
Nata

LumCAT: 3-2115-N	
Luminaire: 92.70.135.00	
Report No: NT2017122801	Voltage(V): 43.4000
Test No: nata-0100	Current(A): 0.5000
LampCAT: NICHIA NVEWJ048Z-V1	Power (W): 21.7000
Lamp flux(lm): 3051.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 81	Width(mm): 81
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2627.33
Efficiency(%): 86.11%
Lumens(lm)/Power(W): 121.26
Central intensity(cd): 17046.840
Maximum intensity(cd): 17046.840
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=15.3
[C90/270]Total=15.3
Field angle(10%Imax): [C0/180]Total=41.9
[C90/270]Total=41.9
Maximum s/h(1/2): C0_180=0.26 C90_270=0.26
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(%): 86.24%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.917%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	17046.838	4.078	4.078	.134%	.155%
1.0	16909.197	32.362	36.44	1.061%	1.387%
2.0	16374.462	62.667	99.107	2.054%	3.772%
3.0	15439.879	88.613	187.719	2.904%	7.145%
4.0	14180.464	108.474	296.194	3.555%	11.274%
5.0	12222.796	116.820	413.014	3.829%	15.720%
6.0	10833.379	124.180	537.194	4.070%	20.446%
7.0	9377.825	125.328	662.522	4.108%	25.217%
8.0	8010.775	122.259	784.781	4.007%	29.870%
9.0	6927.472	118.839	903.62	3.895%	34.393%
10.0	6027.368	114.776	1018.396	3.762%	38.762%
11.0	5232.973	109.496	1127.892	3.589%	42.929%
12.0	4611.524	105.142	1233.033	3.446%	46.931%
13.0	4040.383	99.669	1332.703	3.267%	50.725%
14.0	3539.438	93.899	1426.602	3.078%	54.299%
15.0	3155.076	89.548	1516.15	2.935%	57.707%
16.0	2828.798	85.505	1601.655	2.803%	60.961%
17.0	2565.559	82.256	1683.912	2.696%	64.092%
18.0	2259.652	76.573	1760.485	2.510%	67.007%
19.0	2060.555	73.566	1834.051	2.411%	69.807%
20.0	1866.756	70.015	1904.066	2.295%	72.472%
21.0	1697.595	66.714	1970.78	2.187%	75.011%
22.0	1564.221	64.258	2035.037	2.106%	77.457%
23.0	1424.997	61.058	2096.095	2.001%	79.781%
24.0	1288.113	57.454	2153.549	1.883%	81.967%
25.0	1171.022	54.271	2207.82	1.779%	84.033%
26.0	1092.085	52.499	2260.319	1.721%	86.031%
27.0	1000.567	49.813	2310.132	1.633%	87.927%
28.0	886.112	45.619	2355.751	1.495%	89.663%
29.0	762.683	40.548	2396.299	1.329%	91.207%
30.0	632.515	34.681	2430.98	1.137%	92.527%
31.0	509.561	28.780	2459.76	.943%	93.622%
32.0	385.877	22.424	2482.184	.735%	94.476%
33.0	278.014	16.605	2498.788	.544%	95.108%
34.0	191.376	11.735	2510.524	.385%	95.554%
35.0	107.931	6.789	2517.313	.223%	95.813%
36.0	74.677	4.813	2522.126	.158%	95.996%
37.0	62.682	4.137	2526.263	.136%	96.153%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	53.026	3.580	2529.843	.117%	96.290%
39.0	45.958	3.172	2533.015	.104%	96.410%
40.0	40.700	2.869	2535.883	.094%	96.520%
41.0	36.585	2.632	2538.516	.086%	96.620%
42.0	33.041	2.424	2540.94	.079%	96.712%
43.0	30.543	2.284	2543.224	.075%	96.799%
44.0	28.705	2.187	2545.411	.072%	96.882%
45.0	26.998	2.093	2547.504	.069%	96.962%
46.0	25.760	2.032	2549.536	.067%	97.039%
47.0	24.775	1.987	2551.523	.065%	97.115%
48.0	24.011	1.957	2553.48	.064%	97.189%
49.0	23.310	1.929	2555.409	.063%	97.263%
50.0	22.725	1.909	2557.318	.063%	97.335%
51.0	22.236	1.895	2559.213	.062%	97.408%
52.0	21.864	1.889	2561.103	.062%	97.479%
53.0	21.561	1.888	2562.991	.062%	97.551%
54.0	21.321	1.892	2564.882	.062%	97.623%
55.0	21.162	1.901	2566.783	.062%	97.696%
56.0	21.032	1.912	2568.696	.063%	97.768%
57.0	20.928	1.925	2570.62	.063%	97.842%
58.0	20.846	1.939	2572.559	.064%	97.915%
59.0	20.866	1.961	2574.52	.064%	97.990%
60.0	20.825	1.978	2576.498	.065%	98.065%
61.0	20.894	2.004	2578.502	.066%	98.142%
62.0	20.963	2.030	2580.532	.067%	98.219%
63.0	21.100	2.062	2582.593	.068%	98.297%
64.0	21.114	2.081	2584.674	.068%	98.377%
65.0	20.632	2.051	2586.725	.067%	98.455%
66.0	20.130	2.017	2588.742	.066%	98.531%
67.0	19.345	1.953	2590.694	.064%	98.606%
68.0	18.712	1.903	2592.597	.062%	98.678%
69.0	18.093	1.852	2594.449	.061%	98.749%
70.0	17.618	1.815	2596.265	.060%	98.818%
71.0	17.136	1.777	2598.042	.058%	98.885%
72.0	16.833	1.756	2599.797	.058%	98.952%
73.0	16.593	1.740	2601.537	.057%	99.018%
74.0	16.338	1.722	2603.26	.056%	99.084%
75.0	16.070	1.702	2604.962	.056%	99.149%

