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

LumCAT: 1657-S
Luminaire: 92.70.123.00
Report No: NATA0100
Test No: GC2019120514
LampCAT: LUMINUS CXM-4-AC40
Lamp flux(lm): 589.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 34.5000
Current(A): 0.1470
Power (W): 5.0700
PF: 1.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 521.07
Efficiency(%): 88.47%
Lumens(lm)/Power(W): 102.77
Central intensity(cd): 3255.469
Maximum intensity(cd): 3255.469
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=17.1
[C90/270]Total=17.1
Field angle(10%Imax): [C0/180]Total=33.4
[C90/270]Total=33.4
Maximum s/h(1/2): C0_180=0.29 C90_270=0.29
Maximum s/h(1/4): C0_180=0.30 C90_270=0.30
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.47%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.215%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3255.469	0.000	0	.000%	.000%
1.0	3224.039	3.100	3.1	.526%	.595%
2.0	3143.109	9.139	12.239	1.552%	2.349%
3.0	2999.742	14.692	26.931	2.494%	5.168%
4.0	2797.594	19.406	46.336	3.295%	8.893%
5.0	2571.891	23.099	69.436	3.922%	13.326%
6.0	2301.117	25.609	95.044	4.348%	18.240%
7.0	2030.203	26.884	121.929	4.564%	23.400%
8.0	1781.648	27.281	149.21	4.632%	28.635%
9.0	1507.950	26.660	175.87	4.526%	33.752%
10.0	1279.561	25.226	201.096	4.283%	38.593%
11.0	1080.858	23.585	224.681	4.004%	43.120%
12.0	897.630	21.628	246.309	3.672%	47.270%
13.0	717.012	19.162	265.471	3.253%	50.948%
14.0	571.929	16.498	281.969	2.801%	54.114%
15.0	462.769	14.205	296.174	2.412%	56.840%
16.0	372.769	12.243	308.417	2.079%	59.190%
17.0	307.223	10.589	319.006	1.798%	61.222%
18.0	270.837	9.531	328.537	1.618%	63.051%
19.0	252.619	9.107	337.644	1.546%	64.799%
20.0	232.263	8.875	346.519	1.507%	66.502%
21.0	223.509	8.752	355.271	1.486%	68.181%
22.0	216.991	8.852	364.123	1.503%	69.880%
23.0	211.739	8.996	373.119	1.527%	71.607%
24.0	206.733	9.149	382.268	1.553%	73.363%
25.0	202.634	9.308	391.576	1.580%	75.149%
26.0	199.392	9.490	401.066	1.611%	76.970%
27.0	195.954	9.672	410.738	1.642%	78.826%
28.0	192.220	9.828	420.566	1.669%	80.713%
29.0	189.204	9.979	430.545	1.694%	82.628%
30.0	185.723	10.123	440.668	1.719%	84.570%
31.0	181.997	10.233	450.901	1.737%	86.534%
32.0	174.030	10.200	461.101	1.732%	88.492%
33.0	159.539	9.827	470.928	1.668%	90.378%
34.0	135.527	8.930	479.858	1.516%	92.091%
35.0	104.548	7.456	487.313	1.266%	93.522%
36.0	72.007	5.622	492.935	.954%	94.601%
37.0	44.740	3.808	496.743	.646%	95.332%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	25.643	2.349	499.092	.399%	95.783%
39.0	15.054	1.389	500.481	.236%	96.049%
40.0	11.967	0.942	501.423	.160%	96.230%
41.0	10.877	0.813	502.237	.138%	96.386%
42.0	9.844	0.753	502.99	.128%	96.531%
43.0	8.824	0.692	503.681	.117%	96.664%
44.0	8.065	0.637	504.319	.108%	96.786%
45.0	7.488	0.598	504.916	.101%	96.901%
46.0	6.996	0.566	505.483	.096%	97.009%
47.0	6.680	0.544	506.027	.092%	97.114%
48.0	6.377	0.528	506.555	.090%	97.215%
49.0	6.005	0.508	507.063	.086%	97.313%
50.0	5.738	0.490	507.553	.083%	97.407%
51.0	5.513	0.476	508.029	.081%	97.498%
52.0	5.288	0.463	508.492	.079%	97.587%
53.0	5.084	0.451	508.943	.077%	97.673%
54.0	4.866	0.439	509.382	.074%	97.758%
55.0	4.655	0.425	509.807	.072%	97.839%
56.0	4.493	0.413	510.22	.070%	97.918%
57.0	4.317	0.403	510.623	.068%	97.996%
58.0	4.141	0.391	511.014	.066%	98.071%
59.0	4.008	0.381	511.395	.065%	98.144%
60.0	3.867	0.372	511.767	.063%	98.215%
61.0	3.769	0.364	512.131	.062%	98.285%
62.0	3.663	0.358	512.489	.061%	98.354%
63.0	3.551	0.351	512.84	.060%	98.421%
64.0	3.452	0.344	513.184	.058%	98.487%
65.0	3.368	0.338	513.522	.057%	98.552%
66.0	3.305	0.333	513.854	.057%	98.616%
67.0	3.234	0.329	514.183	.056%	98.679%
68.0	3.171	0.324	514.508	.055%	98.741%
69.0	3.129	0.321	514.829	.055%	98.803%
70.0	3.066	0.318	515.147	.054%	98.864%
71.0	3.030	0.315	515.462	.053%	98.925%
72.0	2.974	0.312	515.775	.053%	98.984%
73.0	2.939	0.309	516.084	.052%	99.044%
74.0	2.897	0.307	516.391	.052%	99.103%
75.0	2.855	0.304	516.694	.052%	99.161%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	2.834	0.302	516.996	.051%	99.219%
77.0	2.784	0.300	517.296	.051%	99.276%
78.0	2.784	0.298	517.594	.051%	99.334%
79.0	2.742	0.297	517.891	.050%	99.391%
80.0	2.714	0.294	518.185	.050%	99.447%
81.0	2.693	0.292	518.478	.050%	99.503%
82.0	2.679	0.291	518.769	.049%	99.559%
83.0	2.700	0.292	519.061	.050%	99.615%
84.0	2.721	0.295	519.357	.050%	99.672%
85.0	2.735	0.298	519.654	.051%	99.729%
86.0	2.728	0.299	519.953	.051%	99.786%
87.0	2.637	0.294	520.247	.050%	99.843%
88.0	2.482	0.280	520.527	.048%	99.897%
89.0	2.461	0.271	520.798	.046%	99.949%
90.0	2.433	0.268	521.066	.046%	100.000%

