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Nata

LumCAT: 3-2031-M
Luminaire: 92.70.132.00
Report No: GC2017121901
Test No: NT-0010
LampCAT: NICHIA NFCWL036B-V2
Lamp flux(lm): 1719.0
Number of Lamps: 1
Length(mm): 79
Phm Type: C

Voltage(V): 35.0000
Current(A): 0.3500
Power (W): 12.2500
PF: 0.0000
Ballast type: DC
Width(mm): 79
Height(mm): 0

Photometric Results

Lumens(lm): 1494.70
Efficiency(%): 86.95%
Lumens(lm)/Power(W): 122.02
Central intensity(cd): 19924.910
Maximum intensity(cd): 19924.910
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=10.5
[C90/270]Total=10.5
Field angle(10%Imax): [C0/180]Total=20.9
[C90/270]Total=20.9
Maximum s/h(1/2): C0_180=0.18 C90_270=0.18
Maximum s/h(1/4): C0_180=0.19 C90_270=0.19
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 86.95%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.494%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	19924.910	0.000	0	.000%	.000%
1.0	19441.104	18.836	18.836	1.096%	1.260%
2.0	17954.580	53.674	72.51	3.122%	4.851%
3.0	15602.984	80.259	152.768	4.669%	10.221%
4.0	12273.723	93.312	246.081	5.428%	16.464%
5.0	10552.591	98.198	344.278	5.712%	23.033%
6.0	8110.289	98.078	442.357	5.706%	29.595%
7.0	5897.917	86.949	529.305	5.058%	35.412%
8.0	4236.246	72.528	601.834	4.219%	40.265%
9.0	2894.866	57.794	659.627	3.362%	44.131%
10.0	2354.625	47.506	707.133	2.764%	47.309%
11.0	1555.756	39.073	746.206	2.273%	49.924%
12.0	1209.995	30.234	776.44	1.759%	51.946%
13.0	1046.946	26.784	803.224	1.558%	53.738%
14.0	920.144	25.179	828.403	1.465%	55.423%
15.0	838.832	24.148	852.551	1.405%	57.038%
16.0	776.075	23.663	876.213	1.377%	58.621%
17.0	739.290	23.598	899.812	1.373%	60.200%
18.0	711.783	23.925	923.737	1.392%	61.801%
19.0	687.985	24.353	948.09	1.417%	63.430%
20.0	668.660	24.830	972.92	1.444%	65.091%
21.0	651.262	25.345	998.265	1.474%	66.787%
22.0	635.021	25.848	1024.114	1.504%	68.516%
23.0	621.394	26.363	1050.477	1.534%	70.280%
24.0	609.247	26.906	1077.383	1.565%	72.080%
25.0	596.488	27.416	1104.799	1.595%	73.915%
26.0	586.557	27.926	1132.725	1.625%	75.783%
27.0	576.743	28.460	1161.185	1.656%	77.687%
28.0	566.751	28.951	1190.136	1.684%	79.624%
29.0	556.331	29.383	1219.519	1.709%	81.590%
30.0	546.497	29.776	1249.295	1.732%	83.582%
31.0	536.167	30.129	1279.424	1.753%	85.598%
32.0	526.539	30.445	1309.869	1.771%	87.634%
33.0	516.126	30.717	1340.587	1.787%	89.689%
34.0	475.508	30.010	1370.596	1.746%	91.697%
35.0	397.665	27.118	1397.714	1.578%	93.511%
36.0	299.238	22.190	1419.904	1.291%	94.996%
37.0	217.686	16.859	1436.763	.981%	96.124%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	98.310	10.548	1447.31	.614%	96.830%
39.0	41.251	4.764	1452.074	.277%	97.148%
40.0	25.477	2.327	1454.401	.135%	97.304%
41.0	18.774	1.576	1455.977	.092%	97.409%
42.0	13.943	1.189	1457.166	.069%	97.489%
43.0	12.629	0.984	1458.15	.057%	97.555%
44.0	11.775	0.921	1459.071	.054%	97.616%
45.0	11.383	0.890	1459.961	.052%	97.676%
46.0	11.046	0.877	1460.838	.051%	97.735%
47.0	10.702	0.865	1461.703	.050%	97.793%
48.0	10.426	0.854	1462.557	.050%	97.850%
49.0	10.151	0.845	1463.402	.049%	97.906%
50.0	9.869	0.835	1464.237	.049%	97.962%
51.0	9.656	0.826	1465.063	.048%	98.017%
52.0	9.456	0.820	1465.883	.048%	98.072%
53.0	9.215	0.812	1466.695	.047%	98.127%
54.0	9.022	0.804	1467.499	.047%	98.180%
55.0	8.830	0.797	1468.296	.046%	98.234%
56.0	8.644	0.790	1469.085	.046%	98.286%
57.0	8.499	0.784	1469.869	.046%	98.339%
58.0	8.334	0.778	1470.648	.045%	98.391%
59.0	8.217	0.774	1471.421	.045%	98.443%
60.0	8.107	0.771	1472.193	.045%	98.494%
61.0	7.976	0.768	1472.96	.045%	98.546%
62.0	7.880	0.764	1473.724	.044%	98.597%
63.0	7.790	0.762	1474.486	.044%	98.648%
64.0	7.673	0.759	1475.245	.044%	98.699%
65.0	7.584	0.755	1476	.044%	98.749%
66.0	7.508	0.753	1476.753	.044%	98.799%
67.0	7.433	0.751	1477.505	.044%	98.850%
68.0	7.371	0.750	1478.254	.044%	98.900%
69.0	7.316	0.749	1479.004	.044%	98.950%
70.0	7.274	0.749	1479.753	.044%	99.000%
71.0	7.219	0.749	1480.502	.044%	99.050%
72.0	7.178	0.749	1481.251	.044%	99.100%
73.0	7.137	0.749	1481.999	.044%	99.150%
74.0	7.102	0.749	1482.748	.044%	99.201%
75.0	7.061	0.748	1483.496	.044%	99.251%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.033	0.748	1484.244	.044%	99.301%
77.0	7.013	0.749	1484.993	.044%	99.351%
78.0	6.978	0.749	1485.742	.044%	99.401%
79.0	6.958	0.749	1486.491	.044%	99.451%
80.0	6.923	0.748	1487.239	.044%	99.501%
81.0	6.930	0.749	1487.989	.044%	99.551%
82.0	6.903	0.750	1488.739	.044%	99.601%
83.0	6.882	0.749	1489.488	.044%	99.651%
84.0	6.855	0.748	1490.236	.044%	99.702%
85.0	6.834	0.747	1490.983	.043%	99.752%
86.0	6.820	0.746	1491.73	.043%	99.801%
87.0	6.772	0.744	1492.474	.043%	99.851%
88.0	6.772	0.742	1493.216	.043%	99.901%
89.0	6.758	0.742	1493.957	.043%	99.950%
90.0	6.744	0.740	1494.697	.043%	100.000%

