NATA LIGHTING CO.,LTD.
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Nata

LumCAT: 3-2500-L
Luminaire: 92.70.129.00
Report No: 200521-B010
Test No: 200521-C010
LampCAT: CREE CXA1820
Lamp flux(lm): 1787.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 36.2000
Current(A): 0.5000
Power (W): 18.1000
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1729.78
Efficiency(%): 96.80%
Lumens(lm)/Power(W): 95.57
Central intensity(cd): 17260.310
Maximum intensity(cd): 17260.310
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=13.5
[C90/270]Total=13.5
Field angle(10%Imax): [C0/180]Total=26.7
[C90/270]Total=26.7
Maximum s/h(1/2): C0_180=0.23 C90_270=0.23
Maximum s/h(1/4): C0_180=0.23 C90_270=0.23
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 96.80%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.575%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	17260.313	0.000	0	.000%	.000%
1.0	17000.156	16.393	16.393	.917%	.948%
2.0	16302.656	47.799	64.192	2.675%	3.711%
3.0	15020.859	74.916	139.108	4.192%	8.042%
4.0	13519.336	95.533	234.641	5.346%	13.565%
5.0	11642.766	108.246	342.887	6.057%	19.823%
6.0	10100.109	114.265	457.152	6.394%	26.428%
7.0	8174.320	113.429	570.581	6.347%	32.986%
8.0	6539.906	105.307	675.888	5.893%	39.074%
9.0	4948.523	93.107	768.995	5.210%	44.456%
10.0	3755.953	78.772	847.767	4.408%	49.010%
11.0	2944.617	66.952	914.72	3.747%	52.881%
12.0	2290.359	57.226	971.946	3.202%	56.189%
13.0	1857.797	49.228	1021.174	2.755%	59.035%
14.0	1482.715	42.758	1063.932	2.393%	61.507%
15.0	1258.193	37.628	1101.561	2.106%	63.682%
16.0	1089.232	34.396	1135.957	1.925%	65.671%
17.0	959.407	31.903	1167.86	1.785%	67.515%
18.0	861.630	30.025	1197.885	1.680%	69.251%
19.0	788.808	28.714	1226.599	1.607%	70.911%
20.0	733.718	27.866	1254.465	1.559%	72.522%
21.0	690.525	27.348	1281.814	1.530%	74.103%
22.0	660.691	27.153	1308.967	1.519%	75.673%
23.0	634.774	27.182	1336.149	1.521%	77.244%
24.0	614.461	27.313	1363.462	1.528%	78.823%
25.0	597.438	27.556	1391.018	1.542%	80.416%
26.0	583.791	27.883	1418.901	1.560%	82.028%
27.0	570.600	28.242	1447.144	1.580%	83.661%
28.0	558.738	28.592	1475.736	1.600%	85.314%
29.0	546.870	28.926	1504.662	1.619%	86.986%
30.0	532.519	29.143	1533.805	1.631%	88.671%
31.0	503.402	28.828	1562.633	1.613%	90.337%
32.0	453.389	27.411	1590.044	1.534%	91.922%
33.0	389.559	24.834	1614.878	1.390%	93.358%
34.0	316.364	21.363	1636.241	1.195%	94.593%
35.0	252.274	17.660	1653.901	.988%	95.613%
36.0	171.633	13.497	1667.398	.755%	96.394%
37.0	104.984	9.022	1676.42	.505%	96.915%

Nata 3-2500-L

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	54.633	5.328	1681.748	.298%	97.223%
39.0	27.260	2.795	1684.543	.156%	97.385%
40.0	18.689	1.603	1686.145	.090%	97.478%
41.0	16.102	1.239	1687.384	.069%	97.549%
42.0	14.632	1.117	1688.501	.062%	97.614%
43.0	13.683	1.049	1689.55	.059%	97.674%
44.0	13.085	1.010	1690.56	.057%	97.733%
45.0	12.705	0.991	1691.551	.055%	97.790%
46.0	12.333	0.979	1692.53	.055%	97.847%
47.0	11.960	0.966	1693.497	.054%	97.903%
48.0	11.623	0.953	1694.45	.053%	97.958%
49.0	11.138	0.935	1695.385	.052%	98.012%
50.0	10.856	0.917	1696.302	.051%	98.065%
51.0	10.603	0.908	1697.21	.051%	98.117%
52.0	10.209	0.893	1698.103	.050%	98.169%
53.0	9.928	0.876	1698.979	.049%	98.219%
54.0	9.921	0.875	1699.853	.049%	98.270%
55.0	9.816	0.881	1700.734	.049%	98.321%
56.0	9.520	0.874	1701.608	.049%	98.371%
57.0	9.471	0.868	1702.477	.049%	98.422%
58.0	9.520	0.878	1703.355	.049%	98.472%
59.0	9.422	0.886	1704.24	.050%	98.524%
60.0	9.436	0.891	1705.131	.050%	98.575%
61.0	9.422	0.900	1706.031	.050%	98.627%
62.0	9.415	0.908	1706.939	.051%	98.680%
63.0	9.338	0.912	1707.851	.051%	98.732%
64.0	9.253	0.912	1708.763	.051%	98.785%
65.0	9.211	0.914	1709.677	.051%	98.838%
66.0	9.162	0.917	1710.594	.051%	98.891%
67.0	8.958	0.911	1711.505	.051%	98.944%
68.0	8.754	0.897	1712.402	.050%	98.995%
69.0	8.571	0.884	1713.286	.049%	99.047%
70.0	8.353	0.869	1714.155	.049%	99.097%
71.0	8.058	0.848	1715.003	.047%	99.146%
72.0	7.847	0.827	1715.83	.046%	99.194%
73.0	7.643	0.810	1716.64	.045%	99.240%
74.0	7.509	0.797	1717.437	.045%	99.287%
75.0	7.425	0.789	1718.226	.044%	99.332%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.383	0.786	1719.012	.044%	99.378%
77.0	7.355	0.786	1719.798	.044%	99.423%
78.0	7.334	0.786	1720.584	.044%	99.468%
79.0	7.277	0.785	1721.369	.044%	99.514%
80.0	7.242	0.783	1722.152	.044%	99.559%
81.0	7.186	0.780	1722.932	.044%	99.604%
82.0	7.158	0.778	1723.71	.044%	99.649%
83.0	7.095	0.775	1724.485	.043%	99.694%
84.0	7.045	0.770	1725.255	.043%	99.739%
85.0	7.010	0.767	1726.022	.043%	99.783%
86.0	6.926	0.762	1726.784	.043%	99.827%
87.0	6.891	0.756	1727.54	.042%	99.871%
88.0	6.827	0.751	1728.291	.042%	99.914%
89.0	6.778	0.746	1729.037	.042%	99.957%
90.0	6.736	0.741	1729.778	.041%	100.000%