Zonal flux distribution table

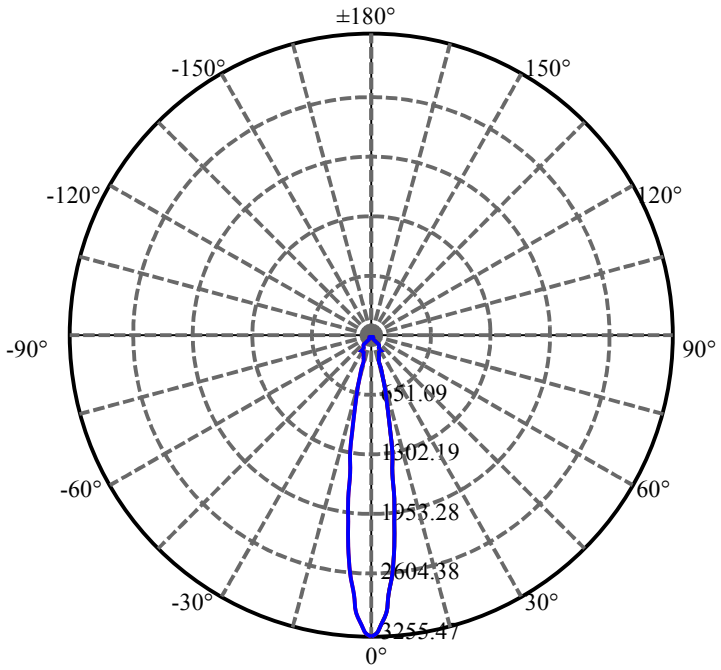
ZONAL LUMEN SUMMARY

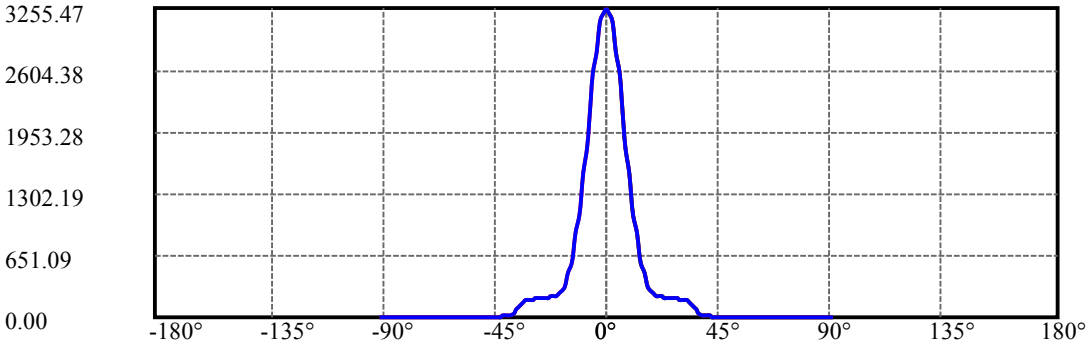
Zone	Lumens	%Lamp	%Fixt
0-30	440.67	74.82%	84.57%
0-40	501.42	85.13%	96.23%
0-60	511.77	86.89%	98.22%
0-90	520.80	88.42%	99.95%
0-120	520.80	88.42%	99.95%
0-180	521.07	88.47%	100.00%
60-90	9.40	1.60%	1.80%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.62	416.85	70.77%	80.00%

ZONAL LUMEN SUMMARY

0-10	201.10
10-20	145.42
20-30	94.15
30-40	60.76
40-50	6.13
50-60	4.21
60-70	3.38
70-80	3.04
80-90	2.61
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:16.7 Right:16.7
:C90/270Left:16.7 Right:16.7

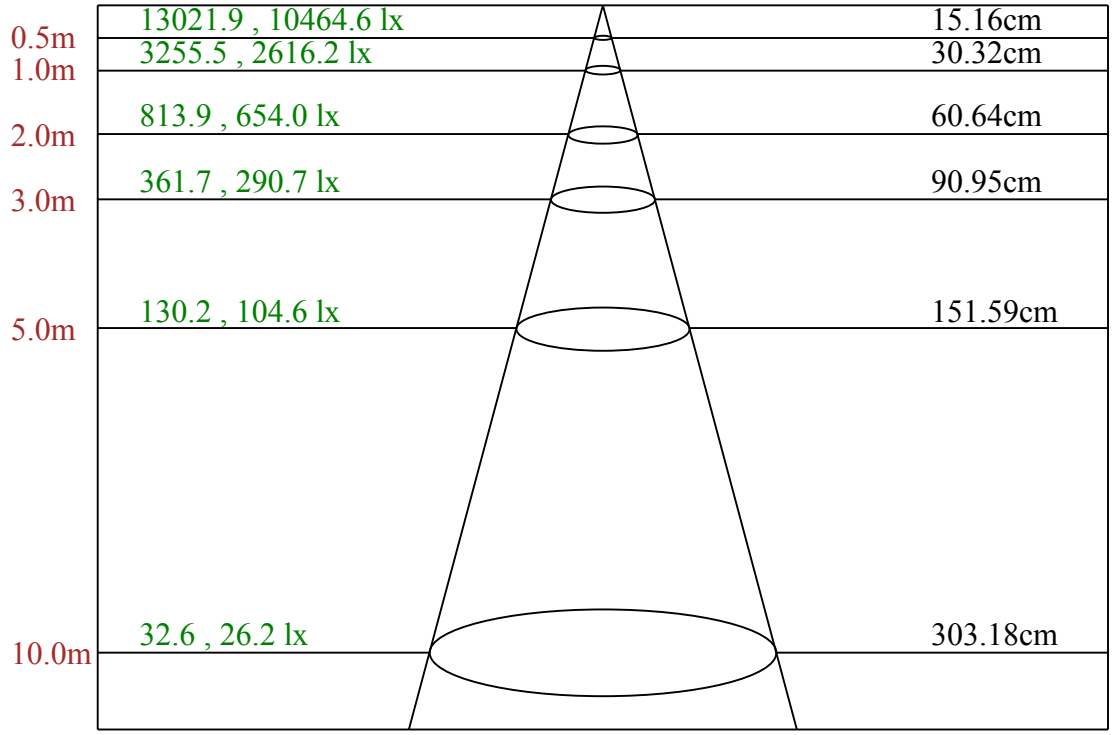
Beam Angle(50%Imax):C0/180Left:8.6 Right:8.6
:C90/270Left:8.6 Right:8.6

