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NATA

LumCAT: 2-1566-M
Luminaire: BJB 47.319.2021

Report No: NATA0100	Voltage(V): 34.2800
Test No: GC2020011324	Current(A): 0.6020
LampCAT: LUMINUS CXM-14-AC40	Power (W): 20.6000
Lamp flux(lm): 2552.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 0	Width(mm): 0
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2300.24
Efficiency(%): 90.13%
Lumens(lm)/Power(W): 111.66
Central intensity(cd): 6906.093
Maximum intensity(cd): 6906.093
Angle of maximum intensity: C=0.0 γ=0.0
Beam Angle(50%Imax): [C0/180]Total=19.3
[C90/270]Total=19.3
Field angle(10%Imax): [C0/180]Total=70.2
[C90/270]Total=70.2
Maximum s/h(1/2): C0_180=0.33 C90_270=0.33
Maximum s/h(1/4): C0_180=0.48 C90_270=0.48
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.13%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.573%

Equipment: GMS1980	Date: 2020/1/13	Operator: NT07
Temperature(°C): 25.0	Humidity(%): 65.0%	Distance(m): 7.50

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6906.094	0.000	0	.000%	.000%
1.0	6897.164	6.605	6.605	.259%	.287%
2.0	6839.438	19.716	26.321	.773%	1.144%
3.0	6694.102	32.368	58.688	1.268%	2.551%
4.0	6448.641	43.993	102.681	1.724%	4.464%
5.0	6069.867	53.854	156.535	2.110%	6.805%
6.0	5516.508	60.889	217.425	2.386%	9.452%
7.0	4883.555	64.553	281.978	2.530%	12.259%
8.0	4312.477	65.814	347.792	2.579%	15.120%
9.0	3744.563	65.298	413.09	2.559%	17.959%
10.0	3309.398	63.836	476.926	2.501%	20.734%
11.0	3027.938	63.323	540.249	2.481%	23.487%
12.0	2818.828	63.914	604.162	2.504%	26.265%
13.0	2674.547	65.193	669.355	2.555%	29.099%
14.0	2562.047	67.028	736.383	2.626%	32.013%
15.0	2450.391	68.813	805.196	2.696%	35.005%
16.0	2340.703	70.203	875.399	2.751%	38.057%
17.0	2231.578	71.203	946.601	2.790%	41.152%
18.0	2109.938	71.582	1018.184	2.805%	44.264%
19.0	1997.227	71.456	1089.64	2.800%	47.371%
20.0	1881.563	70.993	1160.632	2.782%	50.457%
21.0	1763.930	70.001	1230.633	2.743%	53.500%
22.0	1668.234	68.971	1299.604	2.703%	56.499%
23.0	1574.508	68.041	1367.646	2.666%	59.457%
24.0	1473.891	66.649	1434.294	2.612%	62.354%
25.0	1387.336	65.058	1499.353	2.549%	65.183%
26.0	1311.539	63.707	1563.06	2.496%	67.952%
27.0	1226.524	62.094	1625.154	2.433%	70.652%
28.0	1150.748	60.188	1685.342	2.358%	73.268%
29.0	1105.376	59.027	1744.368	2.313%	75.834%
30.0	1054.765	58.323	1802.692	2.285%	78.370%
31.0	1004.878	57.317	1860.008	2.246%	80.862%
32.0	952.959	56.090	1916.098	2.198%	83.300%
33.0	885.480	54.161	1970.259	2.122%	85.655%
34.0	794.749	50.849	2021.108	1.993%	87.865%
35.0	700.277	46.430	2067.538	1.819%	89.884%
36.0	598.823	41.364	2108.902	1.621%	91.682%
37.0	496.849	35.735	2144.636	1.400%	93.235%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	391.662	29.657	2174.294	1.162%	94.525%
39.0	297.183	23.512	2197.806	.921%	95.547%
40.0	221.217	18.080	2215.886	.708%	96.333%
41.0	138.333	12.803	2228.689	.502%	96.890%
42.0	76.050	7.789	2236.478	.305%	97.228%
43.0	43.805	4.440	2240.918	.174%	97.421%
44.0	33.434	2.915	2243.833	.114%	97.548%
45.0	29.489	2.418	2246.251	.095%	97.653%
46.0	26.283	2.181	2248.432	.085%	97.748%
47.0	23.266	1.971	2250.403	.077%	97.834%
48.0	20.946	1.787	2252.19	.070%	97.911%
49.0	18.809	1.633	2253.823	.064%	97.982%
50.0	17.002	1.493	2255.316	.059%	98.047%
51.0	15.813	1.388	2256.704	.054%	98.107%
52.0	14.829	1.315	2258.019	.052%	98.165%
53.0	13.971	1.253	2259.272	.049%	98.219%
54.0	13.514	1.211	2260.483	.047%	98.272%
55.0	13.163	1.191	2261.674	.047%	98.324%
56.0	12.825	1.174	2262.848	.046%	98.375%
57.0	12.509	1.158	2264.007	.045%	98.425%
58.0	12.213	1.143	2265.15	.045%	98.475%
59.0	11.974	1.131	2266.281	.044%	98.524%
60.0	11.763	1.121	2267.402	.044%	98.573%
61.0	11.588	1.114	2268.517	.044%	98.621%
62.0	11.384	1.107	2269.623	.043%	98.669%
63.0	11.236	1.100	2270.724	.043%	98.717%
64.0	11.095	1.096	2271.819	.043%	98.765%
65.0	10.962	1.092	2272.911	.043%	98.812%
66.0	10.856	1.089	2273.999	.043%	98.859%
67.0	10.765	1.087	2275.087	.043%	98.907%
68.0	10.680	1.086	2276.173	.043%	98.954%
69.0	10.589	1.085	2277.258	.043%	99.001%
70.0	10.519	1.084	2278.342	.042%	99.048%
71.0	10.448	1.084	2279.426	.042%	99.095%
72.0	10.413	1.085	2280.511	.043%	99.142%
73.0	10.343	1.085	2281.596	.043%	99.190%
74.0	10.322	1.086	2282.682	.043%	99.237%
75.0	10.273	1.088	2283.77	.043%	99.284%