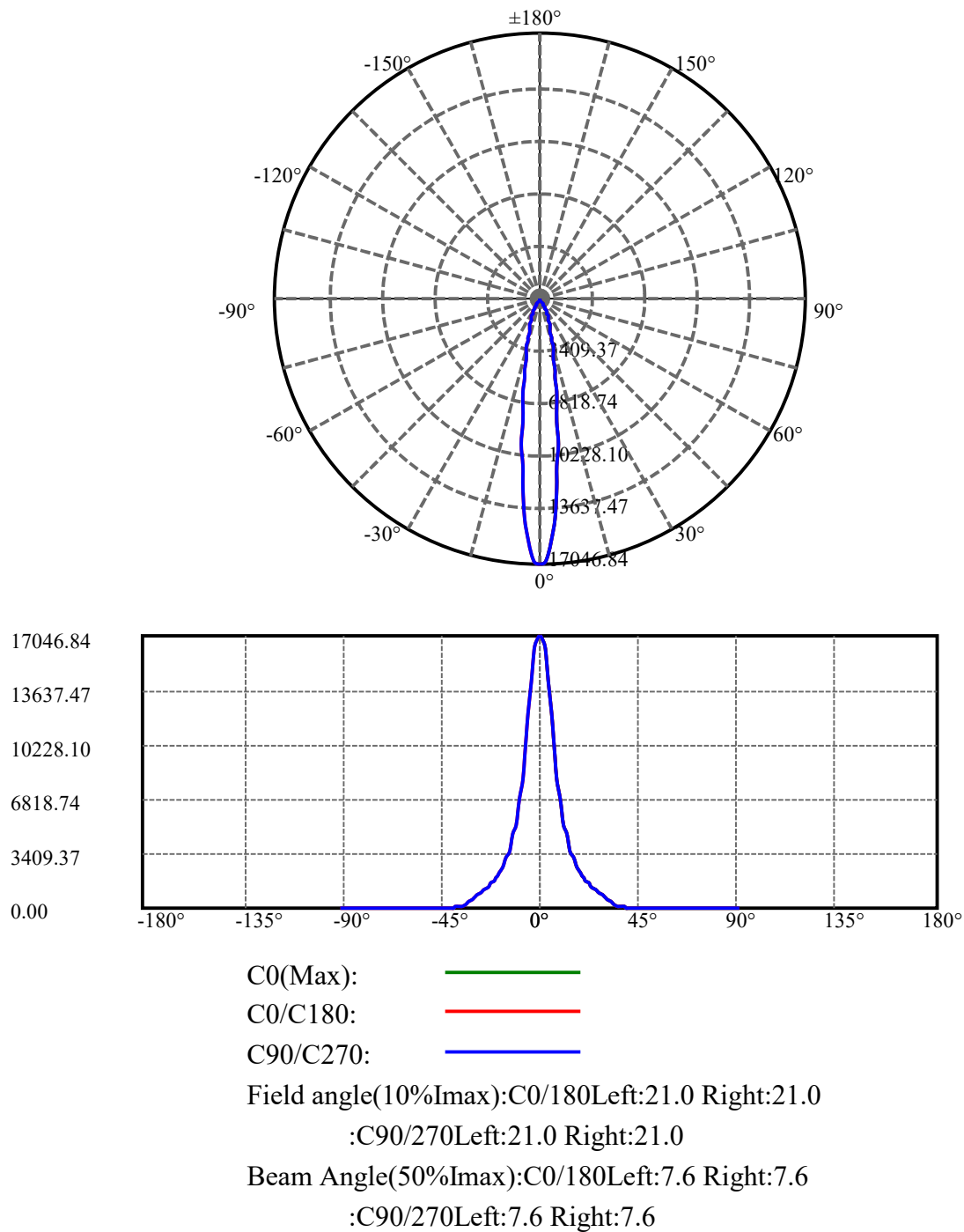
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	15.849	1.686	2606.648	.055%	99.213%
77.0	15.595	1.666	2608.314	.055%	99.276%
78.0	15.340	1.645	2609.96	.054%	99.339%
79.0	15.106	1.626	2611.586	.053%	99.401%
80.0	14.858	1.605	2613.191	.053%	99.462%
81.0	14.583	1.580	2614.77	.052%	99.522%
82.0	14.342	1.557	2616.328	.051%	99.581%
83.0	14.122	1.537	2617.865	.050%	99.640%
84.0	13.881	1.514	2619.379	.050%	99.698%
85.0	13.695	1.496	2620.875	.049%	99.754%
86.0	13.503	1.477	2622.352	.048%	99.811%
87.0	13.269	1.453	2623.805	.048%	99.866%
88.0	13.035	1.429	2625.233	.047%	99.920%
89.0	12.766	1.400	2626.633	.046%	99.974%
90.0	12.635	0.693	2627.326	.023%	100.000%