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/5
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Lux distance Curve



Max , Ave

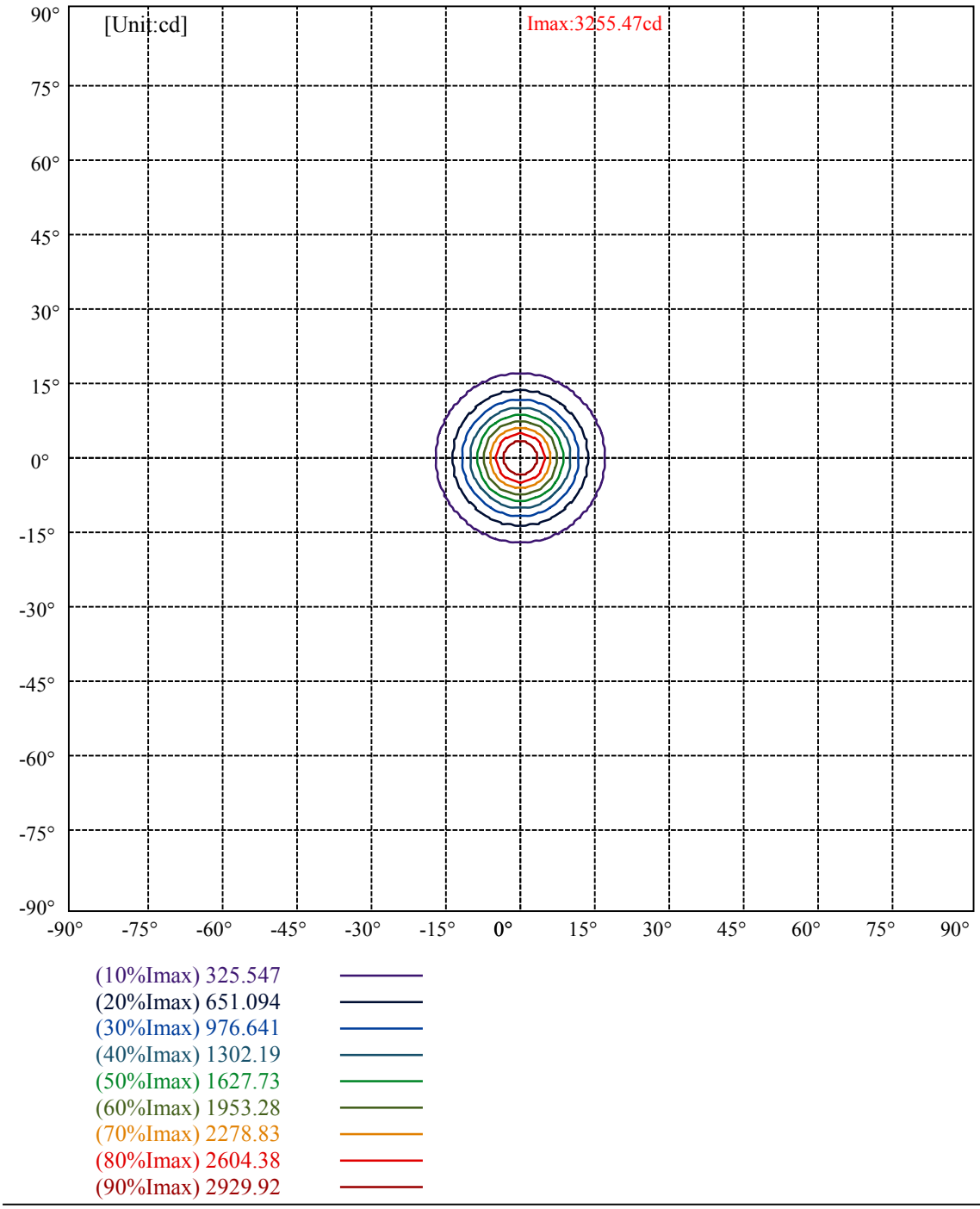
Beam angle of C0 plane 17.24

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/5
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO-Intensity(V-H)

