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Nata

LumCAT: 3-2383-M
Luminaire: 92.70.131.00
Report No: NATA0100
Test No: GC2019092323
LampCAT: OSRAM OPTO SOLERIQ S15 LES14.7
Lamp flux(lm): 1871.0
Number of Lamps: 1
Length(mm): 74
Phm Type: C

Voltage(V): 34.9000
Current(A): 0.5000
Power (W): 17.4500
PF: 0.0000
Ballast type: DC
Width(mm): 74
Height(mm): 0

Photometric Results

Lumens(lm): 1800.23
Efficiency(%): 96.22%
Lumens(lm)/Power(W): 103.16
Central intensity(cd): 9070.313
Maximum intensity(cd): 9070.313
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=21.9
 [C90/270]Total=21.9
Field angle(10%Imax): [C0/180]Total=37.6
 [C90/270]Total=37.6
Maximum s/h(1/2): C0_180=0.38 C90_270=0.38
Maximum s/h(1/4): C0_180=0.35 C90_270=0.35
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 96.22%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.397%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9070.313	0.000	0	.000%	.000%
1.0	9045.844	8.668	8.668	.463%	.482%
2.0	8961.539	25.846	34.514	1.381%	1.917%
3.0	8840.953	42.578	77.092	2.276%	4.282%
4.0	8697.938	58.708	135.8	3.138%	7.543%
5.0	8430.398	73.685	209.485	3.938%	11.637%
6.0	8071.734	86.723	296.208	4.635%	16.454%
7.0	7526.531	96.818	393.027	5.175%	21.832%
8.0	6809.625	102.601	495.628	5.484%	27.531%
9.0	6122.109	104.805	600.432	5.602%	33.353%
10.0	5346.984	103.791	704.224	5.547%	39.119%
11.0	4496.906	98.361	802.584	5.257%	44.582%
12.0	3803.273	90.733	893.317	4.849%	49.622%
13.0	3066.328	81.525	974.842	4.357%	54.151%
14.0	2316.305	68.897	1043.739	3.682%	57.978%
15.0	1818.211	56.760	1100.5	3.034%	61.131%
16.0	1397.123	47.114	1147.613	2.518%	63.748%
17.0	1127.707	39.318	1186.932	2.101%	65.932%
18.0	989.627	34.910	1221.842	1.866%	67.872%
19.0	888.525	32.676	1254.518	1.746%	69.687%
20.0	805.753	31.010	1285.528	1.657%	71.409%
21.0	749.475	29.864	1315.391	1.596%	73.068%
22.0	710.487	29.339	1344.73	1.568%	74.698%
23.0	676.821	29.109	1373.839	1.556%	76.315%
24.0	652.613	29.066	1402.906	1.554%	77.929%
25.0	634.324	29.262	1432.168	1.564%	79.555%
26.0	617.505	29.550	1461.717	1.579%	81.196%
27.0	602.866	29.857	1491.574	1.596%	82.855%
28.0	590.871	30.223	1521.797	1.615%	84.534%
29.0	577.891	30.578	1552.375	1.634%	86.232%
30.0	560.862	30.746	1583.121	1.643%	87.940%
31.0	525.537	30.233	1613.354	1.616%	89.619%
32.0	467.803	28.458	1641.812	1.521%	91.200%
33.0	403.636	25.673	1667.485	1.372%	92.626%
34.0	335.377	22.365	1689.85	1.195%	93.869%
35.0	273.087	18.897	1708.746	1.010%	94.918%
36.0	203.259	15.167	1723.913	.811%	95.761%
37.0	131.020	10.902	1734.816	.583%	96.366%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	78.420	6.991	1741.806	.374%	96.755%
39.0	39.326	4.019	1745.825	.215%	96.978%
40.0	26.852	2.308	1748.133	.123%	97.106%
41.0	22.838	1.769	1749.903	.095%	97.205%
42.0	19.849	1.551	1751.454	.083%	97.291%
43.0	17.873	1.397	1752.851	.075%	97.368%
44.0	16.763	1.307	1754.158	.070%	97.441%
45.0	15.757	1.250	1755.408	.067%	97.510%
46.0	15.012	1.203	1756.611	.064%	97.577%
47.0	14.316	1.166	1757.778	.062%	97.642%
48.0	13.746	1.134	1758.912	.061%	97.705%
49.0	13.296	1.111	1760.023	.059%	97.767%
50.0	12.804	1.088	1761.111	.058%	97.827%
51.0	12.410	1.067	1762.178	.057%	97.886%
52.0	12.108	1.052	1763.23	.056%	97.945%
53.0	11.813	1.041	1764.27	.056%	98.003%
54.0	11.524	1.029	1765.299	.055%	98.060%
55.0	11.334	1.020	1766.319	.055%	98.116%
56.0	11.152	1.016	1767.335	.054%	98.173%
57.0	10.941	1.010	1768.346	.054%	98.229%
58.0	10.828	1.007	1769.352	.054%	98.285%
59.0	10.723	1.008	1770.36	.054%	98.341%
60.0	10.659	1.010	1771.37	.054%	98.397%
61.0	10.589	1.014	1772.384	.054%	98.453%
62.0	10.554	1.019	1773.403	.054%	98.510%
63.0	10.512	1.025	1774.427	.055%	98.567%
64.0	10.448	1.029	1775.456	.055%	98.624%
65.0	10.364	1.030	1776.486	.055%	98.681%
66.0	10.188	1.025	1777.511	.055%	98.738%
67.0	9.991	1.015	1778.526	.054%	98.795%
68.0	9.823	1.004	1779.53	.054%	98.850%
69.0	9.647	0.993	1780.523	.053%	98.905%
70.0	9.513	0.984	1781.507	.053%	98.960%
71.0	9.394	0.977	1782.484	.052%	99.014%
72.0	9.246	0.969	1783.453	.052%	99.068%
73.0	9.162	0.963	1784.416	.051%	99.122%
74.0	9.070	0.959	1785.374	.051%	99.175%
75.0	8.972	0.953	1786.328	.051%	99.228%

