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## Nata

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LumCAT: 3-1701-N  
Luminaire: 92.70.045.00+92.70.061.00  
Report No: NT2017122908  
Test No: nata-0100  
LampCAT: NICHIA NVEWJ048Z-V1  
Lamp flux(lm): 3051.0  
Number of Lamps: 1  
Length(mm): 86  
Phm Type: C

Voltage(V): 43.4000  
Current(A): 0.5000  
Power (W): 21.7000  
PF: 0.0000  
Ballast type: DC  
Width(mm): 86  
Height(mm): 0

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## Photometric Results

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Lumens(lm): 2459.72  
Efficiency(%): 80.62%  
Lumens(lm)/Power(W): 113.35  
Central intensity(cd): 15353.850  
Maximum intensity(cd): 15353.850  
Angle of maximum intensity: C=0.0  $\gamma$ =0.0  
Beam Angle(50%Imax): [C0/180]Total=18.2  
                                  [C90/270]Total=18.2  
Field angle(10%Imax): [C0/180]Total=33.1  
                                  [C90/270]Total=33.1  
Maximum s/h(1/2): C0\_180=0.31 C90\_270=0.31  
Maximum s/h(1/4): C0\_180=0.30 C90\_270=0.30  
Up flux rate of lamp(%): 0.00%  
Down flux rate of lamp(%): 80.74%  
Up flux rate of LUM(%): - -  
Down flux rate of LUM(%): 100.00%  
CIE Type : Direct lighting  
Output flux ratio in  $\pi$  solid angle : 97.572%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	15353.854	3.673	3.673	.120%	.149%
1.0	15268.516	29.222	32.895	.958%	1.337%
2.0	14951.254	57.220	90.115	1.875%	3.664%
3.0	14488.780	83.154	173.269	2.725%	7.044%
4.0	13834.985	105.831	279.101	3.469%	11.347%
5.0	12691.808	121.303	400.404	3.976%	16.278%
6.0	11447.671	131.221	531.625	4.301%	21.613%
7.0	10405.040	139.056	670.681	4.558%	27.267%
8.0	9088.091	138.701	809.382	4.546%	32.905%
9.0	7786.283	133.572	942.953	4.378%	38.336%
10.0	6472.637	123.255	1066.208	4.040%	43.347%
11.0	5110.886	106.942	1173.15	3.505%	47.694%
12.0	3968.534	90.482	1263.631	2.966%	51.373%
13.0	2991.214	73.788	1337.419	2.418%	54.373%
14.0	2266.534	60.130	1397.549	1.971%	56.817%
15.0	1898.895	53.895	1451.444	1.766%	59.009%
16.0	1622.099	49.031	1500.475	1.607%	61.002%
17.0	1461.334	46.853	1547.328	1.536%	62.907%
18.0	1350.258	45.756	1593.084	1.500%	64.767%
19.0	1251.439	44.679	1637.763	1.464%	66.583%
20.0	1156.157	43.363	1681.126	1.421%	68.346%
21.0	1073.614	42.192	1723.318	1.383%	70.062%
22.0	1003.327	41.216	1764.534	1.351%	71.737%
23.0	921.107	39.468	1804.002	1.294%	73.342%
24.0	834.366	37.215	1841.217	1.220%	74.855%
25.0	768.746	35.627	1876.845	1.168%	76.303%
26.0	708.789	34.073	1910.918	1.117%	77.688%
27.0	649.686	32.345	1943.262	1.060%	79.003%
28.0	599.206	30.849	1974.111	1.011%	80.258%
29.0	554.583	29.484	2003.595	.966%	81.456%
30.0	509.010	27.909	2031.504	.915%	82.591%
31.0	469.473	26.516	2058.02	.869%	83.669%
32.0	431.663	25.085	2083.105	.822%	84.689%
33.0	396.317	23.670	2106.775	.776%	85.651%
34.0	368.437	22.593	2129.368	.741%	86.570%
35.0	339.877	21.378	2150.746	.701%	87.439%
36.0	313.897	20.233	2170.979	.663%	88.261%
37.0	295.185	19.481	2190.46	.639%	89.053%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	276.610	18.675	2209.135	.612%	89.812%
39.0	253.576	17.500	2226.634	.574%	90.524%
40.0	238.752	16.829	2243.464	.552%	91.208%
41.0	220.446	15.860	2259.323	.520%	91.853%
42.0	200.192	14.690	2274.013	.481%	92.450%
43.0	180.681	13.513	2287.526	.443%	92.999%
44.0	164.405	12.524	2300.05	.410%	93.509%
45.0	148.336	11.502	2311.552	.377%	93.976%
46.0	134.344	10.598	2322.15	.347%	94.407%
47.0	122.404	9.817	2331.967	.322%	94.806%
48.0	110.712	9.022	2340.989	.296%	95.173%
49.0	101.118	8.369	2349.358	.274%	95.513%
50.0	91.401	7.678	2357.036	.252%	95.825%
51.0	82.302	7.014	2364.05	.230%	96.111%
52.0	74.271	6.418	2370.468	.210%	96.371%
53.0	65.786	5.761	2376.229	.189%	96.606%
54.0	57.217	5.076	2381.305	.166%	96.812%
55.0	51.161	4.596	2385.901	.151%	96.999%
56.0	46.123	4.193	2390.094	.137%	97.169%
57.0	41.003	3.771	2393.865	.124%	97.323%
58.0	37.376	3.476	2397.341	.114%	97.464%
59.0	34.245	3.219	2400.56	.106%	97.595%
60.0	30.852	2.930	2403.49	.096%	97.714%
61.0	28.216	2.706	2406.197	.089%	97.824%
62.0	26.152	2.532	2408.729	.083%	97.927%
63.0	24.610	2.405	2411.133	.079%	98.025%
64.0	23.667	2.333	2413.466	.076%	98.120%
65.0	23.000	2.286	2415.752	.075%	98.212%
66.0	22.325	2.237	2417.989	.073%	98.303%
67.0	21.754	2.196	2420.184	.072%	98.393%
68.0	21.149	2.150	2422.335	.070%	98.480%
69.0	20.584	2.107	2424.442	.069%	98.566%
70.0	20.158	2.077	2426.519	.068%	98.650%
71.0	19.786	2.052	2428.571	.067%	98.734%
72.0	19.373	2.020	2430.591	.066%	98.816%
73.0	19.056	1.998	2432.59	.066%	98.897%
74.0	18.760	1.978	2434.567	.065%	98.977%
75.0	18.437	1.953	2436.52	.064%	99.057%

