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

NATA

Client:
LumCAT: 3-2040-M
Luminaire: 92.70.131.000

Report No: nata-0100	Voltage(V): 36.7000
Test No: GC2018120709	Current(A): 0.5000
LampCAT: OSRAM SOLERIQ S13	Power (W): 18.3500
Lamp flux(lm): 1777.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 79	Width(mm): 79
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1573.38, Efficiency(%): 88.54% , Luminous Efficacy(lm/W): 85.74
Central intensity(cd): 7897.641, Maximum intensity(cd): 7897.641
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=19.4
[C90/270]Total=19.4
Field angle(10%Imax): [C0/180]Total=43.0
[C90/270]Total=43.0
Maximum s/h(1/2): C0_180=0.33 C90_270=0.33
Maximum s/h(1/4): C0_180=0.34 C90_270=0.34
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.64%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.572%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	7897.641	1.889	1.889	.106%	.120%
1.0	7815.234	14.957	16.847	.842%	1.071%
2.0	7597.688	29.077	45.924	1.636%	2.919%
3.0	7258.289	41.657	87.581	2.344%	5.566%
4.0	6866.648	52.527	140.107	2.956%	8.905%
5.0	6418.266	61.343	201.45	3.452%	12.804%
6.0	5935.148	68.033	269.483	3.829%	17.128%
7.0	5382.914	71.939	341.422	4.048%	21.700%
8.0	4888.898	74.614	416.036	4.199%	26.442%
9.0	4339.195	74.438	490.473	4.189%	31.173%
10.0	3778.734	71.956	562.43	4.049%	35.746%
11.0	3309.188	69.242	631.672	3.897%	40.147%
12.0	2858.414	65.171	696.843	3.667%	44.289%
13.0	2404.266	59.309	756.152	3.338%	48.059%
14.0	2043.352	54.209	810.361	3.051%	51.504%
15.0	1748.813	49.635	859.997	2.793%	54.659%
16.0	1461.045	44.162	904.159	2.485%	57.466%
17.0	1287.141	41.268	945.427	2.322%	60.089%
18.0	1103.702	37.401	982.828	2.105%	62.466%
19.0	996.659	35.583	1018.411	2.002%	64.727%
20.0	902.517	33.850	1052.261	1.905%	66.879%
21.0	822.769	32.334	1084.595	1.820%	68.934%
22.0	758.742	31.169	1115.764	1.754%	70.915%
23.0	707.316	30.307	1146.071	1.706%	72.841%
24.0	665.810	29.697	1175.768	1.671%	74.729%
25.0	629.761	29.186	1204.954	1.642%	76.584%
26.0	605.974	29.130	1234.085	1.639%	78.435%
27.0	587.461	29.247	1263.332	1.646%	80.294%
28.0	573.314	29.516	1292.847	1.661%	82.170%
29.0	562.549	29.908	1322.755	1.683%	84.071%
30.0	552.431	30.290	1353.045	1.705%	85.996%
31.0	540.942	30.552	1383.597	1.719%	87.938%
32.0	520.819	30.266	1413.863	1.703%	89.861%
33.0	484.158	28.917	1442.779	1.627%	91.699%
34.0	419.266	25.710	1468.489	1.447%	93.333%
35.0	352.695	22.184	1490.673	1.248%	94.743%
36.0	280.603	18.087	1508.76	1.018%	95.893%
37.0	196.488	12.967	1521.728	.730%	96.717%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	131.070	8.849	1530.577	.498%	97.279%
39.0	64.315	4.438	1535.015	.250%	97.561%
40.0	31.001	2.185	1537.2	.123%	97.700%
41.0	18.893	1.359	1538.56	.076%	97.787%
42.0	15.040	1.104	1539.663	.062%	97.857%
43.0	13.092	0.979	1540.642	.055%	97.919%
44.0	11.426	0.870	1541.513	.049%	97.974%
45.0	10.111	0.784	1542.297	.044%	98.024%
46.0	9.373	0.739	1543.036	.042%	98.071%
47.0	8.986	0.721	1543.757	.041%	98.117%
48.0	8.768	0.715	1544.471	.040%	98.162%
49.0	8.571	0.709	1545.181	.040%	98.207%
50.0	8.388	0.705	1545.885	.040%	98.252%
51.0	8.248	0.703	1546.588	.040%	98.297%
52.0	8.058	0.696	1547.285	.039%	98.341%
53.0	7.896	0.692	1547.976	.039%	98.385%
54.0	7.734	0.686	1548.662	.039%	98.429%
55.0	7.566	0.680	1549.342	.038%	98.472%
56.0	7.432	0.676	1550.018	.038%	98.515%
57.0	7.348	0.676	1550.693	.038%	98.558%
58.0	7.228	0.672	1551.365	.038%	98.601%
59.0	7.172	0.674	1552.04	.038%	98.643%
60.0	7.130	0.677	1552.717	.038%	98.686%
61.0	7.052	0.676	1553.393	.038%	98.729%
62.0	7.003	0.678	1554.071	.038%	98.773%
63.0	6.954	0.679	1554.751	.038%	98.816%
64.0	6.905	0.681	1555.431	.038%	98.859%
65.0	6.898	0.686	1556.117	.039%	98.903%
66.0	6.855	0.687	1556.804	.039%	98.946%
67.0	6.799	0.686	1557.49	.039%	98.990%
68.0	6.792	0.691	1558.18	.039%	99.034%
69.0	6.764	0.692	1558.873	.039%	99.078%
70.0	6.729	0.693	1559.566	.039%	99.122%
71.0	6.708	0.696	1560.262	.039%	99.166%
72.0	6.680	0.697	1560.959	.039%	99.210%
73.0	6.687	0.701	1561.66	.039%	99.255%
74.0	6.666	0.703	1562.362	.040%	99.299%
75.0	6.630	0.702	1563.065	.040%	99.344%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.616	0.704	1563.769	.040%	99.389%
77.0	6.623	0.708	1564.476	.040%	99.434%
78.0	6.602	0.708	1565.185	.040%	99.479%
79.0	6.588	0.709	1565.894	.040%	99.524%
80.0	6.595	0.712	1566.606	.040%	99.569%
81.0	6.588	0.714	1567.32	.040%	99.615%
82.0	6.581	0.715	1568.034	.040%	99.660%
83.0	6.595	0.718	1568.752	.040%	99.706%
84.0	6.560	0.715	1569.468	.040%	99.751%
85.0	6.539	0.714	1570.182	.040%	99.796%
86.0	6.518	0.713	1570.895	.040%	99.842%
87.0	6.497	0.711	1571.607	.040%	99.887%
88.0	6.483	0.710	1572.317	.040%	99.932%
89.0	6.497	0.712	1573.029	.040%	99.977%
90.0	6.469	0.355	1573.384	.020%	100.000%