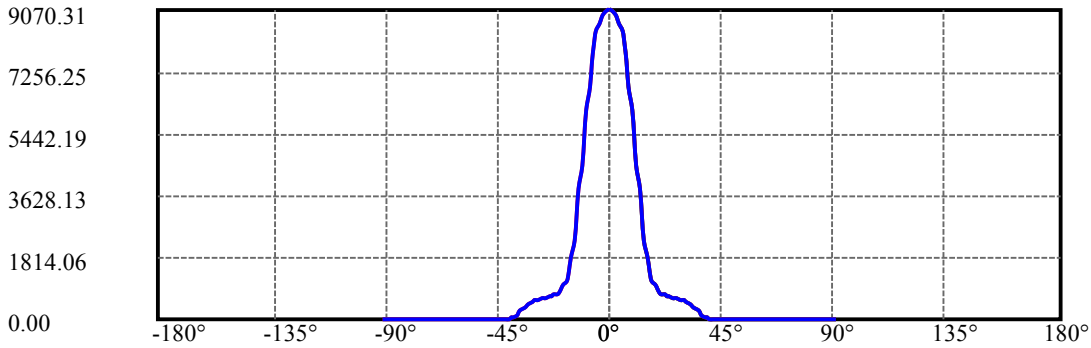
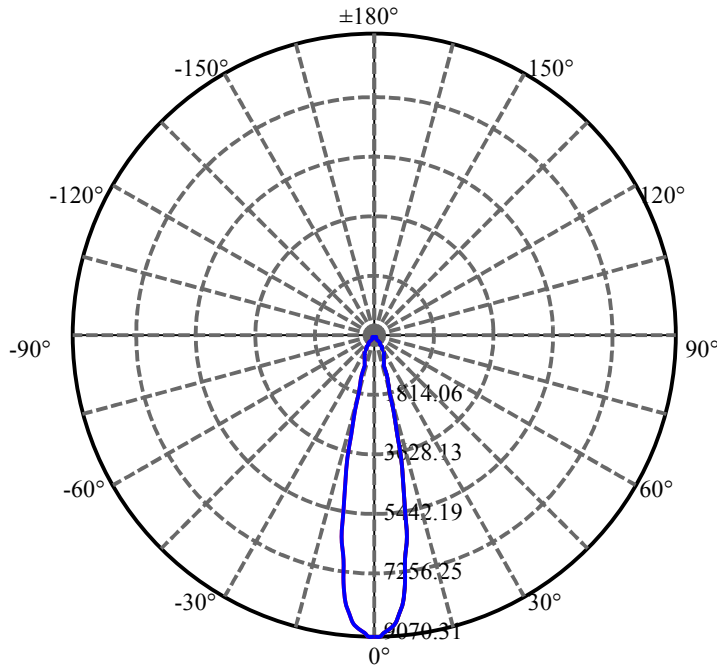
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.916	0.950	1787.277	.051%	99.281%
77.0	8.866	0.948	1788.225	.051%	99.333%
78.0	8.789	0.945	1789.17	.051%	99.386%
79.0	8.740	0.942	1790.112	.050%	99.438%
80.0	8.691	0.940	1791.052	.050%	99.490%
81.0	8.634	0.937	1791.989	.050%	99.542%
82.0	8.585	0.934	1792.923	.050%	99.594%
83.0	8.522	0.930	1793.853	.050%	99.646%
84.0	8.480	0.926	1794.779	.050%	99.697%
85.0	8.409	0.922	1795.7	.049%	99.749%
86.0	8.332	0.915	1796.616	.049%	99.799%
87.0	8.276	0.909	1797.525	.049%	99.850%
88.0	8.248	0.905	1798.43	.048%	99.900%
89.0	8.198	0.901	1799.331	.048%	99.950%
90.0	8.149	0.896	1800.227	.048%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1583.12	84.61%	87.94%
0-40	1748.13	93.43%	97.11%
0-60	1771.37	94.68%	98.40%
0-90	1799.33	96.17%	99.95%
0-120	1799.33	96.17%	99.95%
0-180	1800.23	96.22%	100.00%
60-90	28.97	1.55%	1.61%
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%
0-25.27	1440.18	76.97%	80.00%

ZONAL LUMEN SUMMARY

0-10	704.22
10-20	581.30
20-30	297.59
30-40	165.01
40-50	12.98
50-60	10.26
60-70	10.14
70-80	9.55
80-90	8.28
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