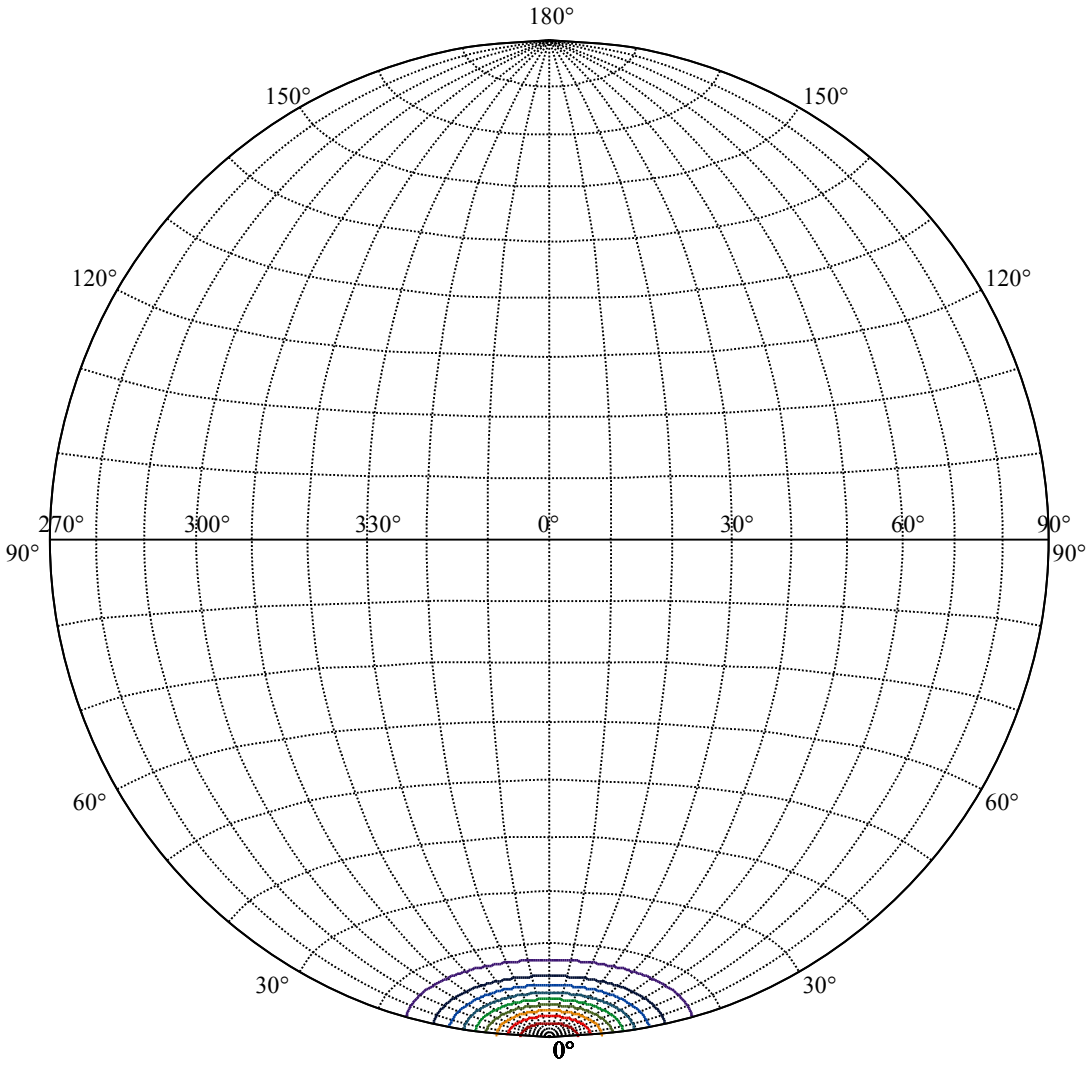


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/5
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:3255.47

(10%Imax) 325.547
(20%Imax) 651.094
(30%Imax) 976.641
(40%Imax) 1302.19
(50%Imax) 1627.73
(60%Imax) 1953.28
(70%Imax) 2278.83
(80%Imax) 2604.38
(90%Imax) 2929.92

Equipment: GMS1980 Date: 2019/12/5 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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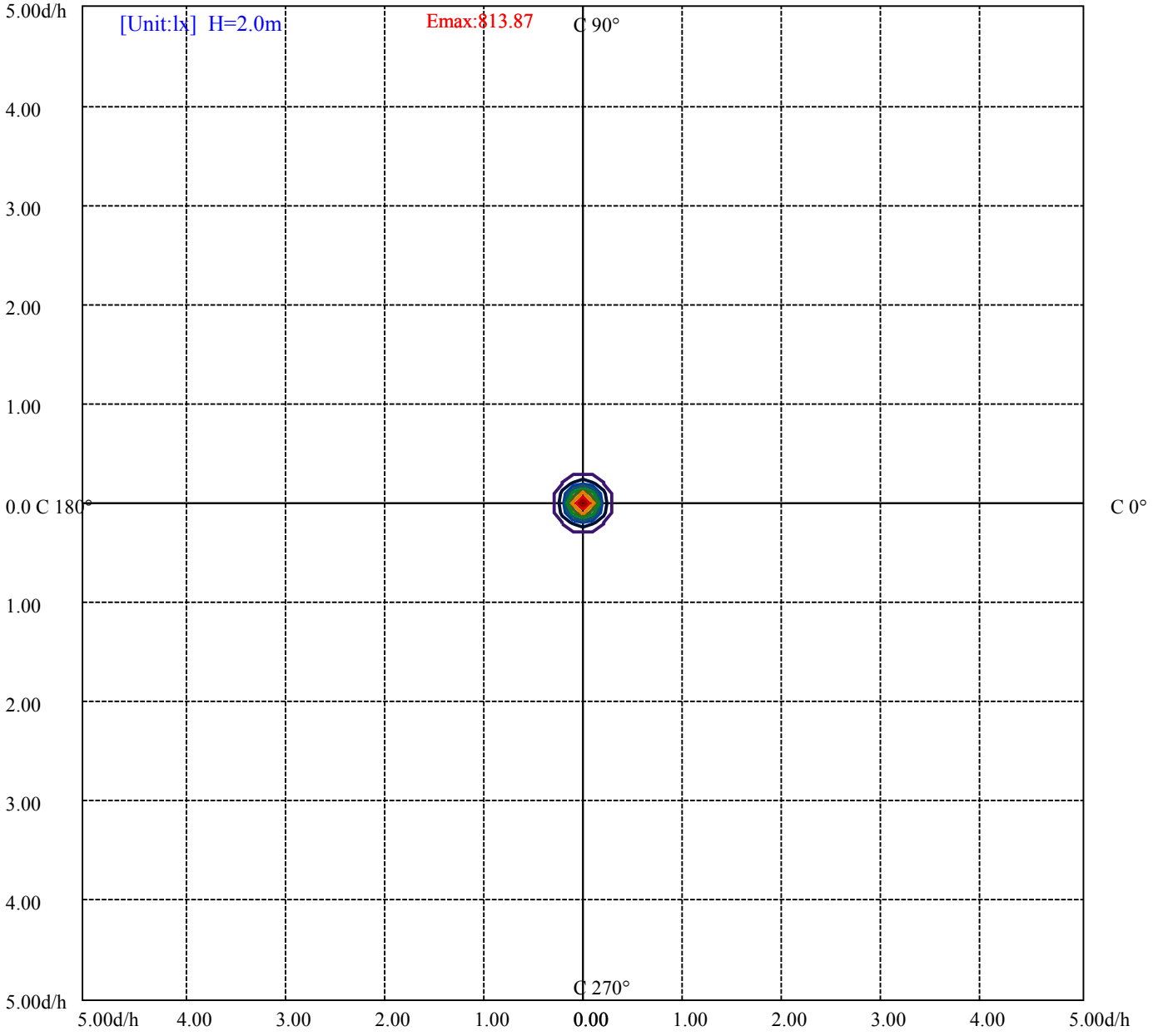
ISO illuminance diagram

