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Nata

LumCAT: 3-2033-M
Luminaire: 92.70.131.00
Report No: GC2017061905
Test No: NT-0010
LampCAT: BMTC MA-1919 20W
Lamp flux(lm): 2561.0
Number of Lamps: 1
Length(mm): 79
Phm Type: C

Voltage(V): 220.0000
Current(A): 0.1300
Power (W): 27.0000
PF: 0.9410
Ballast type: DC
Width(mm): 79
Height(mm): 0

Photometric Results

Lumens(lm): 2339.15
Efficiency(%): 91.34%
Lumens(lm)/Power(W): 86.64
Central intensity(cd): 18030.970
Maximum intensity(cd): 18030.970
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=14.9
[C90/270]Total=14.9
Field angle(10%Imax): [C0/180]Total=30.8
[C90/270]Total=30.8
Maximum s/h(1/2): C0_180=0.26 C90_270=0.26
Maximum s/h(1/4): C0_180=0.26 C90_270=0.26
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.34%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.811%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	18030.971	0.000	0	.000%	.000%
1.0	17852.037	17.169	17.169	.670%	.734%
2.0	17217.514	50.335	67.504	1.965%	2.886%
3.0	16205.851	79.938	147.442	3.121%	6.303%
4.0	14936.801	104.244	251.687	4.070%	10.760%
5.0	13243.679	121.231	372.918	4.734%	15.942%
6.0	11609.193	130.608	503.526	5.100%	21.526%
7.0	9706.443	132.306	635.832	5.166%	27.182%
8.0	8171.884	127.952	763.784	4.996%	32.652%
9.0	6607.731	119.781	883.564	4.677%	37.773%
10.0	5129.054	106.214	989.778	4.147%	42.314%
11.0	4073.072	91.948	1081.726	3.590%	46.244%
12.0	3331.187	80.939	1162.665	3.160%	49.705%
13.0	2597.836	70.363	1233.028	2.747%	52.713%
14.0	2233.776	61.844	1294.872	2.415%	55.357%
15.0	1888.022	56.586	1351.458	2.210%	57.776%
16.0	1665.456	52.068	1403.526	2.033%	60.002%
17.0	1484.596	49.055	1452.581	1.915%	62.099%
18.0	1316.522	46.184	1498.765	1.803%	64.073%
19.0	1221.495	44.156	1542.922	1.724%	65.961%
20.0	1122.435	42.900	1585.822	1.675%	67.795%
21.0	1036.767	41.461	1627.283	1.619%	69.567%
22.0	984.078	40.610	1667.893	1.586%	71.303%
23.0	939.661	40.365	1708.258	1.576%	73.029%
24.0	902.017	40.266	1748.524	1.572%	74.750%
25.0	875.314	40.413	1788.937	1.578%	76.478%
26.0	854.379	40.830	1829.766	1.594%	78.224%
27.0	834.201	41.311	1871.078	1.613%	79.990%
28.0	817.794	41.825	1912.903	1.633%	81.778%
29.0	803.273	42.412	1955.314	1.656%	83.591%
30.0	788.738	42.984	1998.298	1.678%	85.428%
31.0	762.146	43.159	2041.457	1.685%	87.273%
32.0	720.413	42.474	2083.931	1.658%	89.089%
33.0	665.852	40.840	2124.771	1.595%	90.835%
34.0	588.773	37.969	2162.739	1.483%	92.458%
35.0	498.618	33.770	2196.51	1.319%	93.902%
36.0	404.554	28.757	2225.267	1.123%	95.131%
37.0	327.723	23.883	2249.15	.933%	96.152%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	218.147	18.220	2267.37	.711%	96.931%
39.0	154.543	12.721	2280.091	.497%	97.475%
40.0	83.479	8.301	2288.392	.324%	97.830%
41.0	45.903	4.607	2293	.180%	98.027%
42.0	21.321	2.442	2295.442	.095%	98.131%
43.0	15.498	1.364	2296.806	.053%	98.190%
44.0	13.654	1.100	2297.906	.043%	98.237%
45.0	11.603	0.971	2298.877	.038%	98.278%
46.0	10.956	0.882	2299.759	.034%	98.316%
47.0	10.034	0.835	2300.594	.033%	98.352%
48.0	9.910	0.806	2301.4	.031%	98.386%
49.0	9.759	0.808	2302.208	.032%	98.421%
50.0	9.621	0.808	2303.016	.032%	98.455%
51.0	9.539	0.811	2303.826	.032%	98.490%
52.0	9.456	0.815	2304.642	.032%	98.525%
53.0	9.387	0.820	2305.461	.032%	98.560%
54.0	9.291	0.823	2306.284	.032%	98.595%
55.0	9.222	0.826	2307.111	.032%	98.630%
56.0	9.167	0.831	2307.942	.032%	98.666%
57.0	9.126	0.836	2308.778	.033%	98.702%
58.0	9.112	0.843	2309.622	.033%	98.738%
59.0	9.071	0.850	2310.472	.033%	98.774%
60.0	9.029	0.855	2311.327	.033%	98.811%
61.0	8.974	0.859	2312.186	.034%	98.847%
62.0	8.947	0.864	2313.049	.034%	98.884%
63.0	8.933	0.870	2313.919	.034%	98.921%
64.0	8.933	0.877	2314.796	.034%	98.959%
65.0	8.905	0.883	2315.678	.034%	98.997%
66.0	8.892	0.888	2316.566	.035%	99.035%
67.0	8.850	0.892	2317.458	.035%	99.073%
68.0	8.864	0.897	2318.356	.035%	99.111%
69.0	8.850	0.904	2319.26	.035%	99.150%
70.0	8.850	0.909	2320.169	.035%	99.189%
71.0	8.837	0.914	2321.083	.036%	99.228%
72.0	8.823	0.918	2322.001	.036%	99.267%
73.0	8.823	0.923	2322.924	.036%	99.306%
74.0	8.809	0.927	2323.851	.036%	99.346%
75.0	8.850	0.933	2324.784	.036%	99.386%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.850	0.940	2325.723	.037%	99.426%
77.0	8.837	0.943	2326.666	.037%	99.466%
78.0	8.795	0.944	2327.61	.037%	99.507%
79.0	8.823	0.947	2328.557	.037%	99.547%
80.0	8.837	0.952	2329.509	.037%	99.588%
81.0	8.864	0.957	2330.466	.037%	99.629%
82.0	8.837	0.960	2331.426	.037%	99.670%
83.0	8.864	0.962	2332.388	.038%	99.711%
84.0	8.837	0.964	2333.352	.038%	99.752%
85.0	8.823	0.964	2334.316	.038%	99.793%
86.0	8.823	0.965	2335.281	.038%	99.835%
87.0	8.837	0.966	2336.247	.038%	99.876%
88.0	8.837	0.968	2337.215	.038%	99.917%
89.0	8.809	0.967	2338.183	.038%	99.959%
90.0	8.837	0.967	2339.15	.038%	100.000%