C0(Max): —————

C0/C180: —————

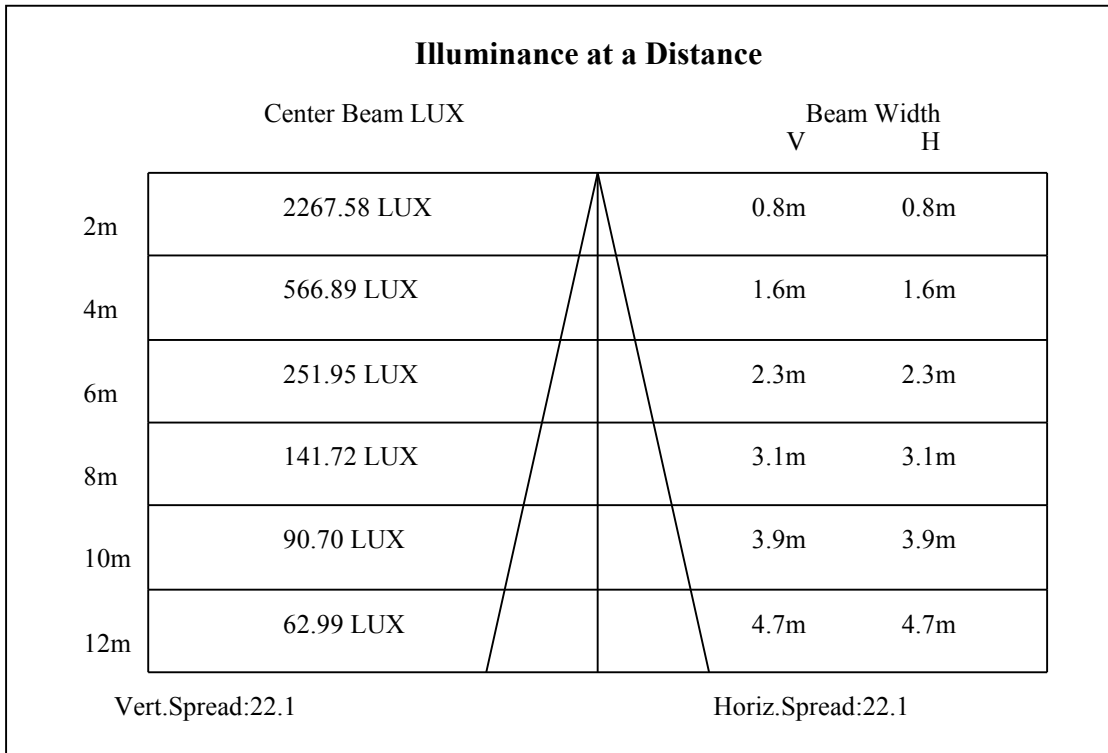
C90/C270: —————

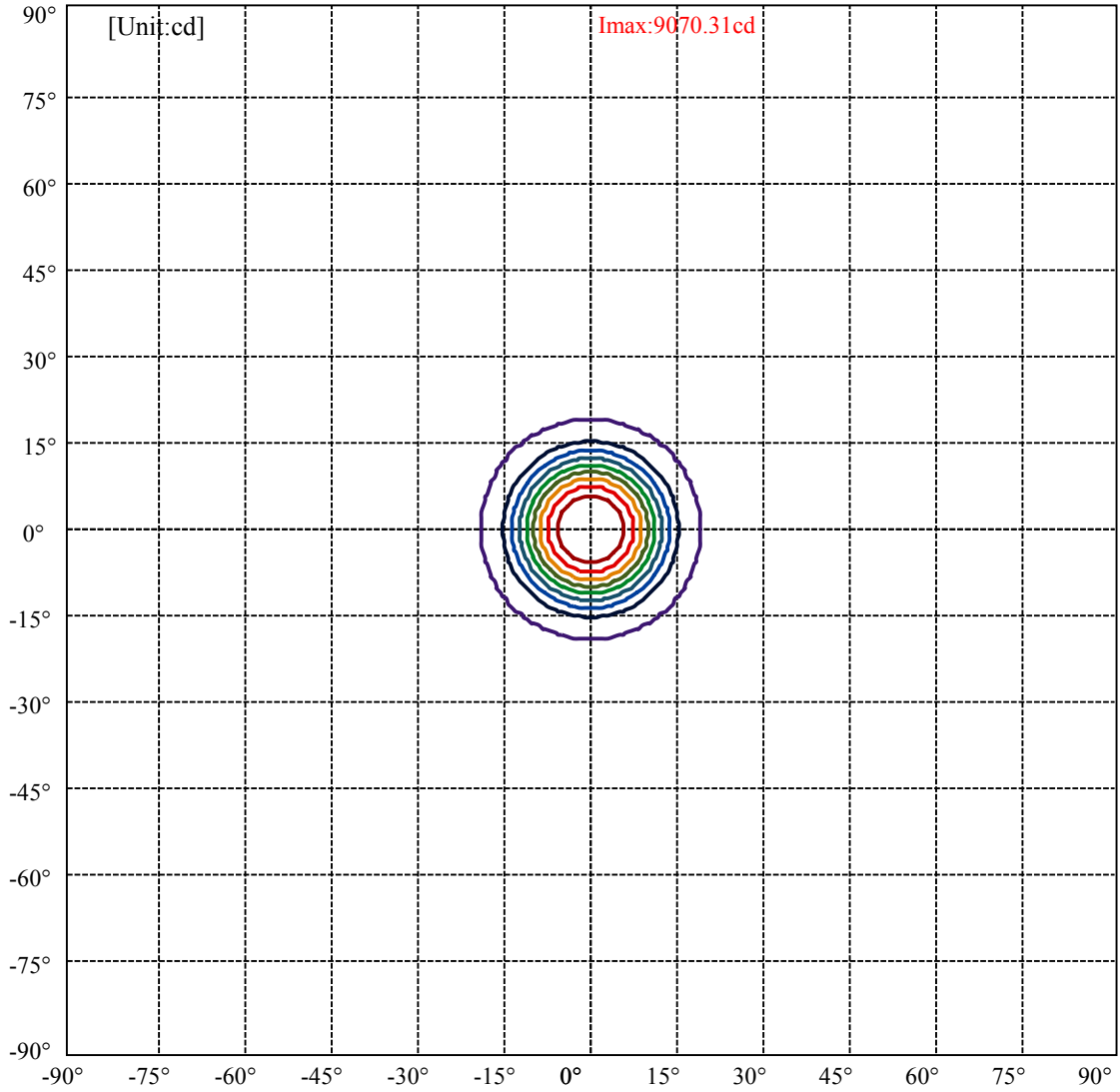
Field angle(10%Imax):C0/180Left:18.8 Right:18.8

:C90/270Left:18.8 Right:18.8

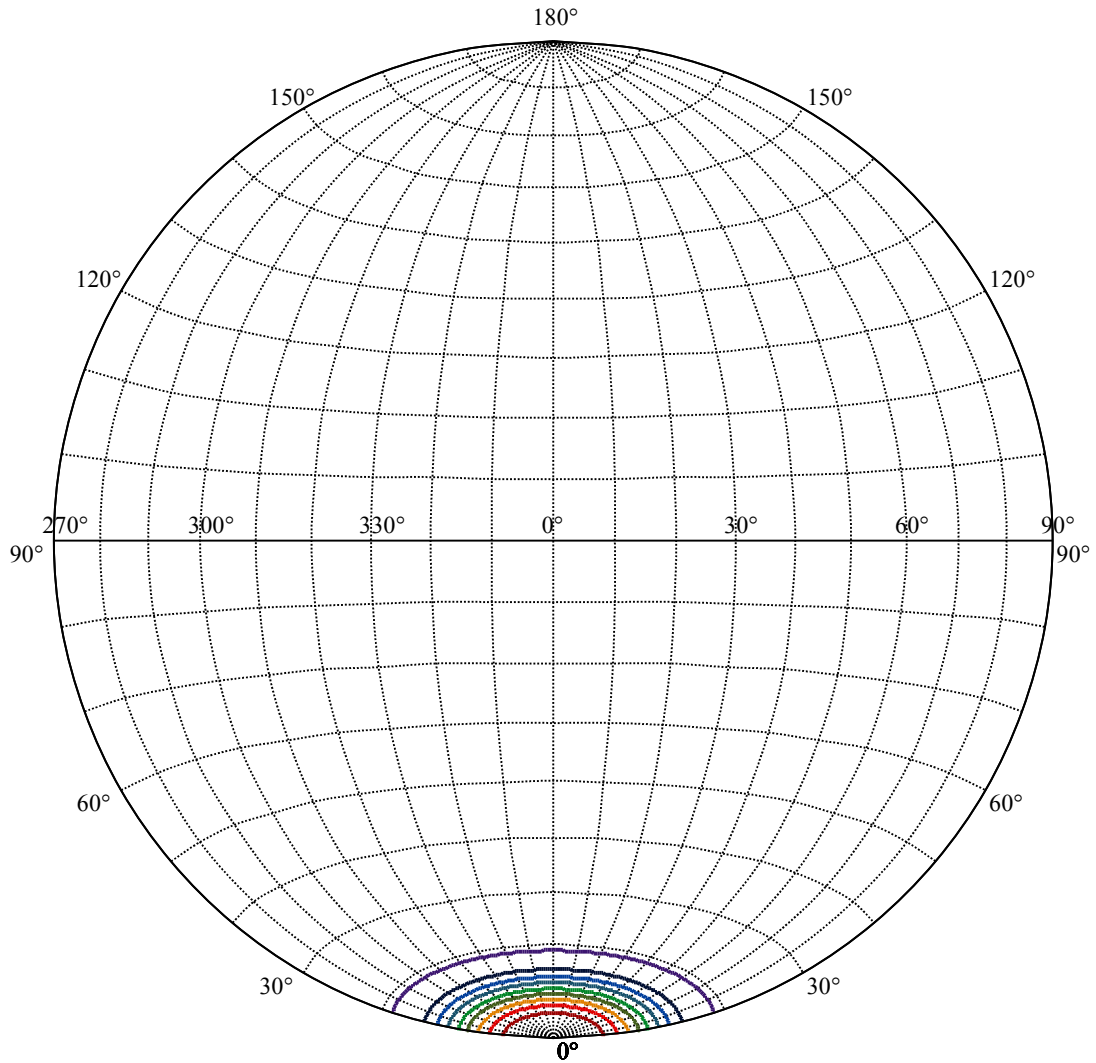
Beam Angle(50%Imax):C0/180Left:11.0 Right:11.0