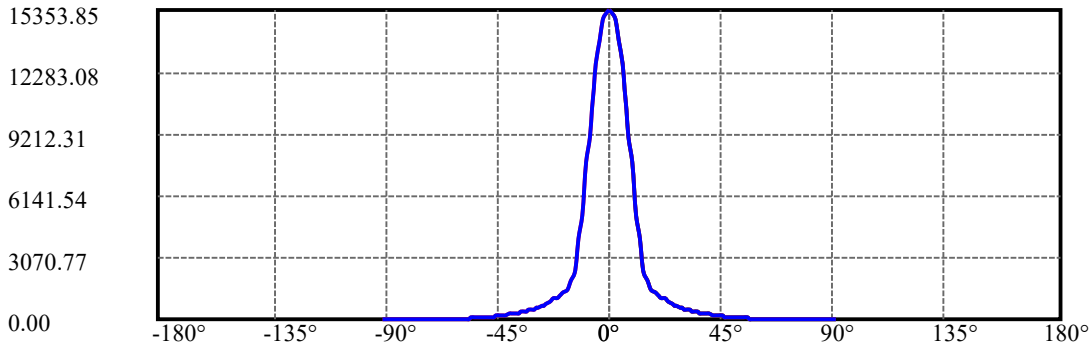
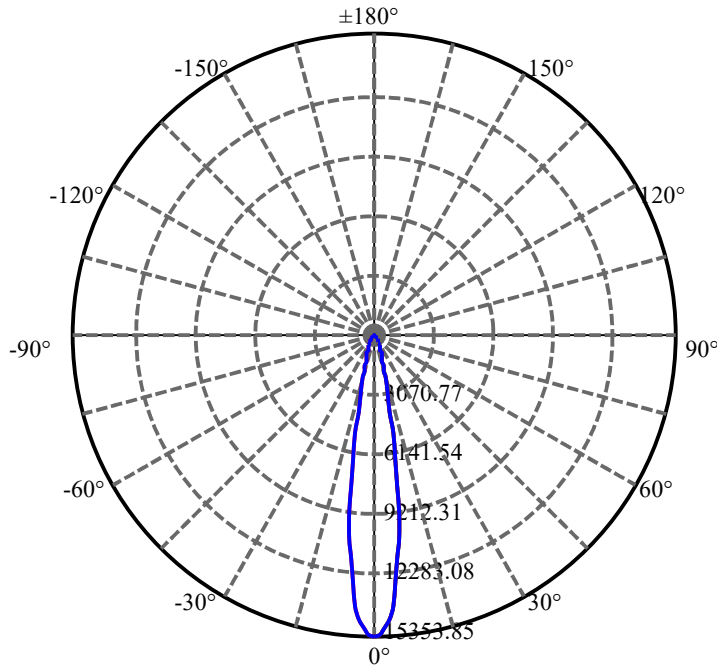
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	18.169	1.933	2438.453	.063%	99.135%
77.0	17.838	1.906	2440.359	.062%	99.213%
78.0	17.384	1.865	2442.224	.061%	99.289%
79.0	16.861	1.815	2444.039	.059%	99.362%
80.0	16.338	1.764	2445.804	.058%	99.434%
81.0	15.746	1.705	2447.509	.056%	99.504%
82.0	15.168	1.647	2449.156	.054%	99.571%
83.0	14.590	1.588	2450.744	.052%	99.635%
84.0	13.950	1.521	2452.266	.050%	99.697%
85.0	13.420	1.466	2453.732	.048%	99.757%
86.0	12.835	1.404	2455.136	.046%	99.814%
87.0	12.367	1.354	2456.49	.044%	99.869%
88.0	11.975	1.312	2457.802	.043%	99.922%
89.0	11.693	1.282	2459.084	.042%	99.974%
90.0	11.589	0.635	2459.72	.021%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2031.50	66.58%	82.59%
0-40	2243.46	73.53%	91.21%
0-60	2403.49	78.78%	97.71%
0-90	2459.08	80.60%	99.97%
0-120	2459.08	80.60%	99.97%
0-180	2459.72	80.62%	100.00%
60-90	58.52	1.92%	2.38%
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%
0-27.79	1967.78	64.50%	80.00%

ZONAL LUMEN SUMMARY

0-10	1066.21
10-20	614.92
20-30	350.38
30-40	211.96
40-50	113.57
50-60	46.45
60-70	23.03
70-80	19.28
80-90	13.28
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