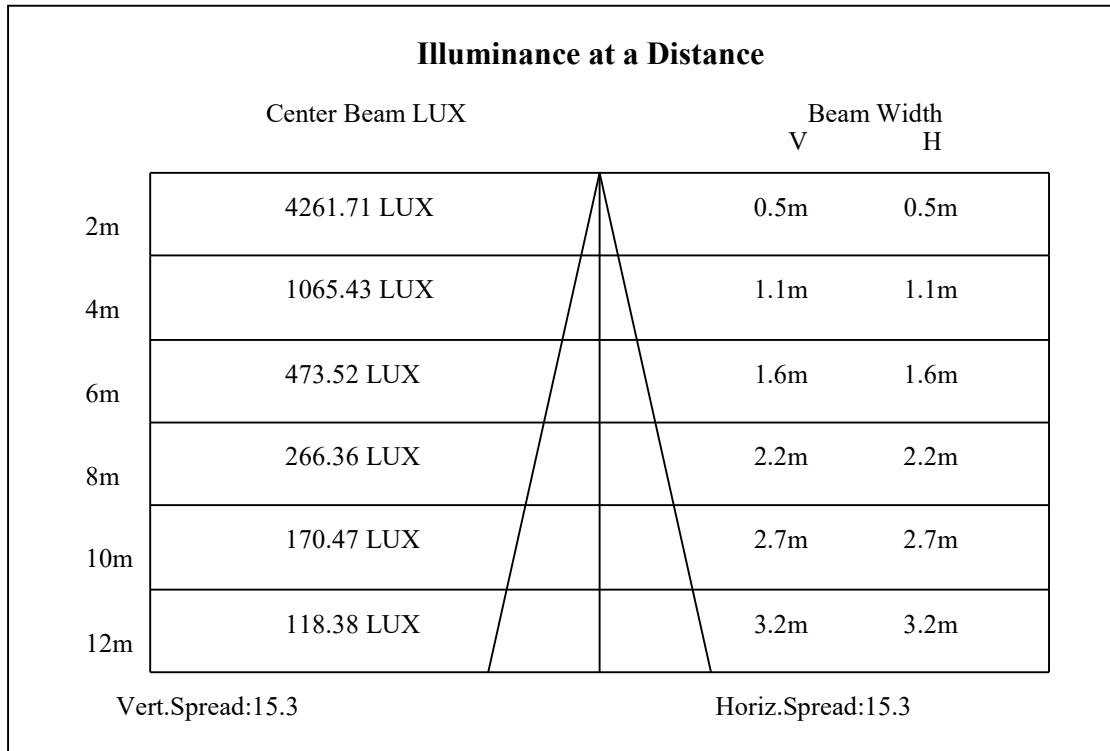
ZONAL LUMEN SUMMARY

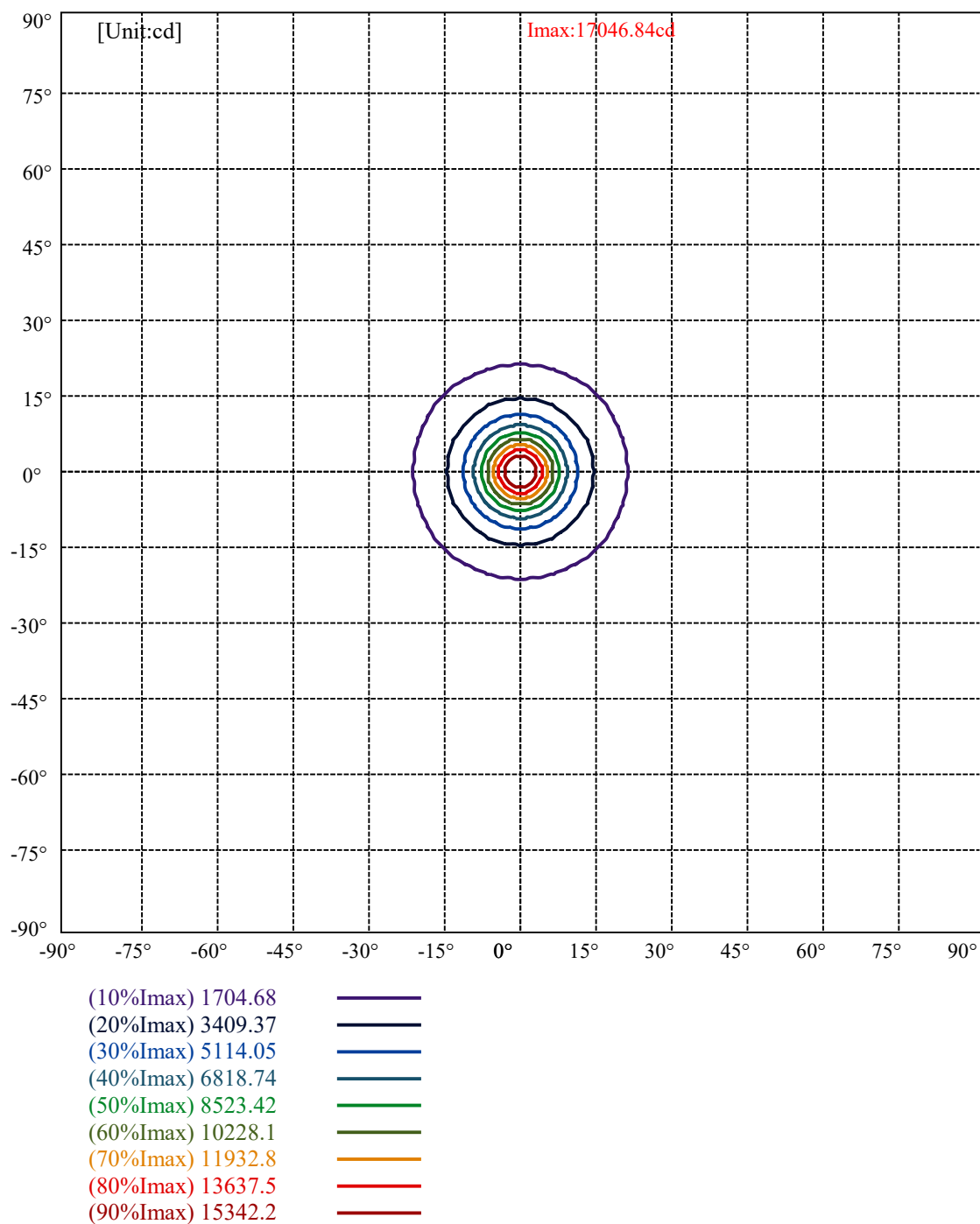
Zone	Lumens	%Lamp	%Fixt
0-30	2430.98	79.68%	92.53%
0-40	2535.88	83.12%	96.52%
0-60	2576.50	84.45%	98.07%
0-90	2626.63	86.09%	99.97%
0-120	2626.63	86.09%	99.97%
0-180	2627.33	86.11%	100.00%
60-90	52.11	1.71%	1.98%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-23.10	2101.86	68.89%	80.00%