Zonal flux distribution table

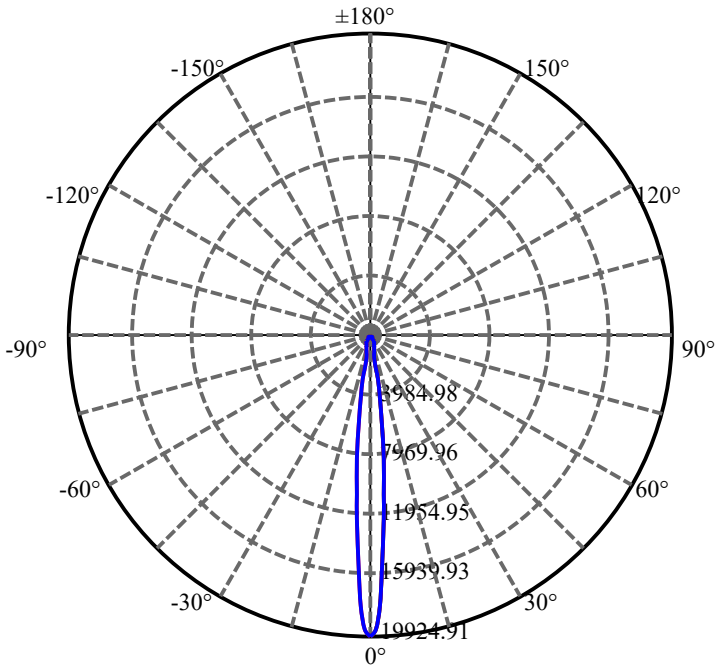
ZONAL LUMEN SUMMARY

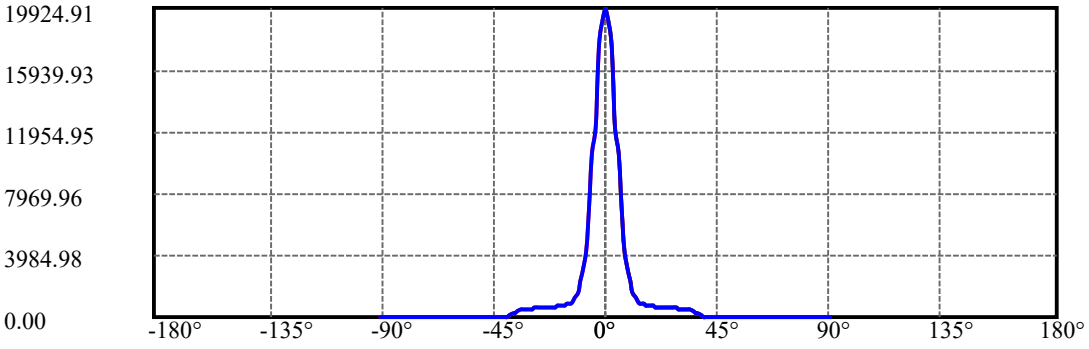
Zone	Lumens	%Lamp	%Fixt
0-30	1249.30	72.68%	83.58%
0-40	1454.40	84.61%	97.30%
0-60	1472.19	85.64%	98.49%
0-90	1493.96	86.91%	99.95%
0-120	1493.96	86.91%	99.95%
0-180	1494.70	86.95%	100.00%
60-90	22.54	1.31%	1.51%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.19	1195.76	69.56%	80.00%

ZONAL LUMEN SUMMARY

0-10	707.13
10-20	265.79
20-30	276.37
30-40	205.11
40-50	9.84
50-60	7.96
60-70	7.56
70-80	7.49
80-90	6.72
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):

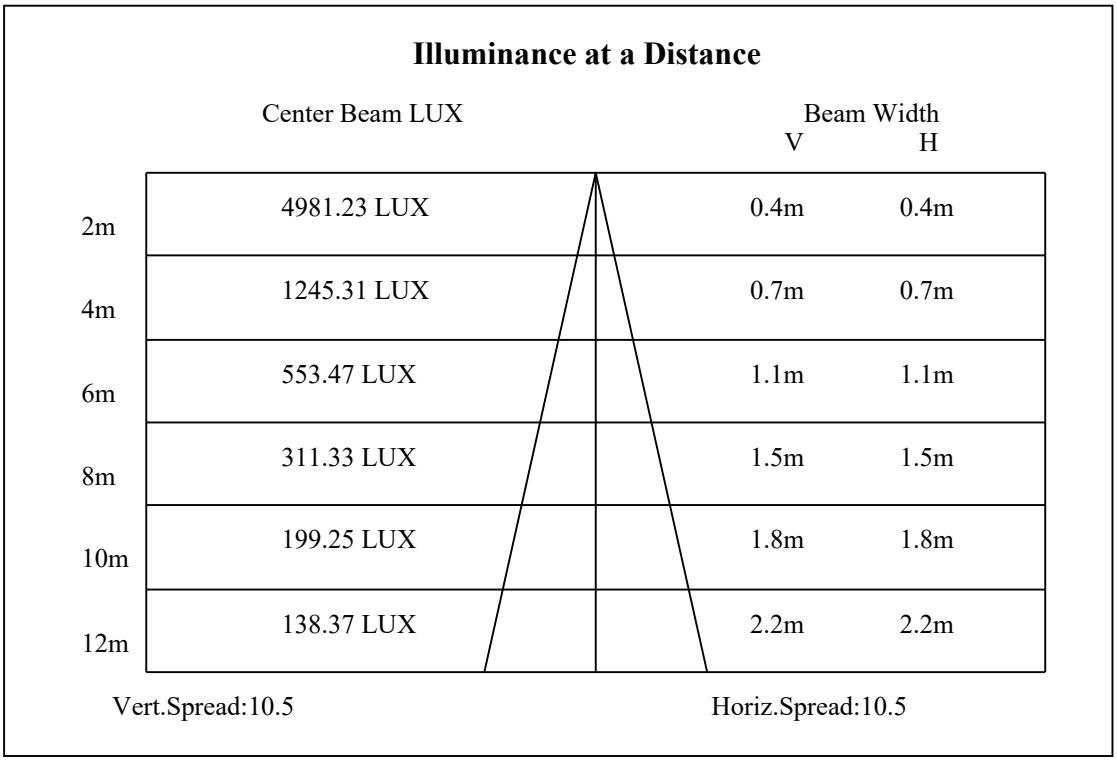
C0/C180:

C90/C270:

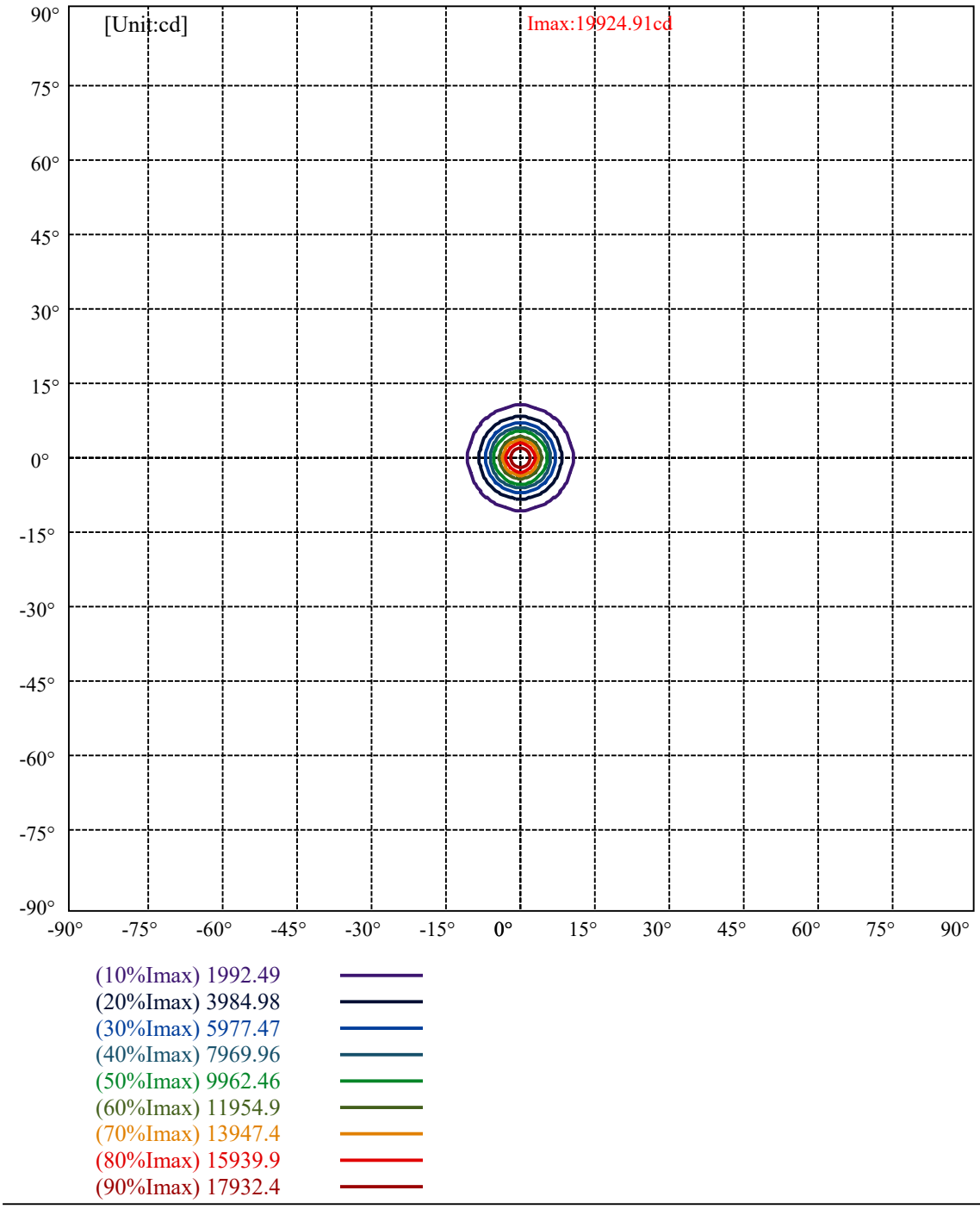
Field angle(10%Imax):C0/180Left:10.5 Right:10.5
:C90/270Left:10.5 Right:10.5

Beam Angle(50%Imax):C0/180Left:5.2 Right:5.2
:C90/270Left:5.2 Right:5.2

Lux distance Curve



ISO-Intensity(V-H)