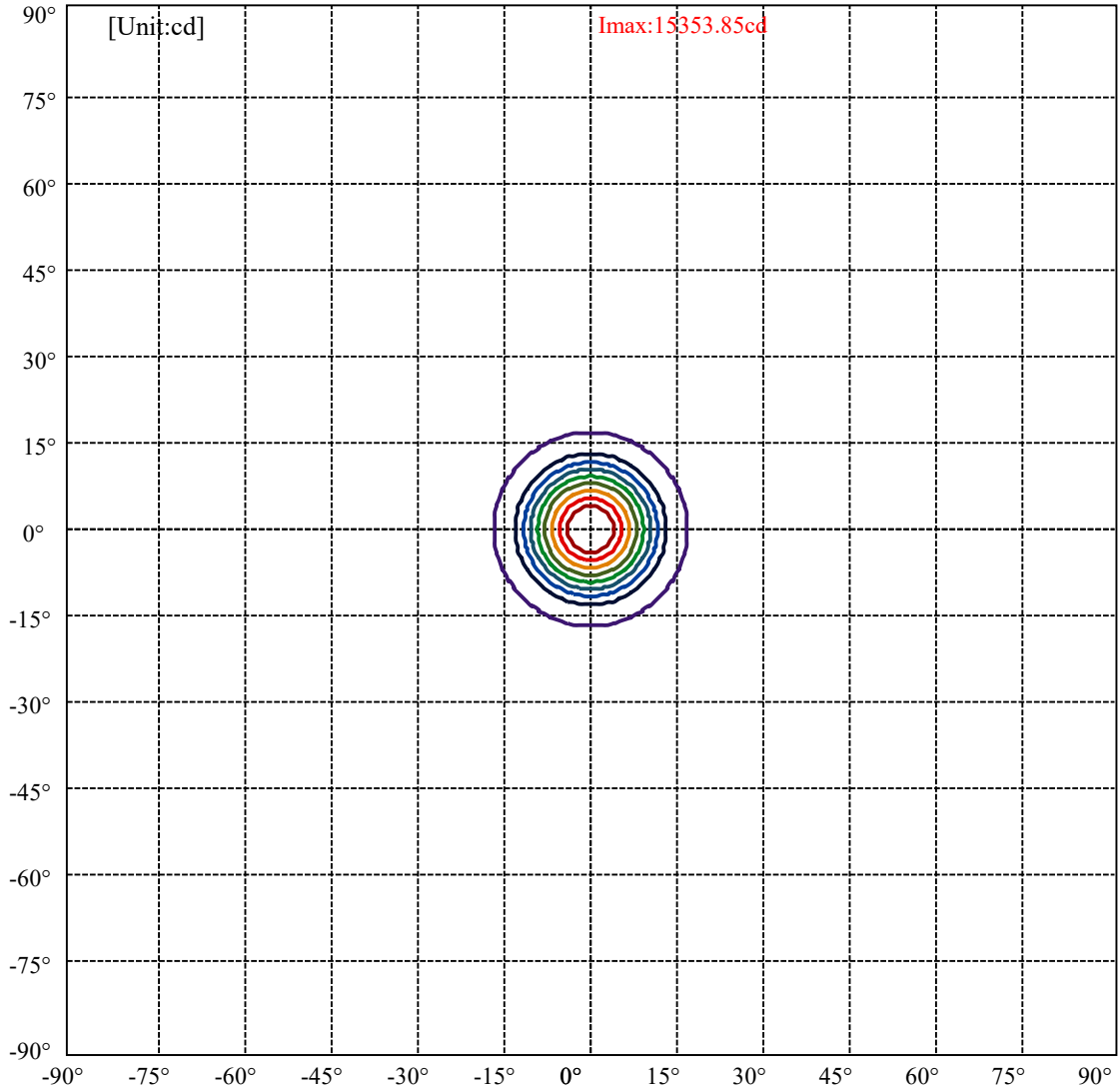


C0(Max): —————  
C0/C180: —————  
C90/C270: —————

Field angle(10%Imax):C0/180Left:16.5 Right:16.5  
:C90/270Left:16.5 Right:16.5

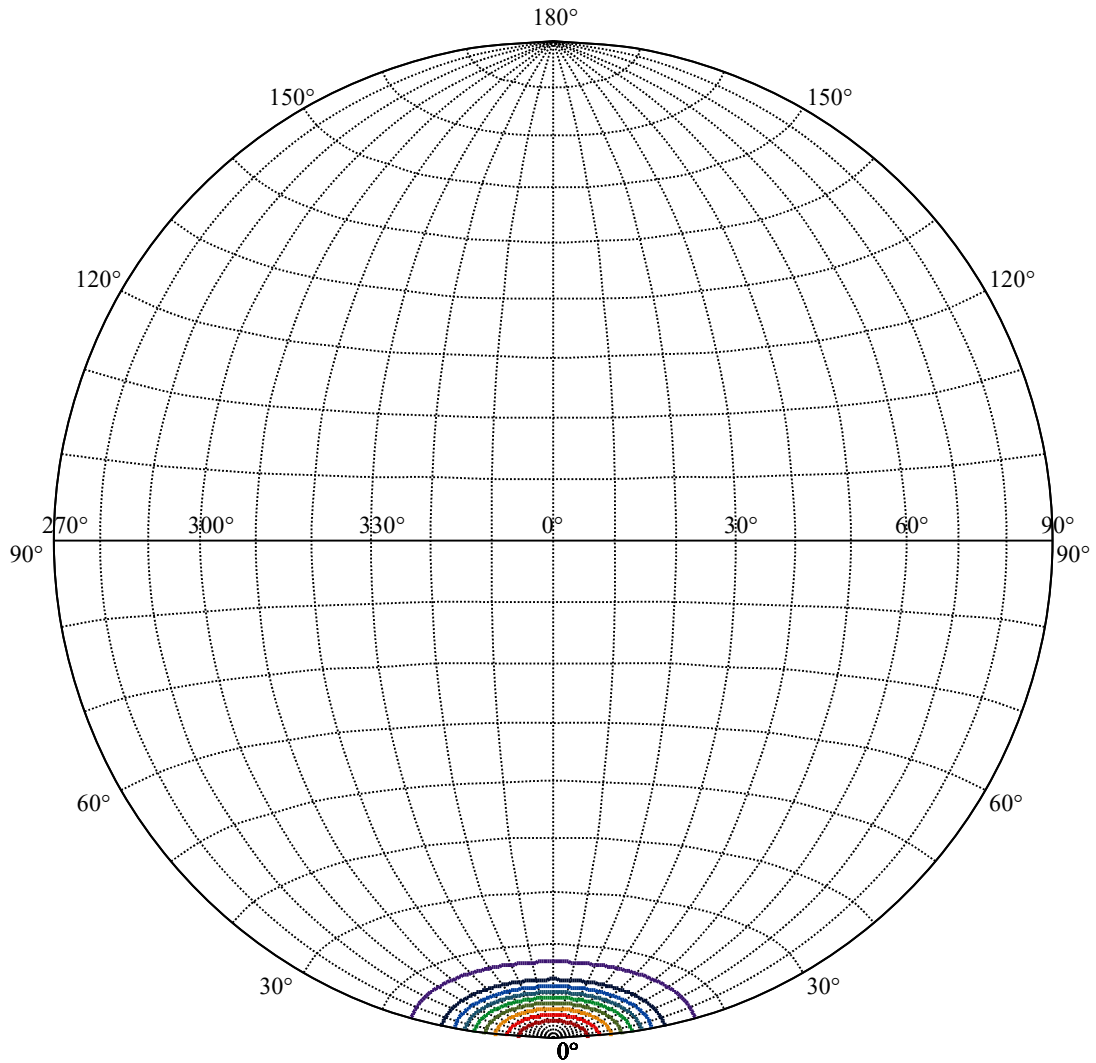
Beam Angle(50%Imax):C0/180Left:9.1 Right:9.1  
:C90/270Left:9.1 Right:9.1