Zonal flux distribution table

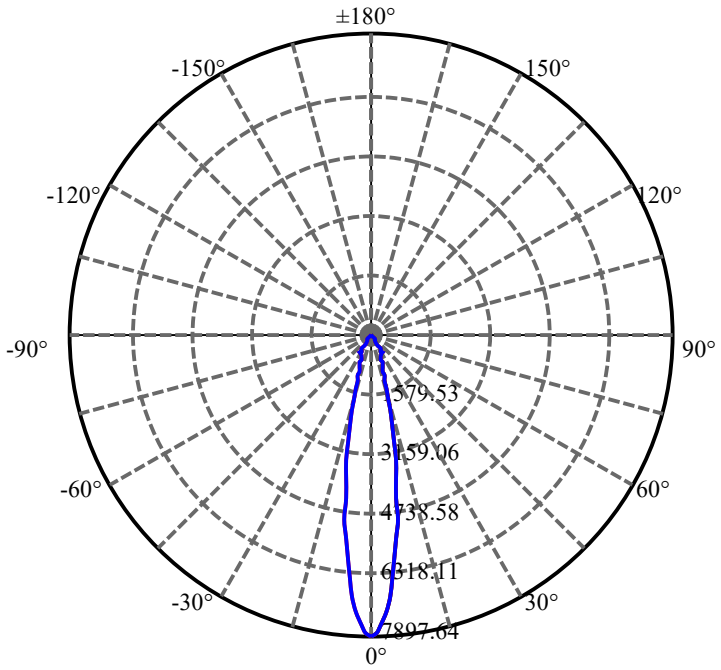
ZONAL LUMEN SUMMARY

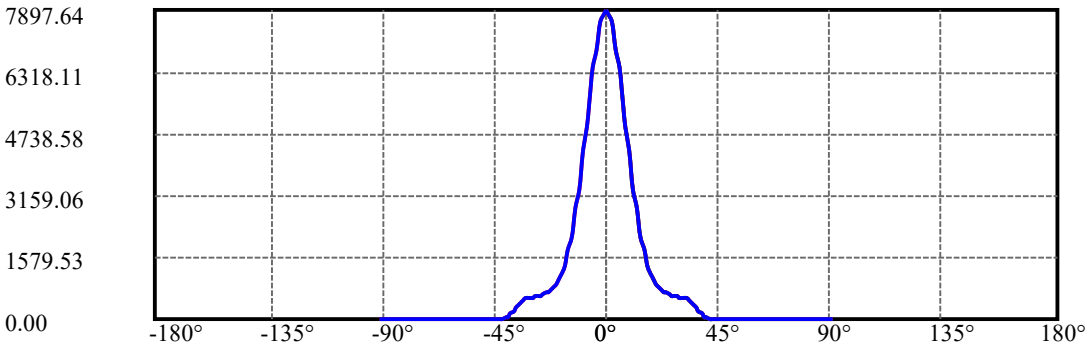
Zone	Lumens	%Lamp	%Fixt
0-30	1353.05	76.14%	86.00%
0-40	1537.20	86.51%	97.70%
0-60	1552.72	87.38%	98.69%
0-90	1573.03	88.52%	99.98%
0-120	1573.03	88.52%	99.98%
0-180	1573.38	88.54%	100.00%
60-90	20.99	1.18%	1.33%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.84	1258.71	70.83%	80.00%

ZONAL LUMEN SUMMARY

0-10	562.43
10-20	489.83
20-30	300.78
30-40	184.16
40-50	8.68
50-60	6.83
60-70	6.85
70-80	7.04
80-90	6.42
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):

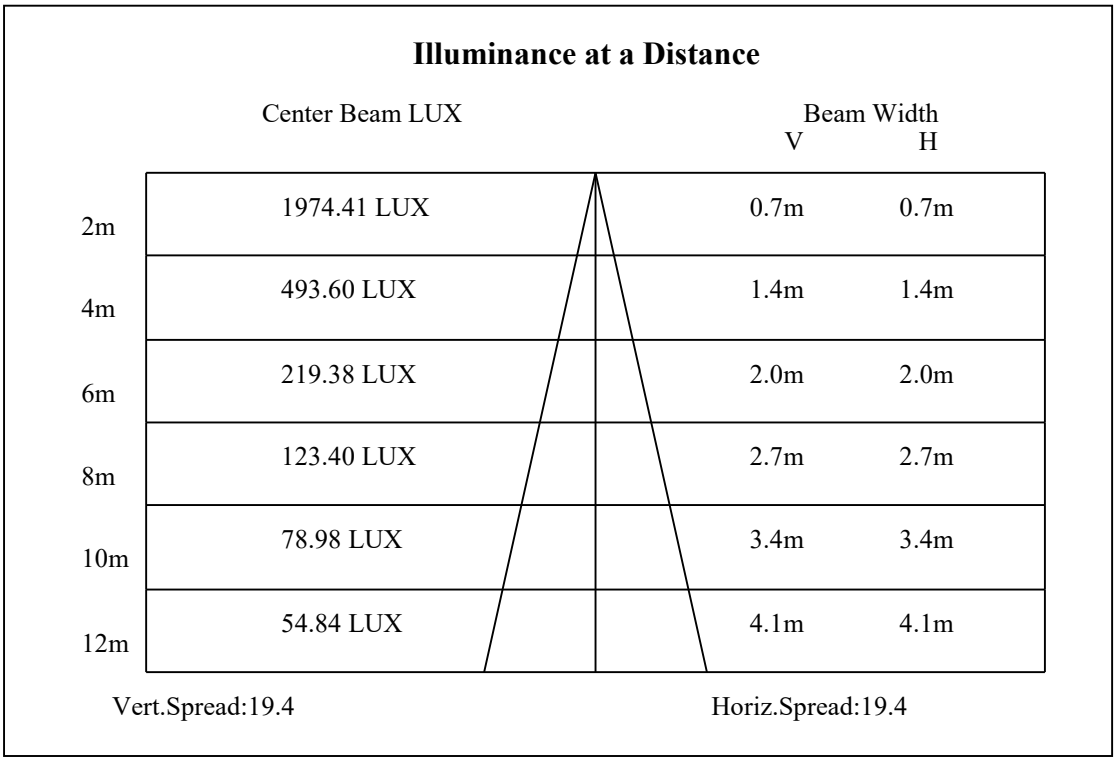
C0/C180:

C90/C270:

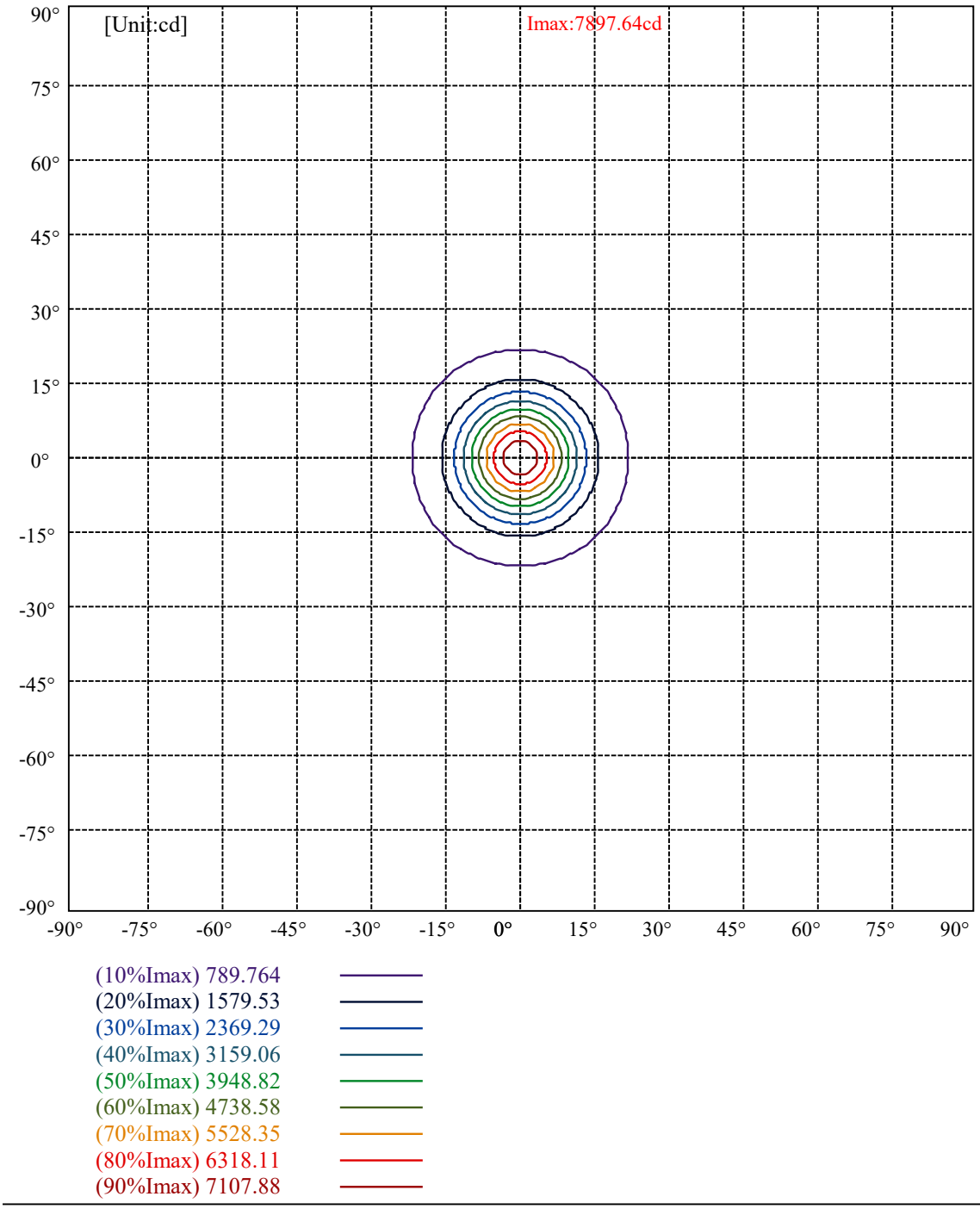
Field angle(10%Imax):C0/180Left:21.5 Right:21.5
:C90/270Left:21.5 Right:21.5

Beam Angle(50%Imax):C0/180Left:9.7 Right:9.7
:C90/270Left:9.7 Right:9.7

Lux distance Curve



ISO-Intensity(V-H)

