.0	13.620	1.087	442.376	.203%	94.056%
46.0	12.607	1.026	443.401	.191%	94.274%
47.0	11.728	0.968	444.369	.181%	94.480%
48.0	10.955	0.917	445.286	.171%	94.675%
49.0	10.301	0.873	446.159	.163%	94.860%
50.0	9.703	0.834	446.993	.156%	95.038%
51.0	9.225	0.801	447.794	.149%	95.208%
52.0	8.824	0.775	448.568	.145%	95.372%
53.0	8.416	0.750	449.318	.140%	95.532%
54.0	8.044	0.725	450.044	.135%	95.686%
55.0	7.727	0.704	450.748	.131%	95.836%
56.0	7.446	0.686	451.433	.128%	95.982%
57.0	7.095	0.665	452.098	.124%	96.123%
58.0	6.841	0.644	452.743	.120%	96.260%
59.0	6.602	0.629	453.371	.117%	96.394%
60.0	6.349	0.612	453.983	.114%	96.524%
61.0	6.124	0.595	454.578	.111%	96.650%
62.0	5.934	0.581	455.159	.108%	96.774%
63.0	5.723	0.567	455.726	.106%	96.894%
64.0	5.555	0.553	456.28	.103%	97.012%
65.0	5.372	0.541	456.821	.101%	97.127%
66.0	5.259	0.530	457.351	.099%	97.240%
67.0	5.259	0.529	457.88	.099%	97.352%
68.0	5.393	0.540	458.42	.101%	97.467%
69.0	5.695	0.566	458.985	.106%	97.587%
70.0	6.047	0.603	459.588	.113%	97.715%
71.0	6.462	0.647	460.235	.121%	97.853%
72.0	7.003	0.700	460.935	.131%	98.002%
73.0	7.418	0.754	461.689	.141%	98.162%
74.0	7.713	0.795	462.485	.148%	98.331%
75.0	7.770	0.818	463.303	.153%	98.505%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.622	0.817	464.12	.152%	98.679%
77.0	7.284	0.795	464.914	.148%	98.848%
78.0	6.701	0.749	465.663	.140%	99.007%
79.0	5.984	0.682	466.345	.127%	99.152%
80.0	5.266	0.607	466.951	.113%	99.281%
81.0	4.577	0.532	467.483	.099%	99.394%
82.0	3.987	0.464	467.948	.087%	99.493%
83.0	3.523	0.408	468.356	.076%	99.580%
84.0	3.073	0.359	468.715	.067%	99.656%
85.0	2.834	0.322	469.038	.060%	99.725%
86.0	2.595	0.297	469.334	.055%	99.788%
87.0	2.405	0.274	469.608	.051%	99.846%
88.0	2.236	0.254	469.862	.047%	99.900%
89.0	2.138	0.240	470.102	.045%	99.951%
90.0	2.081	0.231	470.333	.043%	100.000%

Zonal flux distribution table

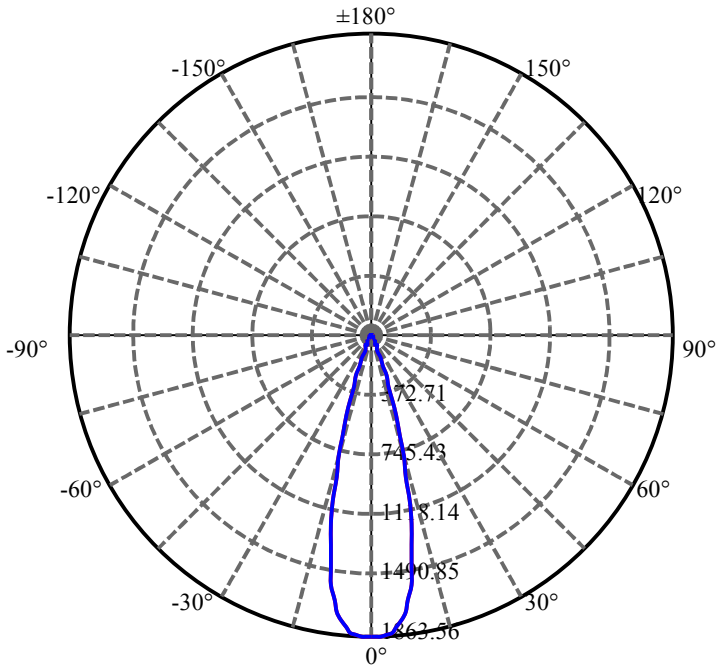
ZONAL LUMEN SUMMARY

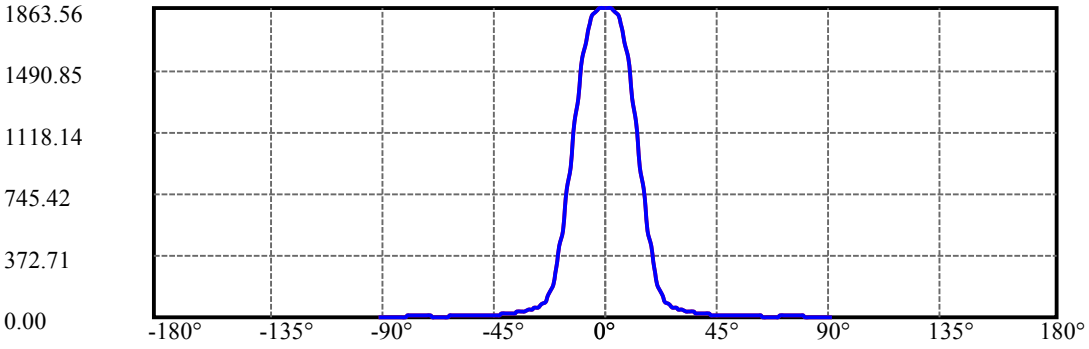
Zone	Lumens	%Lamp	%Fixt
0-30	417.41	77.90%	88.75%
0-40	436.27	81.42%	92.76%
0-60	453.98	84.73%	96.52%
0-90	470.10	87.73%	99.95%
0-120	470.10	87.73%	99.95%
0-180	470.33	87.78%	100.00%
60-90	16.73	3.12%	3.56%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-20.56	376.27	70.22%	80.00%