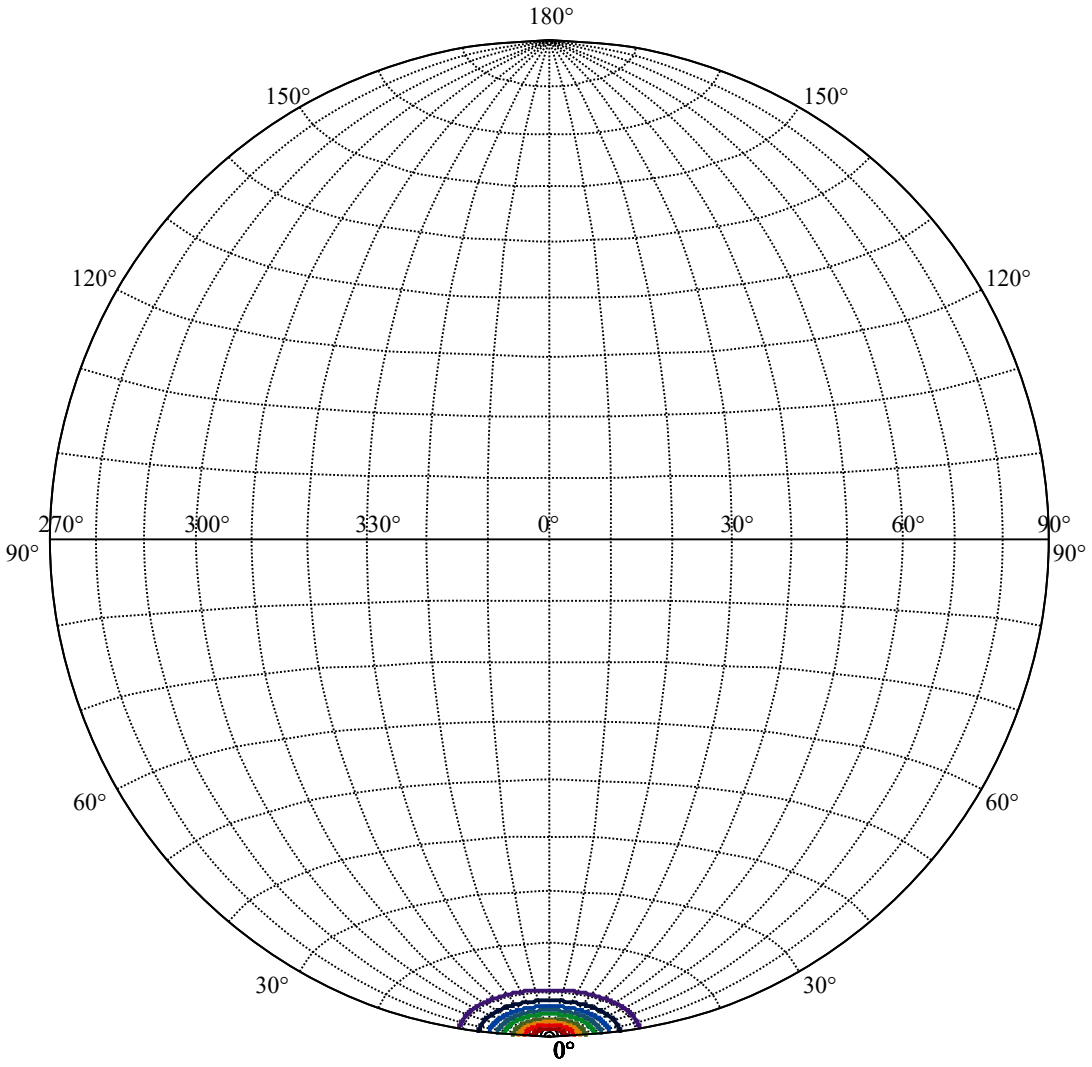
(10%Imax) 1992.49
(20%Imax) 3984.98
(30%Imax) 5977.47
(40%Imax) 7969.96
(50%Imax) 9962.46
(60%Imax) 11954.9
(70%Imax) 13947.4
(80%Imax) 15939.9
(90%Imax) 17932.4

Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/12/23
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



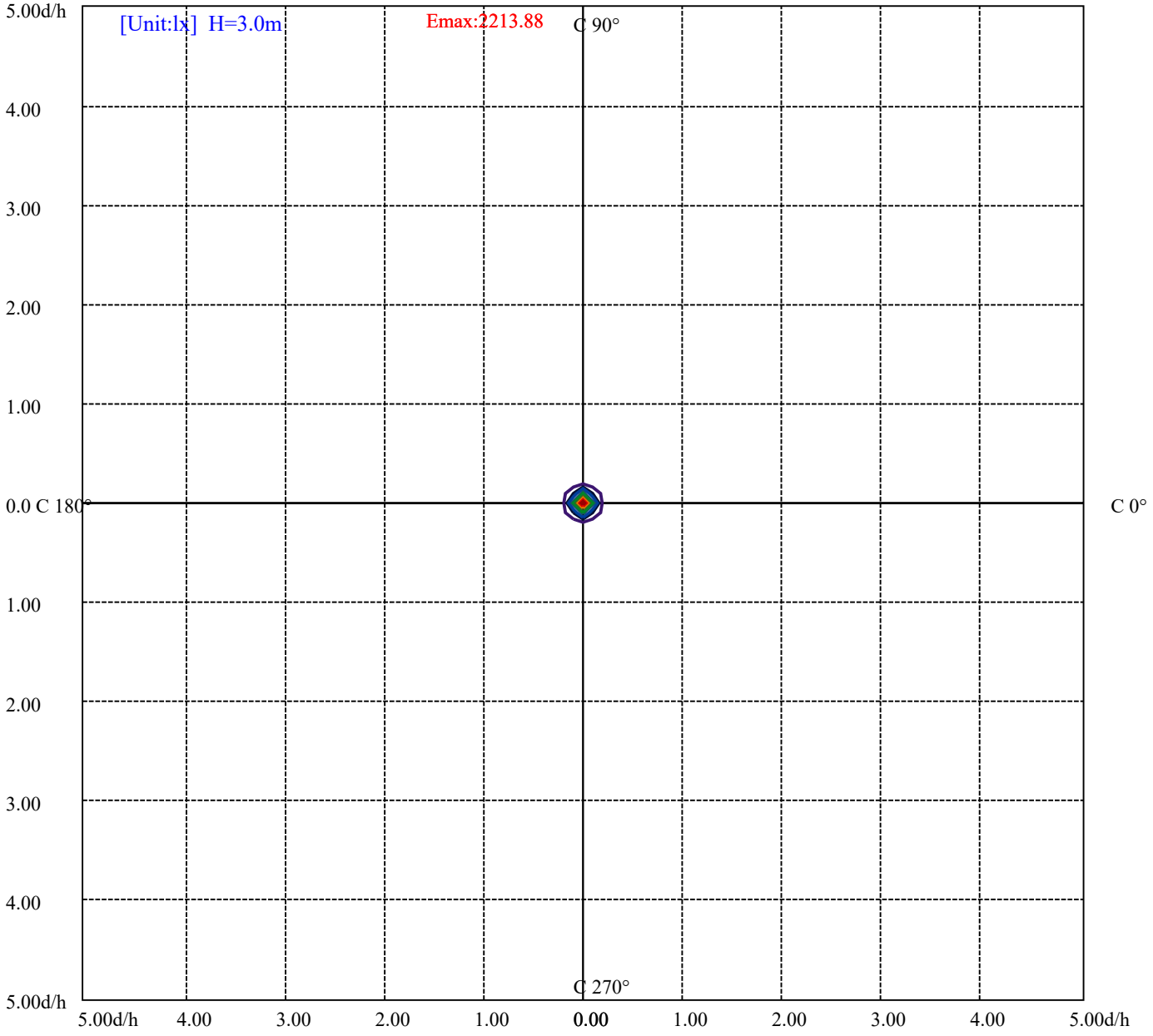
House [Unit:cd] Road

Imax:19924.91

(10%Imax) 1992.49
(20%Imax) 3984.98
(30%Imax) 5977.47
(40%Imax) 7969.96
(50%Imax) 9962.46
(60%Imax) 11954.9
(70%Imax) 13947.4
(80%Imax) 15939.9
(90%Imax) 17932.4