:C90/270Left:11.0 Right:11.0





(10%Imax) 907.031	—
(20%Imax) 1814.06	—
(30%Imax) 2721.09	—
(40%Imax) 3628.13	—
(50%Imax) 4535.16	—
(60%Imax) 5442.19	—
(70%Imax) 6349.22	—
(80%Imax) 7256.25	—
(90%Imax) 8163.28	—



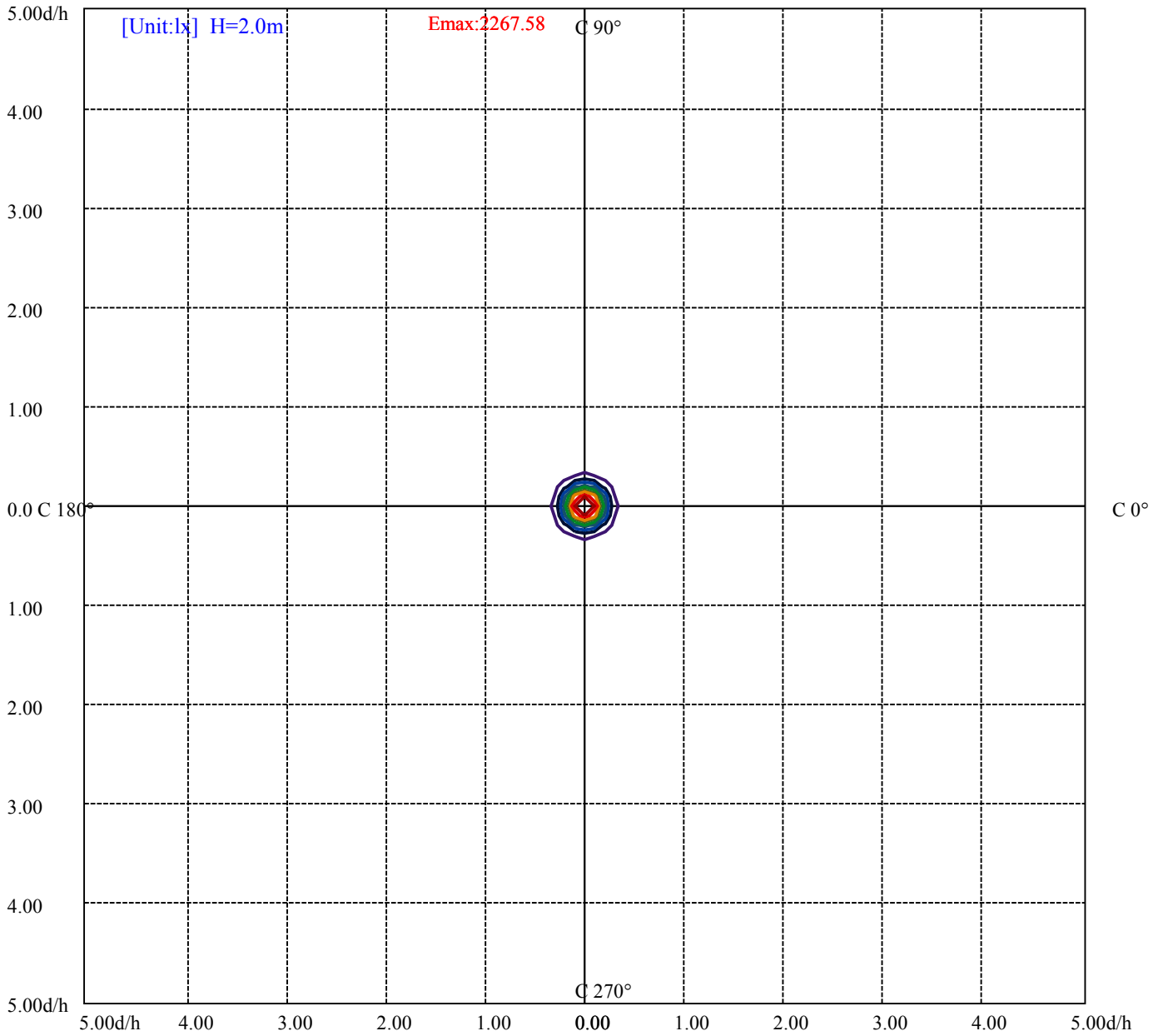
House

[Unit:cd]