(10%Imax) 1535.39	—
(20%Imax) 3070.77	—
(30%Imax) 4606.16	—
(40%Imax) 6141.54	—
(50%Imax) 7676.93	—
(60%Imax) 9212.31	—
(70%Imax) 10747.7	—
(80%Imax) 12283.1	—
(90%Imax) 13818.5	—





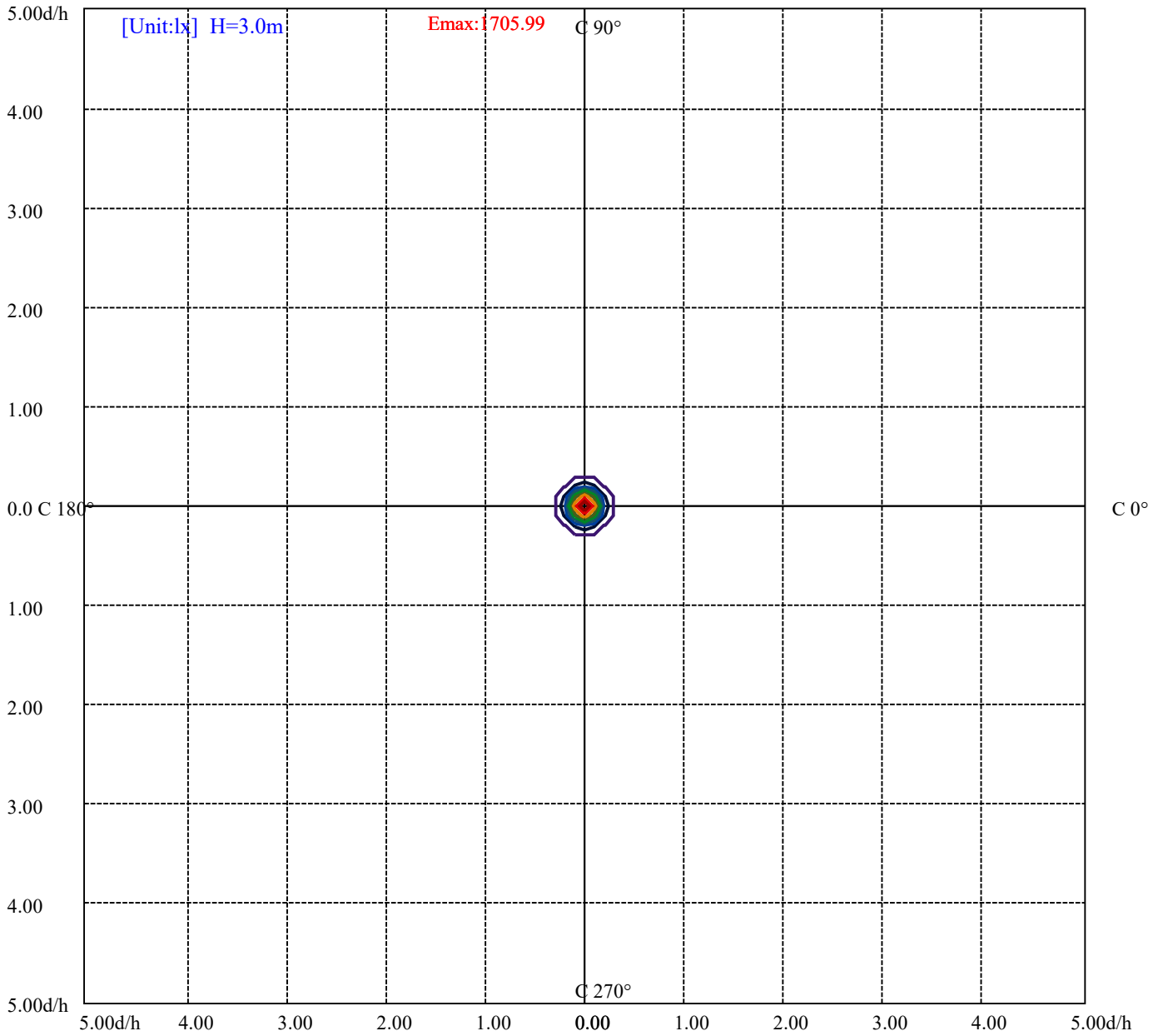
House

[Unit:cd]