Zonal flux distribution table

γ(°)	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.259	1.090	2284.86	.043%	99.332%
77.0	10.216	1.092	2285.952	.043%	99.379%
78.0	10.195	1.093	2287.045	.043%	99.426%
79.0	10.188	1.095	2288.14	.043%	99.474%
80.0	10.153	1.097	2289.237	.043%	99.522%
81.0	10.132	1.097	2290.334	.043%	99.569%
82.0	10.118	1.098	2291.432	.043%	99.617%
83.0	10.104	1.099	2292.531	.043%	99.665%
84.0	10.097	1.100	2293.631	.043%	99.713%
85.0	10.083	1.101	2294.733	.043%	99.761%
86.0	10.083	1.102	2295.835	.043%	99.809%
87.0	10.055	1.102	2296.937	.043%	99.857%
88.0	10.041	1.101	2298.038	.043%	99.904%
89.0	10.027	1.100	2299.138	.043%	99.952%
90.0	10.020	1.099	2300.237	.043%	100.000%

Zonal flux distribution table

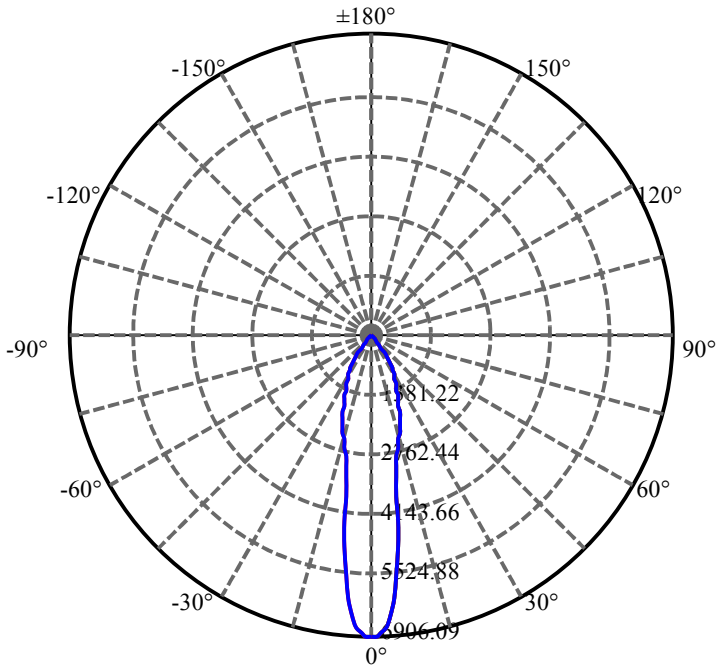
ZONAL LUMEN SUMMARY

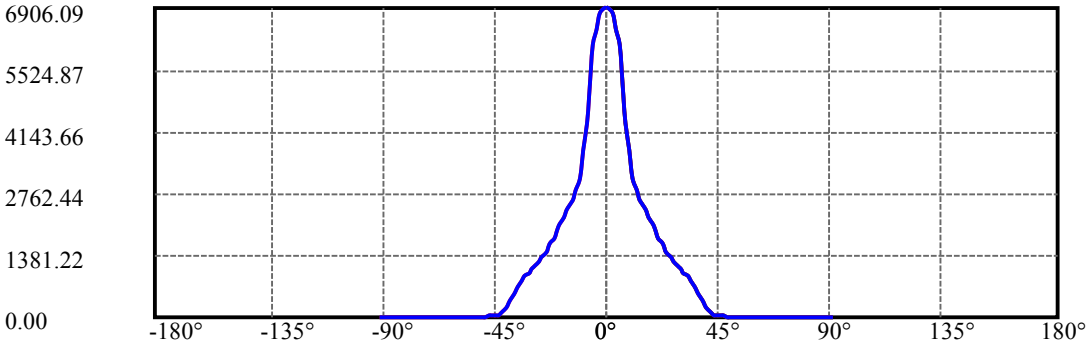
Zone	Lumens	%Lamp	%Fixt
0-30	1802.69	70.64%	78.37%
0-40	2215.89	86.83%	96.33%
0-60	2267.40	88.85%	98.57%
0-90	2299.14	90.09%	99.95%
0-120	2299.14	90.09%	99.95%
0-180	2300.24	90.13%	100.00%
60-90	32.86	1.29%	1.43%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-30.65	1840.19	72.11%	80.00%

ZONAL LUMEN SUMMARY

0-10	476.93
10-20	683.71
20-30	642.06
30-40	413.19
40-50	39.43
50-60	12.09
60-70	10.94
70-80	10.89
80-90	9.90
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):

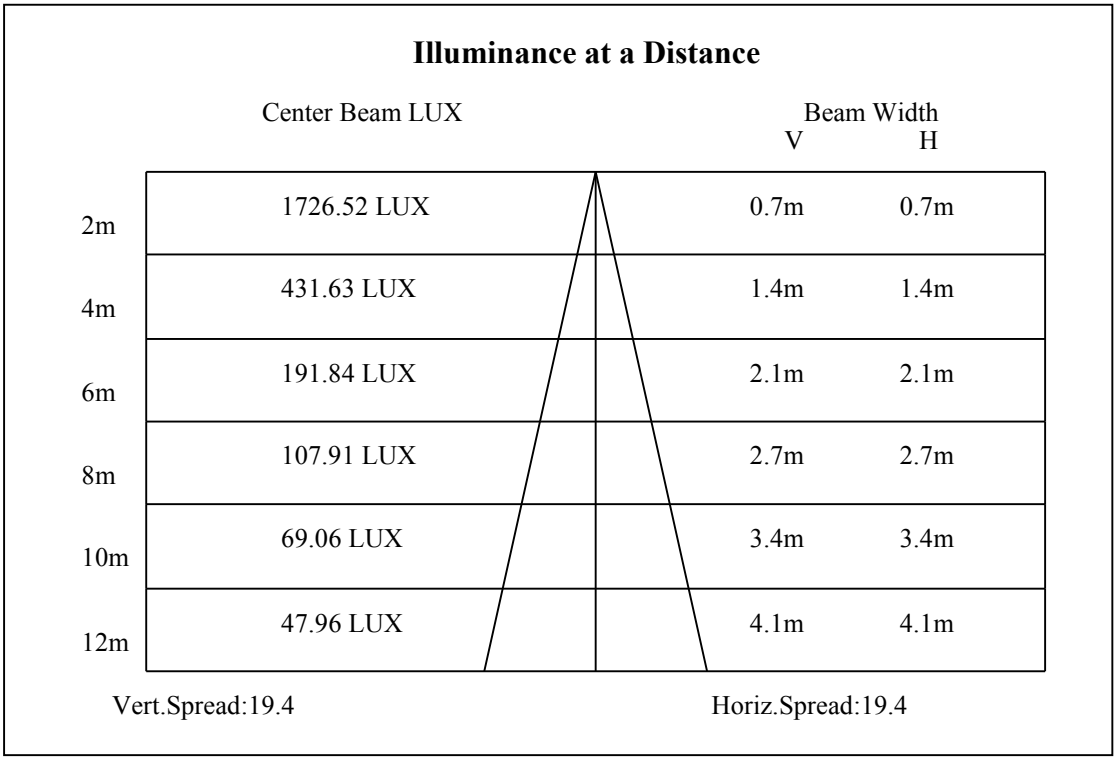
C0/C180:

C90/C270:

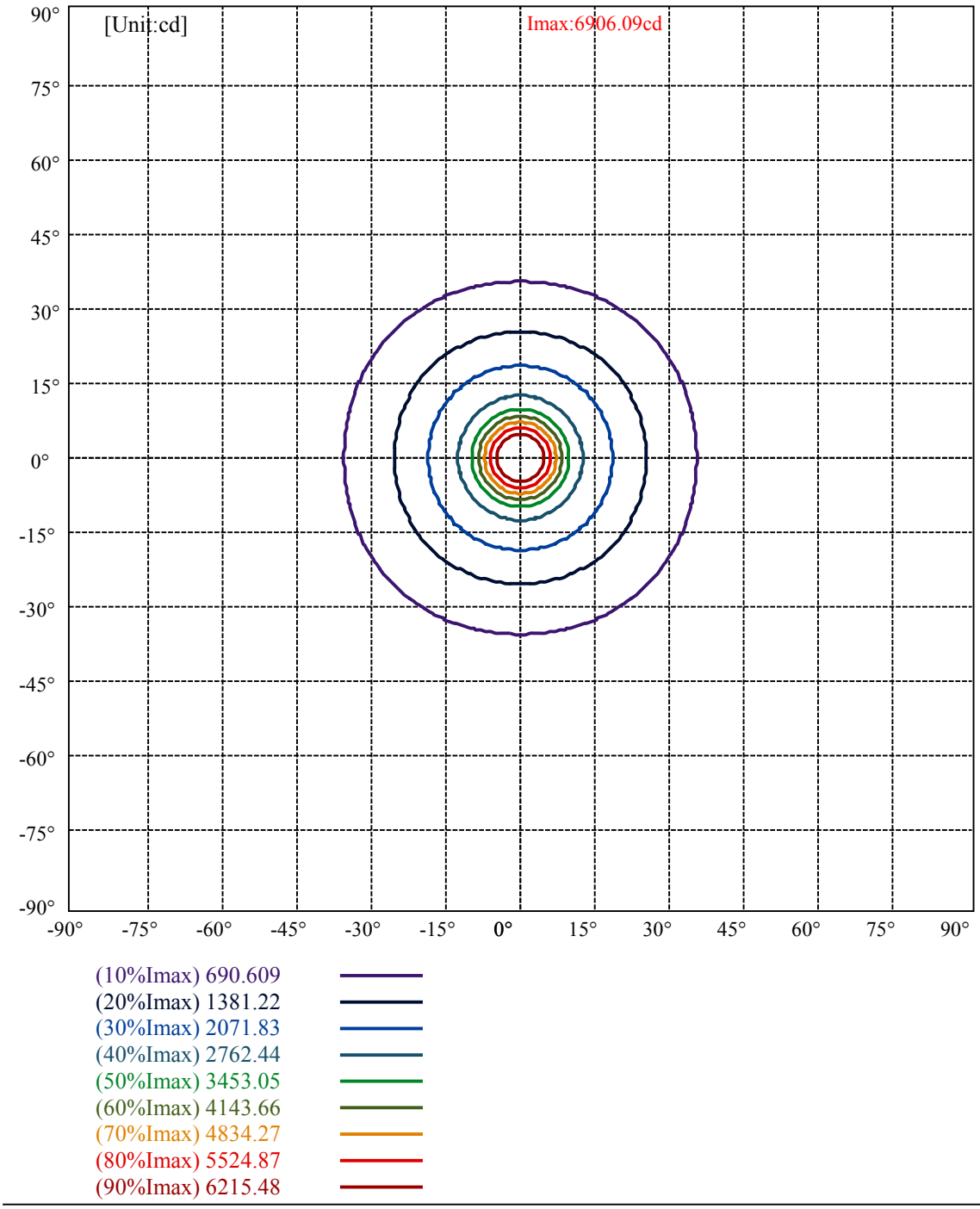
Field angle(10%Imax):C0/180Left:35.1 Right:35.1
:C90/270Left:35.1 Right:35.1

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)