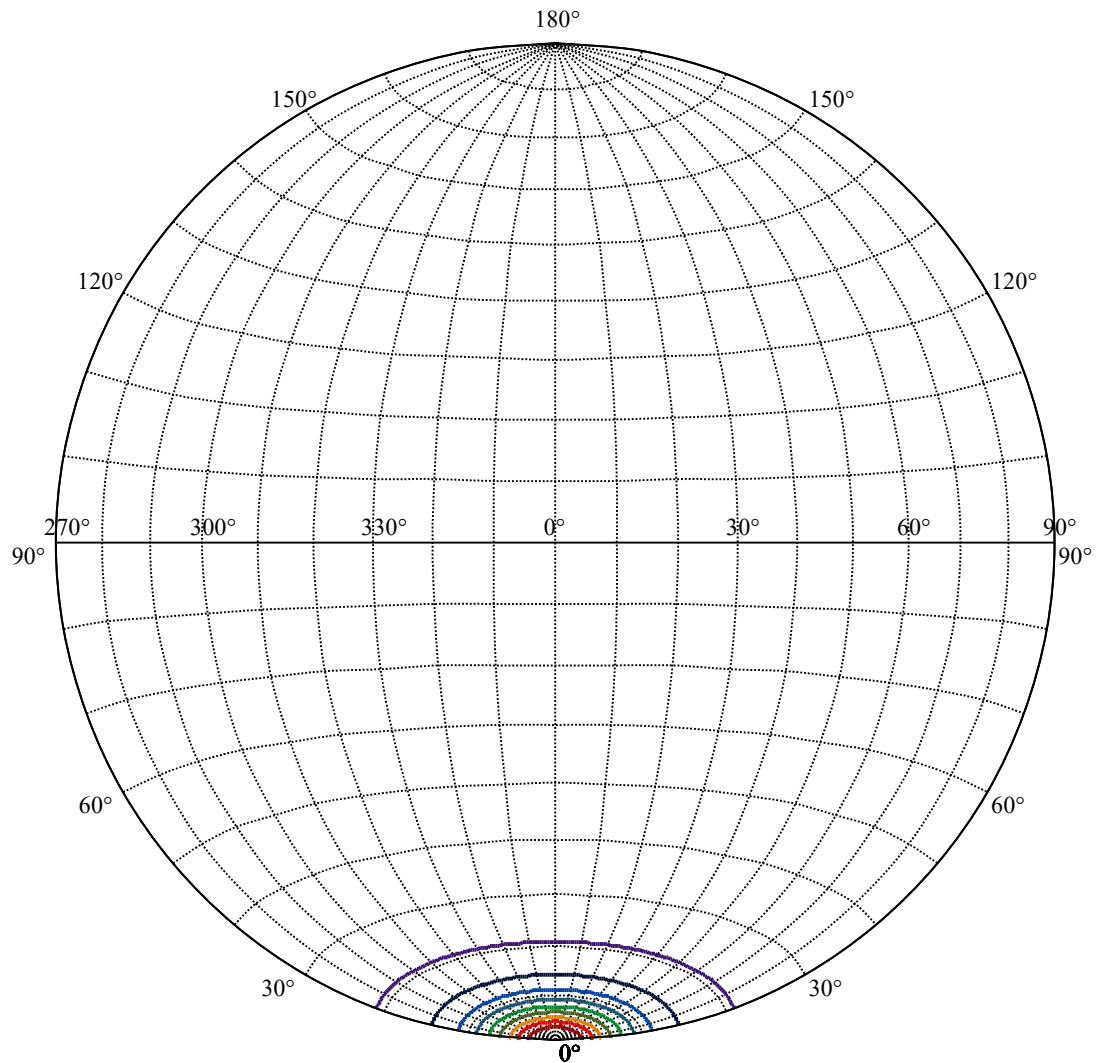
ZONAL LUMEN SUMMARY

0-10	1018.40
10-20	885.67
20-30	526.91
30-40	104.90
40-50	21.43
50-60	19.18
60-70	19.77