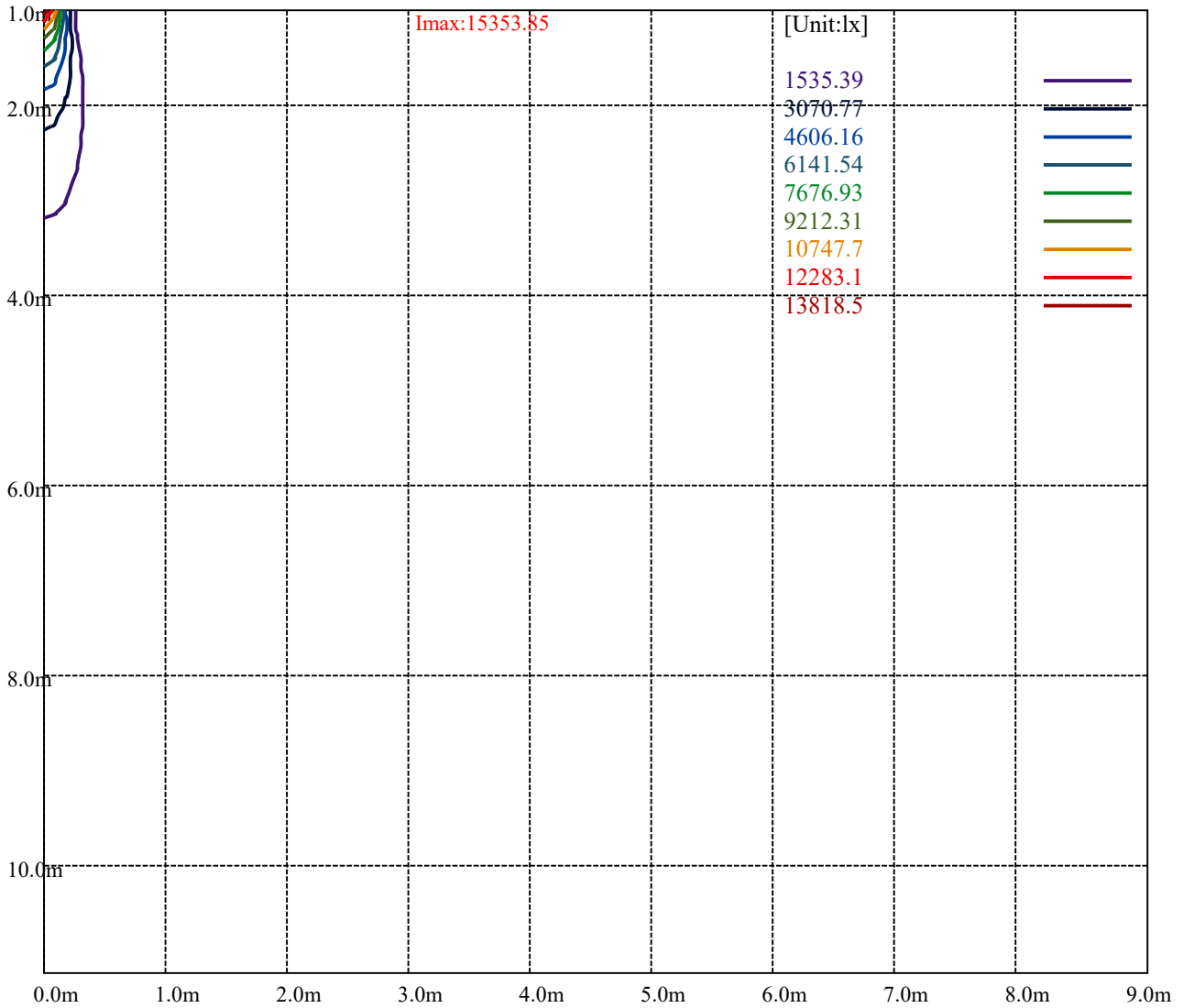
Road

**Imax:15353.85**

(10%Imax) 1535.39	—
(20%Imax) 3070.77	—
(30%Imax) 4606.16	—
(40%Imax) 6141.54	—
(50%Imax) 7676.93	—
(60%Imax) 9212.31	—
(70%Imax) 10747.7	—
(80%Imax) 12283.1	—
(90%Imax) 13818.5	—



- (10%Emax) 170.5978
- (20%Emax) 341.1967
- (30%Emax) 511.7944
- (40%Emax) 682.3933
- (50%Emax) 852.9911
- (60%Emax) 1023.589
- (70%Emax) 1194.189
- (80%Emax) 1364.789
- (90%Emax) 1535.389



Luminance Table

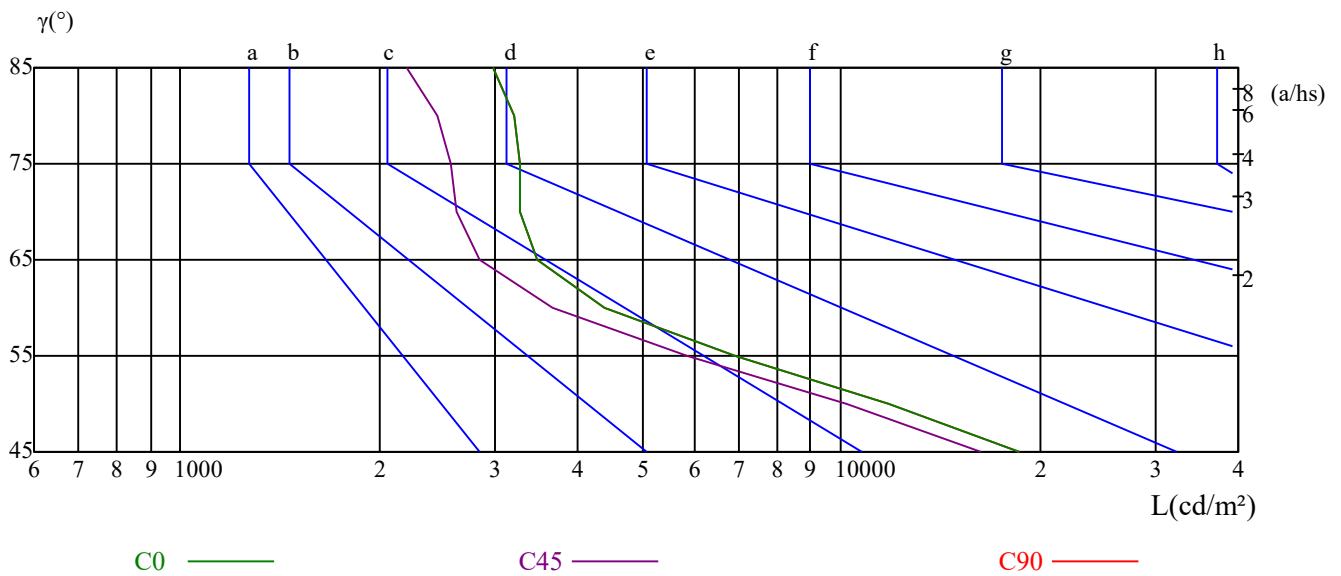
$\gamma$	45	50	55	60	65	70	75	80	85
C0	18620	11842	6902	4377	3467	3269	3262	3206	2982
C45	16301	10216	5863	3656	2844	2627	2560	2448	2201
C90	18620	11842	6902	4377	3467	3269	3262	3206	2982