ZONAL LUMEN SUMMARY

0-10	162.23
10-20	209.02
20-30	46.16
30-40	18.85
40-50	10.73
50-60	6.99
60-70	5.61
70-80	7.36
80-90	3.15
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/C180:

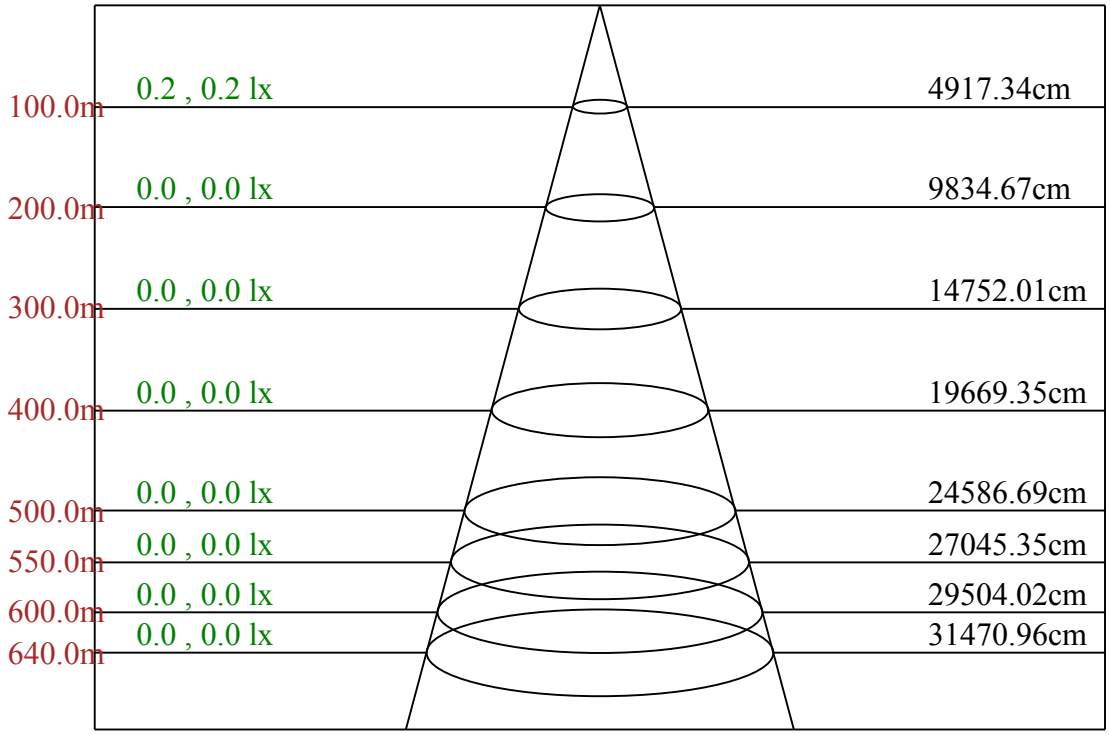
C90/C270:

Field angle(10%Imax):C0/180Left:21.3 Right:21.3
:C90/270Left:21.3 Right:21.3

Beam Angle(50%Imax):C0/180Left:13.8 Right:13.8
:C90/270Left:13.8 Right:13.8

Equipment: GMS1980	Date: 2020/6/23	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