Equipment: GMS1980 Date: 2017/12/23 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

ISO illuminance diagram

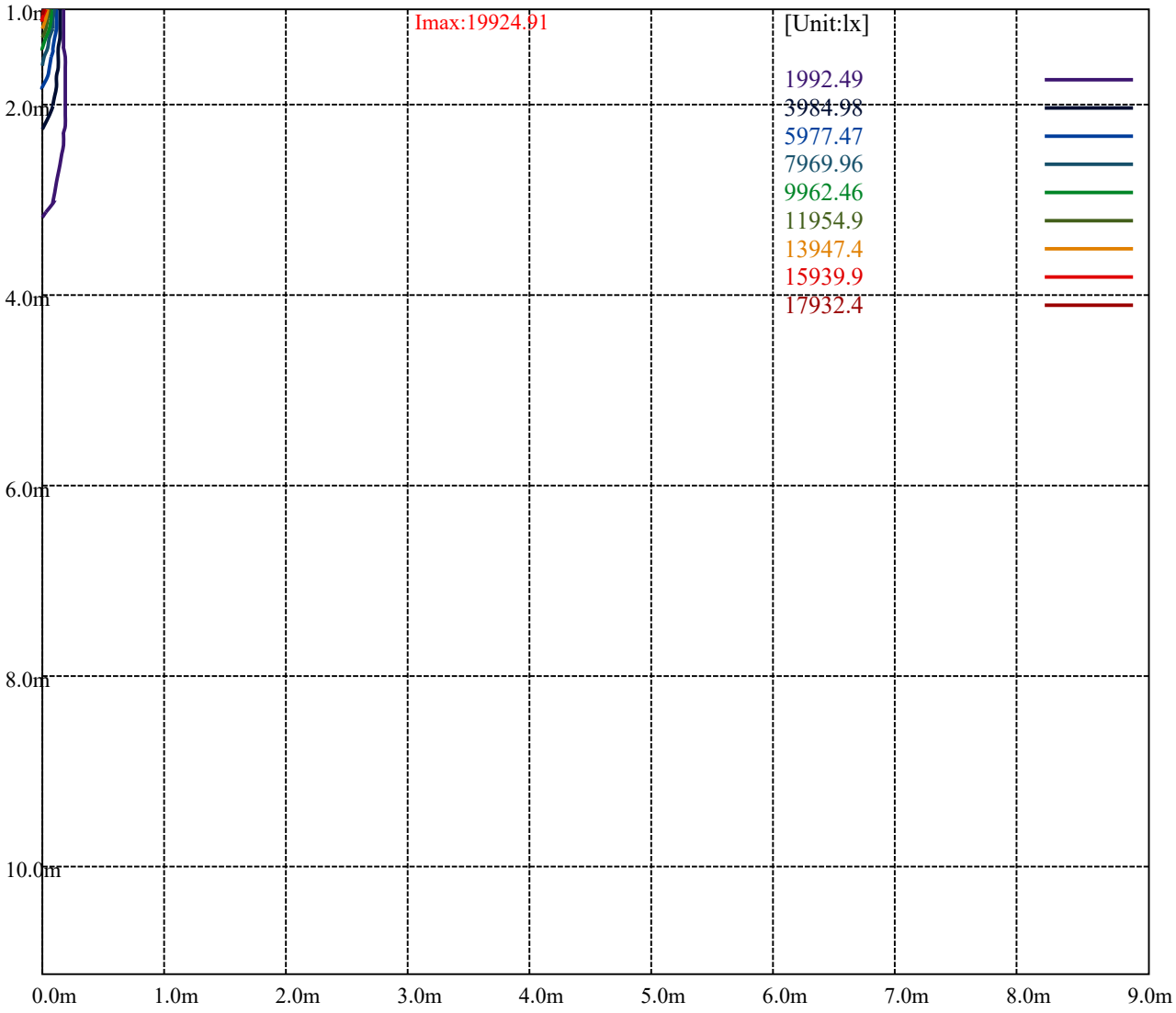


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2017/12/23
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: GMS1980 Date: 2017/12/23 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Luminance Limitting Curve(no luminous side)

Luminance Table

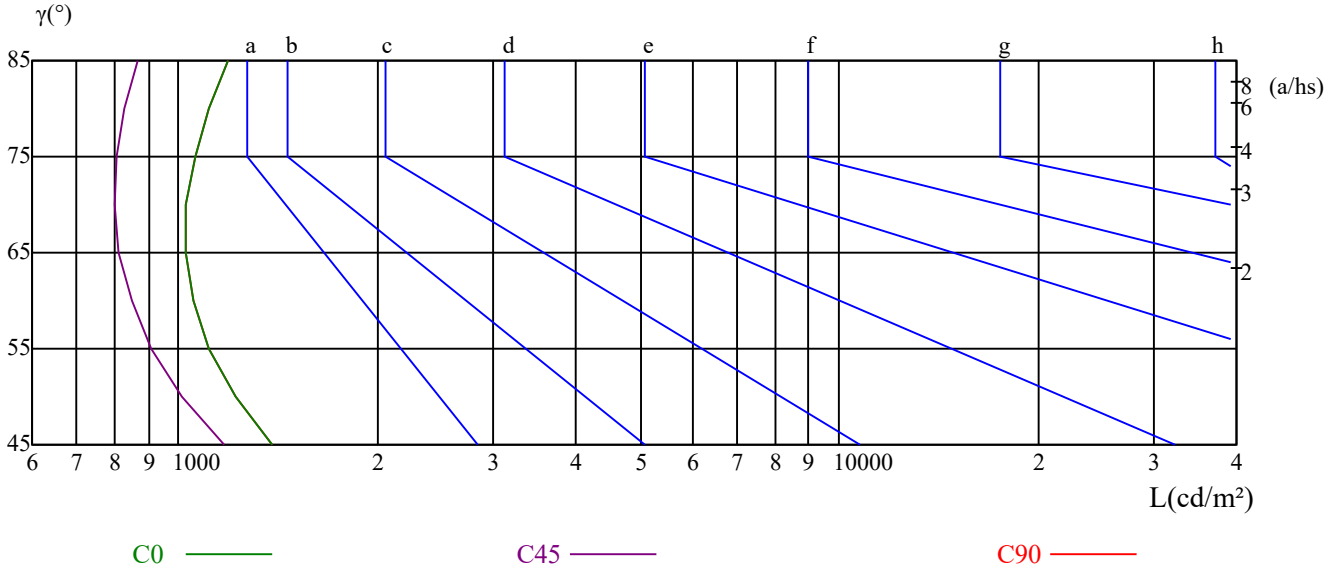
γ	45	50	55	60	65	70	75	80	85
C0	1388	1219	1113	1052	1022	1028	1057	1111	1191
C45	1170	1012	911	847	809	799	806	829	867
C90	1388	1219	1113	1052	1022	1028	1057	1111	1191