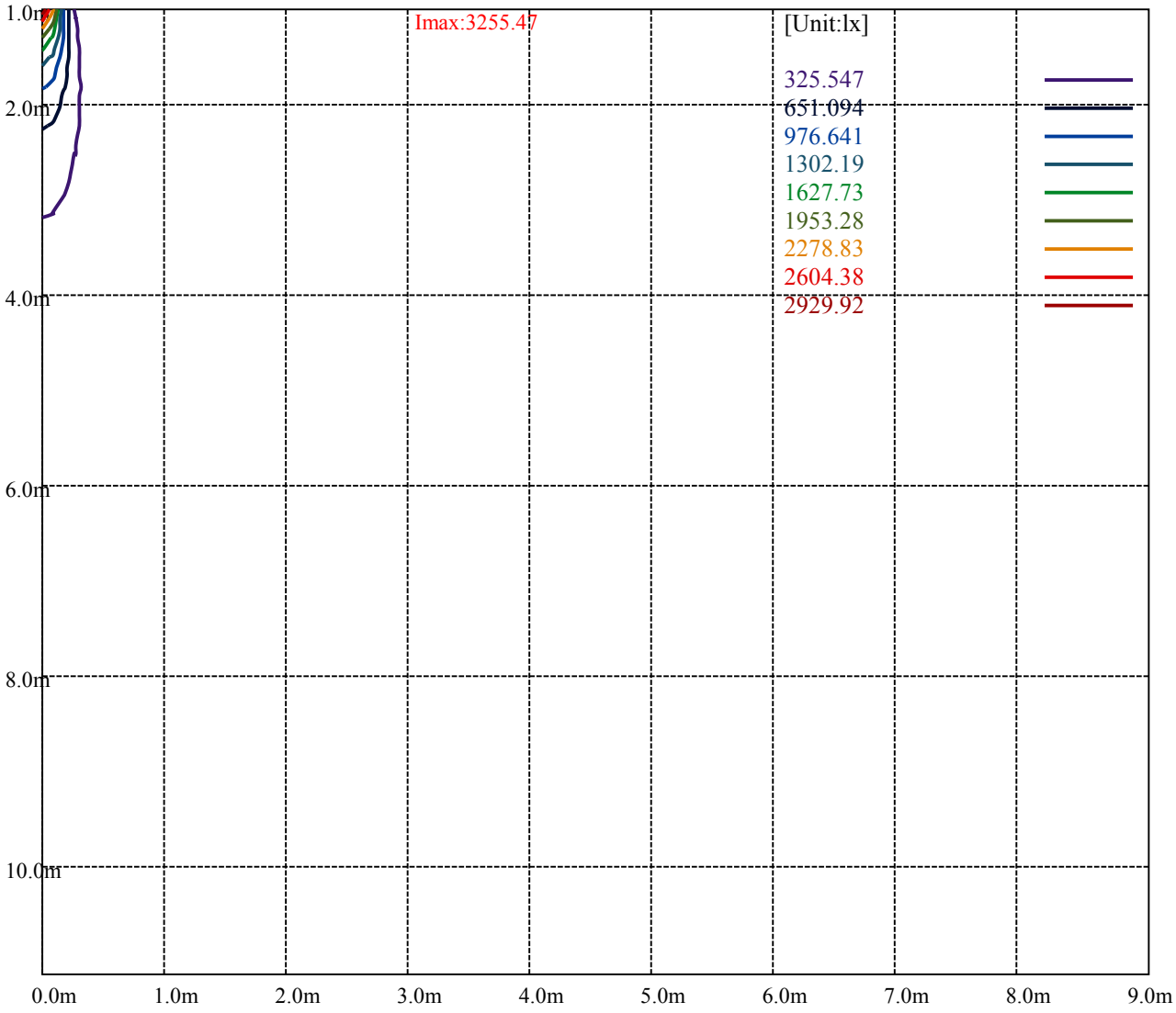


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/5
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/5
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

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Luminance Limitting Curve(no luminous side)

Luminance Table

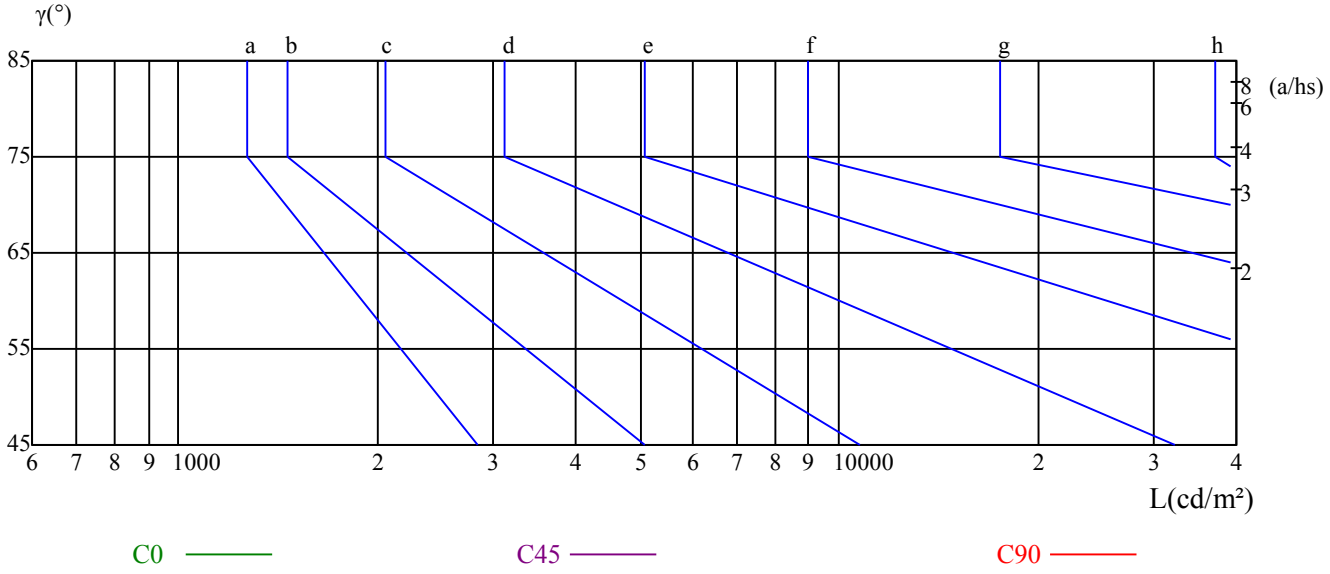
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