Zonal flux distribution table

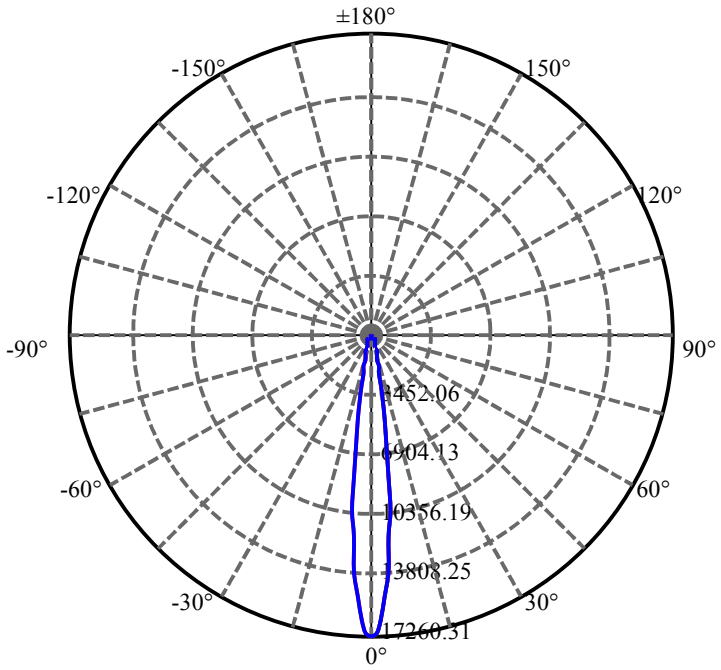
ZONAL LUMEN SUMMARY

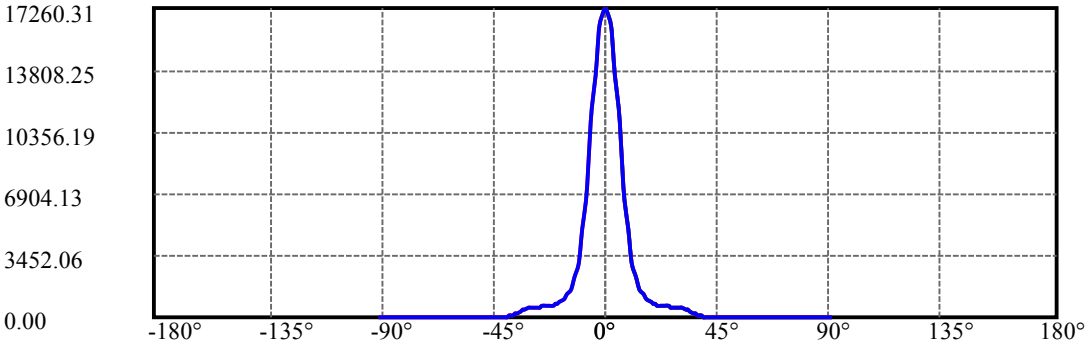
Zone	Lumens	%Lamp	%Fixt
0-30	1533.81	85.83%	88.67%
0-40	1686.15	94.36%	97.48%
0-60	1705.13	95.42%	98.58%
0-90	1729.04	96.76%	99.96%
0-120	1729.04	96.76%	99.96%
0-180	1729.78	96.80%	100.00%
60-90	24.80	1.39%	1.43%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-24.74	1383.82	77.44%	80.00%

ZONAL LUMEN SUMMARY

0-10	847.77
10-20	406.70
20-30	279.34
30-40	152.34
40-50	10.16
50-60	8.83
60-70	9.02
70-80	8.00
80-90	6.89
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):

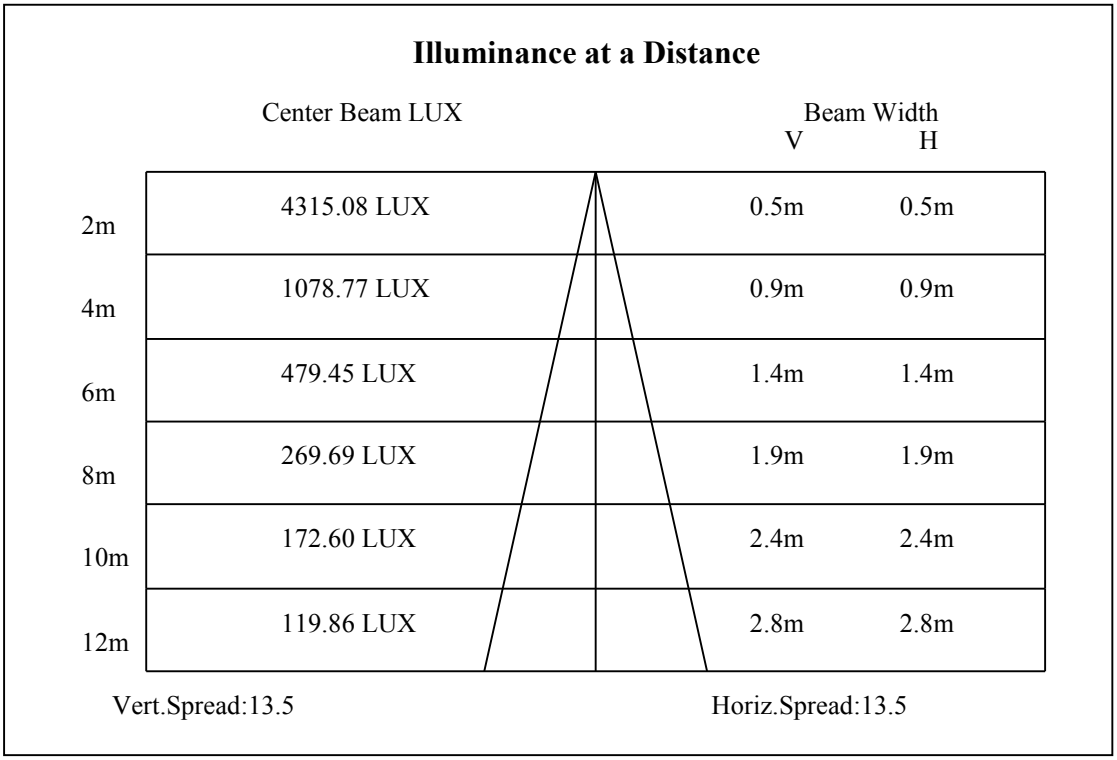
C0/C180:

C90/C270:

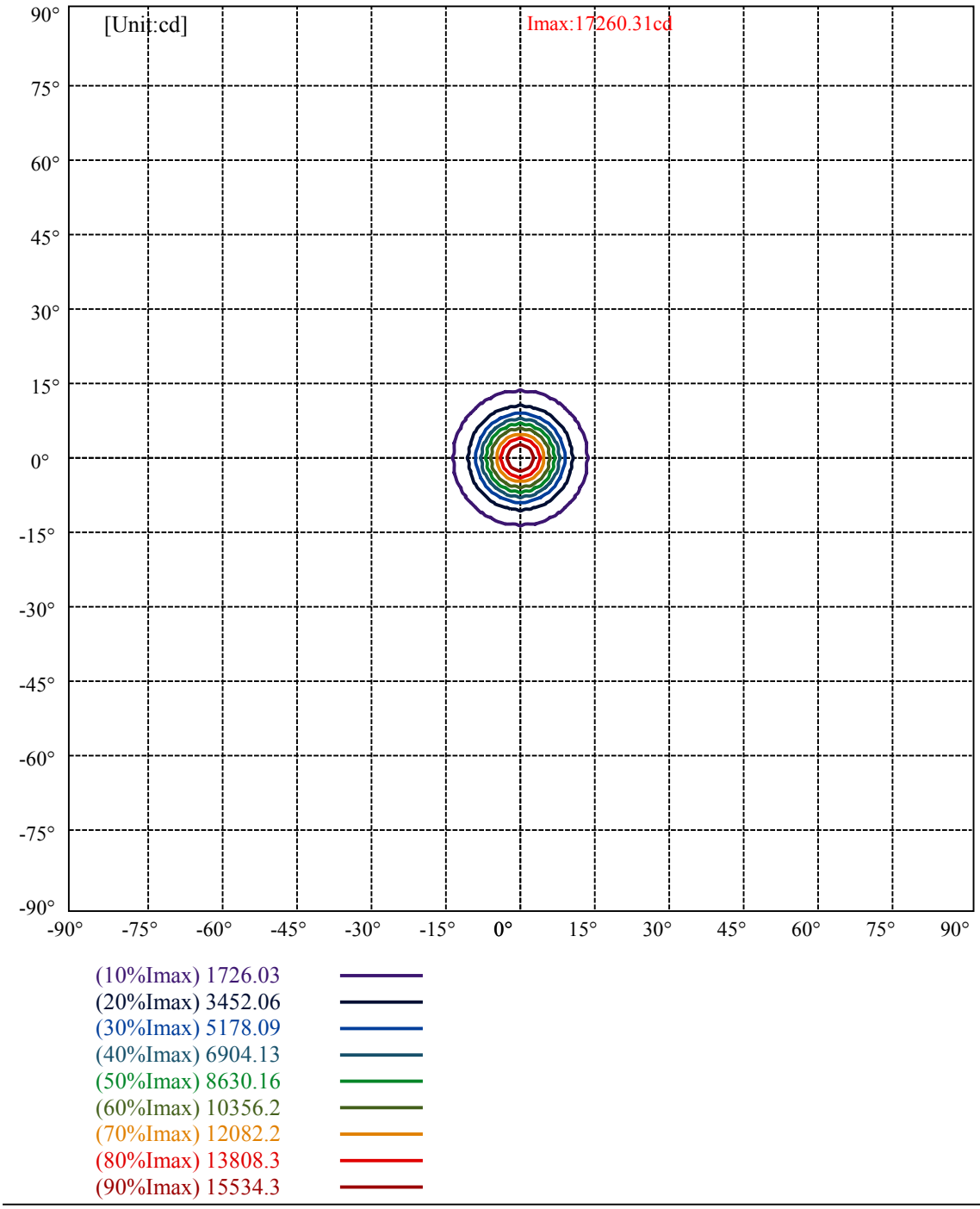
Field angle(10%Imax):C0/180Left:13.4 Right:13.4
:C90/270Left:13.4 Right:13.4

Beam Angle(50%Imax):C0/180Left:6.8 Right:6.8
:C90/270Left:6.8 Right:6.8

Lux distance Curve



ISO-Intensity(V-H)