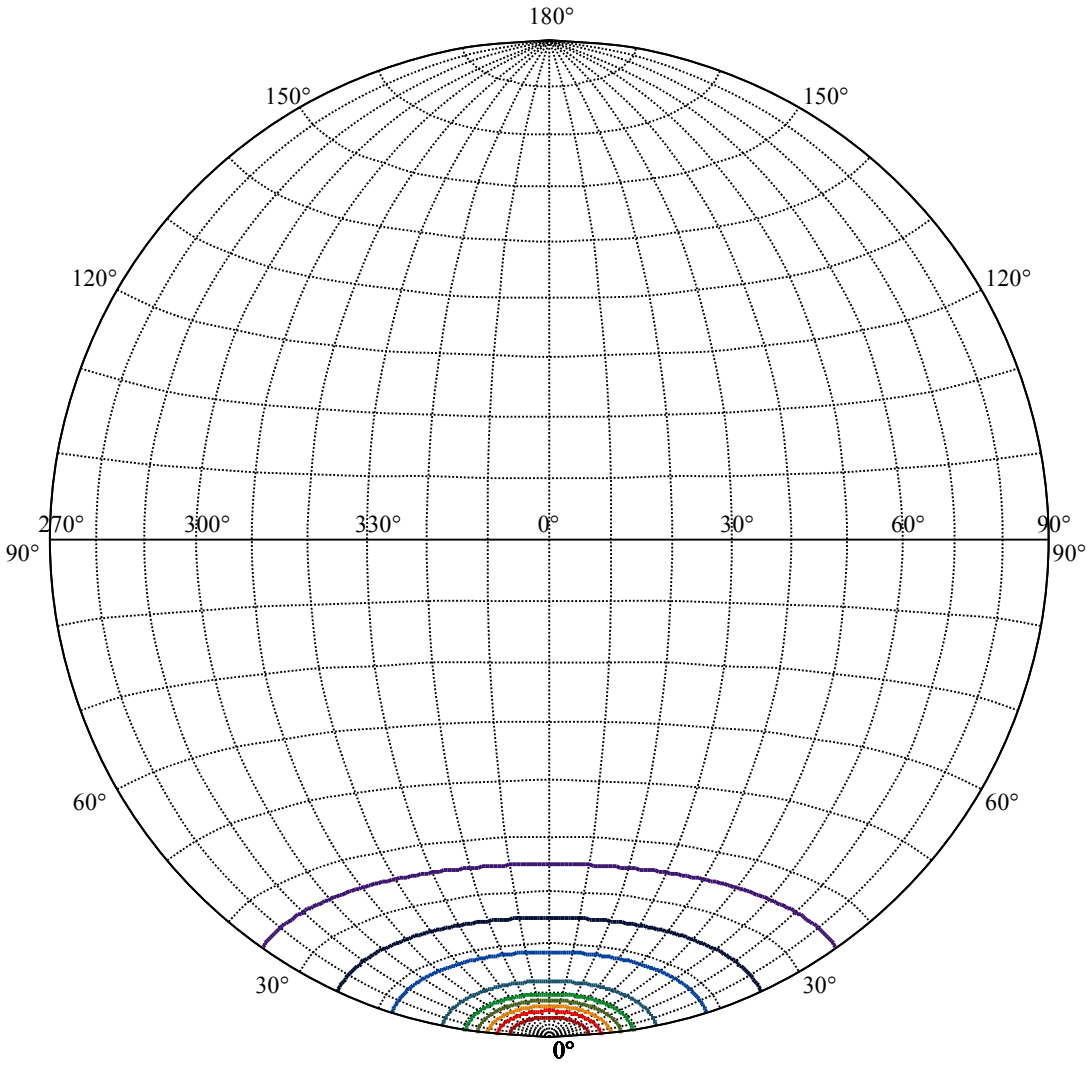


Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/1/13
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

ISO candela diagram on circular web



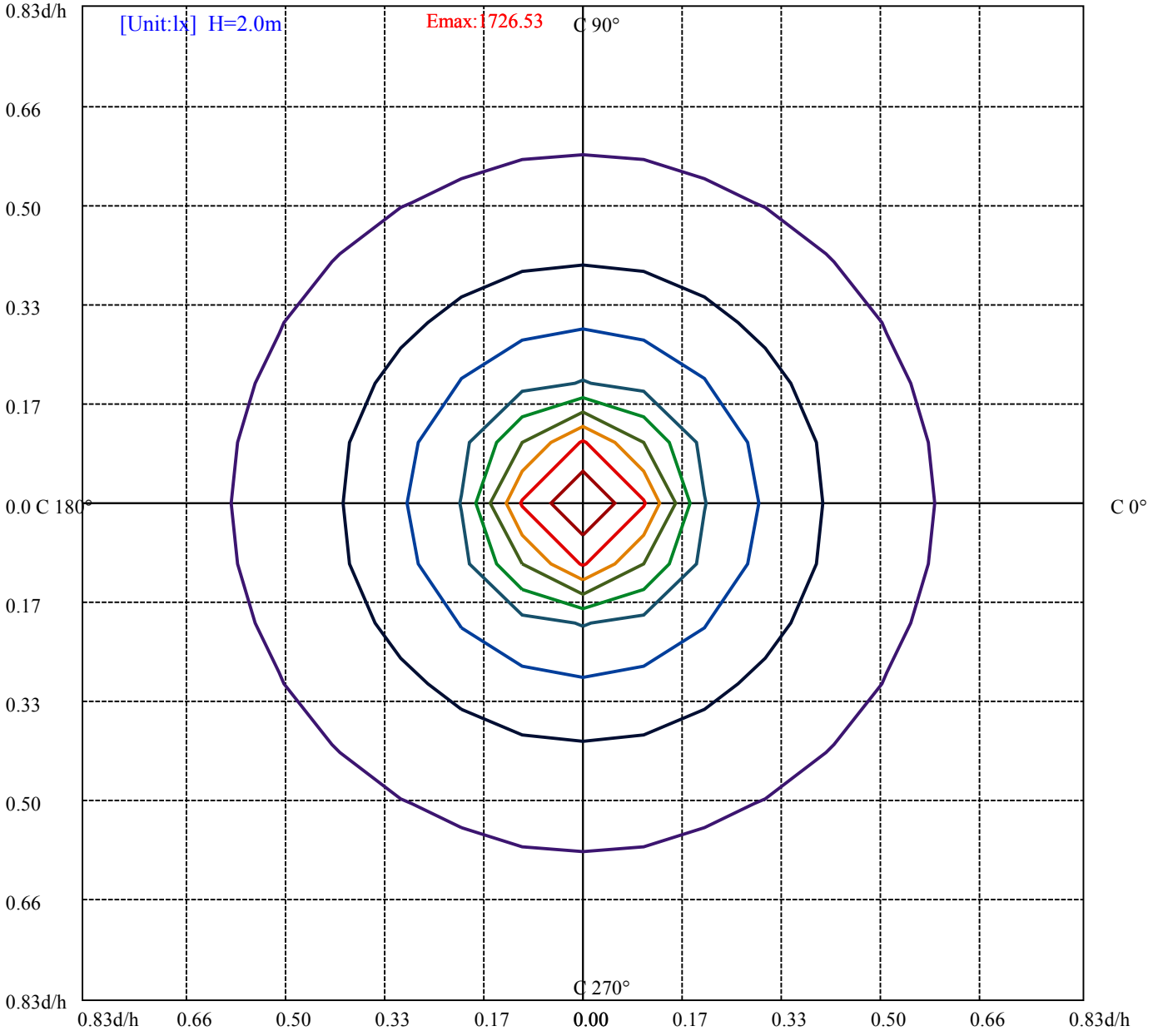
House [Unit:cd] Road

Imax:6906.09

(10%Imax) 690.609
(20%Imax) 1381.22
(30%Imax) 2071.83
(40%Imax) 2762.44
(50%Imax) 3453.05
(60%Imax) 4143.66
(70%Imax) 4834.27
(80%Imax) 5524.87
(90%Imax) 6215.48