Zonal flux distribution table

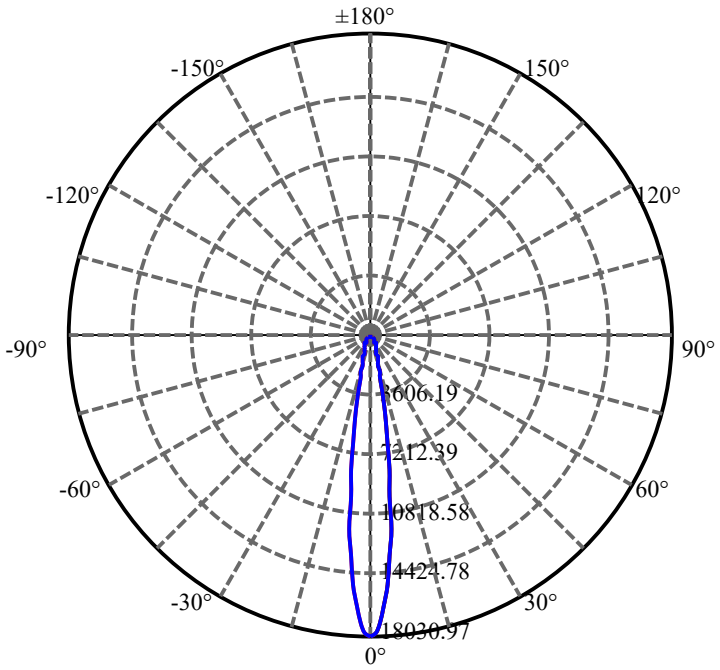
ZONAL LUMEN SUMMARY

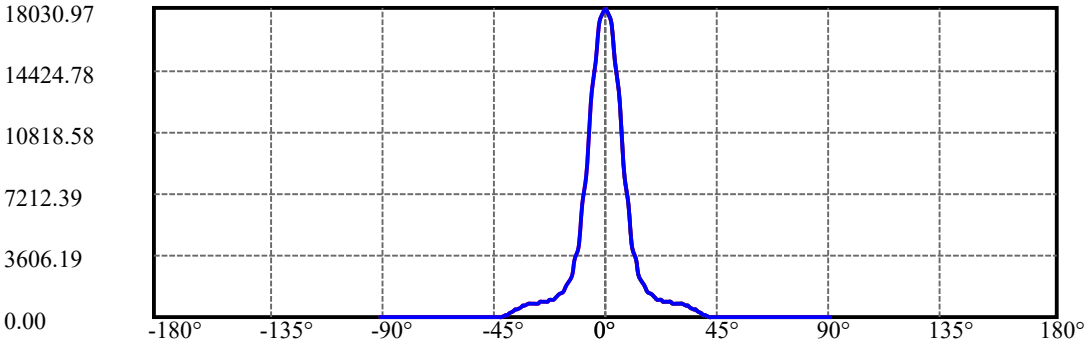
Zone	Lumens	%Lamp	%Fixt
0-30	1998.30	78.03%	85.43%
0-40	2288.39	89.36%	97.83%
0-60	2311.33	90.25%	98.81%
0-90	2338.18	91.30%	99.96%
0-120	2338.18	91.30%	99.96%
0-180	2339.15	91.34%	100.00%
60-90	27.71	1.08%	1.18%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.01	1871.32	73.07%	80.00%

ZONAL LUMEN SUMMARY

0-10	989.78
10-20	596.04
20-30	412.48
30-40	290.09
40-50	14.62
50-60	8.31
60-70	8.84
70-80	9.34
80-90	8.67
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:

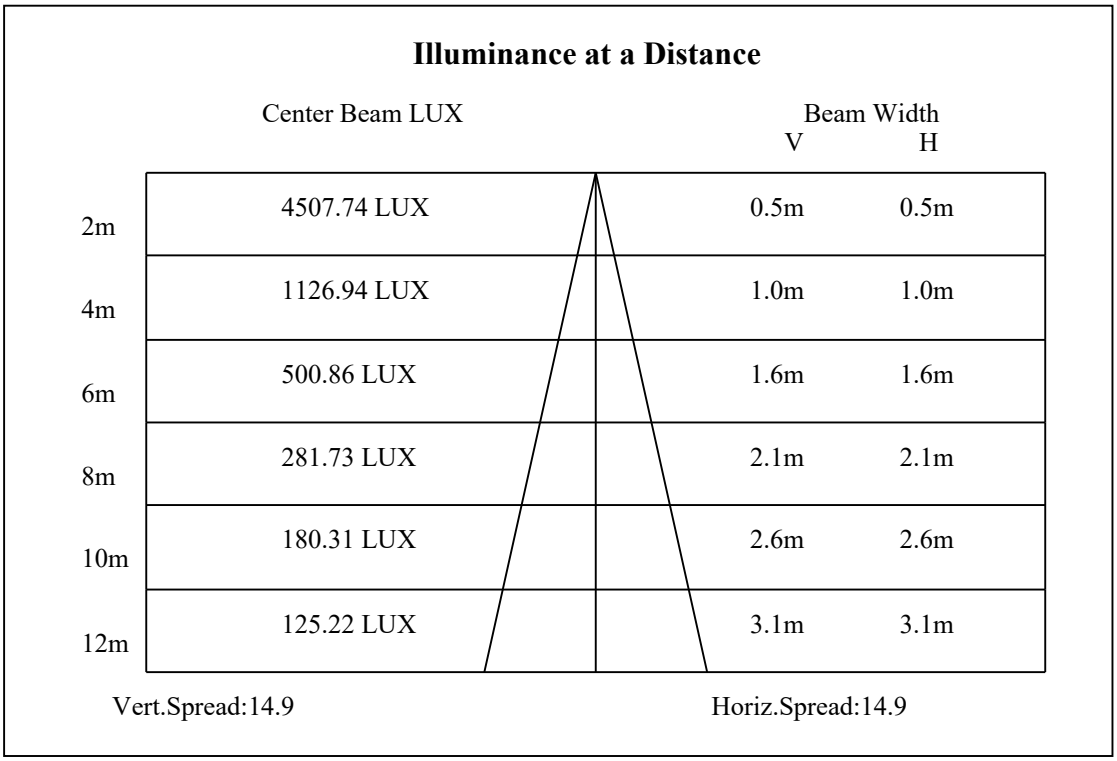
C90/C270:

Field angle(10%Imax):C0/180Left:15.4 Right:15.4
:C90/270Left:15.4 Right:15.4

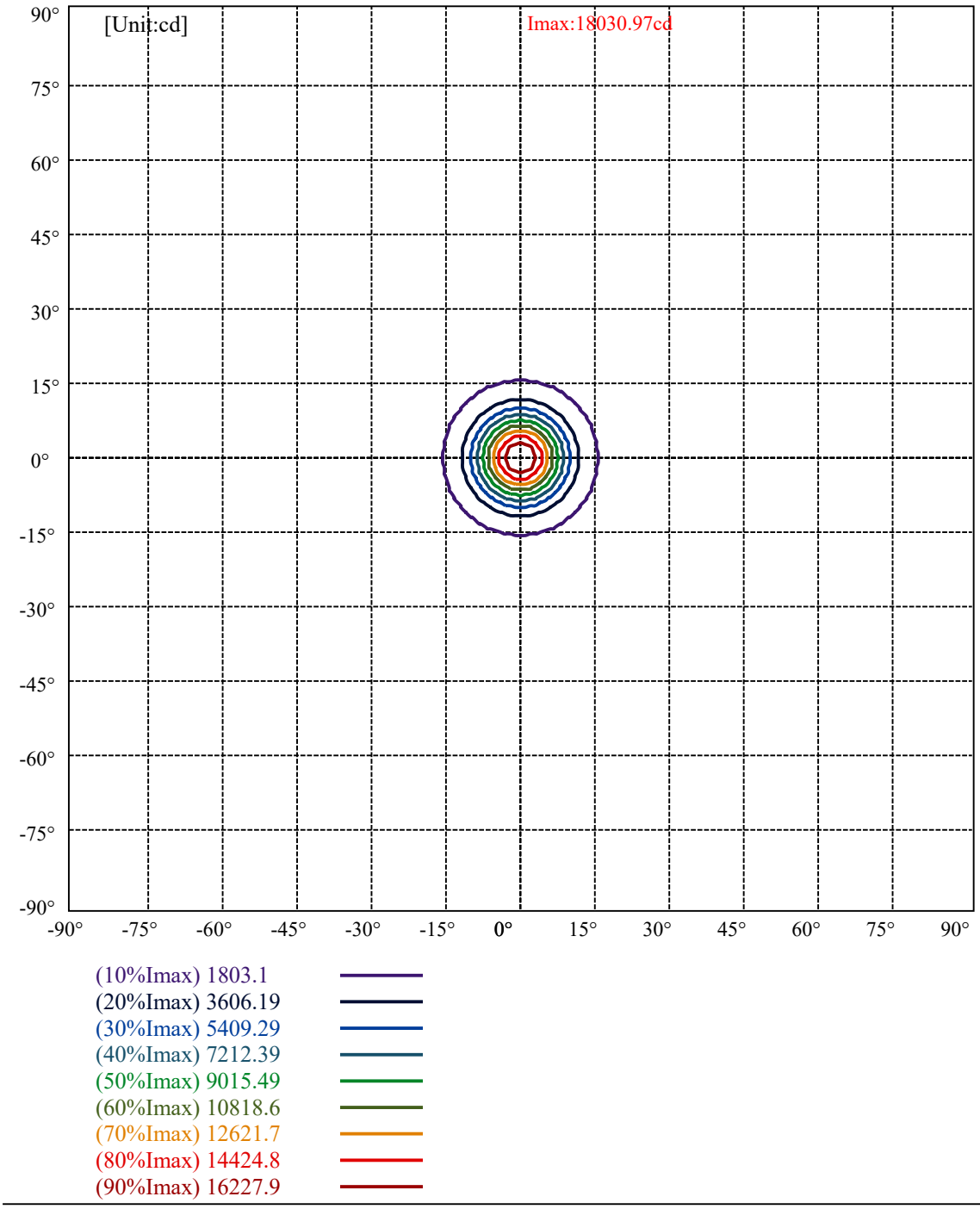
Beam Angle(50%Imax):C0/180Left:7.5 Right:7.5
:C90/270Left:7.5 Right:7.5

Equipment: gms1980 Date: 2017/5/18 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

Lux distance Curve



ISO-Intensity(V-H)