70-80	16.93
80-90	13.44
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









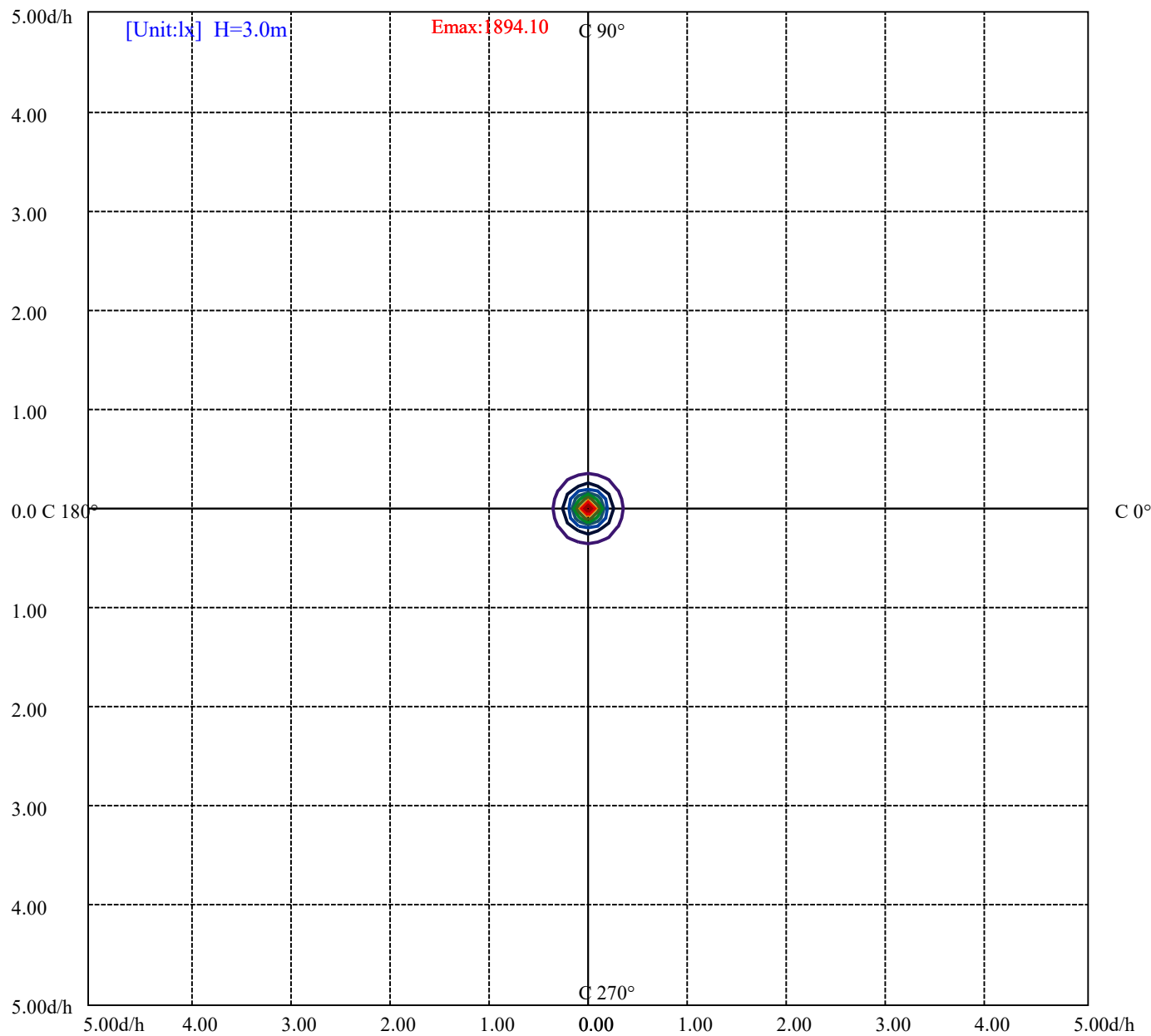
House

[Unit:cd]