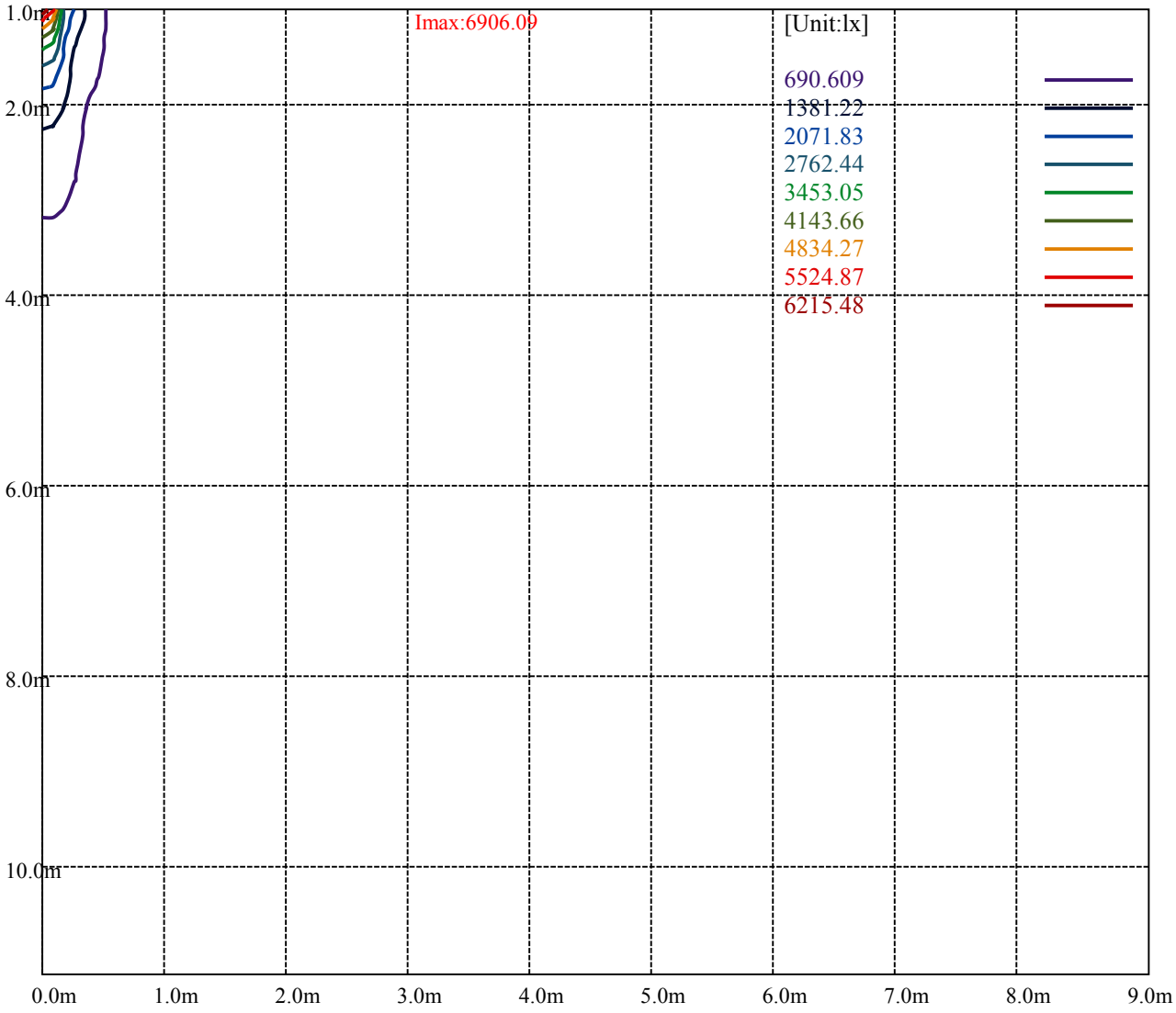
Equipment: GMS1980 Date: 2020/1/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

ISO illuminance diagram



Equipment: GMS1980 Date: 2020/1/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

Space ISO Lux diagram



Equipment: GMS1980
Temperature(°C): 25.0

Date: 2020/1/13
Humidity(%): 65.0%

Operator: NT07
Distance(m): 7.50

Luminance Limitting Curve(no luminous side)

Luminance Table

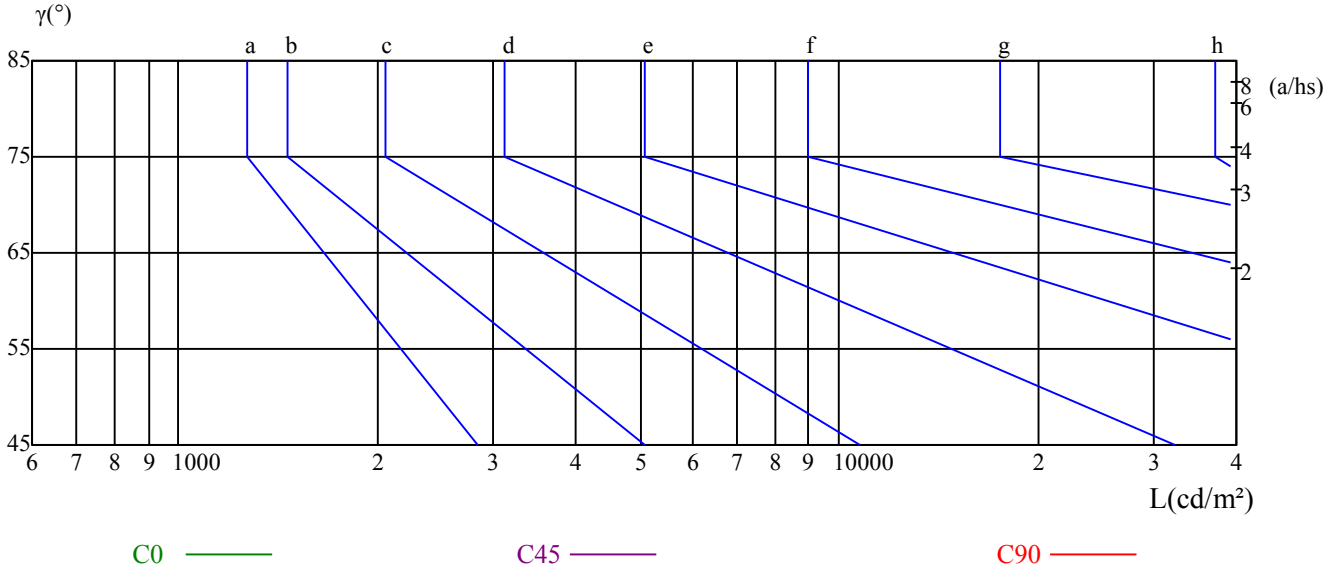
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