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2804	2804	2804	4263	4263	4263	12252	12252	12252

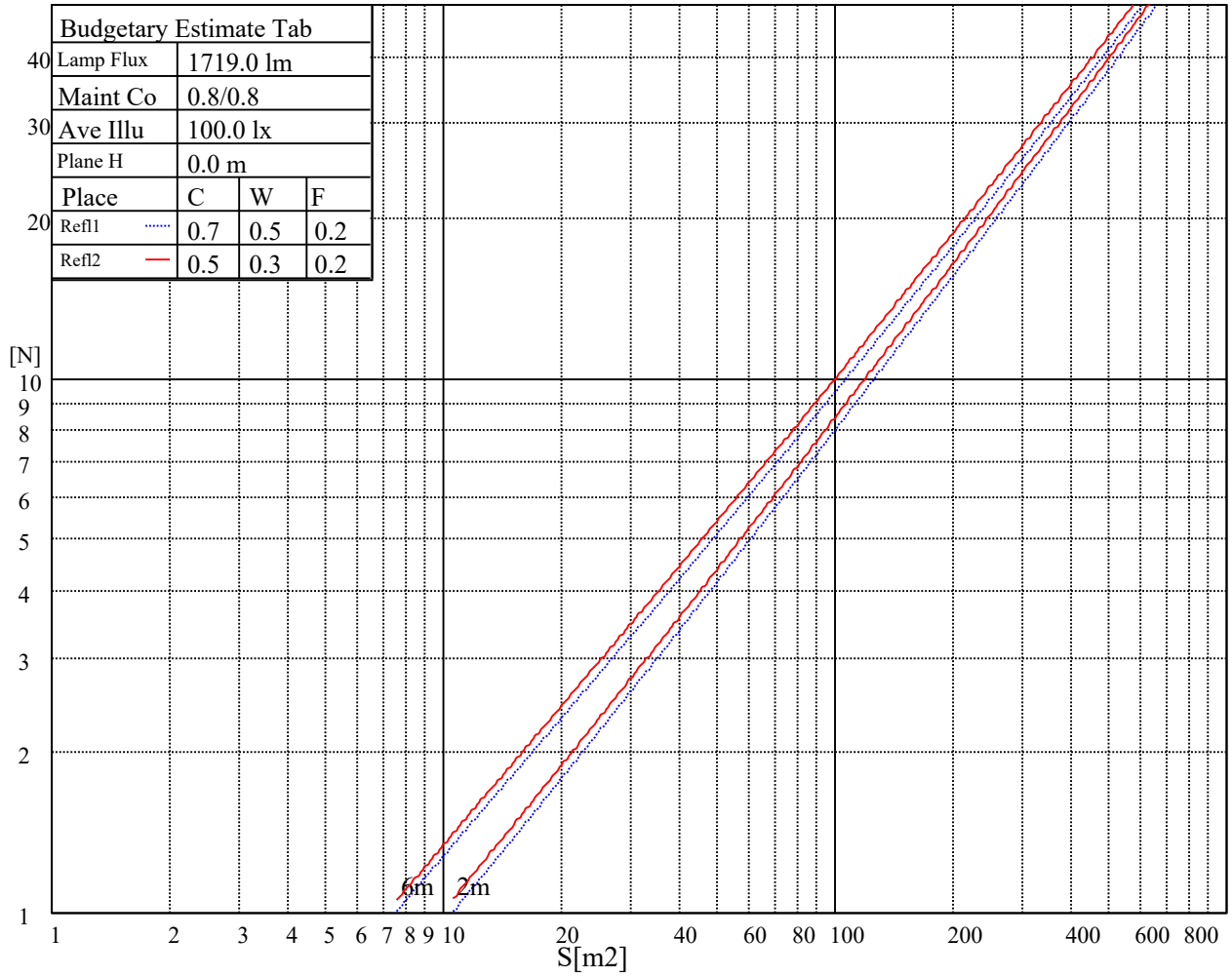
Glare Table

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

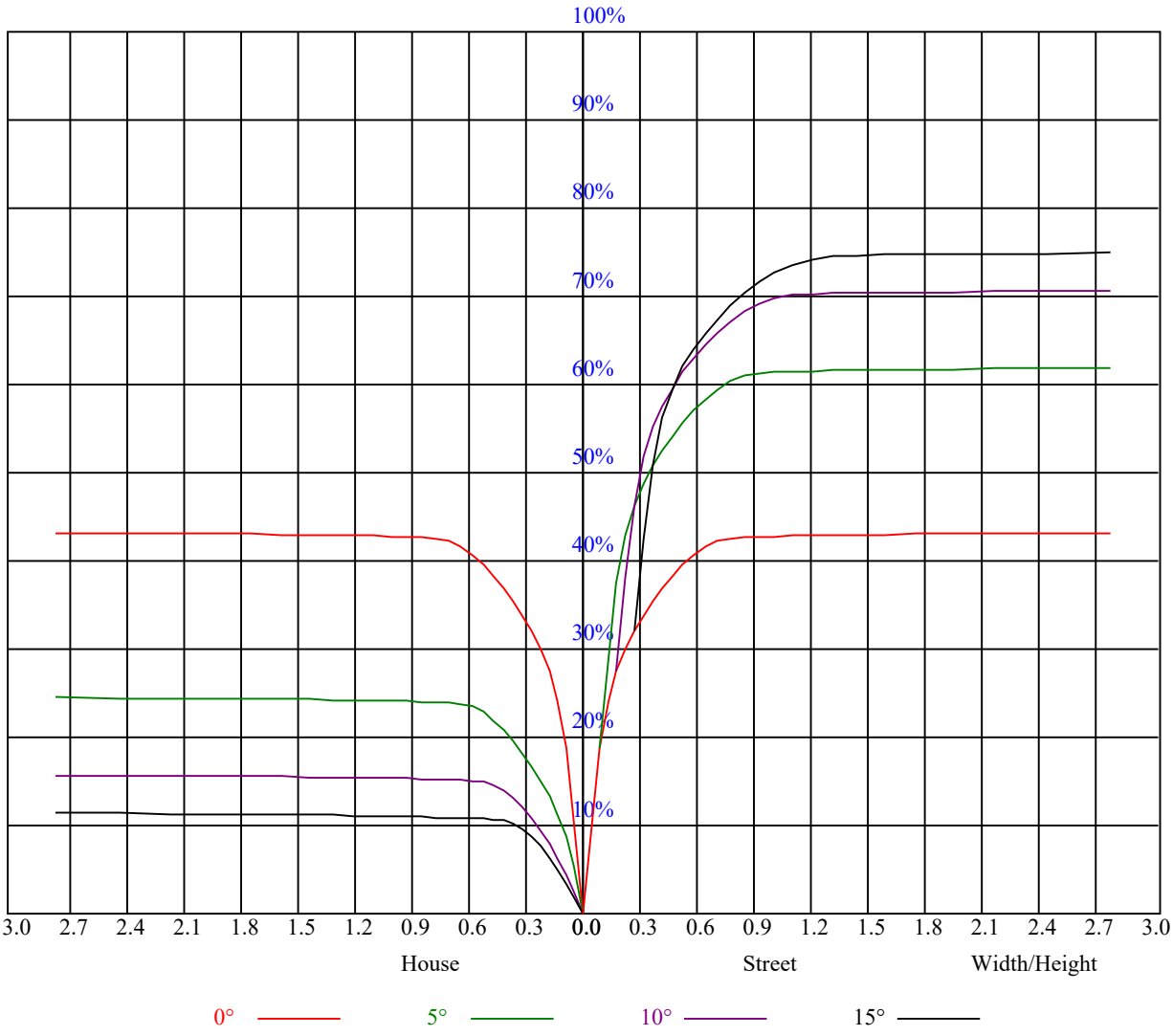


Equipment: GMS1980 Date: 2017/12/23 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.98	0.96	0.94	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.85	0.83
2	0.93	0.90	0.88	0.91	0.89	0.87	0.89	0.86	0.85	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	0.82	0.85	0.83	0.81	0.83	0.81	0.79	0.81	0.80	0.78	0.77
4	0.85	0.81	0.78	0.84	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.79	0.77	0.75	0.74
5	0.81	0.78	0.75	0.81	0.77	0.75	0.79	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	0.72	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	0.72	0.69	0.74	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.67
8	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.66
9	0.71	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.64
10	0.70	0.66	0.64	0.69	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2017/12/23	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 60.0%	Distance(m): 7.42

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	19897.38	19787.27	18520.97	16594.00	13934.77	11484.77	8875.09	6540.70	4773.39
45.0	19891.88	19770.75	18465.92	16555.46	13973.31	11259.03	8946.67	6529.69	4712.83
90.0	19952.44	19192.66	17623.55	14925.79	10735.45	10158.46	7667.70	5455.54	3852.85
135.0	19957.95	19627.61	18157.60	16131.53	13505.33	10851.62	8616.33	6309.46	4569.68
180.0	19897.38	19033.00	17364.79	14578.93	10937.50	9772.51	7052.72	5158.23	3624.36