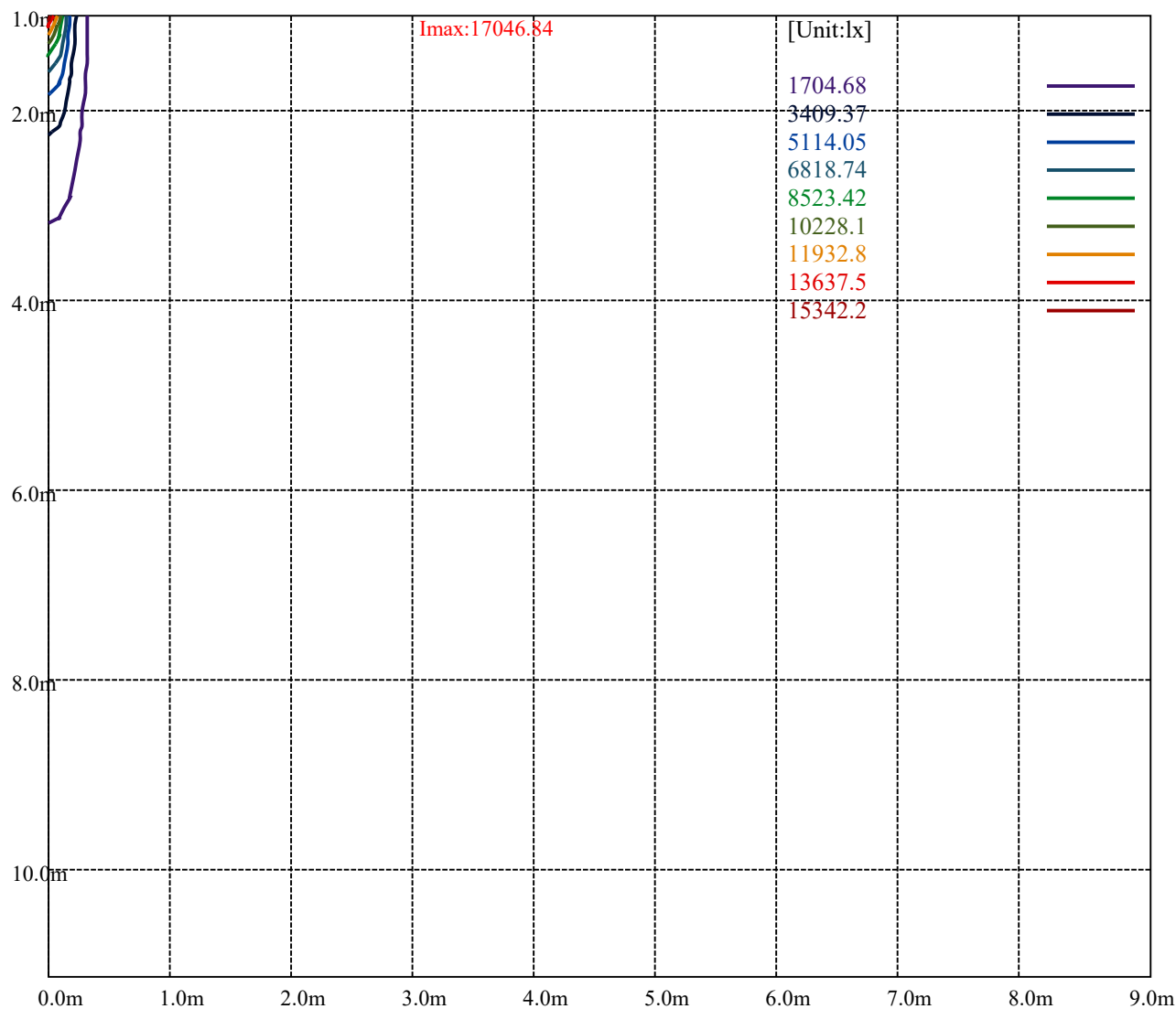
Road

Imax:17046.84

(10%Imax)	1704.68	—
(20%Imax)	3409.37	—
(30%Imax)	5114.05	—
(40%Imax)	6818.74	—
(50%Imax)	8523.42	—
(60%Imax)	10228.1	—
(70%Imax)	11932.8	—
(80%Imax)	13637.5	—
(90%Imax)	15342.2	—



(10%E _{max}) 189.4089	—
(20%E _{max}) 378.8178	—
(30%E _{max}) 568.2267	—
(40%E _{max}) 757.6367	—
(50%E _{max}) 947.0456	—
(60%E _{max}) 1136.456	—
(70%E _{max}) 1325.867	—
(80%E _{max}) 1515.278	—
(90%E _{max}) 1704.678	—