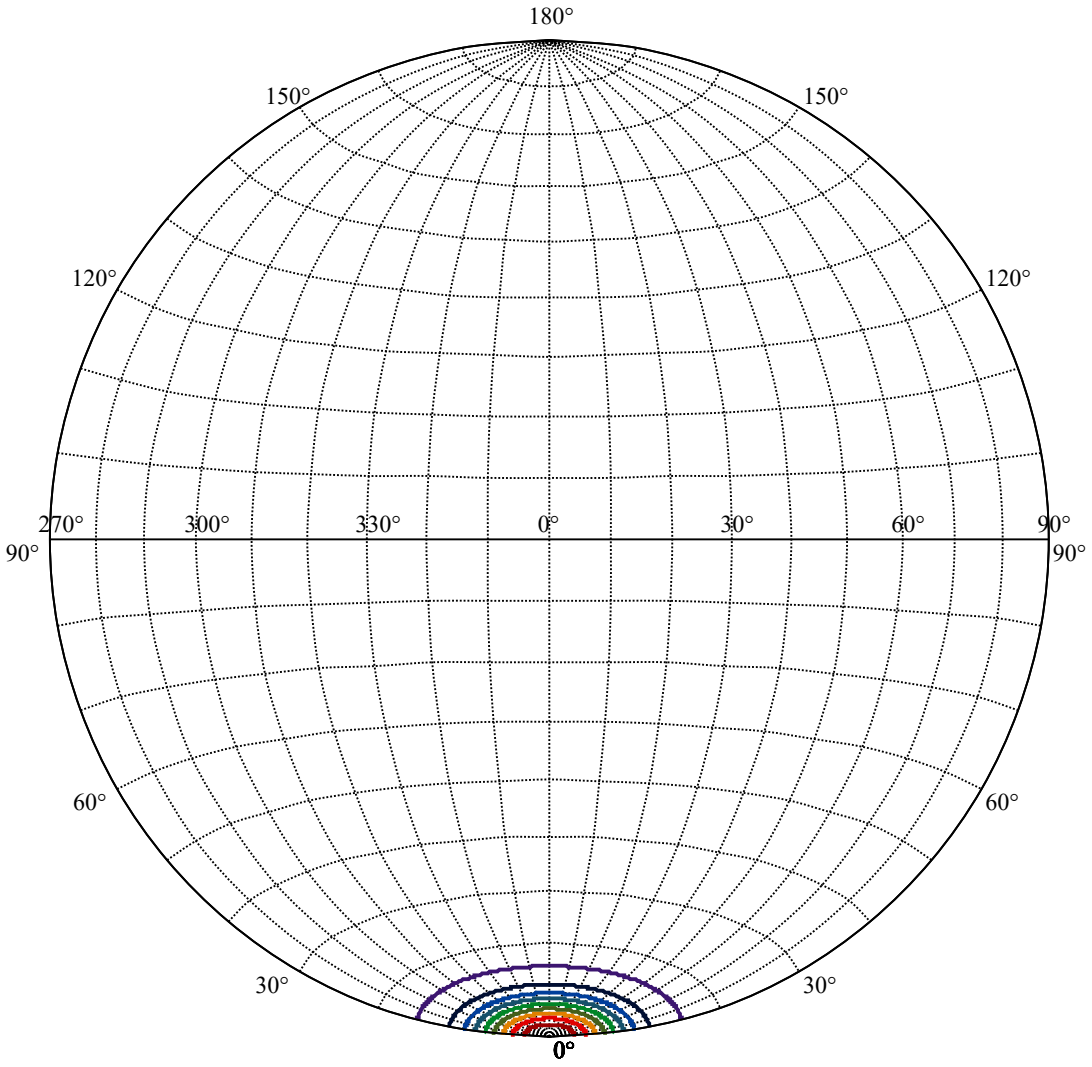
(10%Imax) 1803.1
(20%Imax) 3606.19
(30%Imax) 5409.29
(40%Imax) 7212.39
(50%Imax) 9015.49
(60%Imax) 10818.6
(70%Imax) 12621.7
(80%Imax) 14424.8
(90%Imax) 16227.9

Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/5/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

ISO candela diagram on circular web



House [Unit:cd] Road

Imax:18030.97

(10%Imax) 1803.1
(20%Imax) 3606.19
(30%Imax) 5409.29
(40%Imax) 7212.39
(50%Imax) 9015.49
(60%Imax) 10818.6
(70%Imax) 12621.7
(80%Imax) 14424.8
(90%Imax) 16227.9

Equipment: gms1980	Date: 2017/5/18	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 60.0%	Distance(m): 7.42