225.0	19891.88	19104.57	17447.37	14689.05	10707.92	9826.47	7648.99	5283.21	3754.85
270.0	19952.44	19732.21	18333.78	16329.73	13631.96	10890.16	8616.33	6348.00	4635.75
315.0	19957.95	19280.75	17722.66	15019.39	10763.53	10177.73	7458.49	5558.49	3966.26
360.0	19897.38	19787.27	18520.97	16594.00	13934.77	11484.77	8875.09	6540.70	4773.39

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3215.29	2818.89	1686.38	1356.04	1094.52	957.98	865.49	796.12	749.87
45.0	3292.37	2879.45	1668.76	1349.43	1091.77	955.23	862.18	788.96	750.97
90.0	2682.90	1825.67	1445.23	1082.19	1007.81	883.93	812.08	760.00	728.95
135.0	3077.65	2818.89	1625.26	1315.30	1065.34	934.31	846.77	775.74	738.31
180.0	2546.36	1773.37	1419.35	1089.51	982.54	878.20	807.68	753.83	716.72
225.0	2658.67	1847.14	1461.75	1082.79	1008.30	885.53	814.50	762.09	730.82
270.0	3143.72	3011.59	1673.16	1323.56	1098.38	961.84	869.89	795.56	756.47
315.0	2541.95	1862.01	1466.15	1081.14	1026.91	904.14	832.07	776.30	742.22
360.0	3215.29	2818.89	1686.38	1356.04	1094.52	957.98	865.49	796.12	749.87

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	721.24	696.46	674.99	659.03	641.96	629.29	616.08	603.97	594.06
45.0	722.34	697.01	676.64	659.03	643.61	628.19	615.53	602.32	592.41
90.0	702.24	680.17	662.38	643.99	627.42	614.54	602.37	588.11	578.20
135.0	709.68	684.35	662.33	643.61	627.64	612.78	601.22	590.20	580.29
180.0	691.56	668.38	650.49	633.37	618.17	606.23	594.28	583.32	574.18
225.0	704.89	683.97	667.72	651.21	635.57	622.80	610.85	596.26	585.63
270.0	727.85	701.97	681.05	665.63	649.11	634.25	622.14	609.47	599.01
315.0	714.47	691.56	673.67	654.24	636.67	623.07	611.51	598.24	588.66
360.0	721.24	696.46	674.99	659.03	641.96	629.29	616.08	603.97	594.06