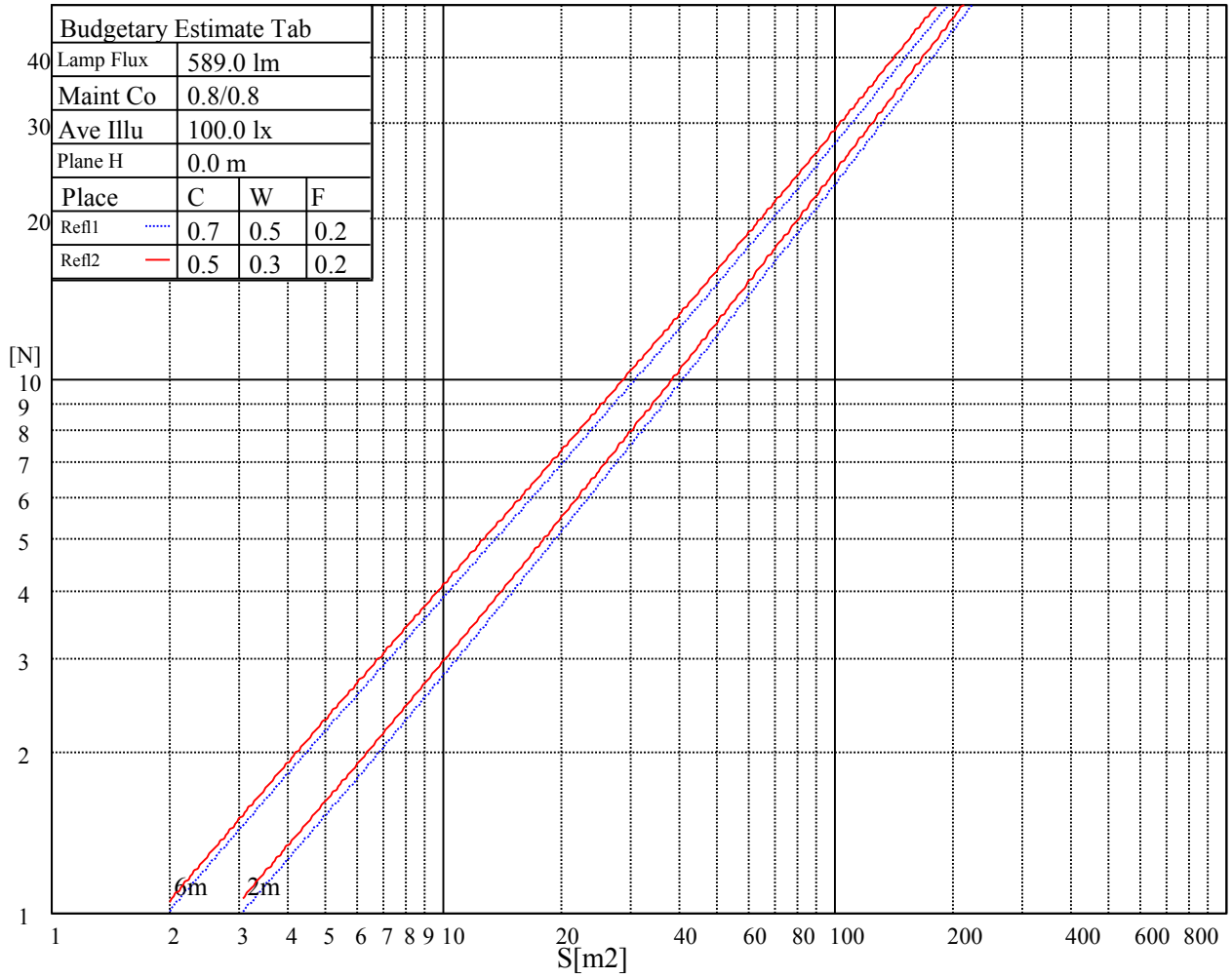


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2019/12/5
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Budgetary Estimate Table