Luminance Table

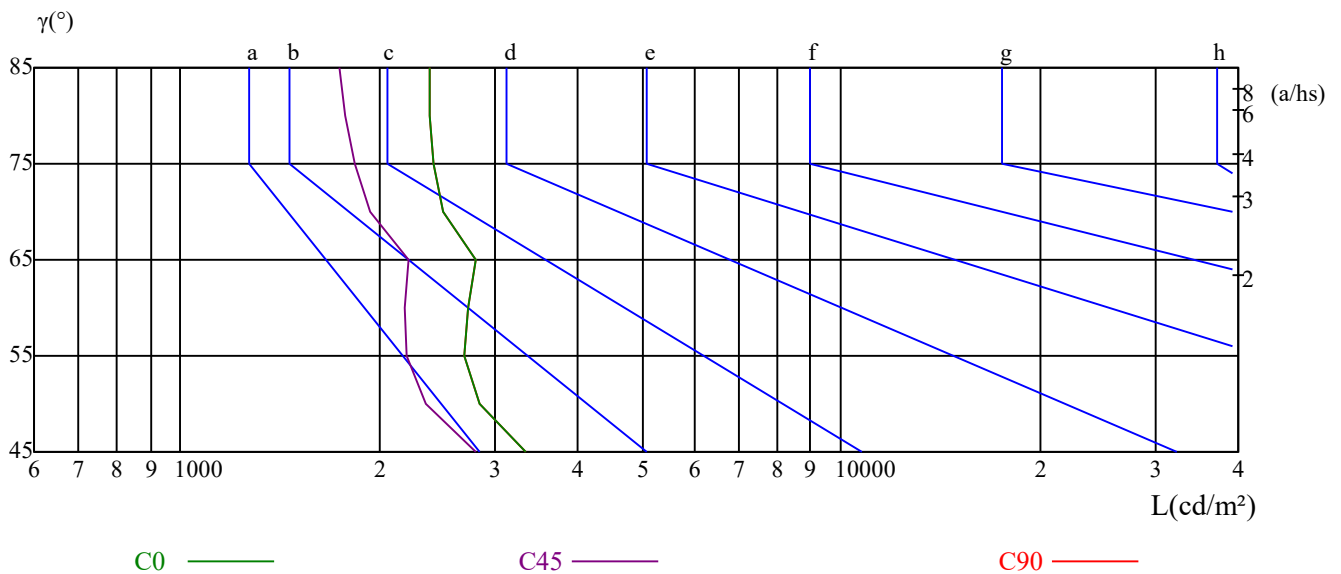
γ	45	50	55	60	65	70	75	80	85
C0	3333	2839	2696	2727	2802	2505	2416	2389	2387
C45	2804	2352	2200	2191	2214	1944	1839	1780	1736
C90	3333	2839	2696	2727	2802	2505	2416	2389	2387

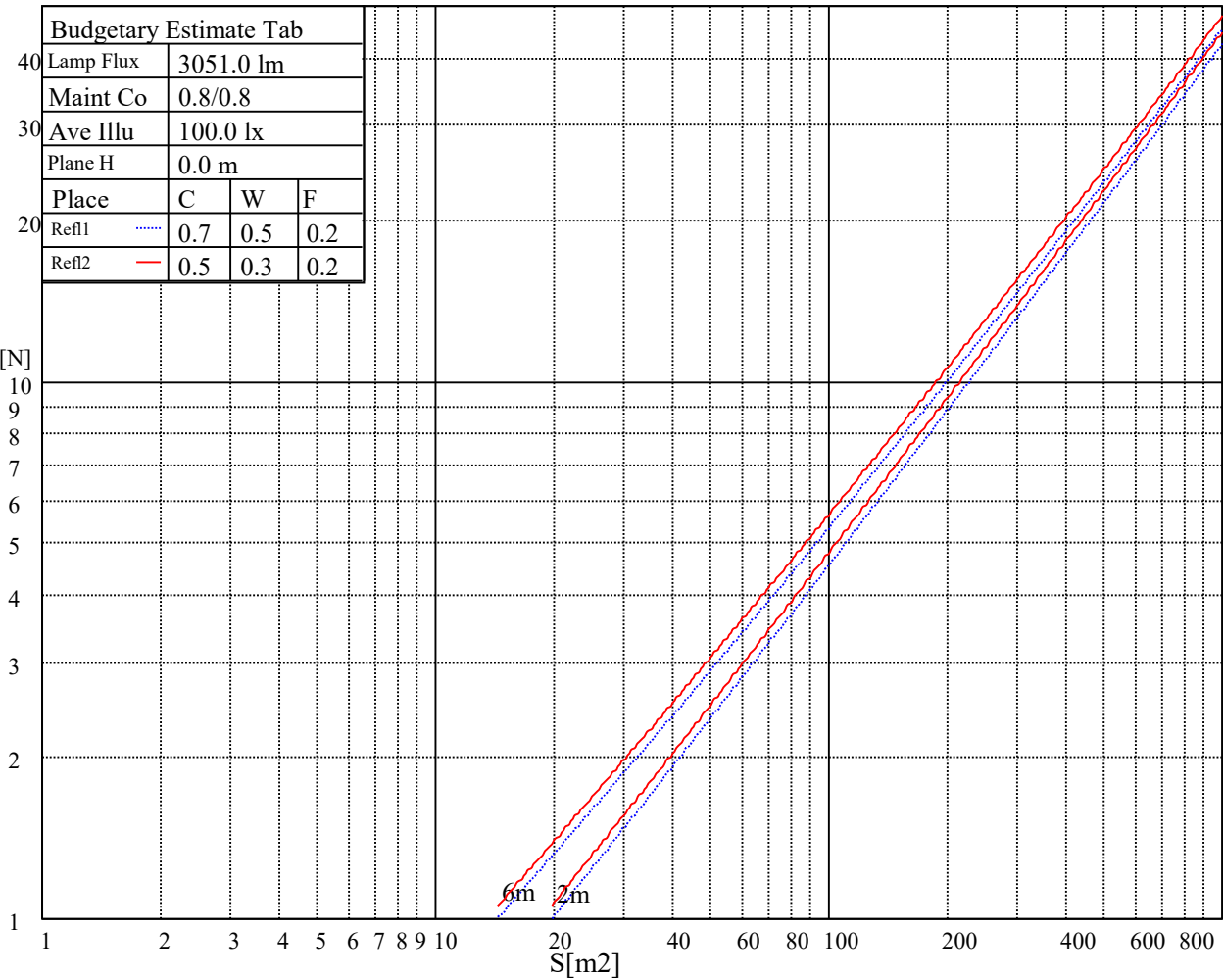
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
7823	7823	7823	9948	9948	9948	25178	25178	25178