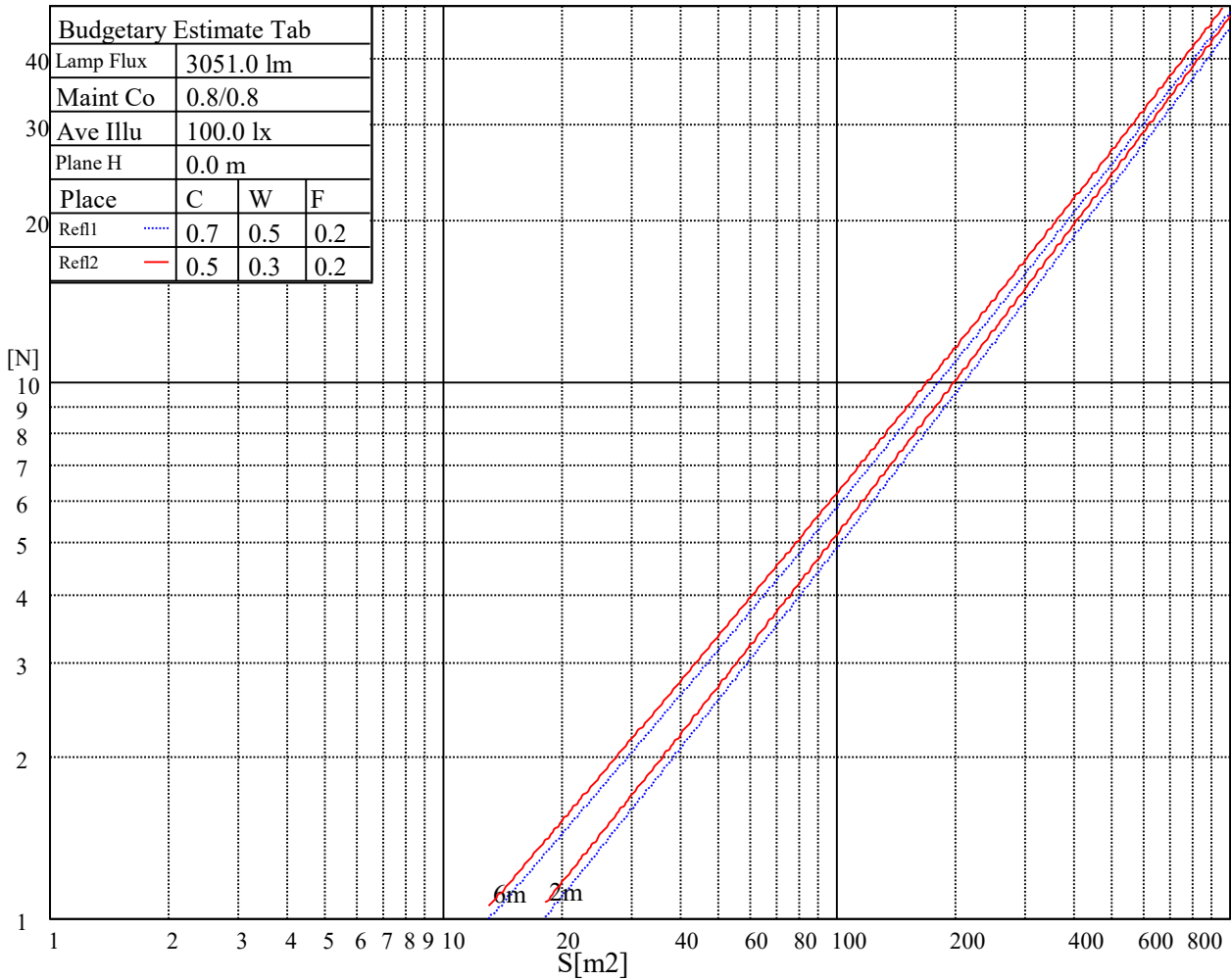
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
7358	7358	7358	9632	9632	9632	20819	20819	20819

Glare Table

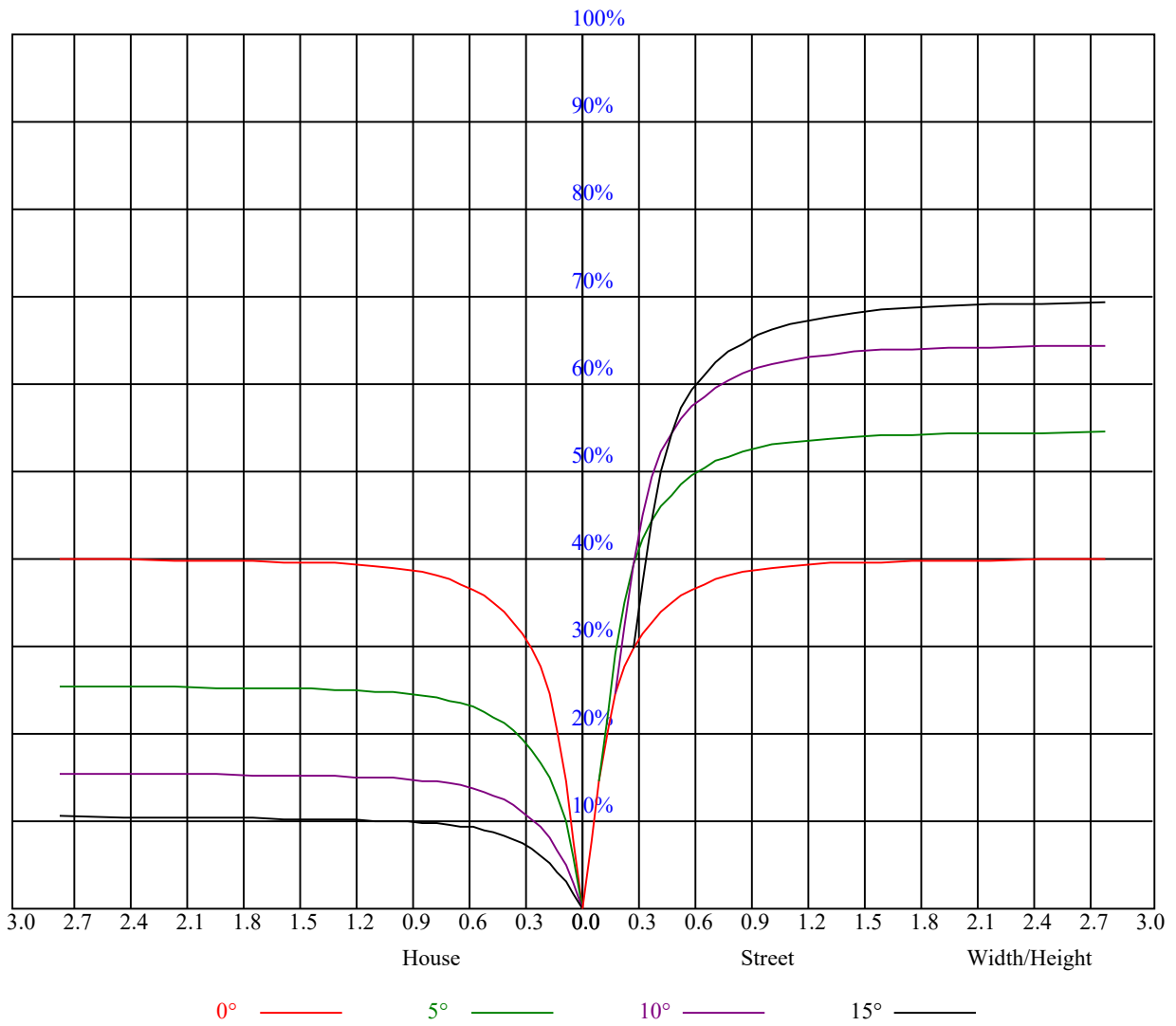
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.82	0.82	0.82	0.81
1	0.90	0.88	0.87	0.88	0.87	0.85	0.85	0.84	0.83	0.82	0.81	0.80	0.79	0.79	0.78	0.77
2	0.85	0.83	0.80	0.84	0.81	0.79	0.81	0.79	0.78	0.79	0.77	0.76	0.77	0.76	0.74	0.73
3	0.81	0.78	0.75	0.80	0.77	0.75	0.78	0.76	0.73	0.76	0.74	0.72	0.74	0.73	0.71	0.70
4	0.78	0.74	0.71	0.77	0.73	0.71	0.75	0.72	0.70	0.74	0.71	0.69	0.72	0.70	0.68	0.67
5	0.74	0.71	0.68	0.74	0.70	0.68	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.66	0.65
6	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.68	0.66	0.64	0.63
7	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.62	0.67	0.64	0.62	0.66	0.64	0.62	0.61
8	0.67	0.63	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.65	0.62	0.60	0.64	0.62	0.60	0.59
9	0.65	0.61	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.63	0.61	0.59	0.63	0.60	0.58	0.58
10	0.63	0.60	0.57	0.63	0.60	0.57	0.62	0.59	0.57	0.62	0.59	0.57	0.61	0.59	0.57	0.56