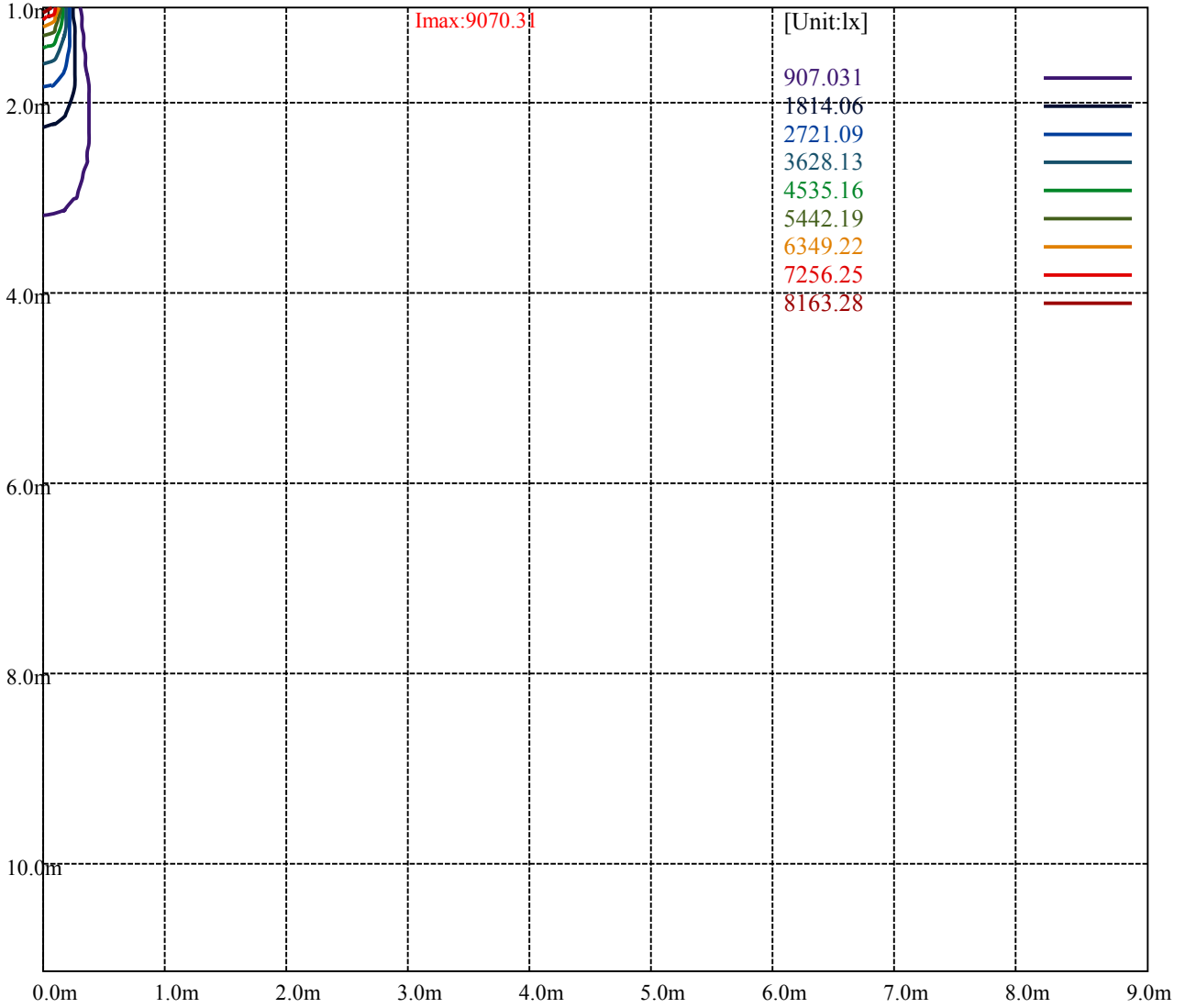
Road

Imax:9070.31

(10%Imax) 907.031	—
(20%Imax) 1814.06	—
(30%Imax) 2721.09	—
(40%Imax) 3628.13	—
(50%Imax) 4535.16	—
(60%Imax) 5442.19	—
(70%Imax) 6349.22	—
(80%Imax) 7256.25	—
(90%Imax) 8163.28	—



(10%Emax) 226.7578	—
(20%Emax) 453.515	—
(30%Emax) 680.2725	—
(40%Emax) 907.03	—
(50%Emax) 1133.787	—
(60%Emax) 1360.547	—
(70%Emax) 1587.305	—
(80%Emax) 1814.063	—
(90%Emax) 2040.82	—



Luminance Table

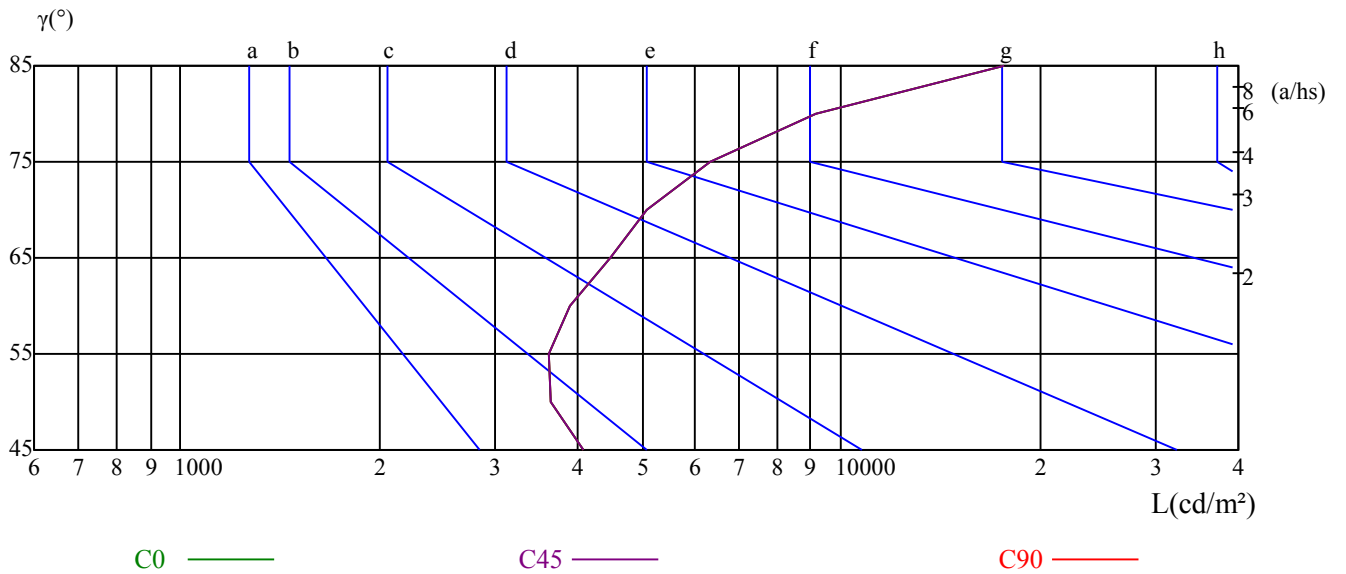
γ	45	50	55	60	65	70	75	80	85
C0	4069	3638	3609	3893	4478	5079	6330	9139	17620
C45	4069	3638	3609	3893	4478	5079	6330	9139	17620
C90	4069	3638	3609	3893	4478	5079	6330	9139	17620