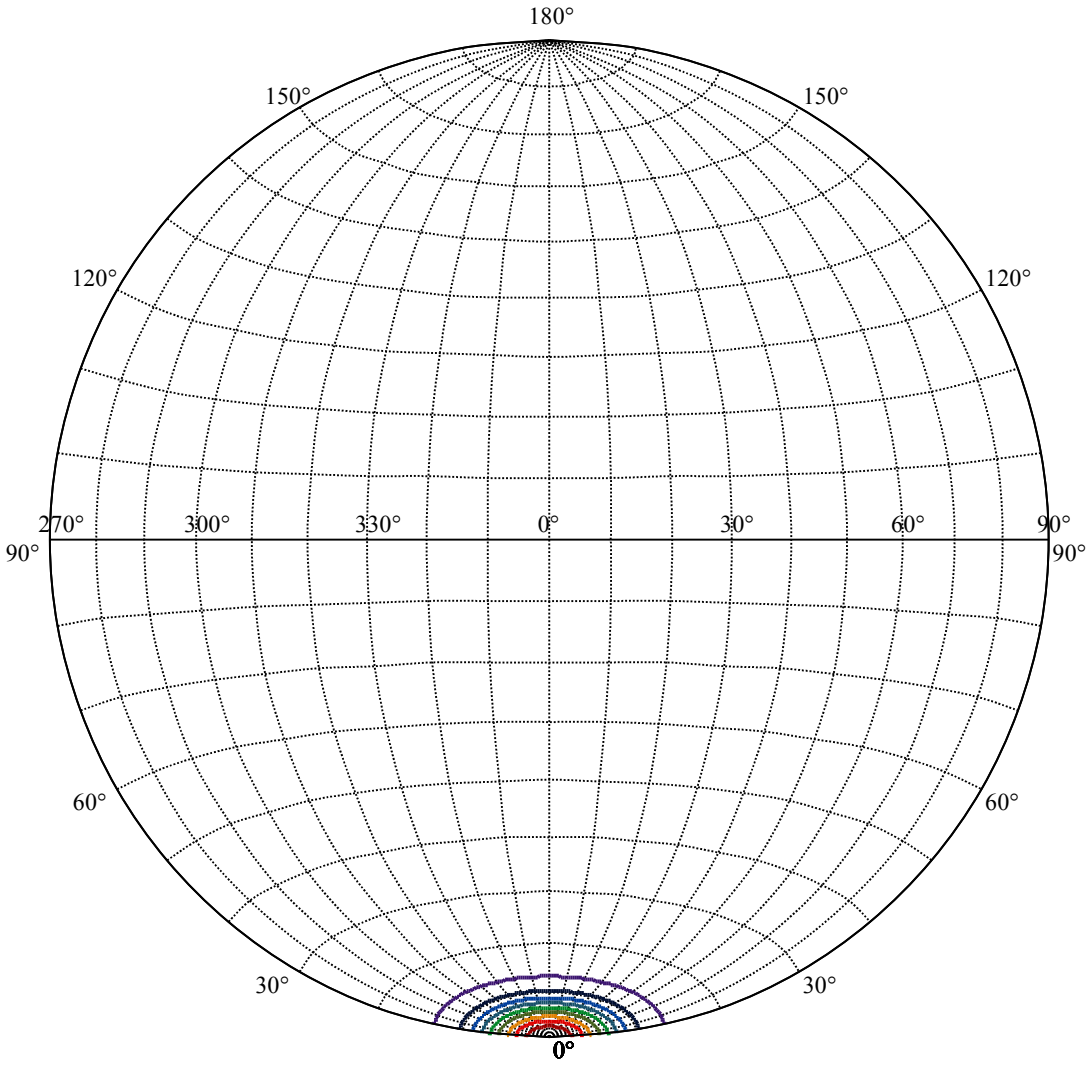
(10%Imax) 1726.03
(20%Imax) 3452.06
(30%Imax) 5178.09
(40%Imax) 6904.13
(50%Imax) 8630.16
(60%Imax) 10356.2
(70%Imax) 12082.2
(80%Imax) 13808.3
(90%Imax) 15534.3

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/5/21
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:17260.31

(10%Imax) 1726.03
(20%Imax) 3452.06
(30%Imax) 5178.09
(40%Imax) 6904.13
(50%Imax) 8630.16
(60%Imax) 10356.2
(70%Imax) 12082.2
(80%Imax) 13808.3
(90%Imax) 15534.3

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/5/21
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

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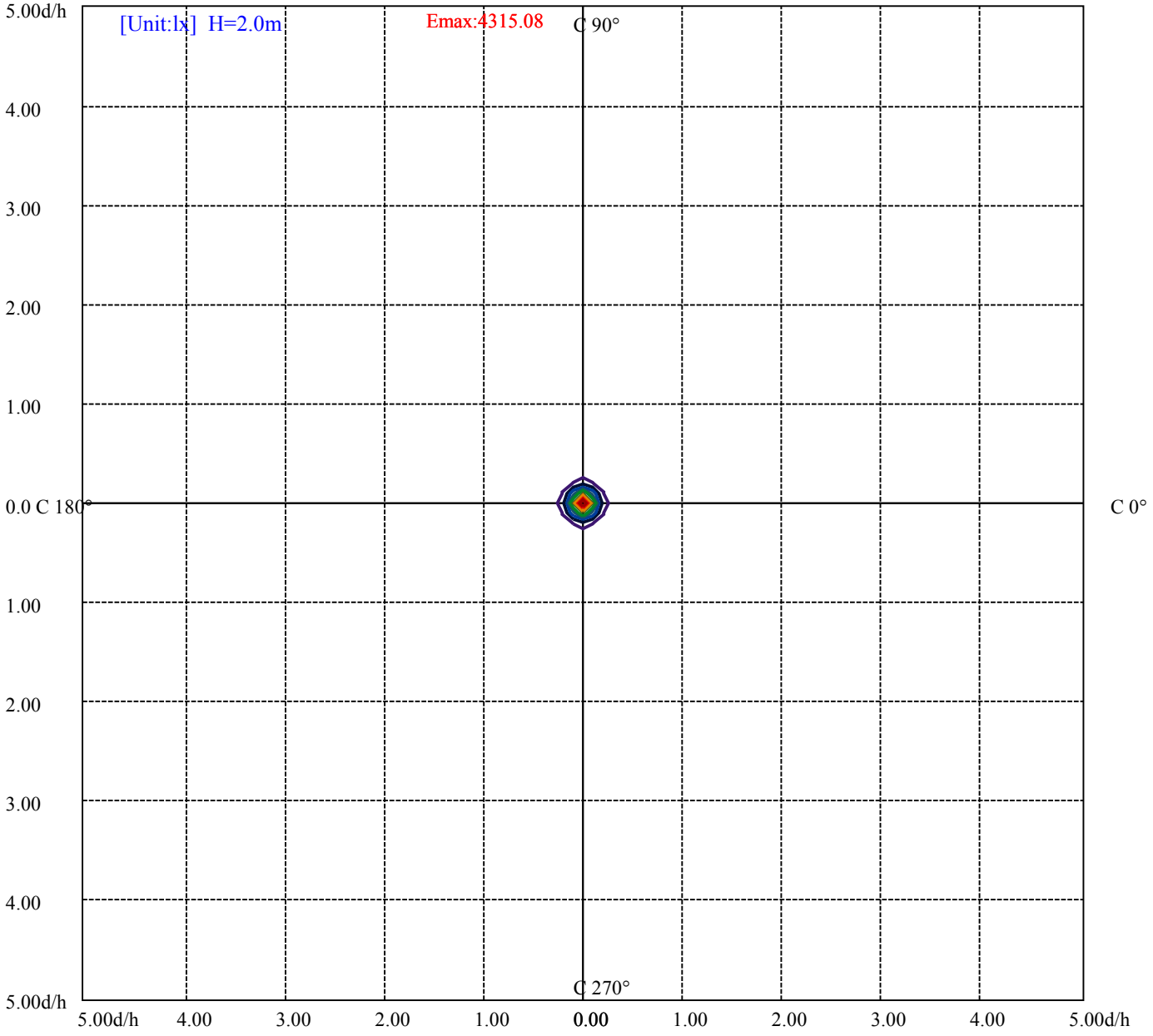
ISO illuminance diagram