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	15366.24	15311.18	14997.36	14556.91	13918.26	12905.22	11633.42	10422.18	9029.25
45.0	15377.25	15206.58	14782.64	14259.61	13549.38	12475.78	11209.48	10009.25	8649.36
90.0	15300.17	15046.91	14507.36	13885.22	13026.34	10845.56	10553.76	9336.46	8105.95
135.0	15371.75	15250.62	14903.77	14424.78	13731.07	12525.33	11391.17	10174.42	8781.50
180.0	15366.24	15256.13	14914.78	14441.29	13720.05	12624.43	10899.52	10132.03	8747.36
225.0	15377.25	15360.74	15190.06	14771.63	14221.07	13422.75	12183.98	10950.72	9966.31
270.0	15300.17	15404.78	15272.65	14997.36	14551.41	13802.64	12773.08	11732.52	10482.74
315.0	15371.75	15311.18	15041.41	14573.43	13962.30	12932.75	10936.95	10482.74	8942.26
360.0	15366.24	15311.18	14997.36	14556.91	13918.26	12905.22	11633.42	10422.18	9029.25
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	7674.86	6458.12	5098.22	3942.04	2873.94	2457.72	1749.14	1554.24	1412.20
45.0	7289.47	6017.66	4619.23	3507.09	2829.90	1938.54	1646.19	1484.87	1345.03
90.0	6679.44	5243.57	4075.83	3000.02	2240.80	1827.87	1581.22	1445.78	1324.11
135.0	7438.12	6221.37	4833.95	3721.81	2813.38	2075.08	1745.84	1556.99	1432.02
180.0	7515.75	6111.81	4744.21	3671.71	2718.13	2098.75	1794.29	1619.76	1461.75
225.0	8643.30	7257.53	5971.42	4590.60	3405.79	2631.15	2077.28	1802.00	1607.10
270.0	9183.41	7983.18	6590.25	5345.98	4046.65	2995.07	2802.37	1913.76	1642.33
315.0	7865.91	6487.85	4953.97	3969.02	3001.12	2108.11	1794.84	1599.39	1466.15
360.0	7674.86	6458.12	5098.22	3942.04	2873.94	2457.72	1749.14	1554.24	1412.20
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1322.45	1236.57	1149.03	1067.54	991.57	921.64	817.59	749.87	697.01
45.0	1250.33	1166.09	1078.55	1011.94	940.36	848.97	771.34	711.33	650.77
90.0	1221.15	1091.82	1066.77	976.65	900.17	826.73	746.84	689.53	638.98
135.0	1335.12	1247.58	1148.48	1076.35	997.07	896.32	821.99	759.78	695.36
180.0	1353.84	1256.94	1097.27	1067.82	989.03	910.52	823.15	760.77	704.17
225.0	1456.24	1345.58	1249.23	1095.29	1067.10	989.91	894.01	828.05	768.37
270.0	1504.69	1395.68	1278.41	1196.38	1123.15	1038.91	948.62	874.30	799.42
315.0	1358.24	1271.25	1181.51	1096.94	1018.16	935.85	851.39	776.35	716.23
360.0	1322.45	1236.57	1149.03	1067.54	991.57	921.64	817.59	749.87	697.01
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	629.85	578.09	540.65	491.65	451.46	422.28	384.84	357.87	332.54
45.0	601.77	554.42	508.17	469.63	429.44	390.35	360.62	335.29	306.66
90.0	587.51	540.10	501.23	458.84	421.57	385.34	355.61	331.88	307.27
135.0	636.45	590.20	547.81	502.11	460.82	427.79	394.20	363.37	335.29
180.0	647.90	596.10	552.44	506.85	469.80	431.42	397.40	369.92	341.24
225.0	699.82	650.38	605.01	551.83	516.59	472.44	427.51	400.15	369.10
270.0	738.86	678.29	624.34	579.19	531.84	487.80	449.26	416.23	380.99
315.0	655.34	606.06	557.01	511.97	474.26	435.88	401.09	372.79	345.92
360.0	629.85	578.09	540.65	491.65	451.46	422.28	384.84	357.87	332.54
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	303.91	284.09	279.69	244.51	229.20	213.95	194.68	172.60	157.35
45.0	286.29	279.69	248.58	231.62	217.25	200.52	182.18	165.94	150.85
90.0	285.14	267.19	251.44	232.56	217.03	200.41	180.97	163.41	149.75
135.0	312.72	292.90	279.69	253.20	236.52	220.23	197.87	179.26	162.80
180.0	315.03	294.28	275.23	253.75	236.36	218.96	197.10	176.90	160.65
225.0	337.77	318.06	296.86	272.64	255.35	237.90	217.36	196.00	177.89
270.0	354.56	330.34	305.01	282.44	278.03	247.09	226.17	207.78	189.78
315.0	315.75	294.94	276.38	257.88	240.27	224.52	205.20	183.56	166.16
360.0	303.91	284.09	279.69	244.51	229.20	213.95	194.68	172.60	157.35