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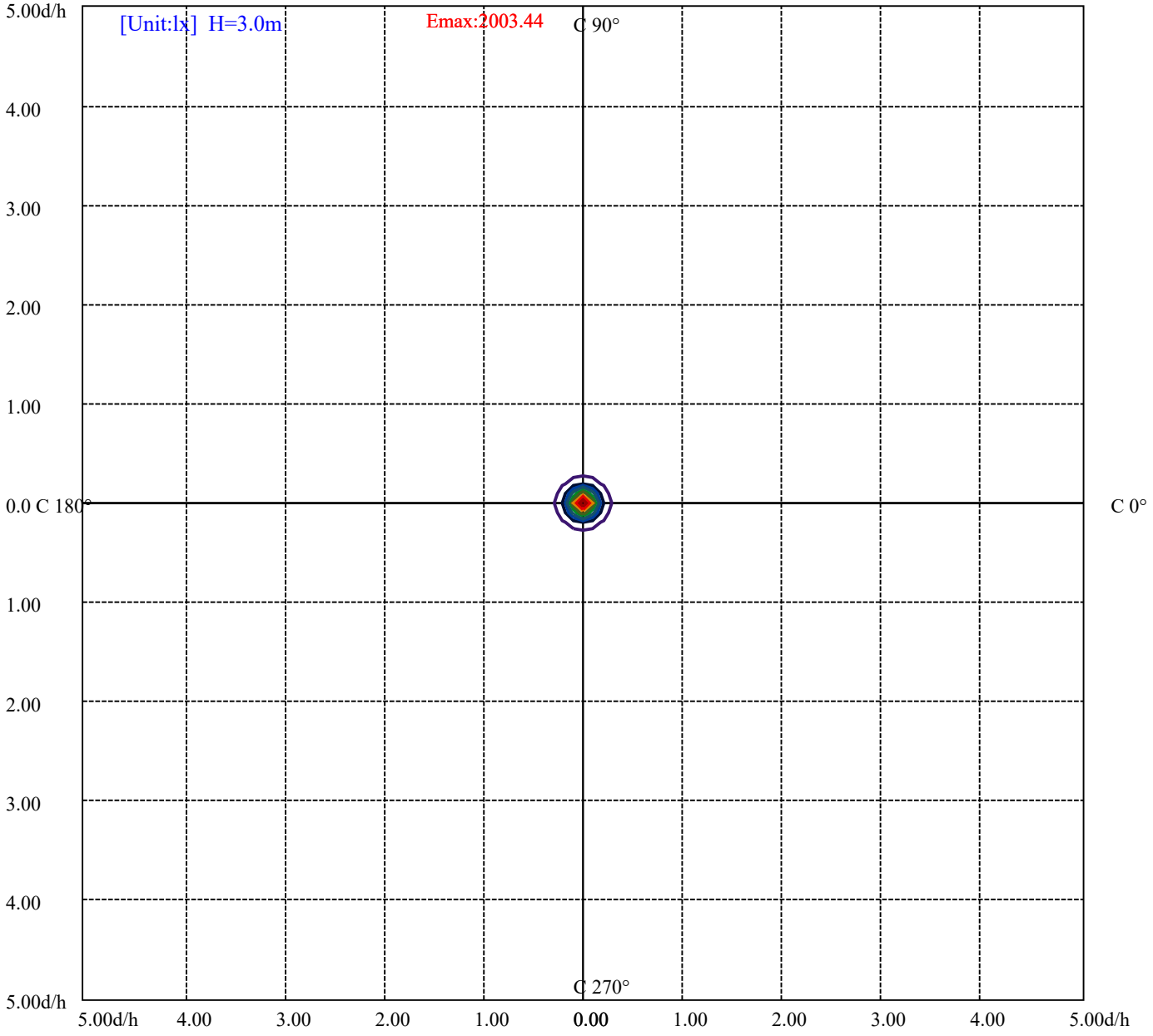
ISO illuminance diagram



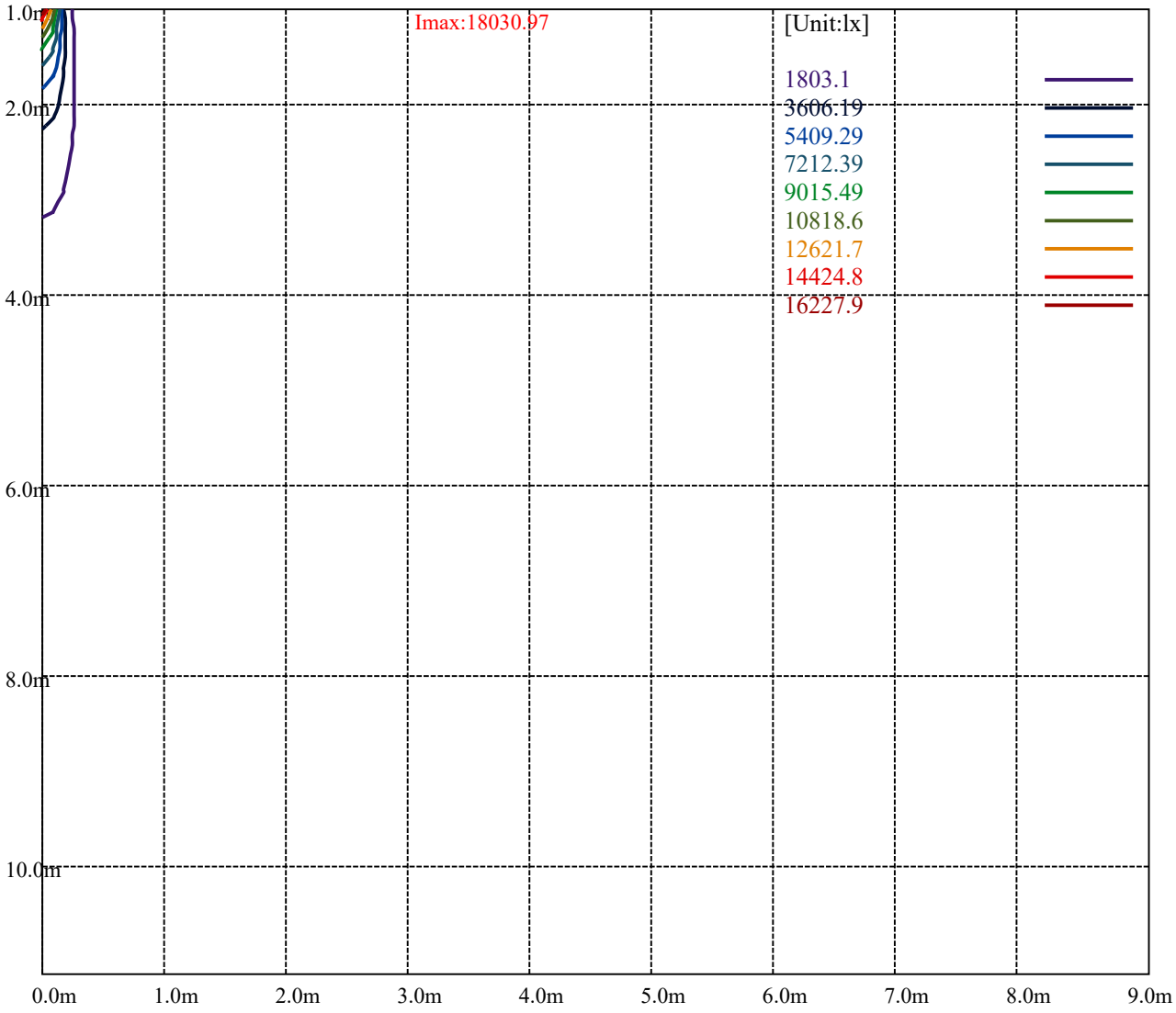
(10%Emax) 200.3433
(20%Emax) 400.6878
(30%Emax) 601.0311
(40%Emax) 801.3755
(50%Emax) 1001.719
(60%Emax) 1202.067
(70%Emax) 1402.411
(80%Emax) 1602.755
(90%Emax) 1803.089

Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/5/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Space ISO Lux diagram



Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/5/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

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Luminance Limitting Curve(no luminous side)

Luminance Table

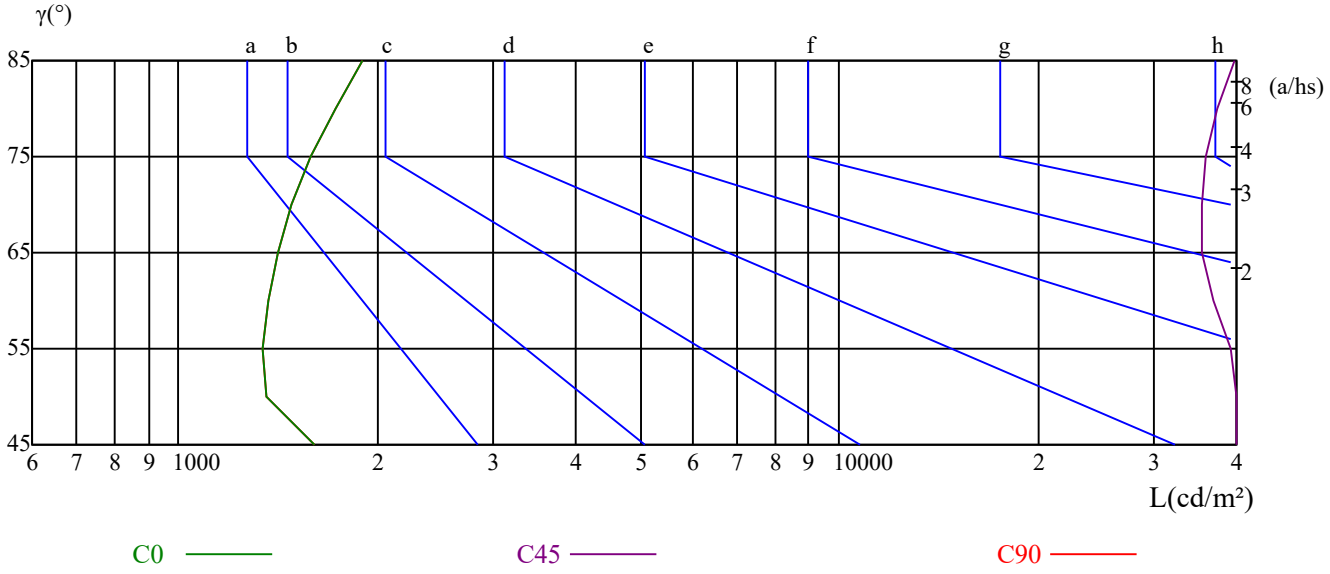
γ	45	50	55	60	65	70	75	80	85
C0	1606	1359	1341	1363	1410	1484	1590	1723	1898
C45	49700	43330	39286	36843	35495	35373	36016	37424	39610
C90	1606	1359	1341	1363	1410	1484	1590	1723	1898

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3463	3463	108642	5620	5620	165179	16639	16639	474671