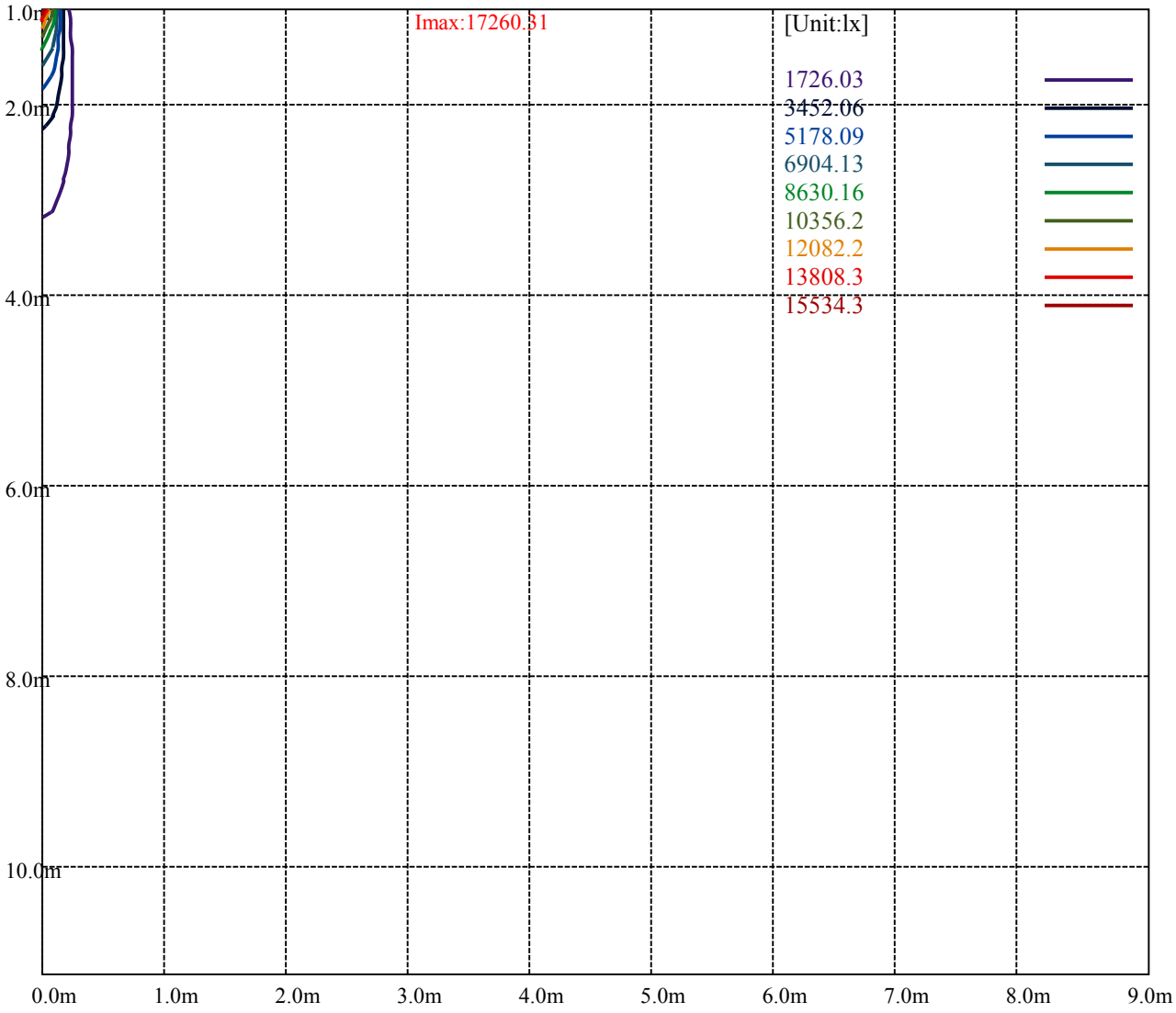


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/5/21
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/5/21
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

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Luminance Limitting Curve(no luminous side)

Luminance Table

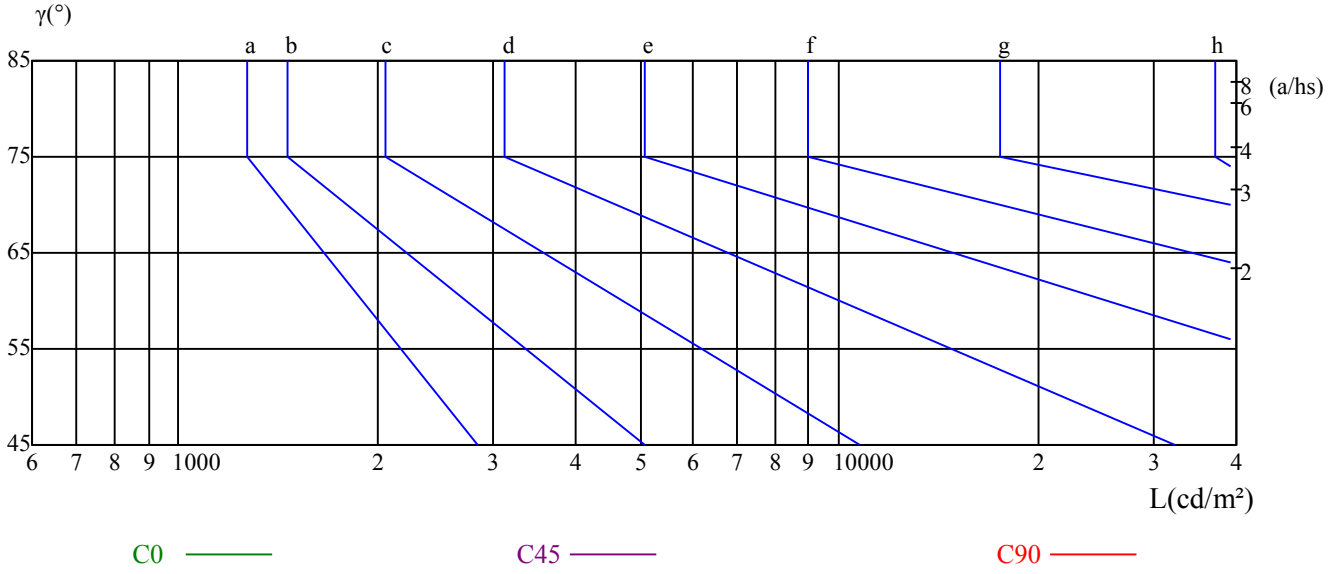
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