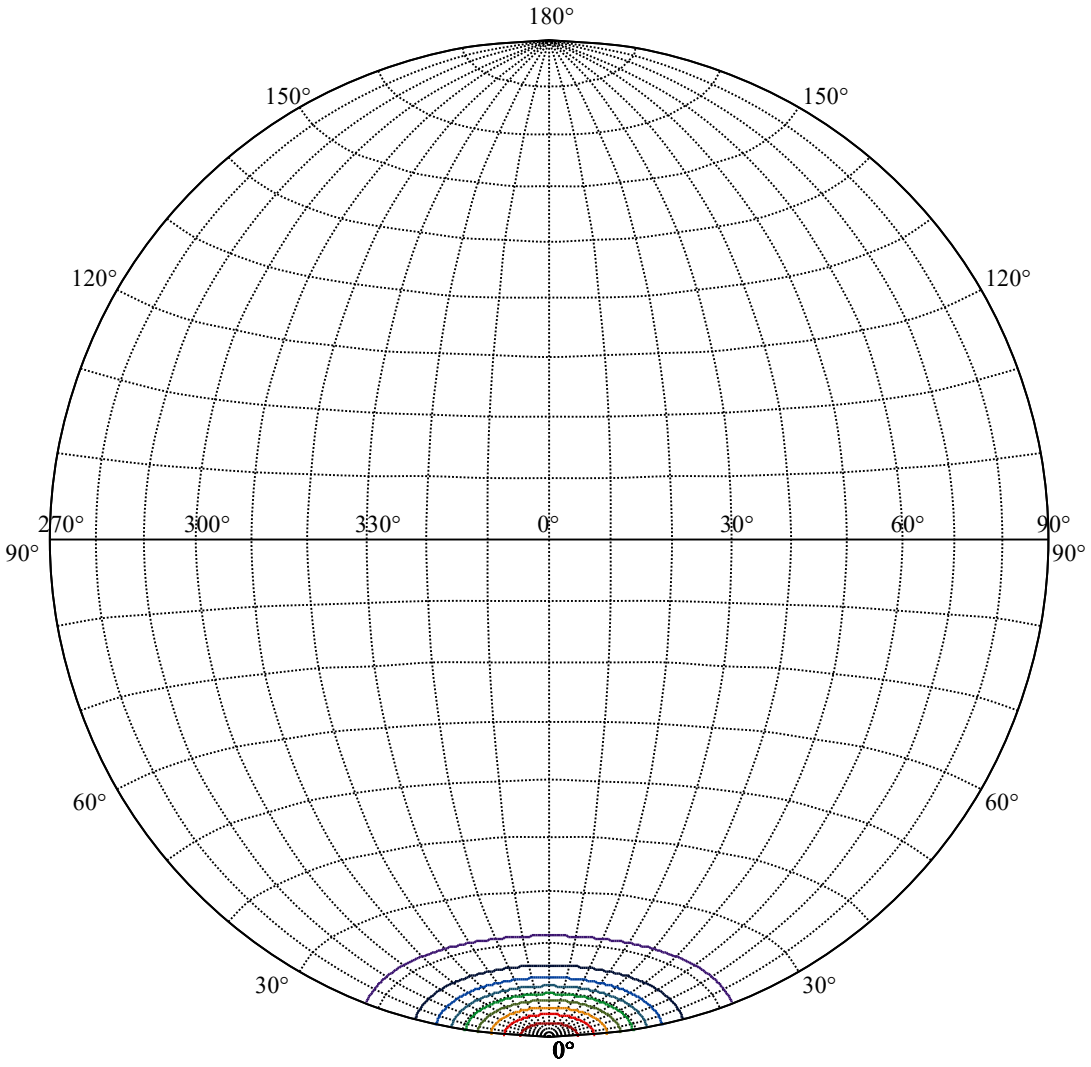


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/12/7
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



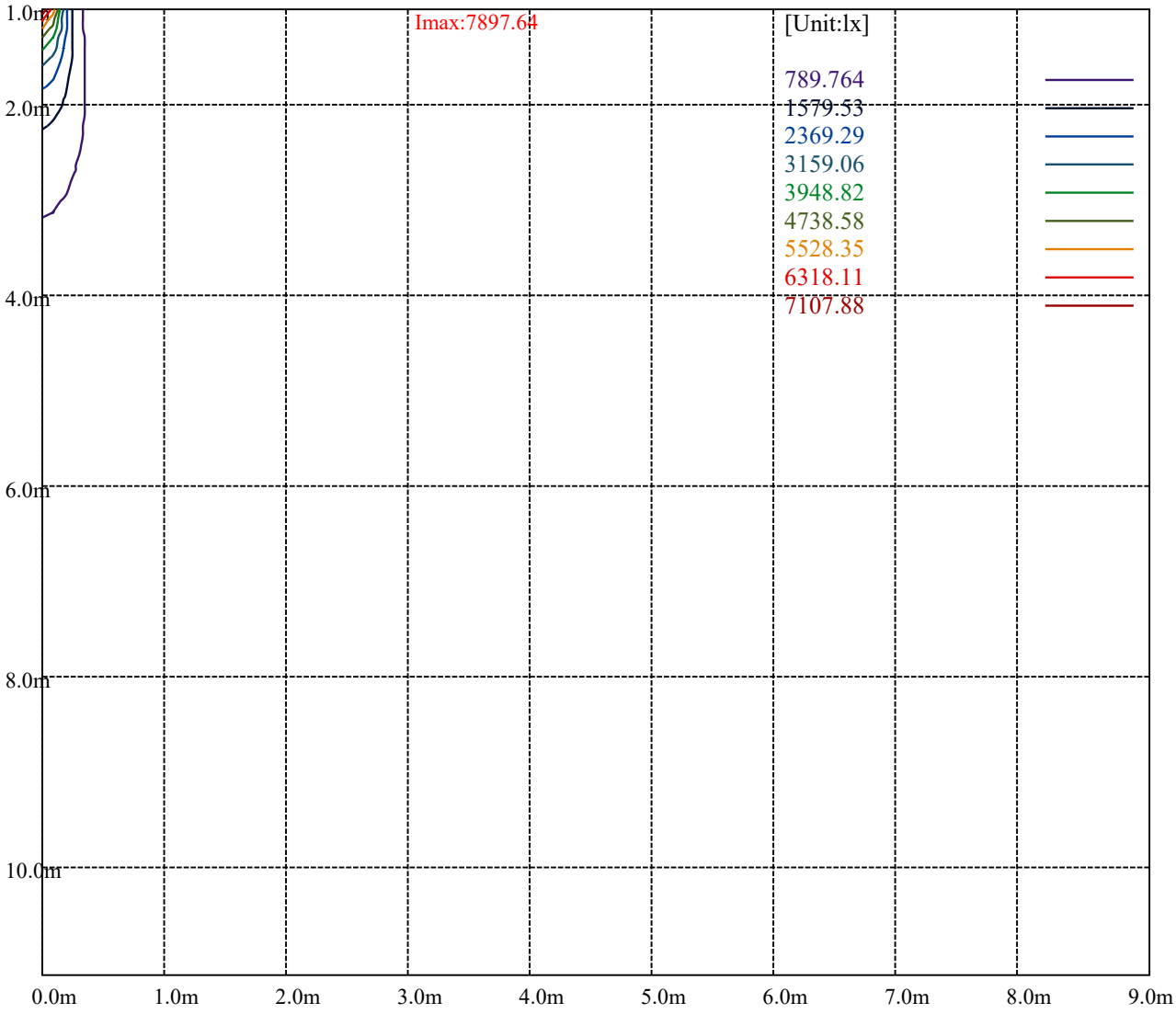
House [Unit:cd] Road

Imax:7897.64

(10%Imax) 789.764
(20%Imax) 1579.53
(30%Imax) 2369.29
(40%Imax) 3159.06
(50%Imax) 3948.82
(60%Imax) 4738.58
(70%Imax) 5528.35
(80%Imax) 6318.11
(90%Imax) 7107.88