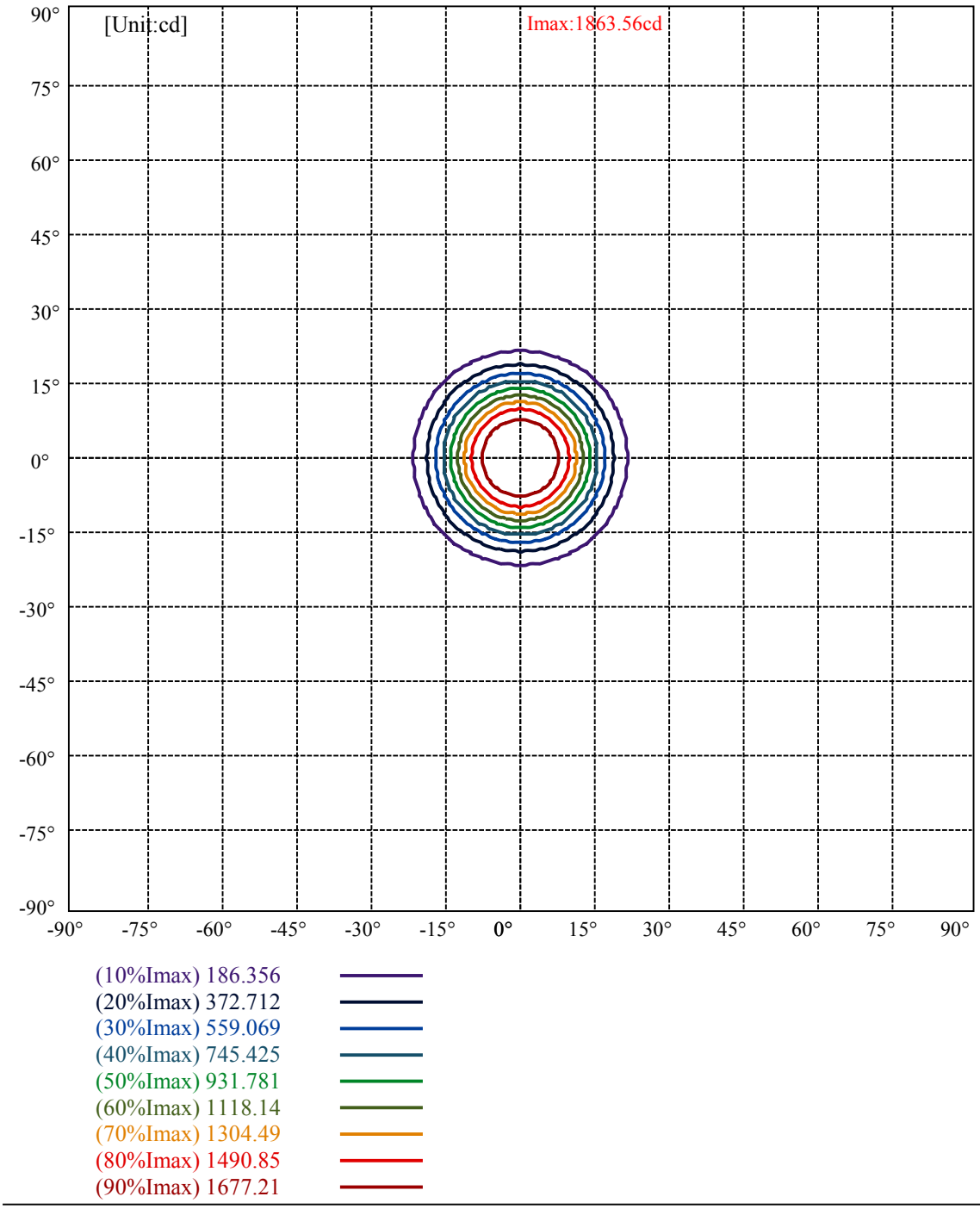
Lux distance Curve



Max , Ave

Beam angle of C0 plane 27.63

ISO-Intensity(V-H)

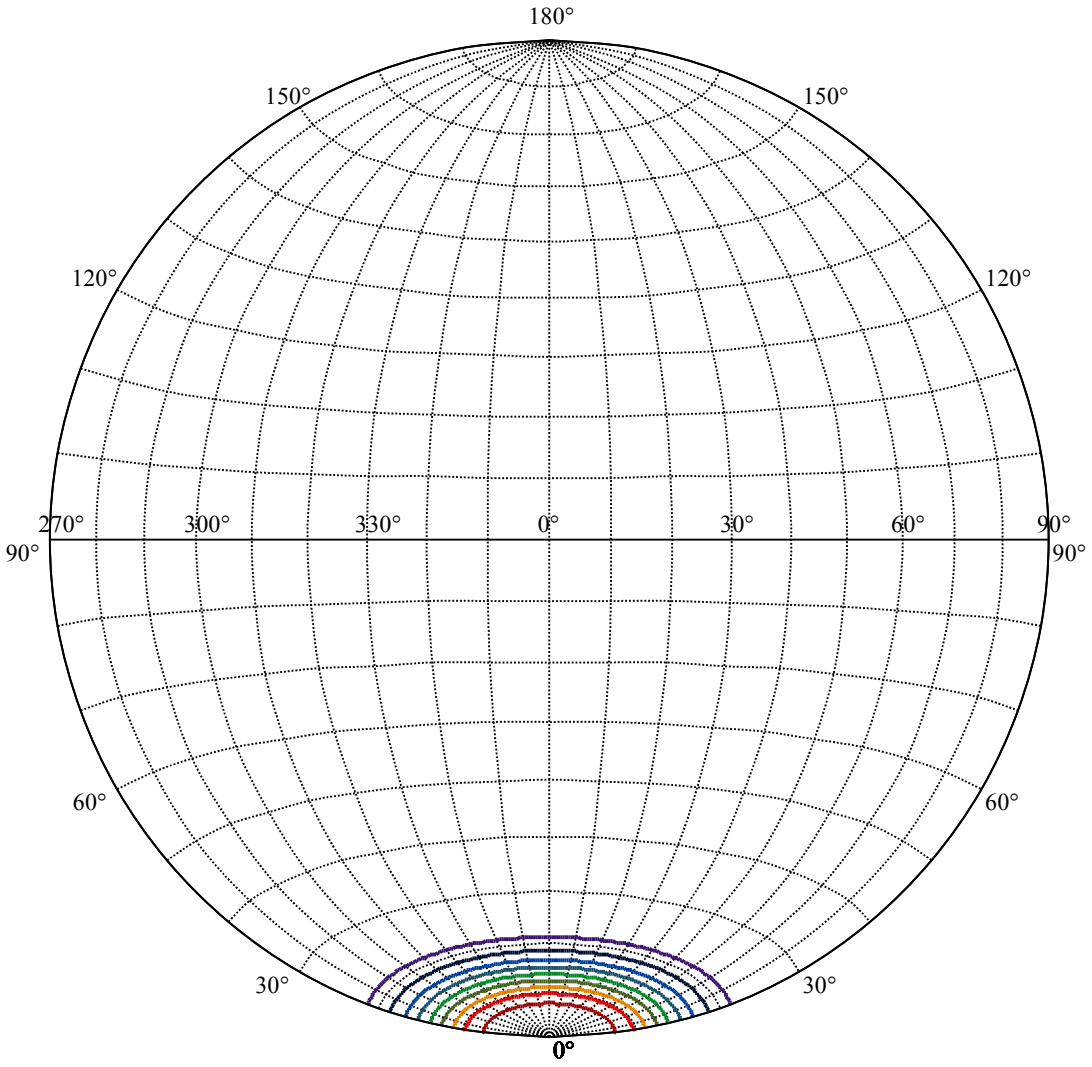


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/6/23
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



[Unit:cd]