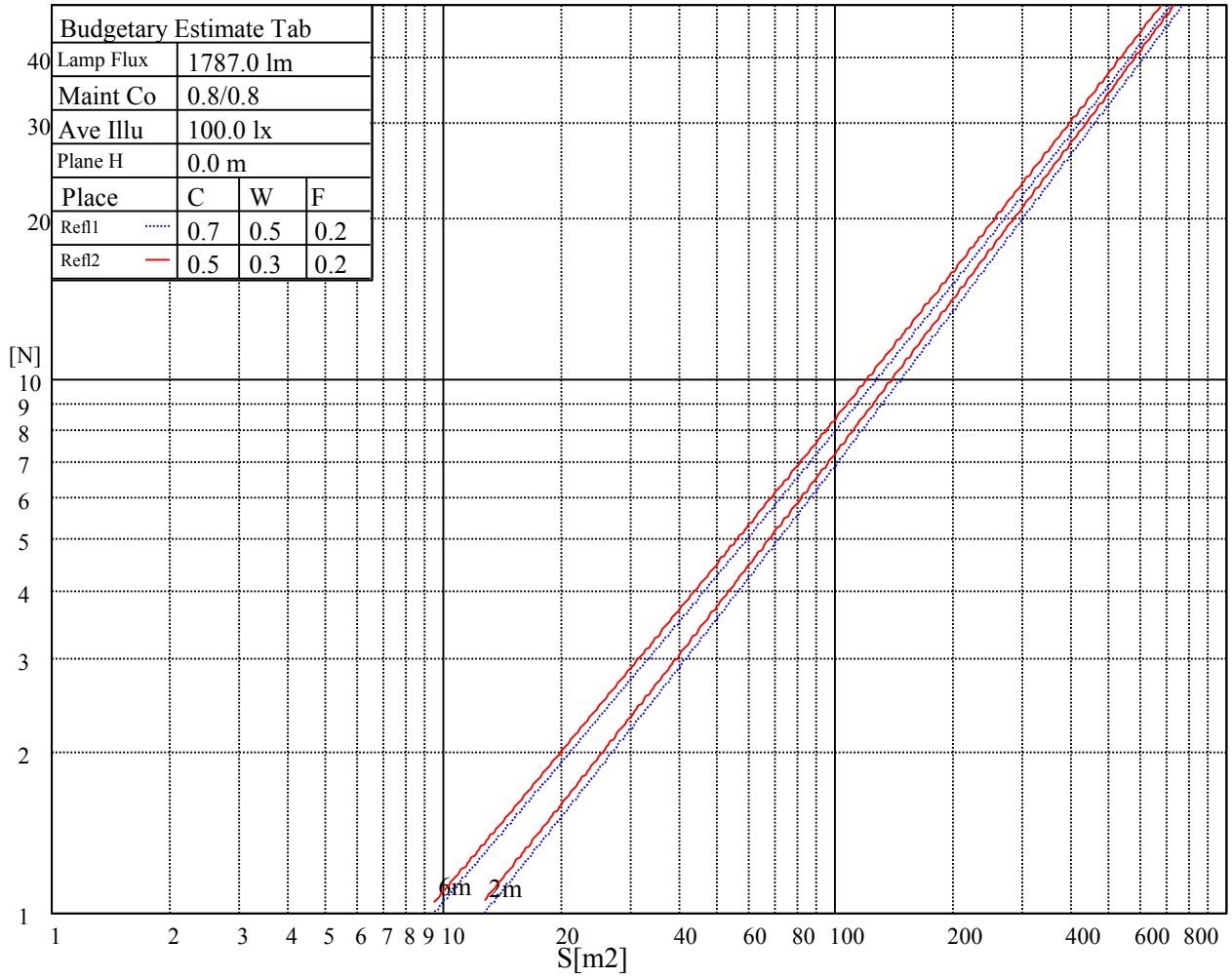


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/5/21
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Budgetary Estimate Table