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	584.70	574.24	565.43	556.07	545.06	536.80	527.44	505.42	433.29
45.0	581.40	570.93	562.68	551.11	539.00	530.74	520.28	493.31	426.69
90.0	569.06	559.15	546.54	536.47	526.61	515.60	503.77	454.71	375.54
135.0	569.83	559.92	550.56	541.20	531.29	522.49	512.58	465.78	384.84
180.0	565.54	555.46	544.34	535.92	527.00	516.81	505.91	452.62	362.82
225.0	575.72	565.54	554.20	544.01	533.94	523.31	513.02	465.83	385.01
270.0	588.00	578.64	568.73	558.27	547.26	537.90	528.54	497.71	429.99
315.0	579.69	570.11	558.16	548.91	539.17	528.65	517.48	468.70	383.14
360.0	584.70	574.24	565.43	556.07	545.06	536.80	527.44	505.42	433.29

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	344.65	279.69	129.22	52.47	28.57	20.92	14.76	12.99	11.89
45.0	340.25	295.10	132.63	59.19	28.63	21.47	14.98	13.21	11.95
90.0	268.18	159.39	79.50	32.32	22.85	16.46	12.72	11.95	11.56
135.0	289.60	228.32	84.51	36.78	24.56	18.22	13.38	12.39	11.56
180.0	266.69	161.65	85.39	33.91	23.18	17.07	13.27	11.89	11.29
225.0	282.49	179.21	93.60	36.12	24.39	17.84	13.38	12.28	11.84
270.0	333.64	281.89	107.53	47.79	28.24	20.92	15.14	13.98	12.22
315.0	268.40	156.25	74.11	31.44	23.40	17.29	13.93	12.33	11.89
360.0	344.65	279.69	129.22	52.47	28.57	20.92	14.76	12.99	11.89

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	11.51	11.18	10.79	10.46	10.19	9.86	9.63	9.47	9.19
45.0	11.29	11.01	10.63	10.41	10.13	9.86	9.63	9.47	9.19
90.0	11.23	10.90	10.57	10.30	10.08	9.80	9.63	9.41	9.19
135.0	11.18	10.90	10.57	10.30	10.08	9.74	9.58	9.36	9.14
180.0	10.96	10.63	10.35	10.08	9.80	9.63	9.41	9.19	9.03
225.0	11.51	11.12	10.79	10.57	10.24	9.97	9.74	9.52	9.30
270.0	11.78	11.45	11.07	10.79	10.46	10.19	9.91	9.74	9.41
315.0	11.62	11.18	10.85	10.52	10.24	9.91	9.69	9.47	9.25
360.0	11.51	11.18	10.79	10.46	10.19	9.86	9.63	9.47	9.19

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.97	8.86	8.70	8.53	8.37	8.26	8.09	7.98	7.87
45.0	9.03	8.86	8.64	8.53	8.42	8.26	8.15	8.04	7.87
90.0	9.03	8.81	8.64	8.48	8.31	8.20	8.15	7.98	7.87
135.0	8.97	8.75	8.53	8.42	8.31	8.20	8.09	7.98	7.87
180.0	8.81	8.64	8.48	8.31	8.15	8.04	7.98	7.82	7.76
225.0	9.08	8.86	8.70	8.53	8.31	8.20	8.09	7.93	7.87
270.0	9.25	9.03	8.81	8.64	8.48	8.37	8.20	8.09	7.98
315.0	9.03	8.81	8.64	8.53	8.31	8.20	8.09	7.98	7.93
360.0	8.97	8.86	8.70	8.53	8.37	8.26	8.09	7.98	7.87

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	7.82	7.71	7.60	7.54	7.49	7.38	7.32	7.32	7.21
45.0	7.82	7.71	7.60	7.54	7.49	7.38	7.32	7.27	7.21
90.0	7.76	7.65	7.60	7.49	7.38	7.32	7.27	7.27	7.21
135.0	7.76	7.65	7.54	7.49	7.38	7.38	7.32	7.27	7.21
180.0	7.71	7.60	7.54	7.43	7.38	7.32	7.27	7.21	7.16
225.0	7.76	7.65	7.54	7.49	7.43	7.38	7.32	7.27	7.21
270.0	7.87	7.76	7.65	7.60	7.49	7.43	7.38	7.32	7.27
315.0	7.82	7.65	7.60	7.49	7.43	7.38	7.32	7.27	7.27
360.0	7.82	7.71	7.60	7.54	7.49	7.38	7.32	7.32	7.21

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	7.21	7.10	7.10	7.05	6.99	6.99	6.99	6.94	6.94
45.0	7.16	7.16	7.10	7.05	7.05	7.05	6.99	6.99	6.94
90.0	7.16	7.10	7.10	7.05	7.05	6.99	6.94	6.94	6.88
135.0	7.16	7.10	7.10	7.05	6.99	6.99	6.94	6.94	6.88
180.0	7.16	7.10	7.05	7.05	6.99	6.99	6.94	6.94	6.88
225.0	7.16	7.16	7.10	7.05	7.05	7.05	7.05	6.99	6.94
270.0	7.21	7.21	7.16	7.10	7.10	7.05	6.99	6.99	6.99
315.0	7.21	7.16	7.10	7.10	7.05	6.99	6.99	6.94	6.94
360.0	7.21	7.10	7.10	7.05	6.99	6.99	6.99	6.94	6.94

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	6.94	6.88	6.88	6.83	6.83	6.83	6.77	6.77	6.77
45.0	6.94	6.94	6.88	6.88	6.83	6.77	6.77	6.77	6.77
90.0	6.94	6.88	6.83	6.83	6.83	6.77	6.77	6.77	6.77
135.0	6.94	6.88	6.88	6.83	6.83	6.83	6.77	6.77	6.77
180.0	6.88	6.88	6.88	6.83	6.83	6.83	6.77	6.77	6.72
225.0	6.94	6.94	6.94	6.94	6.88	6.88	6.77	6.77	6.72
270.0	6.94	6.94	6.88	6.83	6.83	6.83	6.77	6.77	6.77
315.0	6.94	6.88	6.88	6.88	6.83	6.83	6.77	6.77	6.77
360.0	6.94	6.88	6.88	6.83	6.83	6.83	6.77	6.77	6.77

Intensity data(cd)

C/γ(°)	90.0
0.0	6.77
45.0	6.72
90.0	6.77
135.0	6.72
180.0	6.77
225.0	6.72
270.0	6.77
315.0	6.72
360.0	6.77