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

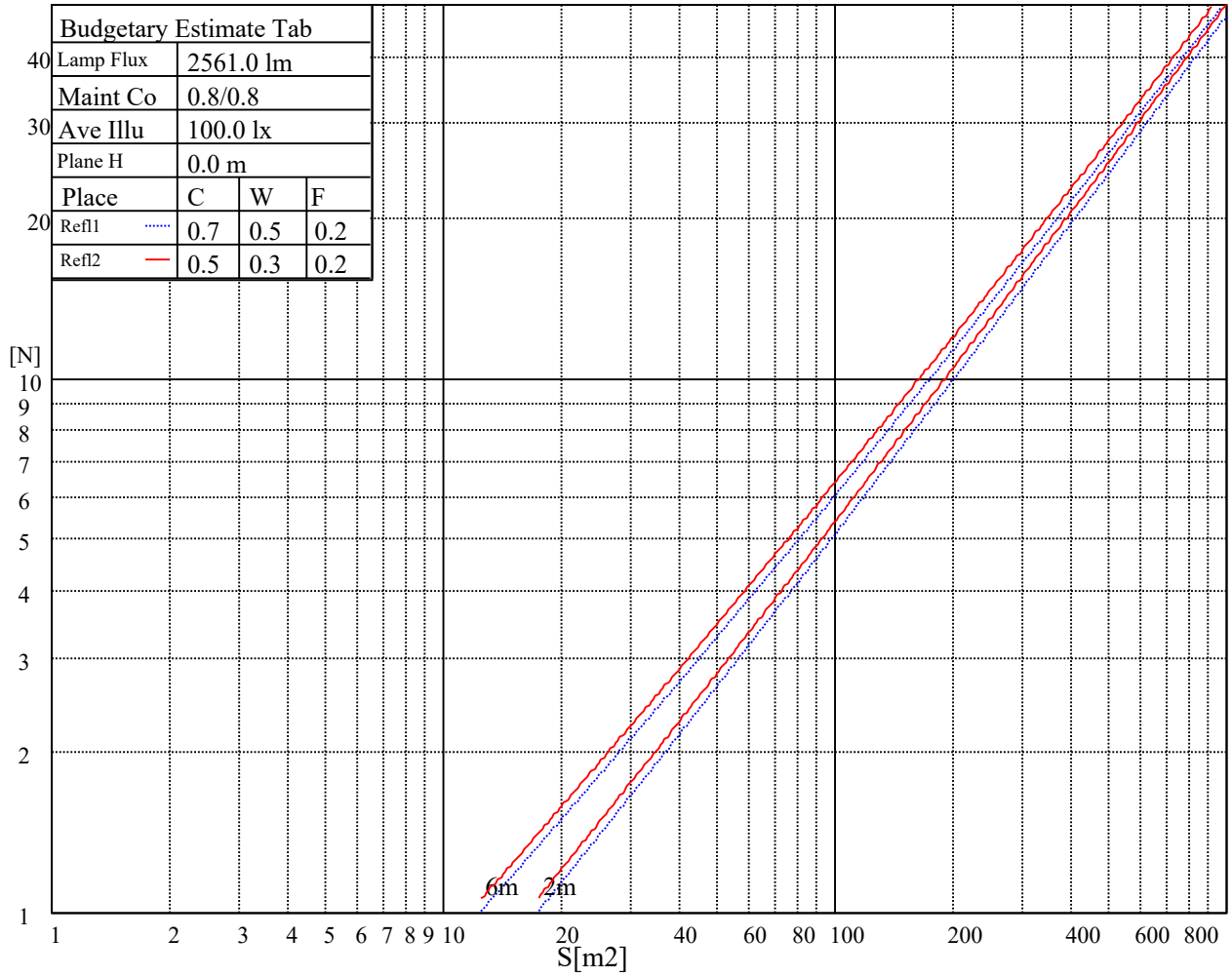


Equipment: gms1980
Temperature(°C): 25.0

Date: 2017/5/18
Humidity(%): 60.0%

Operator: NT07
Distance(m): 7.42

Budgetary Estimate Table

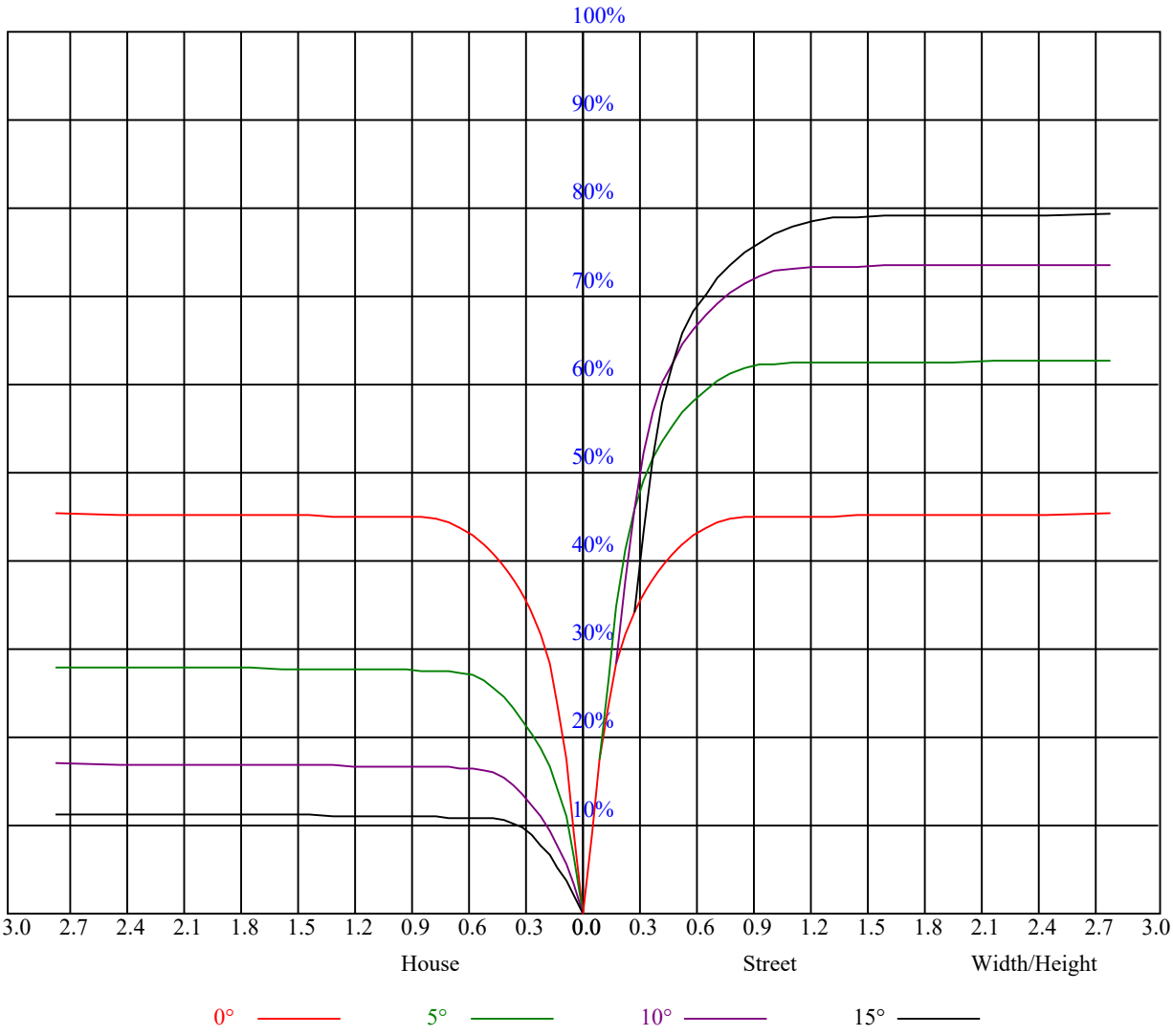


Equipment: gms1980 Date: 2017/5/18 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 60.0% Distance(m): 7.42

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	1.09	1.09	1.09	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.03	1.01	0.99	1.01	0.99	0.97	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88
2	0.97	0.95	0.92	0.96	0.93	0.91	0.93	0.91	0.89	0.90	0.89	0.87	0.88	0.87	0.85	0.84
3	0.93	0.89	0.87	0.92	0.89	0.86	0.89	0.87	0.85	0.87	0.85	0.83	0.85	0.84	0.82	0.81
4	0.89	0.85	0.82	0.88	0.85	0.82	0.86	0.83	0.81	0.85	0.82	0.80	0.83	0.81	0.79	0.78
5	0.86	0.82	0.79	0.85	0.81	0.78	0.83	0.80	0.78	0.82	0.79	0.77	0.81	0.78	0.76	0.75
6	0.82	0.78	0.75	0.82	0.78	0.75	0.81	0.77	0.75	0.79	0.77	0.74	0.78	0.76	0.74	0.73
7	0.80	0.76	0.73	0.79	0.75	0.73	0.78	0.75	0.72	0.77	0.74	0.72	0.76	0.74	0.72	0.71
8	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.69
9	0.75	0.71	0.68	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.70	0.67	0.67
10	0.73	0.69	0.66	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.68	0.66	0.65