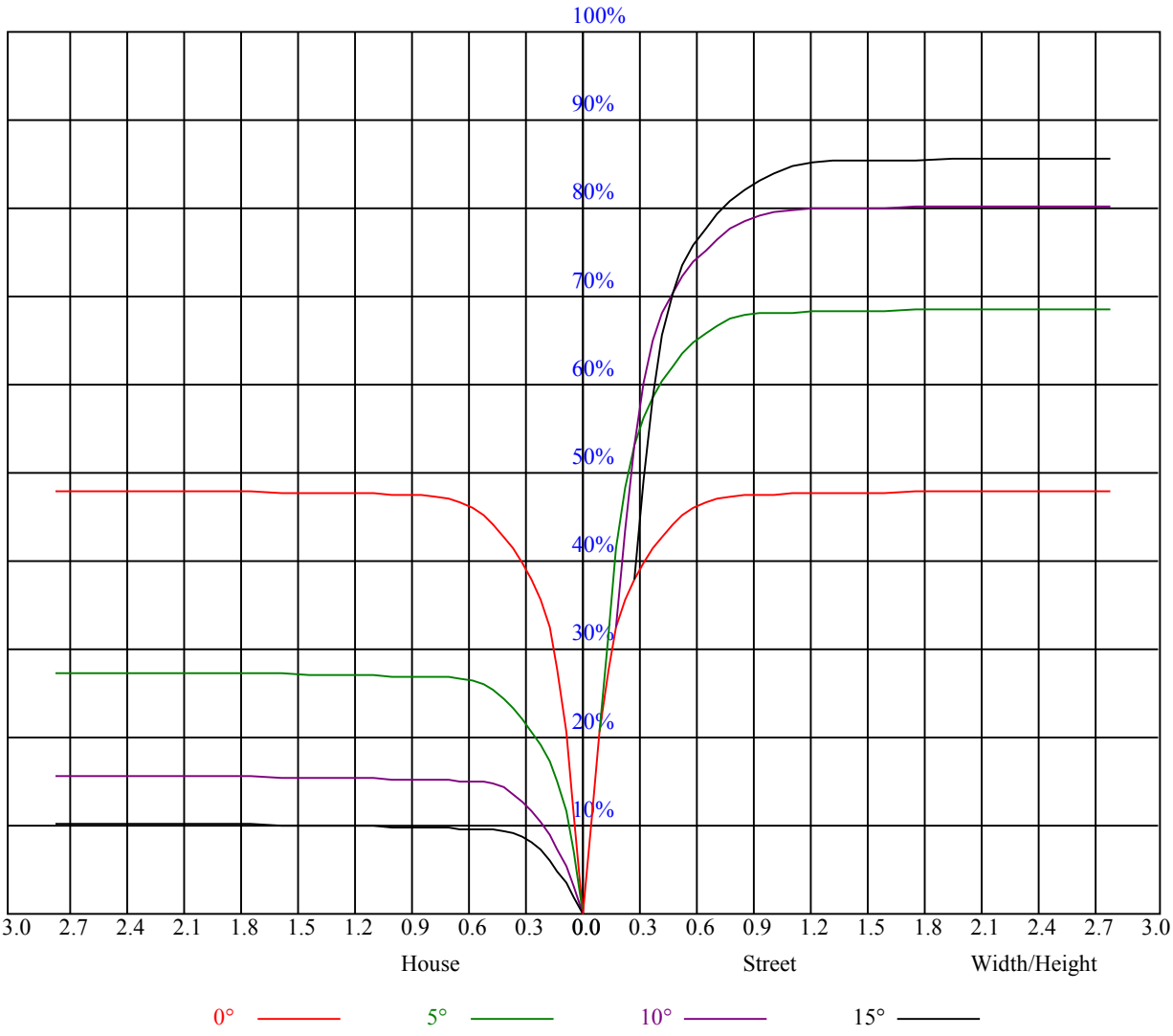


Equipment: GMS1980 Date: 2020/5/21 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.15	1.15	1.15	1.13	1.13	1.13	1.08	1.08	1.08	1.03	1.03	1.03	0.99	0.99	0.99	0.97
1	1.09	1.07	1.05	1.07	1.05	1.04	1.03	1.02	1.01	1.00	0.99	0.98	0.96	0.96	0.95	0.93
2	1.04	1.01	0.98	1.02	1.00	0.97	0.99	0.97	0.95	0.96	0.95	0.93	0.94	0.93	0.91	0.90
3	0.99	0.96	0.93	0.98	0.95	0.92	0.96	0.93	0.91	0.94	0.91	0.90	0.92	0.90	0.88	0.87
4	0.96	0.92	0.89	0.95	0.91	0.88	0.93	0.90	0.87	0.91	0.88	0.86	0.89	0.87	0.85	0.84
5	0.92	0.88	0.85	0.91	0.88	0.85	0.90	0.87	0.84	0.88	0.86	0.84	0.87	0.85	0.83	0.82
6	0.89	0.85	0.82	0.89	0.85	0.82	0.87	0.84	0.82	0.86	0.83	0.81	0.85	0.83	0.81	0.80
7	0.87	0.83	0.80	0.86	0.82	0.80	0.85	0.82	0.79	0.84	0.81	0.79	0.83	0.81	0.79	0.78
8	0.84	0.80	0.78	0.84	0.80	0.77	0.83	0.80	0.77	0.82	0.79	0.77	0.81	0.79	0.77	0.76
9	0.82	0.78	0.76	0.82	0.78	0.75	0.81	0.78	0.75	0.80	0.77	0.75	0.79	0.77	0.75	0.74
10	0.80	0.76	0.74	0.80	0.76	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.78	0.75	0.73	0.72

Coefficient Utilization Curve



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/5/21
Humidity(%): 65.0%

Operator: NT07
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	16886.25	17499.38	17606.25	17100.00	16115.63	14416.88	12819.38	11115.00	9157.50
45.0	17398.13	17679.38	17313.75	16425.00	15288.75	13696.88	11818.13	10068.75	8516.25
90.0	17420.63	17010.00	16312.50	15030.00	13303.13	11041.31	9941.06	7928.44	6242.06
135.0	17336.25	16762.50	15862.50	14467.50	13038.75	11216.25	9450.00	7430.63	5827.50
180.0	16886.25	15918.75	14484.38	12273.75	11138.63	9150.75	7374.38	5536.69	4094.44
225.0	17398.13	16554.38	15440.63	13876.88	11217.94	10324.13	8520.19	6415.88	4951.69
270.0	17420.63	17229.38	16582.50	15255.00	13809.38	12172.50	9973.13	8218.13	6541.88
315.0	17336.25	17347.50	16818.75	15738.75	14242.50	11123.44	10904.63	8681.06	6987.94
360.0	16886.25	17499.38	17606.25	17100.00	16115.63	14416.88	12819.38	11115.00	9157.50

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7228.13	5658.75	4179.38	3223.13	2857.50	1971.56	1644.19	1359.00	1148.06
45.0	6193.13	4730.63	3712.50	2863.13	2106.00	1731.94	1427.06	1202.63	1052.44
90.0	4804.31	3459.94	2718.00	2189.81	1710.56	1431.56	1105.76	1050.24	900.11
135.0	4230.00	3279.38	2908.13	2065.50	1674.00	1419.75	1245.94	1049.06	947.81
180.0	3171.94	2449.69	1949.63	1621.13	1377.00	1116.84	1024.03	925.82	849.43
225.0	3783.94	2837.25	2206.13	1810.13	1517.63	1204.31	1107.56	991.13	890.49
270.0	4736.25	3605.63	2880.00	2165.63	1724.63	1438.31	1197.56	1036.13	901.69
315.0	5440.50	4026.38	3003.19	2384.44	1895.06	1547.44	1313.44	1099.86	985.22
360.0	7228.13	5658.75	4179.38	3223.13	2857.50	1971.56	1644.19	1359.00	1148.06

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1007.44	902.81	810.56	756.00	716.06	677.81	655.31	636.19	621.00
45.0	920.81	837.56	764.44	709.31	671.63	638.44	614.25	595.13	579.94
90.0	810.96	746.49	690.53	648.68	620.83	594.39	574.93	556.43	540.34
135.0	875.81	792.00	748.69	708.19	681.19	657.00	636.75	621.00	608.06
180.0	773.83	726.98	692.33	658.01	636.64	619.54	602.38	589.61	578.64
225.0	815.79	763.14	718.48	682.99	658.63	635.06	617.79	601.59	588.66
270.0	807.75	743.63	691.88	652.50	624.38	601.88	579.38	563.63	550.69
315.0	880.65	797.85	752.85	708.53	676.18	654.08	634.89	615.94	603.00
360.0	1007.44	902.81	810.56	756.00	716.06	677.81	655.31	636.19	621.00