Equipment: GMS1980 Date: 2018/12/7 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2018/12/7
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

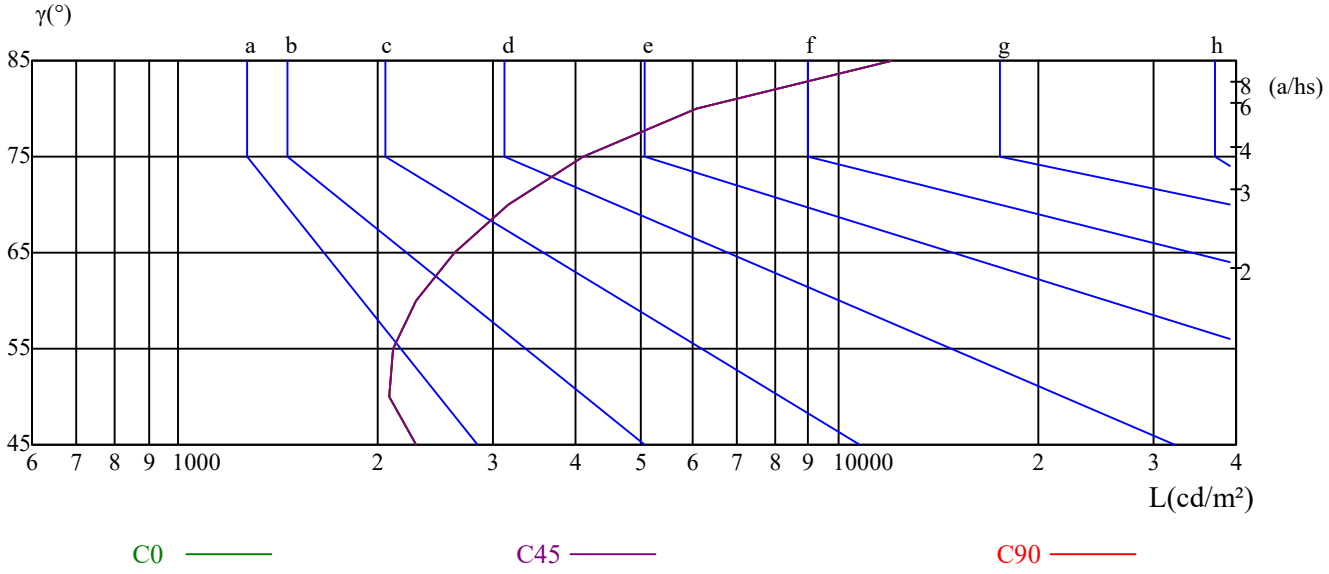
γ	45	50	55	60	65	70	75	80	85
C0	2291	2091	2113	2285	2615	3152	4105	6086	12022
C45	2291	2091	2113	2285	2615	3152	4105	6086	12022
C90	2291	2091	2113	2285	2615	3152	4105	6086	12022

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2615	2615	2615	4105	4105	4105	12022	12022	12022