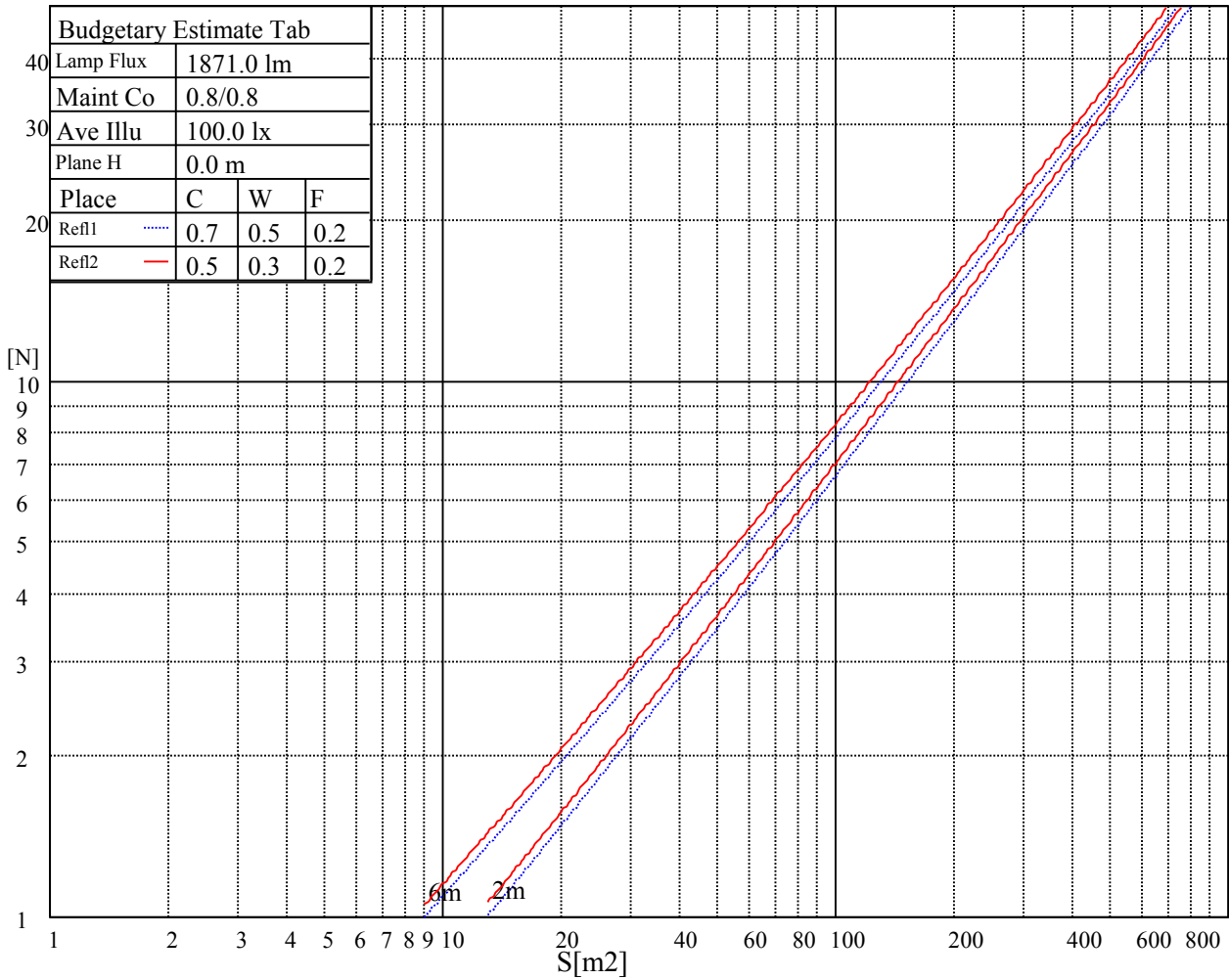
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4478	4478	4478	6330	6330	6330	17620	17620	17620