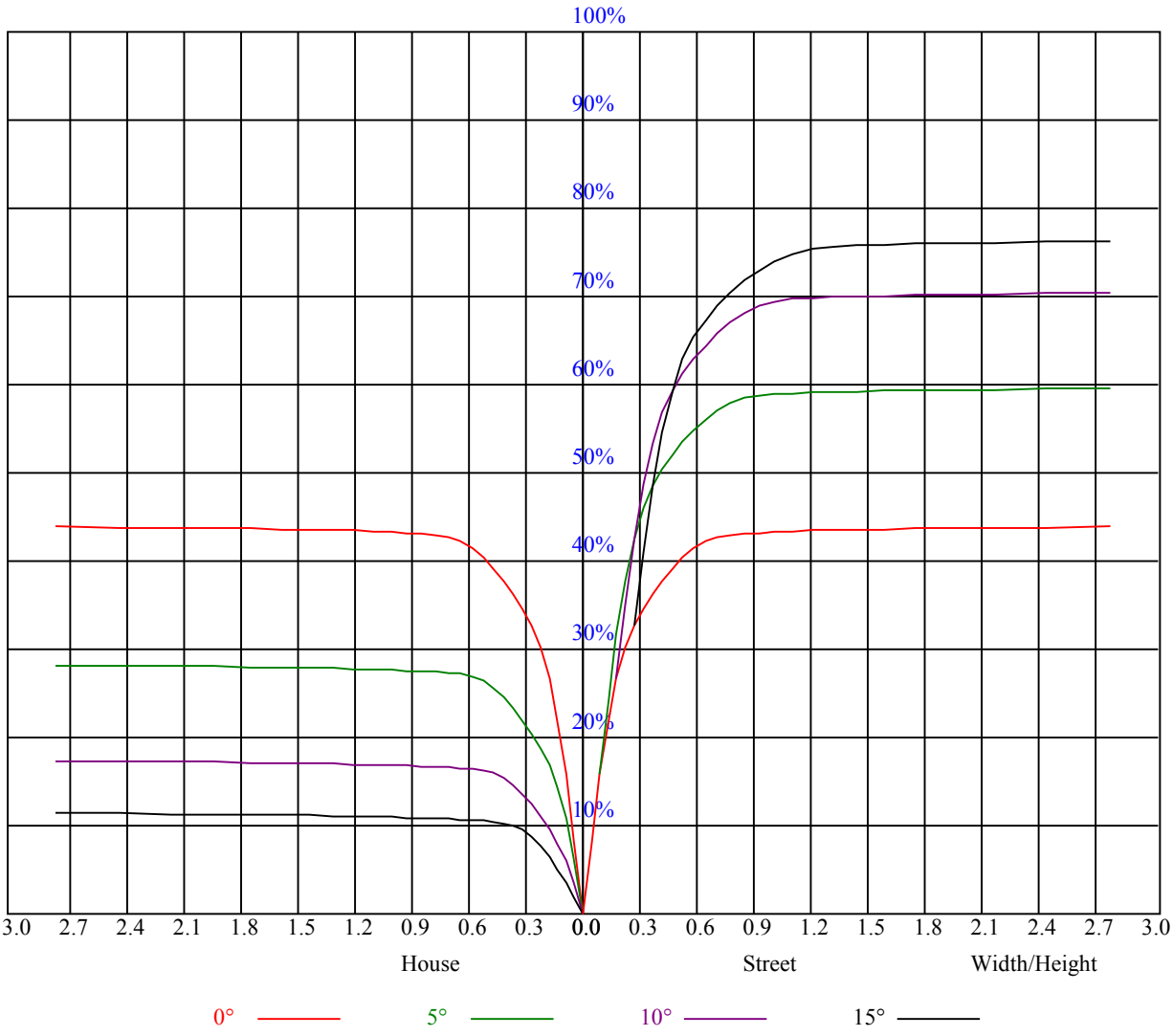


Equipment: GMS1980 Date: 2019/12/5 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.05	1.05	1.05	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.88
1	0.99	0.97	0.95	0.97	0.96	0.94	0.94	0.92	0.91	0.90	0.89	0.88	0.87	0.87	0.86	0.84
2	0.94	0.91	0.88	0.92	0.90	0.87	0.90	0.87	0.86	0.87	0.85	0.84	0.85	0.83	0.82	0.81
3	0.89	0.86	0.83	0.88	0.85	0.82	0.86	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.79	0.77
4	0.85	0.81	0.79	0.84	0.81	0.78	0.83	0.80	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.74
5	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.76	0.74	0.78	0.75	0.73	0.77	0.75	0.73	0.72
6	0.79	0.75	0.72	0.78	0.74	0.71	0.77	0.74	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	0.68	0.73	0.70	0.68	0.72	0.70	0.68	0.67
8	0.73	0.69	0.67	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65
9	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.69	0.66	0.64	0.63
10	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.65	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.61

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2019/12/5	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	3247.88	3242.25	3180.94	3062.25	2883.38	2650.50	2377.13	2140.31	1880.44
45.0	3245.63	3279.94	3267.56	3183.19	3051.00	2882.25	2599.31	2356.88	2117.81
90.0	3291.19	3312.00	3301.31	3227.06	3063.38	2904.75	2655.00	2335.50	2105.44
135.0	3237.19	3283.88	3276.00	3216.38	3086.44	2918.25	2682.00	2392.88	2141.44
180.0	3247.88	3203.44	3100.50	2932.31	2735.44	2469.94	2188.69	1935.00	1640.25
225.0	3245.63	3147.75	2989.69	2791.13	2520.56	2256.75	1958.63	1684.69	1459.69
270.0	3291.19	3177.00	3031.31	2849.63	2540.81	2242.13	2011.50	1704.38	1446.75
315.0	3237.19	3146.06	2997.56	2736.00	2499.75	2250.56	1936.69	1692.00	1461.38
360.0	3247.88	3242.25	3180.94	3062.25	2883.38	2650.50	2377.13	2140.31	1880.44

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	1629.00	1411.88	1179.56	986.63	793.13	623.25	498.38	385.88	312.19
45.0	1850.63	1592.44	1365.75	1146.94	938.25	767.25	611.44	493.88	386.44
90.0	1839.38	1513.13	1319.63	1099.74	902.48	743.29	608.12	489.38	373.05
135.0	1849.50	1574.44	1334.25	1134.00	888.75	717.75	585.00	443.81	361.13
180.0	1436.63	1119.77	953.10	781.20	626.46	476.49	386.16	322.93	275.01
225.0	1085.06	1013.79	828.62	670.44	527.18	410.96	336.04	280.52	252.23
270.0	1261.13	1014.19	844.88	691.88	534.94	425.25	342.56	285.19	246.21
315.0	1112.29	996.86	821.08	670.22	524.93	411.19	334.46	280.58	251.55
360.0	1629.00	1411.88	1179.56	986.63	793.13	623.25	498.38	385.88	312.19

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	286.31	251.61	241.37	233.44	227.81	223.26	216.62	212.34	208.52
45.0	306.56	284.63	244.46	232.20	224.16	218.31	212.40	207.11	202.95
90.0	306.84	265.33	241.03	227.08	219.04	213.24	206.61	202.95	199.58
135.0	298.13	288.00	228.99	217.58	207.00	200.64	196.26	191.93	188.33
180.0	254.25	240.24	230.51	223.26	217.74	212.12	207.90	203.63	199.80
225.0	242.38	235.69	228.94	222.24	216.51	211.73	207.34	203.74	200.98
270.0	233.27	223.65	215.72	208.97	204.64	198.84	195.24	191.64	190.29
315.0	238.95	231.81	227.08	223.31	219.04	215.78	211.50	207.73	204.69
360.0	286.31	251.61	241.37	233.44	227.81	223.26	216.62	212.34	208.52