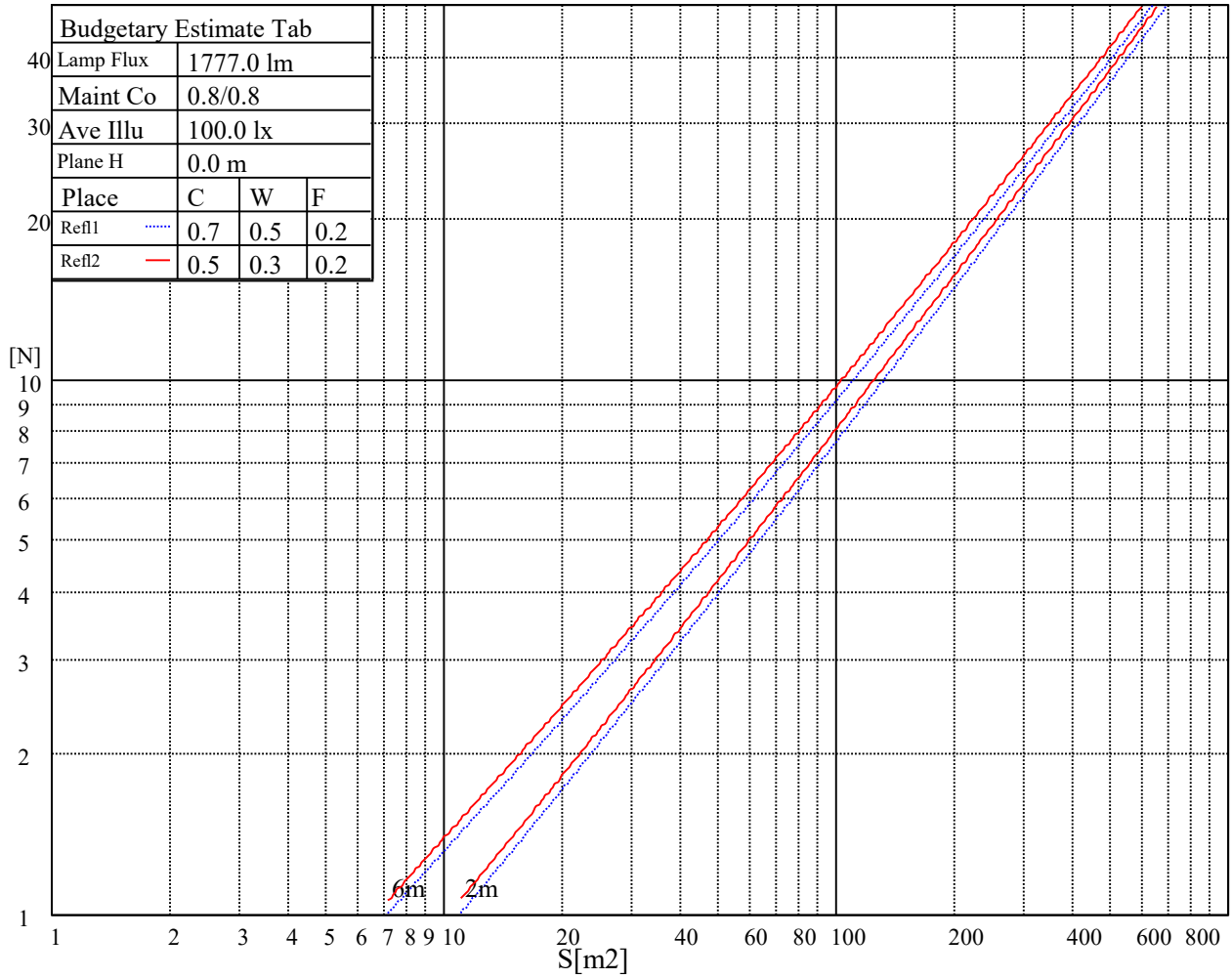
Glare Table

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

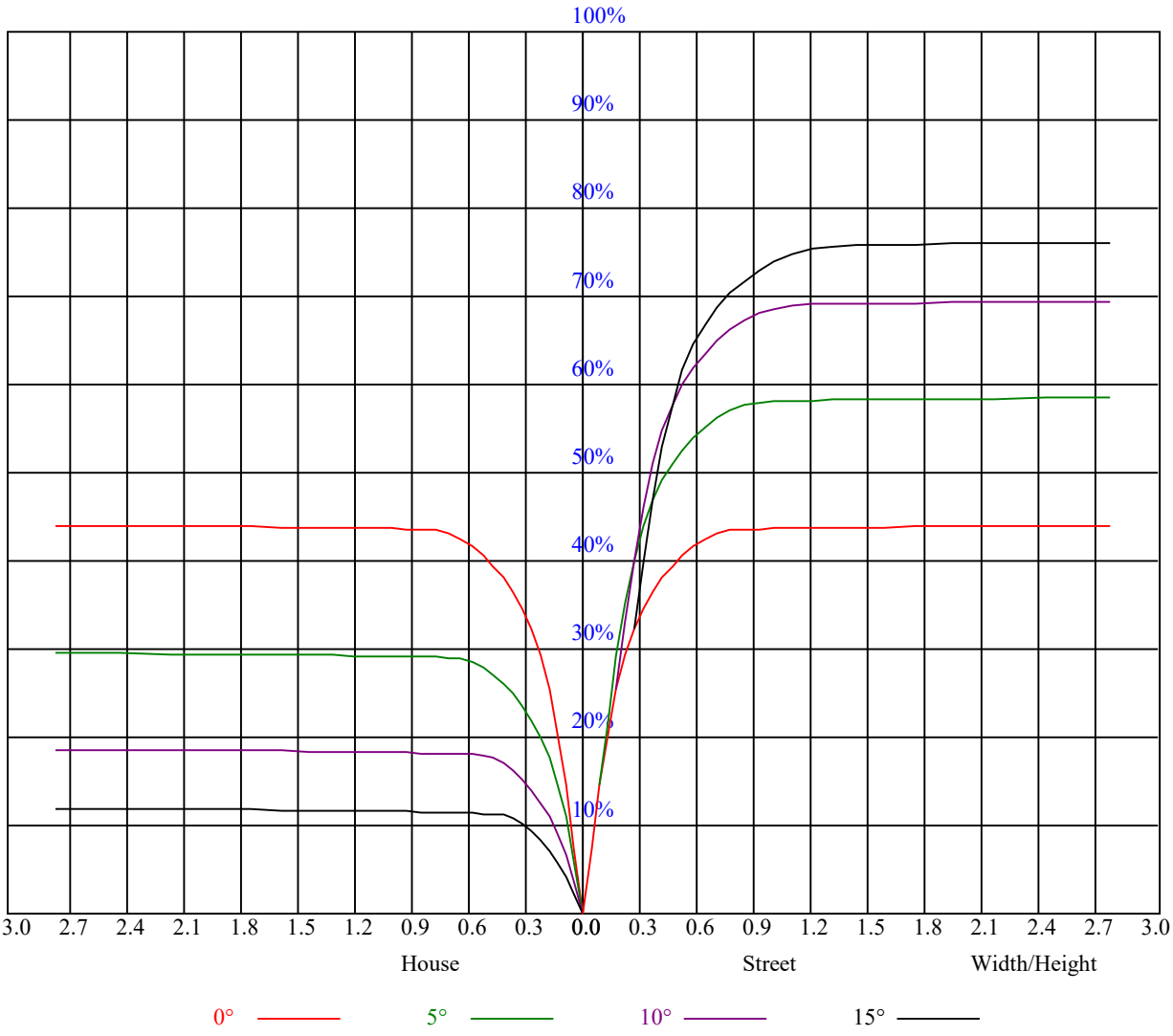


Equipment: GMS1980 Date: 2018/12/7 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