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

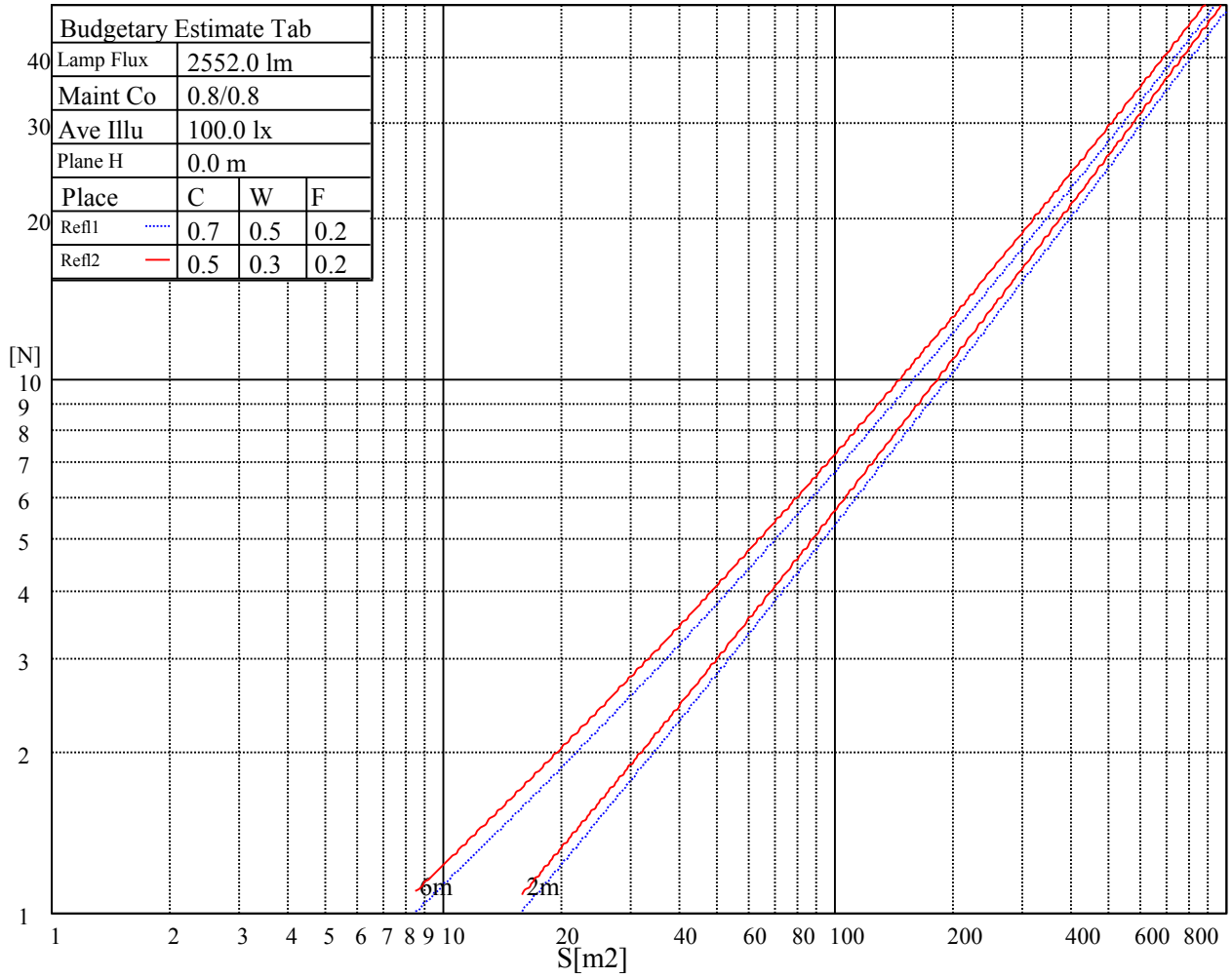
Glare Table

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



Budgetary Estimate Table

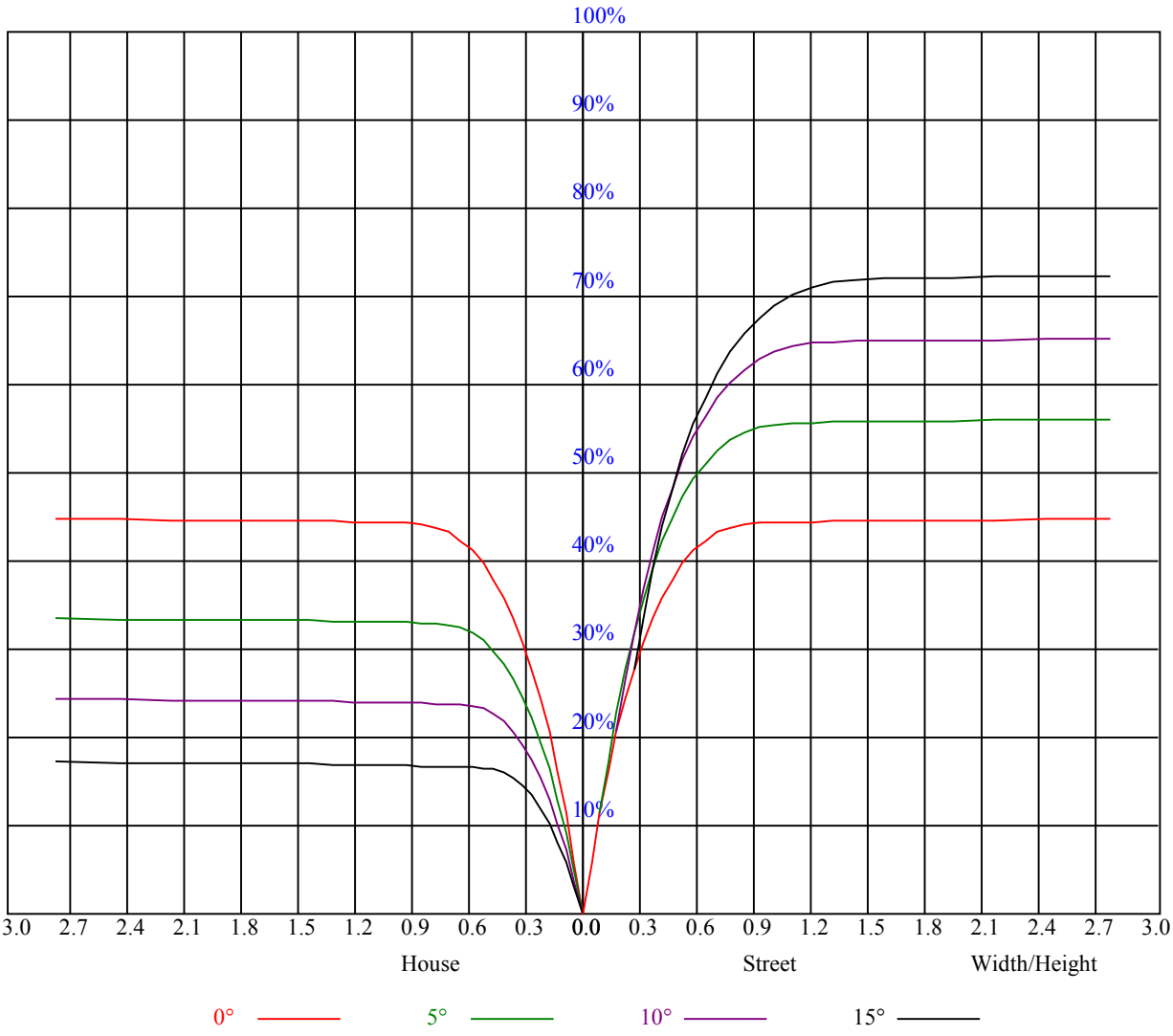


Equipment: GMS1980 Date: 2020/1/13 Operator: NT07
Temperature(°C): 25.0 Humidity(%): 65.0% Distance(m): 7.50

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	1.07	1.07	1.07	1.05	1.05	1.05	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.90
1	1.00	0.98	0.96	0.98	0.96	0.95	0.95	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85
2	0.94	0.91	0.88	0.92	0.89	0.87	0.90	0.87	0.85	0.87	0.85	0.83	0.84	0.83	0.81	0.80
3	0.88	0.84	0.81	0.87	0.83	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.75
4	0.84	0.79	0.76	0.83	0.78	0.75	0.81	0.77	0.74	0.79	0.76	0.73	0.77	0.75	0.73	0.71
5	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.68
6	0.75	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.64
7	0.71	0.67	0.63	0.71	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.64	0.62	0.61
8	0.68	0.63	0.60	0.68	0.63	0.60	0.67	0.62	0.60	0.66	0.62	0.59	0.65	0.62	0.59	0.58
9	0.65	0.60	0.57	0.65	0.60	0.57	0.64	0.60	0.57	0.63	0.59	0.57	0.62	0.59	0.56	0.55
10	0.62	0.57	0.54	0.62	0.57	0.54	0.61	0.57	0.54	0.60	0.57	0.54	0.60	0.56	0.54	0.53

Coefficient Utilization Curve



Equipment: GMS1980	Date: 2020/1/13	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	6908.06	6908.63	6879.38	6783.75	6571.13	6201.00	5729.06	5095.13	4518.56
45.0	6902.44	6895.13	6845.06	6730.31	6479.44	6071.06	5576.63	4907.81	4309.88
90.0	6904.13	6865.31	6778.13	6543.56	6220.13	5769.00	5136.19	4445.44	3890.81
135.0	6909.75	6897.38	6825.94	6685.31	6411.94	6044.63	5488.88	4833.56	4264.88
180.0	6908.06	6894.00	6822.56	6626.81	6363.56	5979.38	5329.13	4746.94	4196.81