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	203.85	200.36	196.48	191.64	187.59	184.28	179.21	157.61	119.98
45.0	199.07	194.63	191.42	187.59	182.93	178.71	175.28	170.33	145.80
90.0	197.04	194.85	192.94	190.46	186.64	183.43	179.78	175.95	158.34
135.0	186.75	184.95	184.22	182.03	179.44	178.48	177.47	174.54	153.90
180.0	196.76	193.33	189.00	185.46	182.42	178.43	165.77	135.90	96.24
225.0	198.11	193.67	190.52	187.71	184.56	171.11	139.95	98.83	57.94
270.0	184.67	179.61	176.01	171.00	166.89	151.20	125.04	83.76	52.14
315.0	201.38	196.37	193.05	189.90	185.51	166.61	133.82	87.30	52.03
360.0	203.85	200.36	196.48	191.64	187.59	184.28	179.21	157.61	119.98

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	78.75	44.94	19.13	12.66	11.53	10.46	9.23	8.10	7.20
45.0	113.29	73.13	41.06	17.66	12.43	11.36	10.24	8.89	7.88
90.0	124.09	87.64	49.44	22.16	15.24	13.95	12.88	11.70	10.46
135.0	121.78	81.68	44.61	22.05	14.63	13.44	12.26	11.03	9.96
180.0	56.53	28.07	12.71	10.97	10.01	8.94	7.93	6.98	6.19
225.0	28.80	13.56	11.48	10.35	9.34	8.38	7.48	6.69	6.41
270.0	27.45	14.85	13.50	12.43	11.53	10.35	9.51	8.89	8.38
315.0	25.37	14.06	13.22	12.15	11.03	10.13	9.23	8.33	8.04
360.0	78.75	44.94	19.13	12.66	11.53	10.46	9.23	8.10	7.20

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	6.58	6.08	5.85	5.51	5.18	5.01	4.84	4.67	4.56
45.0	7.03	6.41	6.08	5.79	5.46	5.23	5.06	4.89	4.78
90.0	9.56	8.83	8.38	7.93	7.43	6.98	6.64	6.30	5.91
135.0	9.00	8.27	7.99	7.65	7.03	6.75	6.47	6.13	5.85
180.0	5.85	5.63	5.23	5.06	4.89	4.73	4.61	4.50	4.44
225.0	6.13	5.85	5.68	5.46	5.29	5.18	5.01	4.89	4.78
270.0	8.04	7.71	7.31	6.98	6.53	6.13	5.85	5.57	5.23
315.0	7.71	7.20	6.92	6.64	6.24	5.91	5.63	5.34	5.12
360.0	6.58	6.08	5.85	5.51	5.18	5.01	4.84	4.67	4.56

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	4.44	4.28	4.22	4.11	3.94	3.88	3.71	3.66	3.60
45.0	4.61	4.44	4.33	4.22	4.05	3.94	3.88	3.77	3.66
90.0	5.57	5.34	5.06	4.78	4.61	4.39	4.22	4.05	3.88
135.0	5.57	5.23	4.95	4.73	4.50	4.28	4.05	3.94	3.83
180.0	4.33	4.28	4.16	3.99	3.88	3.83	3.71	3.66	3.54
225.0	4.61	4.39	4.33	4.16	3.99	3.88	3.77	3.66	3.54
270.0	4.95	4.67	4.50	4.33	4.11	3.99	3.83	3.71	3.66
315.0	4.84	4.61	4.39	4.22	4.05	3.88	3.77	3.71	3.60
360.0	4.44	4.28	4.22	4.11	3.94	3.88	3.71	3.66	3.60

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	3.49	3.43	3.38	3.32	3.26	3.21	3.09	3.04	3.04
45.0	3.54	3.43	3.38	3.32	3.21	3.15	3.15	3.04	3.04
90.0	3.71	3.66	3.49	3.43	3.32	3.26	3.21	3.15	3.09
135.0	3.66	3.54	3.43	3.38	3.26	3.21	3.15	3.09	3.04
180.0	3.49	3.32	3.26	3.21	3.15	3.09	3.04	2.98	2.93
225.0	3.49	3.38	3.26	3.26	3.21	3.09	3.09	3.04	2.98
270.0	3.54	3.43	3.38	3.26	3.26	3.21	3.15	3.09	3.04
315.0	3.49	3.43	3.38	3.26	3.21	3.15	3.15	3.09	3.09
360.0	3.49	3.43	3.38	3.32	3.26	3.21	3.09	3.04	3.04

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	2.98	2.98	2.93	2.87	2.87	2.76	2.70	2.70	2.70
45.0	2.98	2.93	2.87	2.87	2.81	2.76	2.76	2.70	2.70
90.0	3.04	2.98	2.98	2.93	2.87	2.87	2.81	2.81	2.76
135.0	2.98	2.93	2.87	2.81	2.76	2.76	2.76	2.70	2.64
180.0	2.87	2.81	2.81	2.76	2.76	2.70	2.64	2.64	2.64
225.0	2.93	2.87	2.81	2.76	2.76	2.70	2.70	2.70	2.64
270.0	3.04	3.04	2.98	2.93	2.93	2.87	3.04	2.87	2.81
315.0	2.98	2.98	2.93	2.93	2.93	2.87	2.87	2.81	2.81
360.0	2.98	2.98	2.93	2.87	2.87	2.76	2.70	2.70	2.70

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	2.64	2.59	2.59	2.59	2.64	2.64	2.53	2.48	2.48
45.0	2.64	2.64	2.59	2.59	2.59	2.53	2.53	2.53	2.48
90.0	2.76	2.70	2.70	2.64	2.64	2.59	2.53	2.53	2.59
135.0	2.64	2.59	2.59	2.59	2.53	2.53	2.48	2.48	2.48
180.0	2.59	2.64	2.64	2.76	2.70	2.76	2.48	2.48	2.42
225.0	2.64	2.64	2.64	2.70	2.81	2.81	2.81	2.48	2.42
270.0	2.81	2.87	2.98	3.09	3.09	3.09	3.15	2.48	2.42
315.0	2.81	2.76	2.87	2.81	2.87	2.87	2.59	2.42	2.42
360.0	2.64	2.59	2.59	2.59	2.64	2.64	2.53	2.48	2.48

Intensity data(cd)

C/γ(°)	90.0
0.0	2.48
45.0	2.48
90.0	2.42
135.0	2.42
180.0	2.42
225.0	2.42
270.0	2.42
315.0	2.42
360.0	2.48