Imax:1863.56

(10%Imax) 186.356
(20%Imax) 372.712
(30%Imax) 559.069
(40%Imax) 745.425
(50%Imax) 931.781
(60%Imax) 1118.14
(70%Imax) 1304.49
(80%Imax) 1490.85
(90%Imax) 1677.21

Equipment: GMS1980	Date: 2020/6/23	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

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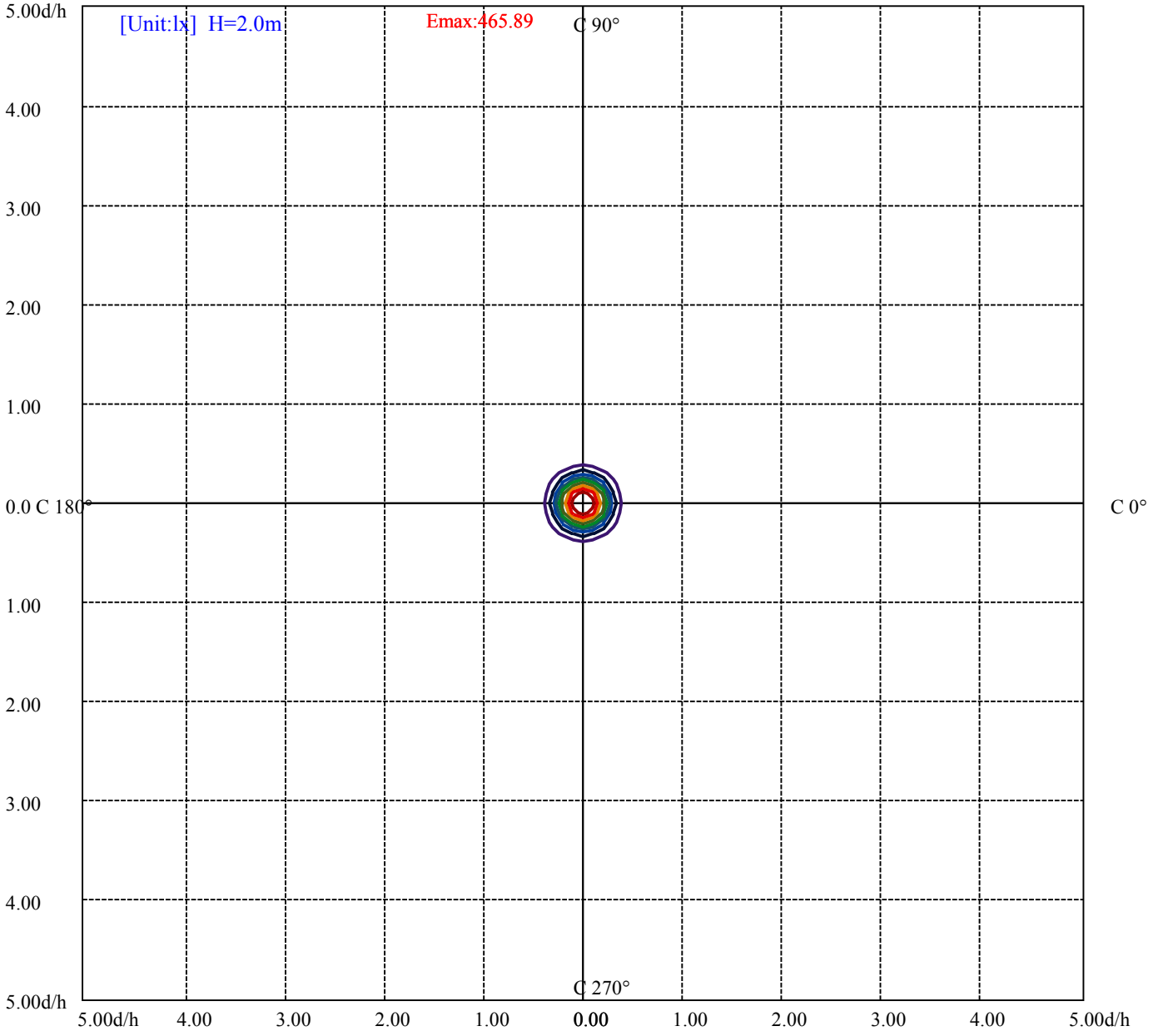
ISO illuminance diagram