225.0	6902.44	6895.69	6829.31	6678.56	6441.75	6066.00	5502.94	4860.00	4294.13
270.0	6904.13	6912.56	6887.81	6802.88	6621.19	6296.06	5855.63	5243.06	4658.06
315.0	6909.75	6908.63	6847.31	6701.63	6480.00	6131.81	5513.63	4936.50	4366.69
360.0	6908.06	6908.63	6879.38	6783.75	6571.13	6201.00	5729.06	5095.13	4518.56

C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	3929.63	3452.63	3146.06	2935.13	2761.31	2652.75	2554.88	2432.81	2335.50
45.0	3725.44	3272.06	2988.00	2778.75	2637.00	2531.81	2433.38	2323.69	2213.44
90.0	3387.94	3024.00	2812.50	2657.81	2553.19	2438.44	2325.94	2225.25	2124.00
135.0	3721.50	3292.31	3013.31	2829.38	2671.88	2566.69	2461.50	2344.50	2228.06
180.0	3619.13	3268.13	3017.81	2810.25	2700.56	2575.69	2440.13	2343.94	2234.81
225.0	3735.00	3302.44	3036.38	2829.38	2700.00	2581.31	2462.63	2354.06	2230.31
270.0	4042.13	3521.25	3167.44	2914.31	2707.88	2591.44	2488.50	2354.06	2250.56
315.0	3795.75	3342.38	3042.00	2795.63	2664.56	2558.25	2436.19	2347.31	2235.94
360.0	3929.63	3452.63	3146.06	2935.13	2761.31	2652.75	2554.88	2432.81	2335.50

C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2239.31	2121.75	1999.13	1888.31	1775.81	1679.06	1573.88	1472.63	1386.56
45.0	2107.69	1985.63	1869.75	1768.50	1672.88	1574.44	1474.31	1387.69	1314.00
90.0	1991.25	1883.81	1784.81	1667.25	1573.88	1488.38	1397.81	1312.88	1243.13
135.0	2113.88	1999.69	1866.94	1765.69	1670.63	1559.25	1460.81	1372.50	1295.44
180.0	2073.38	1969.88	1858.50	1718.44	1634.06	1542.94	1447.88	1359.00	1287.00
225.0	2104.88	1990.69	1881.00	1753.88	1657.69	1565.44	1459.13	1378.69	1304.44
270.0	2143.69	2017.69	1893.38	1788.75	1683.00	1597.50	1505.81	1415.81	1339.31
315.0	2105.44	2008.69	1899.00	1760.63	1677.94	1589.06	1471.50	1399.50	1322.44
360.0	2239.31	2121.75	1999.13	1888.31	1775.81	1679.06	1573.88	1472.63	1386.56