Utilization factor table for indoor luminaire

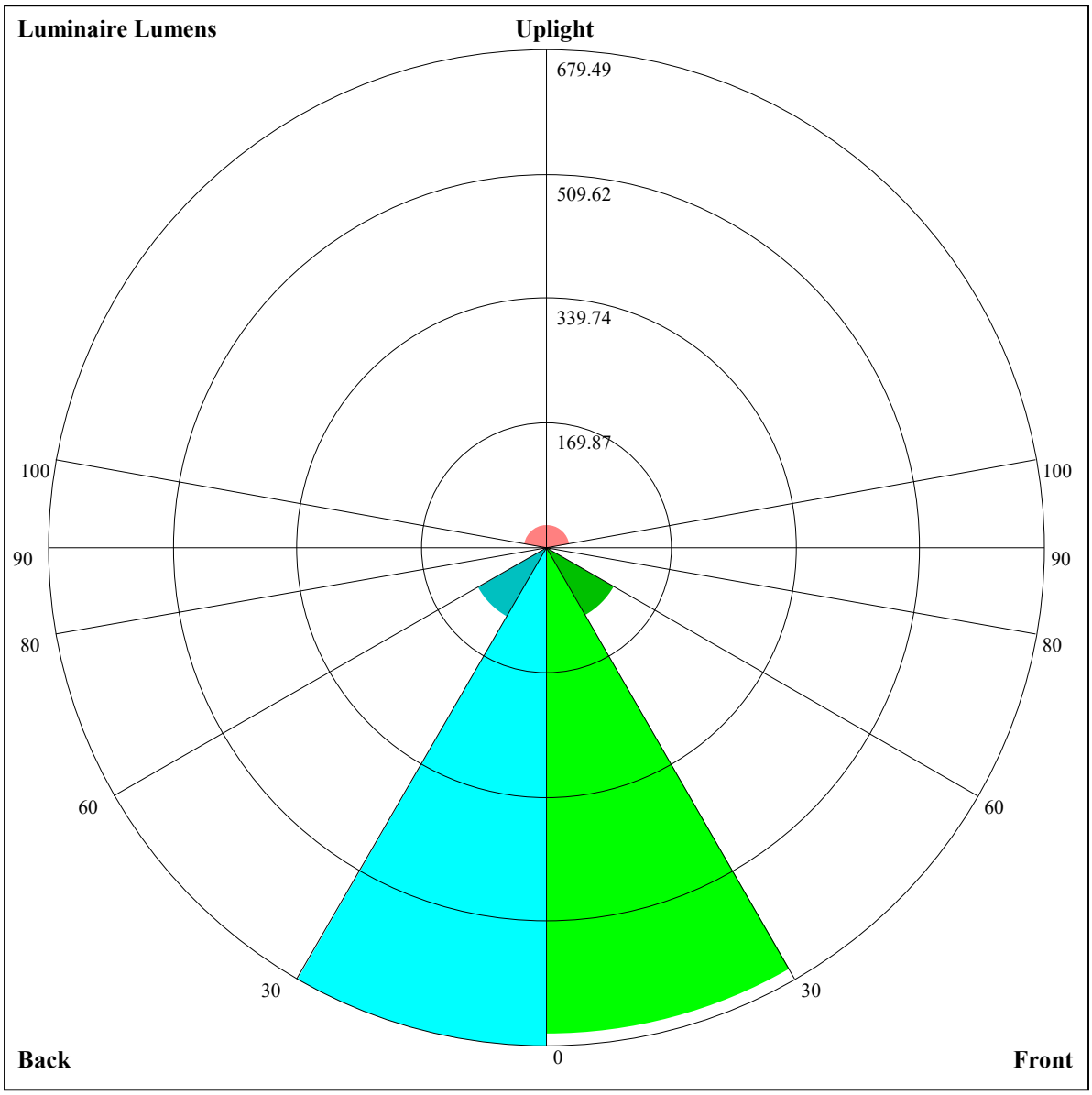
RHOCC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.06	1.06	1.06	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.89
1	0.99	0.97	0.96	0.97	0.96	0.94	0.94	0.92	0.91	0.91	0.89	0.89	0.88	0.87	0.86	0.84
2	0.94	0.91	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.87	0.85	0.84	0.85	0.83	0.82	0.81
3	0.90	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	0.78
4	0.86	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.77	0.81	0.79	0.76	0.80	0.77	0.76	0.75
5	0.82	0.78	0.75	0.81	0.77	0.75	0.80	0.76	0.74	0.78	0.76	0.73	0.77	0.75	0.73	0.72
6	0.79	0.75	0.72	0.78	0.74	0.72	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	0.71	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	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65
9	0.71	0.67	0.64	0.70	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.63
10	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.61

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2018/12/7	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

LCS Graph



Luminaire Lumens:

FL=664.25,FM=106.41,FH=6.95,FVH=3.58

BL=679.49,BM=109.71,BH=6.95,BVH=3.57

UL=7.06,UH=33.59

BUG Rating:B2-U2-G0

Equipment: GMS1980	Date: 2018/12/7	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	7926.75	7844.63	7610.63	7266.38	6888.38	6409.13	5883.75	5394.38	4900.50
45.0	7916.06	7700.63	7365.94	7005.38	6545.25	6041.25	5549.63	4983.19	4475.25
90.0	7848.00	7588.13	7264.69	6778.13	6346.69	5877.00	5379.75	4735.69	4219.31
135.0	7911.00	7810.88	7549.31	7187.06	6801.75	6316.31	5781.94	5286.38	4788.56
180.0	7926.75	7826.63	7605.56	7261.88	6842.25	6414.19	5947.88	5336.44	4840.31
225.0	7916.06	7954.31	7841.25	7538.63	7213.50	6820.88	6334.88	5824.13	5347.69
270.0	7825.50	7957.13	7899.19	7706.25	7377.19	6960.94	6545.81	6041.25	5569.88
315.0	7911.00	7839.56	7644.94	7322.63	6918.19	6506.44	6057.56	5461.88	4969.69
360.0	7926.75	7844.63	7610.63	7266.38	6888.38	6409.13	5883.75	5394.38	4900.50

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4287.38	3804.75	3342.38	2853.56	2413.13	2072.25	1745.44	1478.25	1287.56
45.0	3913.88	3363.75	2909.81	2496.94	2050.31	1746.00	1499.63	1254.38	1105.88
90.0	3713.06	3120.19	2690.44	2310.75	1939.50	1633.50	1411.88	1121.23	1072.69
135.0	4166.44	3669.75	3195.00	2706.75	2284.31	1960.31	1657.13	1415.81	1244.25
180.0	4335.19	3714.75	3246.19	2814.75	2377.69	2005.88	1726.88	1446.19	1287.00
225.0	4799.25	4230.56	3733.88	3198.94	2763.00	2324.25	1953.00	1670.06	1437.75
270.0	5024.25	4467.94	3974.06	3549.94	2922.75	2511.56	2194.31	1771.31	1528.31
315.0	4474.13	3858.19	3381.75	2935.69	2483.44	2093.06	1802.25	1531.13	1333.69
360.0	4287.38	3804.75	3342.38	2853.56	2413.13	2072.25	1745.44	1478.25	1287.56

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1118.25	1002.94	903.38	825.19	767.25	712.69	667.69	636.19	610.31
45.0	984.38	882.56	806.63	745.88	691.31	651.94	619.88	595.13	579.94
90.0	952.09	859.05	790.93	726.13	675.11	640.91	616.84	591.02	576.51
135.0	1082.81	973.69	883.13	804.94	747.00	693.00	649.13	621.00	599.63
180.0	1119.54	995.06	906.75	825.92	757.24	706.16	663.86	623.98	599.34
225.0	1107.96	1077.58	972.11	863.04	806.63	749.81	695.59	652.78	624.32
270.0	1353.38	1155.38	1022.63	939.38	843.75	775.13	729.00	676.13	643.50
315.0	1111.22	1027.01	934.59	851.68	781.65	728.89	684.51	641.87	614.25
360.0	1118.25	1002.94	903.38	825.19	767.25	712.69	667.69	636.19	610.31