Glare Table

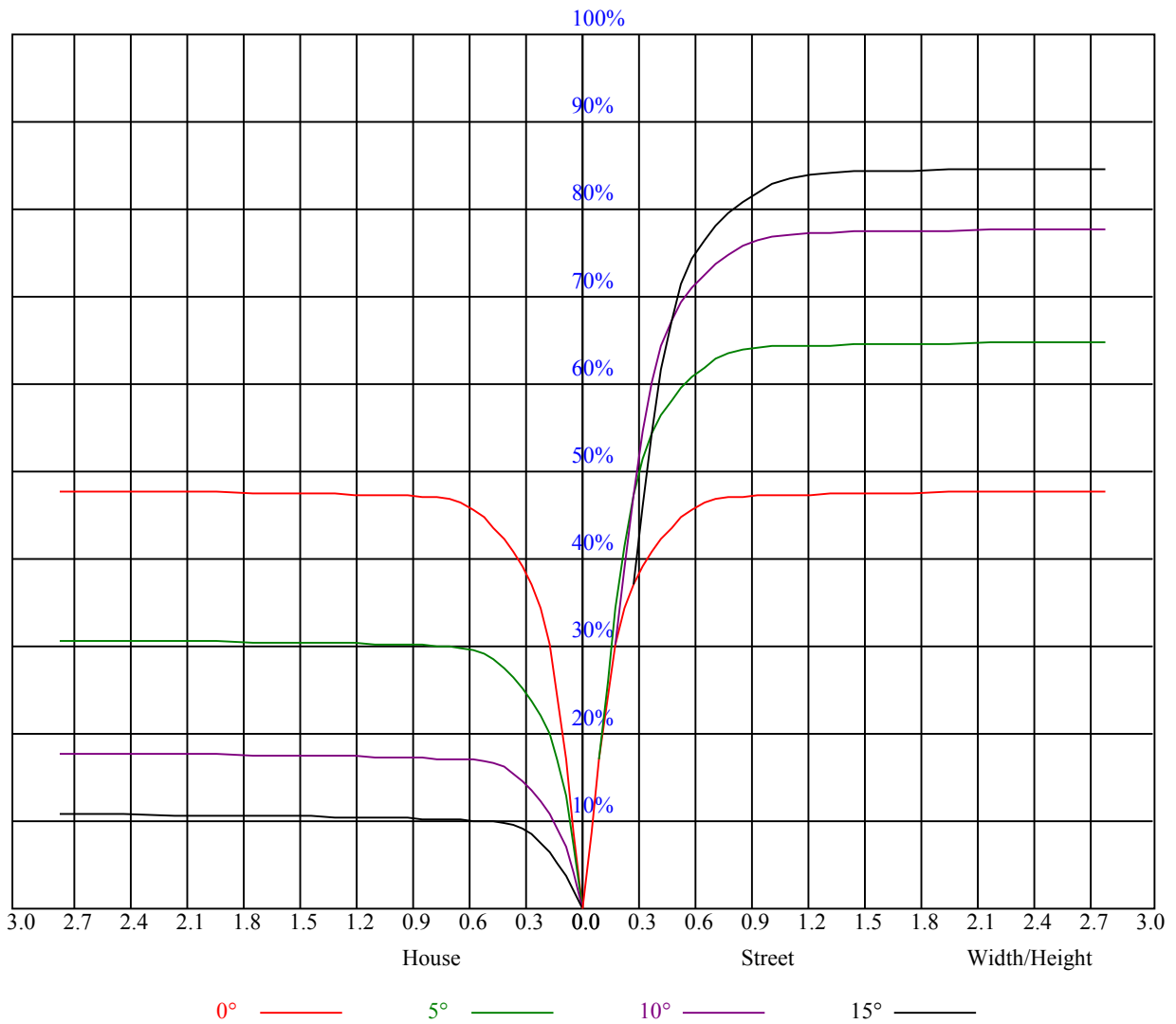
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	COEFFICIENTS OF UTILIZATION RHOFC=20 CU															
0	1.15	1.15	1.15	1.12	1.12	1.12	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.96
1	1.08	1.06	1.04	1.06	1.04	1.03	1.02	1.01	0.99	0.99	0.97	0.96	0.95	0.94	0.94	0.92
2	1.03	0.99	0.97	1.01	0.98	0.96	0.98	0.96	0.94	0.95	0.93	0.92	0.93	0.91	0.90	0.88
3	0.98	0.94	0.91	0.97	0.93	0.90	0.94	0.91	0.89	0.92	0.90	0.88	0.90	0.88	0.86	0.85
4	0.94	0.90	0.87	0.93	0.89	0.86	0.91	0.88	0.85	0.89	0.86	0.84	0.87	0.85	0.83	0.82
5	0.90	0.86	0.83	0.89	0.85	0.82	0.88	0.84	0.82	0.86	0.83	0.81	0.85	0.82	0.80	0.79
6	0.87	0.83	0.80	0.86	0.82	0.79	0.85	0.81	0.79	0.84	0.81	0.78	0.83	0.80	0.78	0.77
7	0.84	0.80	0.77	0.83	0.79	0.77	0.82	0.79	0.76	0.81	0.78	0.76	0.80	0.78	0.75	0.74
8	0.81	0.77	0.74	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.72
9	0.79	0.75	0.72	0.78	0.74	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
10	0.77	0.73	0.70	0.76	0.72	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.68



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	9054.00	9019.69	8915.63	8802.56	8643.38	8385.19	7969.50	7448.06	6744.94
45.0	9090.00	9077.63	9009.00	8920.69	8789.06	8602.88	8324.44	7898.06	7260.19
90.0	9080.44	9063.00	9000.00	8890.88	8767.13	8552.25	8222.06	7676.44	6985.69
135.0	9056.81	9069.19	9021.38	8965.13	8880.75	8735.63	8518.50	8039.25	7372.69
180.0	9054.00	9045.00	8980.31	8879.63	8767.69	8516.81	8143.31	7603.88	6791.63
225.0	9090.00	9041.06	8936.44	8773.31	8589.38	8264.25	7827.75	7180.88	6465.38
270.0	9080.44	9061.31	8956.69	8791.31	8615.25	8278.88	7874.44	7336.13	6658.88
315.0	9056.81	8989.88	8872.88	8704.13	8530.88	8107.31	7693.88	7029.56	6197.63
360.0	9054.00	9019.69	8915.63	8802.56	8643.38	8385.19	7969.50	7448.06	6744.94
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5997.94	5330.25	4545.56	3848.06	3097.69	2399.06	1842.75	1440.56	1142.44
45.0	6524.44	5814.00	4939.88	4177.69	3360.94	2603.81	2043.00	1549.13	1232.44
90.0	6296.06	5439.38	4575.38	3818.81	3108.94	2322.00	1812.94	1435.50	1078.48
135.0	6638.63	5933.25	5118.19	4376.25	3560.63	2754.00	2152.13	1614.38	1268.44
180.0	6177.38	5376.38	4471.88	3855.94	3079.13	2269.69	1810.13	1434.94	1083.99
225.0	5756.63	4900.50	4068.00	3373.31	2723.63	2022.75	1599.75	1223.44	1087.59
270.0	5998.50	5192.44	4361.06	3657.94	2921.63	2251.69	1764.56	1369.69	1120.50
315.0	5587.31	4789.69	3895.31	3318.19	2678.06	1907.44	1520.44	1109.36	1007.78
360.0	5997.94	5330.25	4545.56	3848.06	3097.69	2399.06	1842.75	1440.56	1142.44
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1000.69	903.94	816.19	765.00	726.19	693.00	667.13	649.13	631.69
45.0	1044.56	925.88	829.69	777.38	735.19	699.75	675.00	658.13	640.13
90.0	965.53	858.21	773.21	707.57	667.52	627.53	605.87	580.05	557.16
135.0	1082.81	959.63	853.88	792.00	745.31	700.31	673.88	653.63	635.06
180.0	1000.74	899.44	823.67	754.14	715.67	686.59	658.29	641.53	626.46
225.0	953.66	867.26	798.30	746.83	710.72	679.95	658.58	639.51	624.43
270.0	977.06	875.25	787.50	737.44	699.75	666.56	640.13	624.94	607.50
315.0	891.96	818.61	763.59	715.44	683.55	660.88	642.04	627.69	617.63
360.0	1000.69	903.94	816.19	765.00	726.19	693.00	667.13	649.13	631.69
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	617.63	604.13	591.75	576.00	536.63	476.44	414.00	346.50	286.88
45.0	622.69	610.31	597.94	586.69	563.06	515.81	448.88	379.69	307.13
90.0	538.31	523.24	506.76	490.16	463.50	417.04	361.13	305.94	254.48
135.0	620.44	608.63	597.38	586.69	564.75	514.69	457.88	381.94	311.63
180.0	613.18	600.92	589.28	573.36	539.66	482.18	411.53	344.08	268.76
225.0	612.28	600.86	586.07	562.56	515.87	439.76	373.28	306.90	237.26
270.0	592.88	584.44	572.06	557.44	514.69	459.00	399.38	322.31	290.25
315.0	605.53	594.45	581.91	554.01	506.14	437.51	363.04	295.65	228.32
360.0	617.63	604.13	591.75	576.00	536.63	476.44	414.00	346.50	286.88
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	190.80	129.94	76.61	34.65	23.63	21.60	18.45	16.59	15.64
45.0	284.63	162.73	98.55	51.64	31.95	25.31	22.22	19.86	18.45
90.0	190.58	137.76	94.11	53.33	37.24	30.66	25.82	22.56	20.76
135.0	286.31	175.50	106.14	52.37	28.07	20.19	17.78	15.92	14.74
180.0	193.95	133.48	79.99	34.31	20.59	18.28	15.69	13.78	13.05
225.0	154.91	95.74	51.41	26.16	21.99	19.63	17.16	15.64	14.85
270.0	176.51	120.32	72.06	36.68	28.41	26.21	23.23	21.32	20.19
315.0	148.39	92.70	48.49	25.48	22.95	20.81	18.45	17.33	16.43
360.0	190.80	129.94	76.61	34.65	23.63	21.60	18.45	16.59	15.64