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	142.32	129.27	118.70	107.58	98.50	89.03	79.94	72.40	64.03
45.0	138.25	126.30	114.13	104.66	96.40	86.71	78.84	70.91	61.06
90.0	136.54	124.04	113.36	102.85	94.26	85.06	75.92	67.77	59.68
135.0	146.01	131.14	119.53	107.97	97.89	89.74	80.77	72.84	63.92
180.0	144.80	130.92	119.42	107.75	98.61	89.03	79.83	71.90	64.09
225.0	159.77	143.86	131.31	117.88	107.19	96.46	86.99	78.73	70.75
270.0	170.12	153.50	140.50	126.52	114.90	103.51	93.71	85.06	75.98
315.0	148.87	135.71	122.28	110.50	101.19	91.67	82.42	74.55	66.78
360.0	142.32	129.27	118.70	107.58	98.50	89.03	79.94	72.40	64.03
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	56.16	50.49	45.81	40.85	37.44	34.30	30.83	28.41	26.37
45.0	54.07	48.56	43.60	39.37	36.12	32.92	30.12	27.75	25.60
90.0	51.86	46.96	42.83	38.26	35.02	32.15	28.90	26.70	25.05
135.0	55.61	49.83	44.60	40.14	36.78	33.91	30.56	28.08	26.21
180.0	55.00	49.33	44.65	39.86	36.50	33.47	30.50	27.91	26.04
225.0	61.00	54.12	48.39	42.56	38.59	35.13	31.71	28.52	26.15
270.0	66.67	58.80	53.02	45.86	41.57	38.21	33.53	30.50	28.02
315.0	57.37	51.20	46.08	41.13	37.00	33.86	30.67	27.86	25.77
360.0	56.16	50.49	45.81	40.85	37.44	34.30	30.83	28.41	26.37
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	24.72	23.95	23.29	22.68	22.08	21.47	20.87	20.43	20.04
45.0	24.67	23.84	23.07	22.41	21.86	21.14	20.59	20.21	19.93
90.0	24.28	23.51	22.74	21.97	21.47	20.87	20.32	20.10	19.82
135.0	24.89	24.00	23.34	22.63	21.91	21.42	20.87	20.43	19.99
180.0	24.83	24.00	23.34	22.68	22.13	21.47	20.92	20.43	20.04
225.0	24.28	23.18	22.57	21.97	21.42	20.76	20.32	19.82	19.43
270.0	25.16	23.45	22.90	22.19	21.64	21.09	20.48	19.99	19.60
315.0	24.06	23.40	22.74	22.08	21.53	20.98	20.32	19.88	19.43
360.0	24.72	23.95	23.29	22.68	22.08	21.47	20.87	20.43	20.04
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	19.66	19.32	19.05	18.77	18.55	18.22	17.73	17.18	16.68
45.0	19.71	19.49	19.16	18.88	18.61	18.17	17.73	17.07	16.52
90.0	19.43	19.16	18.94	18.61	18.28	17.84	17.23	16.68	16.13
135.0	19.60	19.27	18.99	18.66	18.50	18.17	17.62	17.07	16.52
180.0	19.49	19.16	18.83	18.39	18.11	17.73	17.29	16.68	16.13
225.0	19.05	18.61	18.28	17.95	17.62	17.34	16.96	16.46	16.02
270.0	19.10	18.77	18.50	18.11	17.84	17.56	17.23	16.85	16.41
315.0	18.94	18.66	18.33	18.11	17.84	17.67	17.29	16.90	16.30
360.0	19.66	19.32	19.05	18.77	18.55	18.22	17.73	17.18	16.68
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	16.08	15.53	14.98	14.31	13.71	13.10	12.55	12.11	11.78
45.0	15.91	15.36	14.70	14.04	13.43	12.72	12.28	11.84	11.56
90.0	15.58	14.98	14.42	13.65	13.10	12.50	12.06	11.78	11.56
135.0	15.80	15.25	14.65	14.04	13.43	12.83	12.33	11.95	11.62
180.0	15.53	14.98	14.37	13.76	13.27	12.66	12.22	11.84	11.62
225.0	15.53	14.87	14.37	13.76	13.32	12.83	12.39	12.00	11.73
270.0	15.86	15.25	14.70	14.09	13.60	13.05	12.61	12.22	11.89
315.0	15.69	15.14	14.53	13.93	13.49	12.99	12.50	12.06	11.78
360.0	16.08	15.53	14.98	14.31	13.71	13.10	12.55	12.11	11.78

Intensity data(cd)

<b>C/<math>\gamma</math>(<math>^{\circ}</math>)</b>	<b>90.0</b>
<b>0.0</b>	<b>11.62</b>
<b>45.0</b>	<b>11.51</b>
<b>90.0</b>	<b>11.62</b>
<b>135.0</b>	<b>11.62</b>
<b>180.0</b>	<b>11.62</b>
<b>225.0</b>	<b>11.51</b>
<b>270.0</b>	<b>11.62</b>
<b>315.0</b>	<b>11.62</b>
<b>360.0</b>	<b>11.62</b>