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	590.06	578.25	568.69	557.44	547.31	535.50	492.19	425.81	354.38
45.0	568.13	557.44	547.31	538.31	527.63	491.63	442.69	353.81	293.63
90.0	565.71	555.30	544.50	535.56	519.19	470.64	408.66	328.84	255.60
135.0	581.06	570.38	559.69	549.00	537.75	518.63	473.63	387.56	318.94
180.0	583.76	568.24	557.66	547.14	537.64	521.10	477.73	417.77	340.59
225.0	598.50	583.88	571.73	561.09	551.03	540.45	527.96	487.18	427.56
270.0	617.63	594.56	582.19	572.06	559.69	550.69	541.69	509.63	457.88
315.0	594.84	578.48	568.63	558.84	547.31	537.92	508.73	443.53	372.99
360.0	590.06	578.25	568.69	557.44	547.31	535.50	492.19	425.81	354.38

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	288.00	190.24	113.29	55.63	19.97	16.88	15.02	12.60	10.97
45.0	209.08	146.59	65.70	26.83	17.49	15.41	13.22	11.70	9.68
90.0	175.56	102.77	51.58	19.18	16.48	14.96	12.83	10.97	9.84
135.0	291.94	164.42	88.65	39.26	18.00	16.14	14.51	12.54	11.03
180.0	257.68	184.11	109.97	51.75	20.59	16.82	15.30	13.05	11.31
225.0	340.76	266.63	192.54	109.52	54.90	21.15	16.93	14.96	13.11
270.0	390.94	307.69	288.56	145.13	75.49	32.68	17.04	15.47	13.73
315.0	290.87	209.48	138.26	67.22	25.09	17.10	15.47	13.44	11.76
360.0	288.00	190.24	113.29	55.63	19.97	16.88	15.02	12.60	10.97

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	9.67	9.28	9.06	8.83	8.61	8.44	8.33	8.04	7.93
45.0	8.94	8.83	8.55	8.38	8.27	8.04	7.93	7.76	7.65
90.0	9.17	8.94	8.78	8.55	8.44	8.27	8.10	7.88	7.65
135.0	9.51	9.17	9.00	8.78	8.55	8.49	8.33	8.16	7.99
180.0	9.96	9.28	9.00	8.78	8.61	8.38	8.27	8.16	7.99
225.0	11.53	9.96	9.17	9.00	8.72	8.55	8.38	8.21	8.04
270.0	11.59	10.13	9.23	8.94	8.66	8.49	8.33	8.10	7.88
315.0	10.52	9.39	9.11	8.89	8.72	8.44	8.33	8.16	8.04
360.0	9.67	9.28	9.06	8.83	8.61	8.44	8.33	8.04	7.93

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	7.76	7.54	7.43	7.37	7.26	7.20	7.14	7.03	7.03
45.0	7.54	7.43	7.31	7.20	7.14	7.14	7.03	7.03	6.98
90.0	7.48	7.37	7.31	7.31	7.14	7.14	7.09	7.03	6.98
135.0	7.88	7.71	7.43	7.37	7.26	7.20	7.14	7.09	7.03
180.0	7.76	7.59	7.48	7.31	7.26	7.14	7.14	7.03	6.98
225.0	7.88	7.65	7.48	7.37	7.20	7.14	7.14	7.03	6.98
270.0	7.76	7.59	7.54	7.43	7.31	7.20	7.20	7.09	7.03
315.0	7.82	7.65	7.48	7.43	7.26	7.20	7.14	7.09	7.03
360.0	7.76	7.54	7.43	7.37	7.26	7.20	7.14	7.03	7.03

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	6.98	6.92	6.92	6.86	6.81	6.75	6.75	6.75	6.69
45.0	6.86	6.86	6.86	6.81	6.75	6.75	6.75	6.69	6.69
90.0	6.92	6.86	6.86	6.86	6.75	6.81	6.75	6.75	6.75
135.0	6.98	6.92	6.92	6.86	6.81	6.81	6.75	6.75	6.69
180.0	6.98	6.92	6.86	6.81	6.81	6.81	6.75	6.69	6.69
225.0	6.92	6.92	6.86	6.86	6.75	6.75	6.75	6.69	6.64
270.0	7.03	6.92	6.98	6.92	6.86	6.86	6.81	6.81	6.81
315.0	6.98	6.92	6.92	6.86	6.86	6.81	6.81	6.69	6.69
360.0	6.98	6.92	6.92	6.86	6.81	6.75	6.75	6.75	6.69

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	6.64	6.69	6.64	6.58	6.58	6.58	6.58	6.58	6.58
45.0	6.64	6.64	6.64	6.58	6.58	6.58	6.58	6.53	6.53
90.0	6.69	6.75	6.75	6.69	6.64	6.69	6.69	6.69	6.69
135.0	6.69	6.69	6.64	6.64	6.64	6.58	6.58	6.58	6.58
180.0	6.69	6.64	6.64	6.58	6.58	6.58	6.58	6.53	6.58
225.0	6.64	6.64	6.64	6.58	6.58	6.58	6.53	6.53	6.53
270.0	6.75	6.75	6.75	6.75	6.69	6.75	6.69	6.69	6.69
315.0	6.69	6.69	6.64	6.64	6.64	6.64	6.58	6.58	6.58
360.0	6.64	6.69	6.64	6.58	6.58	6.58	6.58	6.58	6.58

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	6.58	6.53	6.58	6.53	6.53	6.53	6.53	6.47	6.47
45.0	6.53	6.53	6.53	6.53	6.53	6.53	6.47	6.47	6.53
90.0	6.69	6.75	6.75	6.69	6.53	6.53	6.47	6.47	6.47
135.0	6.58	6.58	6.58	6.53	6.53	6.53	6.47	6.47	6.53
180.0	6.53	6.53	6.53	6.53	6.53	6.47	6.47	6.47	6.47
225.0	6.53	6.53	6.53	6.47	6.47	6.47	6.47	6.47	6.47
270.0	6.69	6.69	6.69	6.69	6.64	6.58	6.58	6.53	6.53
315.0	6.58	6.53	6.58	6.53	6.58	6.53	6.53	6.53	6.53
360.0	6.58	6.53	6.58	6.53	6.53	6.53	6.53	6.47	6.47

Intensity data(cd)

C/γ(°)	90.0
0.0	6.53
45.0	6.47
90.0	6.47
135.0	6.47
180.0	6.47
225.0	6.41
270.0	6.47
315.0	6.47
360.0	6.53