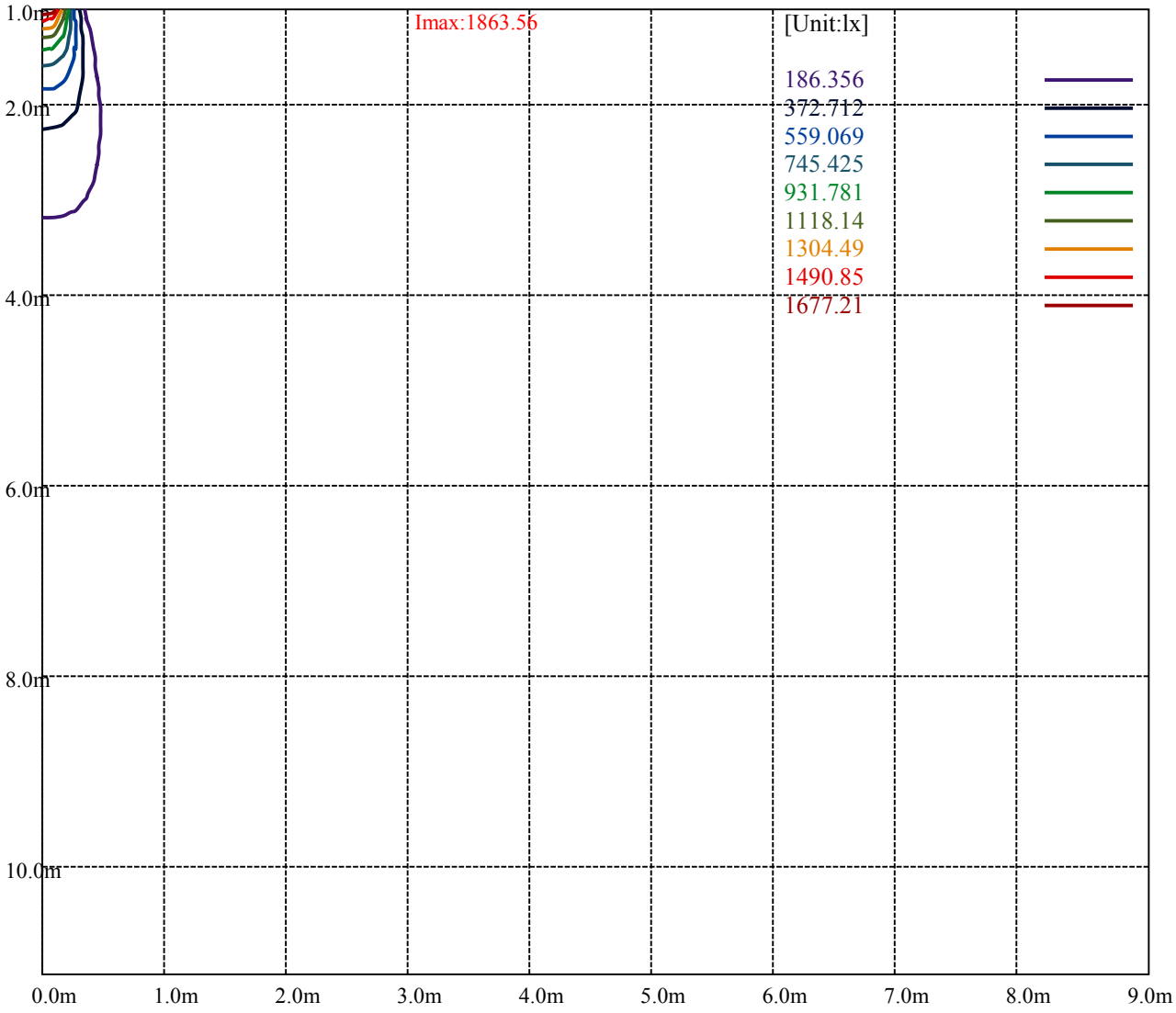


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/6/23
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/6/23
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

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Luminance Limitting Curve(no luminous side)

Luminance Table

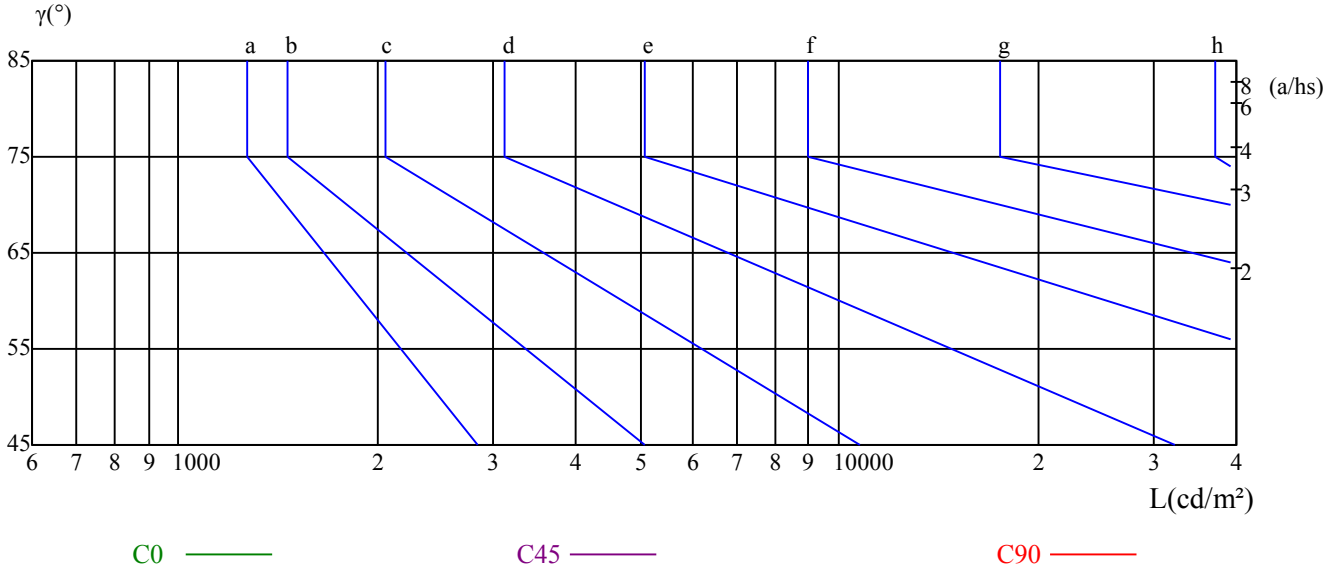
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