C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	1296.56	1213.31	1148.06	1092.38	1028.81	980.44	912.38	810.00	720.56
45.0	1236.38	1180.13	1113.19	1062.00	1011.94	960.75	894.94	792.00	691.31
90.0	1119.88	1113.13	1056.54	1004.85	963.00	899.83	812.59	724.39	631.24
135.0	1220.06	1152.56	1099.13	1050.75	997.31	948.38	879.75	783.56	673.88
180.0	1212.19	1121.85	1089.17	1042.82	996.13	929.93	856.07	761.12	669.43
225.0	1226.25	1118.42	1098.84	1047.26	1007.04	958.16	888.08	810.28	715.84
270.0	1260.56	1188.56	1133.44	1083.94	1029.94	991.13	949.50	871.31	793.13
315.0	1240.31	1118.03	1104.64	1054.13	1004.85	955.07	890.55	805.33	706.84
360.0	1296.56	1213.31	1148.06	1092.38	1028.81	980.44	912.38	810.00	720.56

C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	622.69	513.00	402.19	308.25	285.75	140.85	78.64	44.49	33.98
45.0	598.50	510.19	375.75	286.31	235.18	124.37	66.04	38.31	31.16
90.0	512.44	418.61	328.78	229.44	160.76	99.45	53.66	32.51	29.31
135.0	582.19	468.00	369.56	294.19	192.43	120.26	66.09	37.18	31.44
180.0	561.26	451.07	354.71	254.48	167.68	103.78	57.54	35.55	31.95
225.0	593.33	496.52	400.16	299.70	209.64	136.69	75.38	42.53	35.10
270.0	705.38	609.75	488.81	393.75	301.50	237.32	124.59	76.67	40.16
315.0	614.81	507.66	413.33	311.34	216.79	143.94	86.46	43.20	34.37
360.0	622.69	513.00	402.19	308.25	285.75	140.85	78.64	44.49	33.98

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	29.76	26.78	23.68	21.38	19.01	17.21	16.09	15.02	13.78
45.0	27.45	24.53	21.54	19.29	17.27	15.58	14.57	13.95	13.16
90.0	26.33	23.23	20.53	18.56	16.76	15.41	14.57	13.50	12.99
135.0	28.24	24.92	22.11	20.08	18.45	16.20	15.08	14.29	13.67
180.0	28.74	25.48	22.67	20.42	18.23	16.71	15.69	14.74	14.23
225.0	31.05	27.96	24.75	22.11	20.03	18.28	16.76	15.98	14.74
270.0	33.75	30.66	26.83	23.96	21.15	18.90	17.33	16.20	14.96
315.0	30.60	26.72	24.02	21.77	19.58	17.72	16.43	14.96	14.23
360.0	29.76	26.78	23.68	21.38	19.01	17.21	16.09	15.02	13.78

C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	13.33	13.05	12.66	12.38	12.15	11.87	11.64	11.53	11.31
45.0	12.88	12.66	12.38	12.09	11.87	11.64	11.48	11.31	11.14
90.0	12.71	12.43	12.21	11.98	11.70	11.53	11.42	11.25	11.08
135.0	13.39	13.11	12.71	12.43	12.15	11.93	11.76	11.59	11.36
180.0	13.78	13.44	13.11	12.77	12.43	12.21	11.98	11.81	11.59
225.0	14.12	13.61	13.28	12.88	12.54	12.26	12.04	11.81	11.59
270.0	14.23	13.78	13.33	12.99	12.66	12.32	12.04	11.81	11.64
315.0	13.67	13.22	12.94	12.54	12.21	12.04	11.76	11.59	11.36
360.0	13.33	13.05	12.66	12.38	12.15	11.87	11.64	11.53	11.31

C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	11.19	11.03	10.91	10.80	10.74	10.63	10.58	10.52	10.41
45.0	11.03	10.91	10.86	10.74	10.69	10.58	10.52	10.46	10.41
90.0	10.97	10.86	10.74	10.69	10.58	10.58	10.46	10.41	10.41
135.0	11.25	11.14	10.97	10.86	10.80	10.69	10.63	10.52	10.46
180.0	11.42	11.31	11.14	11.03	10.91	10.86	10.69	10.63	10.58
225.0	11.42	11.25	11.14	10.97	10.86	10.80	10.69	10.58	10.52
270.0	11.42	11.25	11.03	10.97	10.80	10.74	10.63	10.58	10.46
315.0	11.19	11.03	10.91	10.80	10.74	10.58	10.52	10.46	10.35
360.0	11.19	11.03	10.91	10.80	10.74	10.63	10.58	10.52	10.41

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	10.41	10.29	10.29	10.24	10.24	10.18	10.18	10.18	10.13
45.0	10.35	10.35	10.35	10.29	10.29	10.24	10.18	10.18	10.18
90.0	10.35	10.29	10.29	10.24	10.18	10.18	10.18	10.18	10.13
135.0	10.41	10.35	10.29	10.29	10.24	10.24	10.18	10.18	10.18
180.0	10.52	10.41	10.35	10.29	10.29	10.24	10.18	10.18	10.13
225.0	10.46	10.41	10.35	10.29	10.29	10.24	10.24	10.24	10.18
270.0	10.46	10.35	10.35	10.29	10.29	10.24	10.24	10.18	10.18
315.0	10.35	10.29	10.29	10.24	10.24	10.18	10.18	10.18	10.13
360.0	10.41	10.29	10.29	10.24	10.24	10.18	10.18	10.18	10.13

C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.13	10.13	10.13	10.13	10.07	10.07	10.13	10.07	10.01
45.0	10.18	10.18	10.13	10.13	10.07	10.13	10.07	10.07	10.07
90.0	10.13	10.07	10.07	10.07	10.07	10.01	10.01	10.01	10.01
135.0	10.13	10.13	10.13	10.07	10.07	10.07	10.01	10.01	10.01
180.0	10.13	10.13	10.13	10.13	10.07	10.13	10.01	10.01	10.01
225.0	10.13	10.13	10.13	10.13	10.13	10.13	10.07	10.07	10.01
270.0	10.13	10.13	10.07	10.07	10.13	10.07	10.07	10.07	10.07
315.0	10.13	10.07	10.07	10.07	10.07	10.07	10.07	10.01	10.01
360.0	10.13	10.13	10.13	10.13	10.07	10.07	10.13	10.07	10.01

Intensity data(cd)

C/γ(°)	90.0
0.0	10.01
45.0	10.01
90.0	10.01
135.0	10.01
180.0	10.01
225.0	10.07
270.0	10.01
315.0	10.01
360.0	10.01