Coefficient Utilization Curve



Equipment: gms1980	Date: 2017/5/18	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	18075.02	17491.42	16406.81	14920.28	13334.66	11666.45	9585.32	7972.17	6491.15
90.0	17986.93	18295.24	18130.07	17629.06	16759.17	15239.61	13742.08	12117.91	10201.95
180.0	18075.02	18267.71	18047.49	17469.40	16428.83	15151.52	13461.29	10924.29	9859.50
270.0	17986.93	17353.78	16285.68	14804.67	13224.55	10917.13	9648.08	7811.40	6134.93
360.0	18075.02	17491.42	16406.81	14920.28	13334.66	11666.45	9585.32	7972.17	6491.15

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5043.17	3853.95	3083.16	2785.85	2100.95	1836.13	1607.65	1446.33	1298.23
90.0	8335.54	6821.49	5312.94	4178.78	3220.80	2835.40	2229.23	1915.96	1728.22
180.0	8205.06	6170.17	5056.38	3994.89	3032.51	2529.84	2165.37	1892.84	1638.48
270.0	4847.17	3670.61	2839.81	2365.22	2037.09	1733.73	1549.84	1406.69	1273.45
360.0	5043.17	3853.95	3083.16	2785.85	2100.95	1836.13	1607.65	1446.33	1298.23

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1179.31	1096.72	1024.05	972.85	935.41	905.68	875.95	855.58	839.61
90.0	1512.95	1371.45	1250.33	1130.31	1057.08	999.27	944.22	910.63	886.96
180.0	1477.71	1340.62	1210.69	1093.53	1028.73	968.06	923.13	893.07	868.02
270.0	1096.12	1077.18	1004.67	950.38	915.09	885.64	864.77	841.98	822.93
360.0	1179.31	1096.72	1024.05	972.85	935.41	905.68	875.95	855.58	839.61

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	819.79	807.13	794.46	783.45	746.56	686.55	610.58	513.68	414.02
90.0	857.23	837.41	821.99	807.13	791.71	780.15	747.12	681.60	612.23
180.0	850.18	831.46	815.00	799.53	788.85	773.60	742.93	688.21	594.28
270.0	809.60	795.18	781.64	764.84	721.46	641.35	562.79	471.61	373.94
360.0	819.79	807.13	794.46	783.45	746.56	686.55	610.58	513.68	414.02

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	324.83	279.14	128.23	65.35	27.20	18.39	15.64	13.05	12.11
90.0	523.59	431.09	318.78	282.99	141.33	77.68	24.72	17.67	15.25
180.0	509.00	421.02	323.90	226.72	144.03	69.87	30.28	18.77	15.75
270.0	260.80	179.65	101.69	43.11	21.36	17.67	14.65	12.50	11.51
360.0	324.83	279.14	128.23	65.35	27.20	18.39	15.64	13.05	12.11

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	10.68	10.08	9.91	9.80	9.58	9.47	9.36	9.30	9.25
90.0	12.55	11.78	10.24	10.08	9.97	9.86	9.74	9.69	9.58
180.0	13.21	12.17	10.30	10.19	10.02	9.86	9.80	9.69	9.63
270.0	9.97	9.80	9.69	9.58	9.47	9.30	9.25	9.14	9.08
360.0	10.68	10.08	9.91	9.80	9.58	9.47	9.36	9.30	9.25

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	9.19	9.08	9.03	8.97	8.97	8.92	8.92	8.86	8.81
90.0	9.47	9.41	9.36	9.30	9.30	9.25	9.19	9.14	9.14
180.0	9.52	9.41	9.36	9.36	9.30	9.25	9.19	9.14	9.08
270.0	8.97	8.97	8.92	8.86	8.86	8.86	8.81	8.75	8.75
360.0	9.19	9.08	9.03	8.97	8.97	8.92	8.92	8.86	8.81

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.81	8.81	8.81	8.81	8.75	8.75	8.75	8.75	8.75
90.0	9.08	9.08	9.03	9.03	8.97	8.97	8.97	8.92	8.92
180.0	9.08	9.08	9.03	9.03	8.97	9.03	8.97	8.97	8.97
270.0	8.75	8.75	8.75	8.70	8.70	8.70	8.70	8.75	8.70
360.0	8.81	8.81	8.81	8.81	8.75	8.75	8.75	8.75	8.75

Intensity data(cd)

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.75	8.75	8.75	8.75	8.81	8.75	8.75	8.81	8.81
90.0	8.92	8.92	8.86	8.92	8.92	8.92	8.86	8.81	8.86
180.0	8.92	8.92	8.92	8.97	8.92	8.92	8.86	8.92	8.86
270.0	8.70	8.70	8.70	8.75	8.75	8.75	8.70	8.75	8.81
360.0	8.75	8.75	8.75	8.75	8.81	8.75	8.75	8.81	8.81

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	8.86	8.81	8.86	8.81	8.81	8.81	8.86	8.81	8.81
90.0	8.86	8.81	8.86	8.81	8.81	8.81	8.81	8.86	8.81
180.0	8.92	8.92	8.92	8.92	8.86	8.86	8.86	8.86	8.81
270.0	8.81	8.81	8.81	8.81	8.81	8.81	8.81	8.81	8.81
360.0	8.86	8.81	8.86	8.81	8.81	8.81	8.86	8.81	8.81

C/γ(°)	90.0
0.0	8.81
90.0	8.81
180.0	8.86
270.0	8.86
360.0	8.81