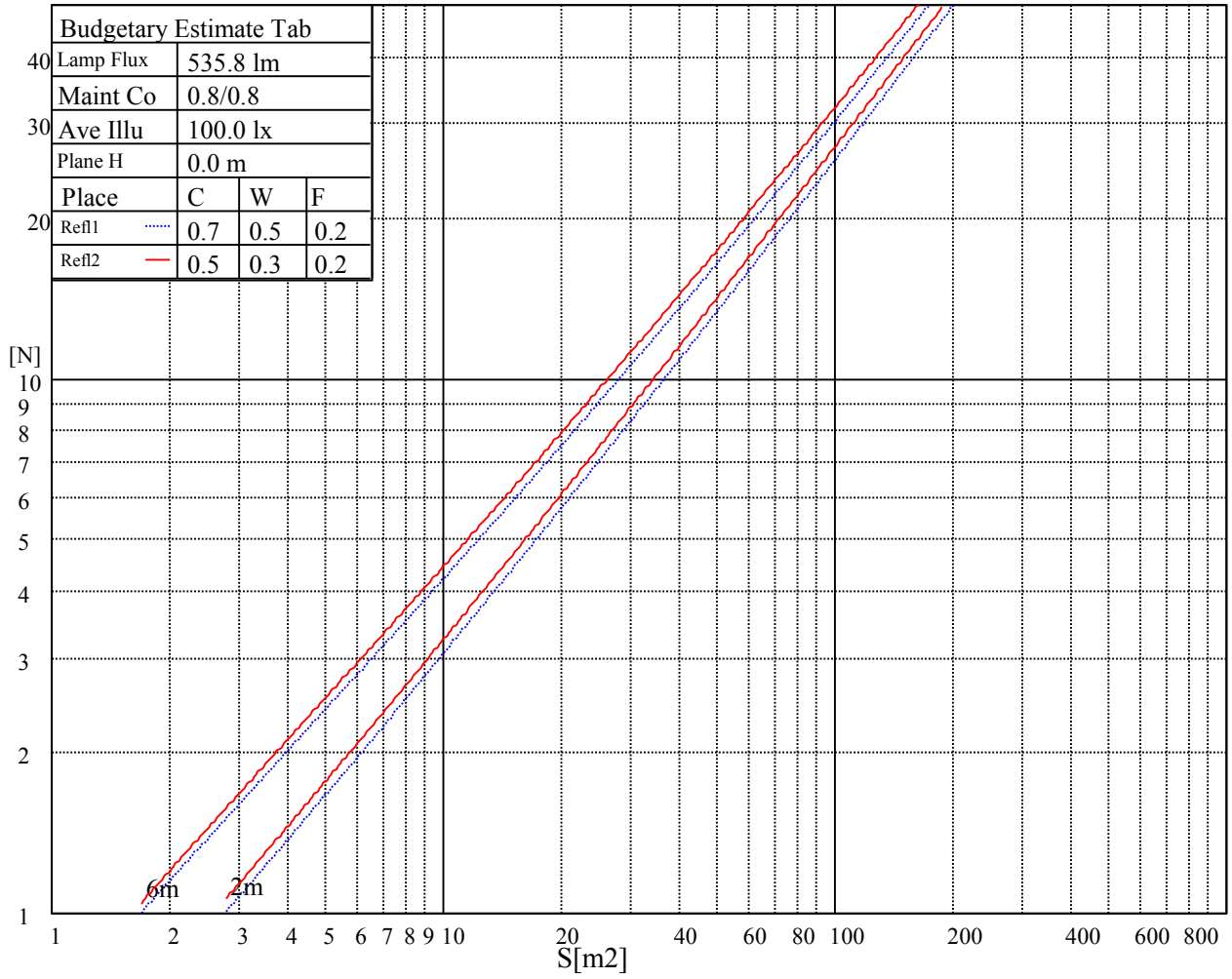
Glare Table

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

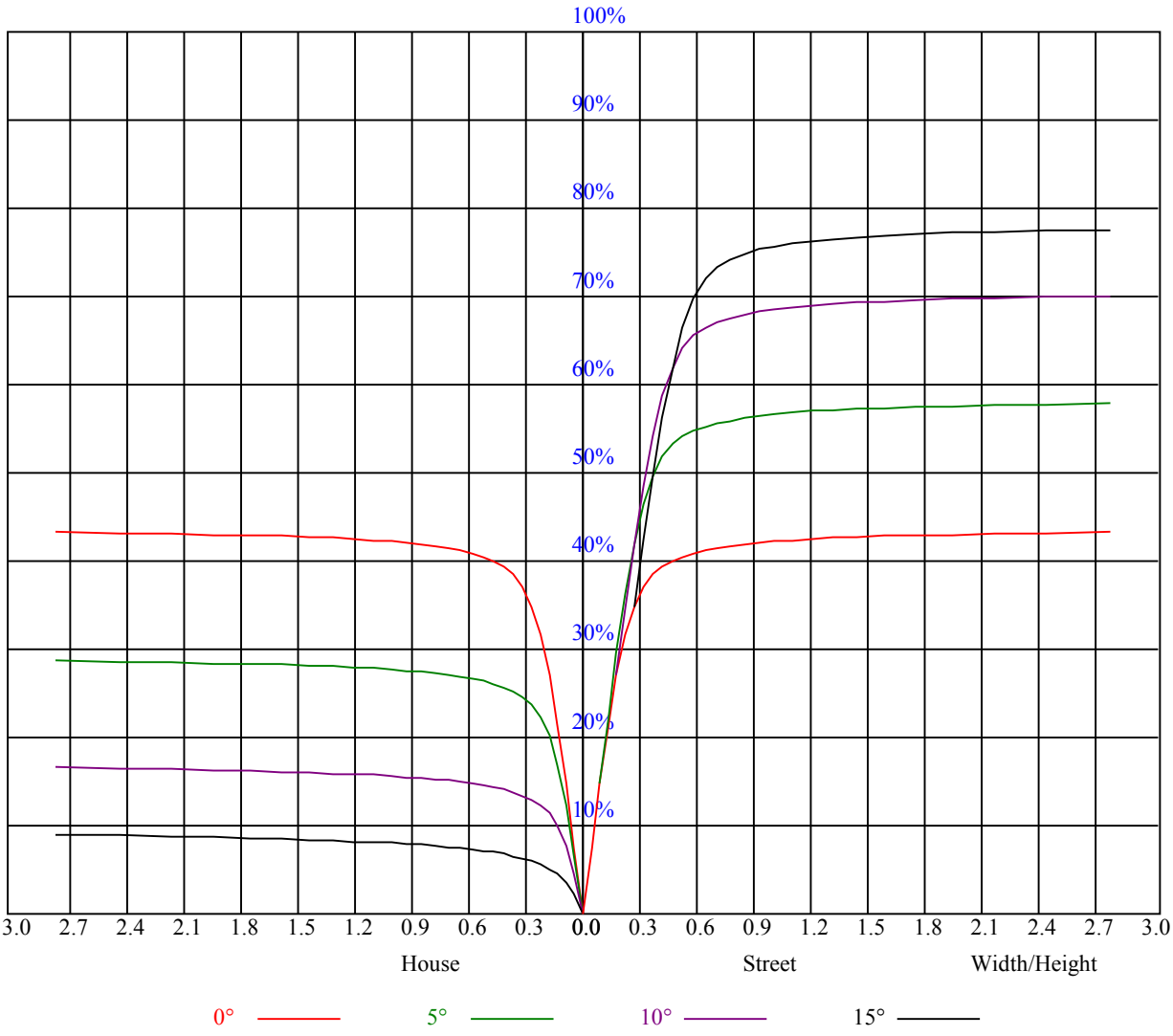


Equipment: GMS1980 Date: 2020/6/23 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.04	1.04	1.04	1.02	1.02	1.02	0.98	0.98	0.98	0.93	0.93	0.93	0.90	0.90	0.90	0.88
1	0.98	0.96	0.94	0.96	0.94	0.93	0.93	0.91	0.90	0.89	0.88	0.87	0.86	0.86	0.85	0.83
2	0.93	0.90	0.87	0.91	0.89	0.86	0.89	0.86	0.84	0.86	0.84	0.83	0.84	0.82	0.81	0.80
3	0.88	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.81	0.79	0.78	0.77
4	0.85	0.81	0.78	0.84	0.80	0.77	0.82	0.79	0.77	0.80	0.78	0.76	0.79	0.77	0.75	0.74
5	0.81	0.77	0.75	0.81	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.77	0.74	0.72	0.71
6	0.79	0.75	0.72	0.78	0.74	0.71	0.77	0.73	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	0.69	0.73	0.71	0.68	0.73	0.70	0.68	0.67
8	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.66	0.71	0.68	0.66	0.65
9	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.63
10	0.69	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.62

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2020/6/23	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	1863.00	1845.00	1819.69	1796.63	1771.31	1739.25	1701.00	1654.88	1591.31
45.0	1864.69	1857.94	1852.31	1843.88	1822.50	1787.63	1740.38	1690.31	1618.31
90.0	1866.94	1878.75	1885.50	1879.31	1862.44	1823.63	1771.31	1711.13	1611.00
135.0	1859.63	1878.19	1895.63	1901.81	1896.19	1877.06	1836.00	1785.38	1708.31
180.0	1863.00	1880.44	1896.19	1899.56	1898.44	1882.69	1837.69	1783.13	1713.38
225.0	1864.69	1867.50	1872.00	1870.31	1868.63	1854.56	1823.06	1780.88	1722.38
270.0	1866.94	1856.81	1841.63	1828.13	1819.13	1799.44	1771.31	1733.06	1681.88
315.0	1859.63	1838.25	1813.50	1791.56	1770.75	1730.81	1693.13	1647.56	1577.25
360.0	1863.00	1845.00	1819.69	1796.63	1771.31	1739.25	1701.00	1654.88	1591.31