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	14.63	13.61	12.88	12.32	11.98	11.59	11.42	11.25	11.03
45.0	17.21	16.48	15.69	14.85	14.34	13.73	13.33	12.99	12.60
90.0	19.24	18.34	17.38	16.71	16.14	15.53	14.85	14.34	13.89
135.0	14.06	13.67	13.11	12.66	12.21	11.81	11.42	11.19	10.91
180.0	12.43	11.93	11.53	11.14	10.91	10.69	10.46	10.29	10.13
225.0	14.18	13.39	12.88	12.43	12.09	11.59	11.25	10.97	10.86
270.0	18.51	17.66	16.71	16.09	15.13	14.46	13.95	13.61	13.28
315.0	15.81	15.02	14.34	13.78	13.56	13.05	12.60	12.21	11.81
360.0	14.63	13.61	12.88	12.32	11.98	11.59	11.42	11.25	11.03
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	10.97	10.86	10.74	10.58	10.52	10.52	10.58	10.58	10.58
45.0	12.38	12.15	12.04	11.76	11.53	11.42	11.31	11.25	11.25
90.0	13.33	12.94	12.60	12.21	11.93	11.59	11.42	11.19	11.08
135.0	10.63	10.46	10.35	10.24	10.24	10.24	10.18	10.18	10.13
180.0	9.96	9.84	9.73	9.62	9.62	9.56	9.51	9.51	9.45
225.0	10.69	10.58	10.46	10.41	10.35	10.29	10.29	10.29	10.24
270.0	12.77	12.60	12.26	11.87	11.70	11.53	11.36	11.25	11.25
315.0	11.48	11.25	11.03	10.86	10.74	10.63	10.63	10.46	10.46
360.0	10.97	10.86	10.74	10.58	10.52	10.52	10.58	10.58	10.58
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.58	10.58	10.52	10.41	10.18	9.96	9.79	9.56	9.39
45.0	11.31	11.31	11.19	10.80	10.52	10.18	9.90	9.73	9.56
90.0	10.91	10.69	10.52	10.29	10.07	9.90	9.79	9.62	9.51
135.0	10.13	10.07	10.01	9.90	9.73	9.62	9.45	9.34	9.28
180.0	9.45	9.51	9.56	9.62	9.56	9.56	9.45	9.39	9.28
225.0	10.24	10.18	10.07	9.90	9.73	9.56	9.45	9.34	9.28
270.0	11.14	11.03	10.91	10.69	10.46	10.24	9.96	9.84	9.62
315.0	10.35	10.24	10.13	9.90	9.68	9.56	9.39	9.28	9.23
360.0	10.58	10.58	10.52	10.41	10.18	9.96	9.79	9.56	9.39
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	9.23	9.11	9.00	8.89	8.78	8.72	8.66	8.61	8.55
45.0	9.34	9.23	9.06	8.89	8.83	8.78	8.66	8.61	8.61
90.0	9.34	9.28	9.23	9.17	9.11	9.06	9.00	8.94	8.83
135.0	9.11	9.06	9.00	8.94	8.89	8.83	8.72	8.66	8.66
180.0	9.17	9.06	9.00	8.89	8.83	8.72	8.66	8.61	8.55
225.0	9.17	9.11	9.00	8.89	8.89	8.83	8.78	8.72	8.66
270.0	9.51	9.45	9.34	9.28	9.23	9.28	9.23	9.23	9.17
315.0	9.11	9.00	8.94	8.83	8.78	8.72	8.61	8.55	8.49
360.0	9.23	9.11	9.00	8.89	8.78	8.72	8.66	8.61	8.55
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	8.49	8.49	8.44	8.44	8.38	8.33	8.27	8.27	8.27
45.0	8.49	8.49	8.44	8.44	8.38	8.33	8.27	8.27	8.27
90.0	8.78	8.72	8.66	8.61	8.44	8.33	8.27	8.21	8.16
135.0	8.61	8.55	8.49	8.44	8.38	8.33	8.27	8.27	8.21
180.0	8.49	8.44	8.38	8.38	8.38	8.33	8.33	8.27	8.21
225.0	8.61	8.55	8.49	8.44	8.44	8.38	8.27	8.27	8.16
270.0	9.11	9.00	8.89	8.72	8.55	8.38	8.33	8.21	8.16
315.0	8.49	8.44	8.38	8.38	8.33	8.27	8.21	8.21	8.16
360.0	8.49	8.49	8.44	8.44	8.38	8.33	8.27	8.27	8.27

Intensity data(cd)

C/γ(°)	90.0
0.0	8.16
45.0	8.21
90.0	8.16
135.0	8.10
180.0	8.10
225.0	8.16
270.0	8.16
315.0	8.16
360.0	8.16