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	604.69	593.44	582.19	571.50	561.38	547.88	501.19	434.25	364.50
45.0	565.31	554.63	540.56	528.75	517.50	487.69	434.25	365.63	298.13
90.0	529.37	515.76	503.44	495.06	473.12	417.71	360.51	298.01	219.26
135.0	594.56	581.06	572.06	561.94	520.88	464.06	399.94	305.44	284.06
180.0	564.47	555.64	544.95	507.77	451.13	374.68	290.70	218.08	148.67
225.0	575.49	563.68	551.36	533.14	485.33	408.66	337.73	261.90	178.65
270.0	538.31	525.38	513.00	502.31	477.00	430.31	364.50	300.94	253.24
315.0	592.59	580.33	567.39	559.69	540.90	496.13	427.67	346.67	271.69
360.0	604.69	593.44	582.19	571.50	561.38	547.88	501.19	434.25	364.50

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	290.25	203.79	124.54	58.95	24.98	16.14	14.46	12.94	11.64
45.0	244.41	151.09	84.43	35.16	18.00	16.20	14.57	13.16	12.43
90.0	157.22	98.27	46.97	23.79	20.53	18.39	16.88	15.81	15.02
135.0	155.81	86.96	35.27	19.80	18.17	16.76	15.08	14.06	13.50
180.0	72.39	31.22	16.65	14.85	13.44	12.04	11.19	10.80	10.52
225.0	104.06	52.43	20.42	15.53	14.29	12.43	11.53	11.19	10.91
270.0	161.27	94.95	48.04	23.57	19.80	18.11	16.26	15.81	15.47
315.0	187.65	121.16	60.75	26.44	20.31	18.73	17.10	15.69	15.19
360.0	290.25	203.79	124.54	58.95	24.98	16.14	14.46	12.94	11.64

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	10.97	10.63	10.29	9.96	9.62	9.34	9.11	8.94	8.78
45.0	12.21	11.81	11.42	11.25	10.74	10.58	10.58	10.07	9.73
90.0	14.91	14.79	14.40	13.67	12.94	12.77	12.60	12.09	11.59
135.0	12.99	12.32	11.98	11.64	11.25	10.97	10.58	10.24	10.07
180.0	10.18	9.96	9.68	9.51	9.34	9.11	8.94	8.83	8.78
225.0	10.58	10.35	10.13	9.96	9.68	9.17	8.89	8.72	8.49
270.0	14.91	14.46	14.46	14.12	12.99	12.83	12.60	11.76	11.59
315.0	14.91	14.34	13.33	12.88	12.54	12.09	11.53	11.03	10.41
360.0	10.97	10.63	10.29	9.96	9.62	9.34	9.11	8.94	8.78

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.66	8.61	8.55	8.49	8.49	8.49	8.55	8.66	8.72
45.0	9.73	9.62	9.45	9.45	9.51	9.56	9.56	9.62	9.79
90.0	12.15	11.93	10.80	10.91	10.91	10.41	10.52	10.29	10.07
135.0	9.84	9.68	9.56	9.39	9.34	9.17	9.00	8.83	8.83
180.0	8.72	8.72	8.72	8.72	8.78	8.83	8.89	8.89	8.94
225.0	8.44	8.38	8.38	8.38	8.38	8.33	8.38	8.49	8.55
270.0	11.76	11.70	10.97	10.80	11.19	11.03	11.25	11.48	11.31
315.0	10.07	9.90	9.73	9.62	9.56	9.56	9.34	9.11	9.11
360.0	8.66	8.61	8.55	8.49	8.49	8.49	8.55	8.66	8.72

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.66	8.72	8.66	8.72	8.66	8.61	8.61	8.55	8.38
45.0	9.96	9.90	9.90	9.90	9.96	9.56	9.34	9.00	8.33
90.0	9.96	9.96	9.51	9.34	8.61	8.10	7.93	7.88	7.82
135.0	8.78	8.83	8.89	8.89	8.78	8.66	8.49	8.21	7.88
180.0	8.94	9.00	8.94	8.94	8.89	8.78	8.55	8.33	8.10
225.0	8.61	8.66	8.72	8.66	8.55	8.49	8.27	7.99	7.71
270.0	10.74	9.96	10.07	9.90	9.51	9.28	8.94	8.61	8.27
315.0	9.06	9.00	9.00	8.94	8.72	8.55	8.44	8.27	7.99
360.0	8.66	8.72	8.66	8.72	8.66	8.61	8.61	8.55	8.38

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.16	7.93	7.76	7.59	7.48	7.48	7.43	7.37	7.37
45.0	8.04	7.65	7.37	7.26	7.20	7.20	7.14	7.09	7.03
90.0	7.76	7.71	7.65	7.65	7.59	7.54	7.54	7.48	7.43
135.0	7.65	7.43	7.31	7.20	7.20	7.14	7.14	7.09	7.03
180.0	7.88	7.82	7.76	7.71	7.71	7.71	7.71	7.65	7.65
225.0	7.48	7.31	7.20	7.20	7.14	7.09	7.09	7.03	7.03
270.0	8.04	7.76	7.65	7.54	7.54	7.54	7.48	7.43	7.37
315.0	7.76	7.54	7.37	7.26	7.20	7.14	7.14	7.09	7.03
360.0	8.16	7.93	7.76	7.59	7.48	7.48	7.43	7.37	7.37

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.31	7.31	7.26	7.20	7.20	7.09	7.09	7.03	6.92
45.0	7.03	7.03	6.98	6.98	6.98	6.92	6.92	6.86	6.86
90.0	7.31	7.26	7.09	7.03	6.98	6.86	6.81	6.75	6.69
135.0	7.03	6.98	6.98	6.92	6.92	6.86	6.86	6.81	6.75
180.0	7.54	7.48	7.43	7.37	7.26	7.03	6.92	6.75	6.69
225.0	7.03	7.03	6.98	6.98	6.92	6.92	6.86	6.81	6.75
270.0	7.26	7.20	7.09	6.98	6.92	6.86	6.81	6.81	6.75
315.0	6.98	6.98	6.98	6.92	6.92	6.86	6.86	6.81	6.81
360.0	7.31	7.31	7.26	7.20	7.20	7.09	7.09	7.03	6.92

Intensity data(cd)

C/γ(°)	90.0
0.0	6.86
45.0	6.75
90.0	6.69
135.0	6.69
180.0	6.69
225.0	6.69
270.0	6.75
315.0	6.75
360.0	6.86