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1513.69	1429.88	1317.94	1207.69	1069.88	928.13	806.06	685.13	551.81
45.0	1522.13	1414.69	1277.44	1145.81	995.06	847.69	727.31	612.56	482.06
90.0	1505.25	1365.19	1106.55	1072.63	918.56	754.31	648.96	536.23	399.21
135.0	1602.00	1487.81	1332.00	1189.69	1025.44	864.56	733.50	612.56	476.44
180.0	1600.88	1470.38	1333.13	1115.66	1008.06	869.51	726.19	606.26	482.12
225.0	1652.06	1548.56	1423.69	1290.38	1115.33	978.69	849.04	722.76	577.41
270.0	1616.63	1544.63	1443.38	1337.63	1200.38	1055.25	924.19	797.63	650.81
315.0	1517.06	1425.38	1301.63	1108.07	1060.93	936.79	801.56	683.55	560.36
360.0	1513.69	1429.88	1317.94	1207.69	1069.88	928.13	806.06	685.13	551.81

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	455.63	369.00	285.75	215.83	169.03	130.05	103.28	87.19	74.64
45.0	383.63	303.19	286.88	170.27	133.76	109.69	88.37	76.61	66.88
90.0	325.13	254.59	192.32	147.66	119.25	97.14	81.62	71.44	62.44
135.0	378.00	298.13	218.98	168.19	134.27	107.94	89.94	77.46	67.56
180.0	371.53	290.87	226.07	166.39	132.64	109.63	89.61	78.02	69.36
225.0	474.75	381.21	291.99	220.73	172.41	132.08	104.68	88.14	74.93
270.0	545.06	448.31	342.00	285.75	208.35	163.13	121.89	99.62	83.76
315.0	453.83	368.27	294.13	216.90	169.82	133.43	102.26	85.67	74.36
360.0	455.63	369.00	285.75	215.83	169.03	130.05	103.28	87.19	74.64

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	66.09	58.56	52.43	47.93	43.48	39.60	36.68	34.03	31.05
45.0	58.95	52.93	47.64	43.03	38.87	35.83	32.91	30.54	28.13
90.0	56.14	50.18	44.94	40.95	37.58	33.86	31.33	29.08	26.49
135.0	60.41	54.11	48.43	43.93	39.88	36.45	33.75	31.33	28.74
180.0	61.20	54.51	49.61	44.78	41.06	37.63	34.48	32.12	29.64
225.0	65.98	57.88	51.64	46.91	42.69	38.25	35.27	32.63	29.64
270.0	71.27	61.93	55.52	49.50	44.44	40.56	36.90	34.03	30.83
315.0	64.80	57.32	52.03	46.91	43.03	39.15	35.78	33.08	30.32
360.0	66.09	58.56	52.43	47.93	43.48	39.60	36.68	34.03	31.05

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	28.91	26.89	24.64	22.61	20.98	19.35	17.83	16.65	15.36
45.0	26.04	24.13	22.56	20.48	19.01	17.61	15.98	14.85	13.73
90.0	24.64	22.89	21.15	19.46	18.11	16.71	15.47	14.23	13.16
135.0	26.83	25.14	23.23	21.49	20.03	18.51	17.16	16.09	14.96
180.0	27.28	25.43	23.68	21.71	20.19	18.73	17.33	16.03	14.96
225.0	27.56	25.59	23.29	21.60	20.08	18.39	17.27	15.92	14.63
270.0	28.52	26.44	24.47	22.22	20.64	19.18	17.55	16.37	15.24
315.0	27.96	25.99	24.13	21.99	20.48	19.07	17.66	16.37	15.36
360.0	28.91	26.89	24.64	22.61	20.98	19.35	17.83	16.65	15.36

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	14.40	13.33	12.38	11.59	10.80	10.13	9.62	9.17	8.72
45.0	12.60	11.64	10.80	10.01	9.51	9.00	8.55	8.16	7.76
90.0	12.09	11.14	10.41	9.73	9.23	8.66	8.33	7.99	7.65
135.0	14.06	13.05	12.26	11.48	10.86	10.29	9.84	9.51	9.00
180.0	13.78	12.77	11.93	11.14	10.46	9.96	9.45	9.00	8.66
225.0	13.67	12.60	11.48	10.80	10.13	9.45	9.00	8.61	8.21
270.0	14.12	13.05	12.15	11.25	10.41	9.79	9.17	8.78	8.33
315.0	14.23	13.28	12.43	11.64	11.03	10.35	9.84	9.39	9.00
360.0	14.40	13.33	12.38	11.59	10.80	10.13	9.62	9.17	8.72

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.38	8.04	7.71	7.37	7.14	6.86	6.64	6.41	6.19
45.0	7.43	7.14	6.86	6.53	6.36	6.13	5.96	5.74	5.57
90.0	7.37	7.09	6.92	6.64	6.41	6.24	6.02	5.79	5.63
135.0	8.61	8.21	7.88	7.43	7.09	6.81	6.47	6.24	6.02
180.0	8.27	7.93	7.65	7.31	7.09	6.81	6.53	6.36	6.13
225.0	7.82	7.54	7.20	6.98	6.69	6.47	6.24	6.02	5.85
270.0	7.93	7.65	7.43	7.03	6.81	6.64	6.36	6.13	6.02
315.0	8.55	8.21	7.93	7.48	7.14	6.86	6.58	6.30	6.08
360.0	8.38	8.04	7.71	7.37	7.14	6.86	6.64	6.41	6.19

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.96	5.85	5.57	5.46	5.34	5.12	5.06	4.95	4.84
45.0	5.40	5.23	5.12	5.01	4.84	4.73	4.61	4.50	4.39
90.0	5.46	5.29	5.18	5.23	6.08	7.99	10.46	12.88	15.30
135.0	5.74	5.57	5.40	5.23	5.06	4.89	4.78	4.61	4.50
180.0	5.91	5.74	5.51	5.34	5.23	5.12	4.89	4.84	4.73
225.0	5.68	5.51	5.29	5.18	5.01	4.89	4.78	4.67	4.50
270.0	5.79	5.63	5.46	5.34	5.34	5.40	6.13	7.20	8.83
315.0	5.85	5.63	5.46	5.29	5.18	5.01	4.84	4.73	4.61
360.0	5.96	5.85	5.57	5.46	5.34	5.12	5.06	4.95	4.84

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	4.73	4.67	4.56	4.39	4.28	4.16	3.94	3.71	3.60
45.0	4.28	4.22	4.22	4.22	4.22	4.05	3.77	3.54	3.38
90.0	17.83	19.46	20.19	19.29	17.72	15.92	13.50	10.69	7.99
135.0	4.39	4.22	4.16	3.99	3.88	3.77	3.60	3.49	3.32
180.0	4.56	4.44	4.33	4.16	4.05	3.88	3.71	3.60	3.49
225.0	4.44	4.39	4.50	4.67	4.78	4.89	4.89	4.50	3.83
270.0	11.36	13.56	15.47	17.33	18.06	17.72	16.48	14.79	13.11
315.0	4.44	4.39	4.28	4.11	3.99	3.88	3.71	3.54	3.43
360.0	4.73	4.67	4.56	4.39	4.28	4.16	3.94	3.71	3.60

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	3.43	3.32	3.15	2.98	2.87	2.70	2.53	2.42	2.31
45.0	3.26	3.09	2.98	2.87	2.70	2.36	2.19	2.03	1.97
90.0	5.51	3.88	3.38	3.15	2.87	2.42	2.08	2.03	1.97
135.0	3.21	3.04	2.87	2.70	2.59	2.42	2.31	2.14	2.08
180.0	3.38	3.21	3.04	2.93	2.81	2.64	2.48	2.36	2.19
225.0	3.43	3.26	3.09	2.93	2.81	2.59	2.36	2.25	2.14
270.0	11.14	8.94	6.69	4.22	3.26	3.04	2.87	2.36	2.25
315.0	3.26	3.15	2.98	2.81	2.76	2.59	2.42	2.31	2.19
360.0	3.43	3.32	3.15	2.98	2.87	2.70	2.53	2.42	2.31

Intensity data(cd)

C/γ(°)	90.0
0.0	2.25
45.0	1.97
90.0	1.97
135.0	2.08
180.0	2.19
225.0	2.03
270.0	2.08
315.0	2.08
360.0	2.25