Glare Table

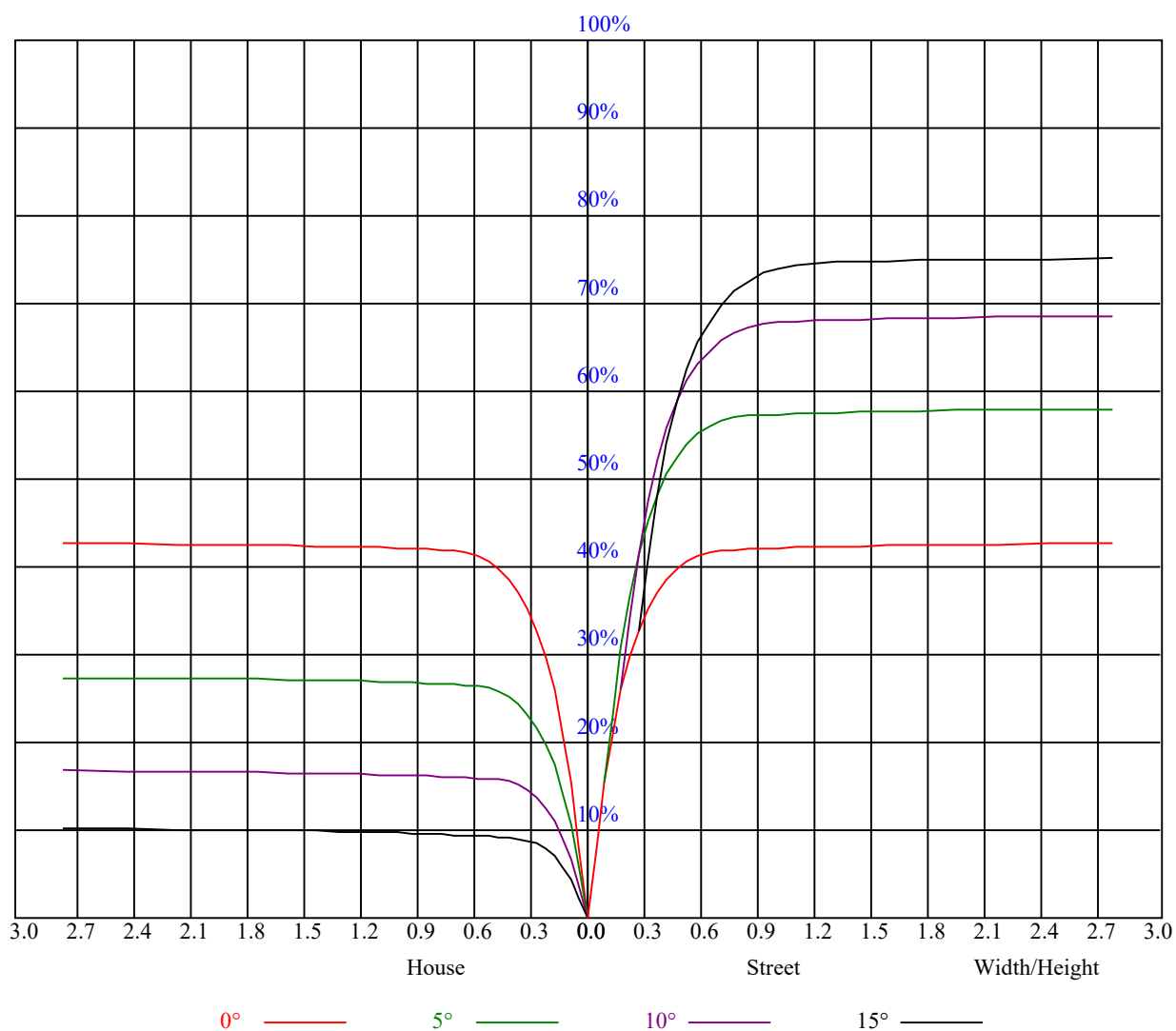
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





RHOC	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	1.03	1.03	1.03	1.00	1.00	1.00	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.86
1	0.97	0.95	0.93	0.95	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.84	0.82
2	0.92	0.89	0.87	0.90	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.82	0.83	0.82	0.80	0.79
3	0.88	0.84	0.82	0.87	0.83	0.81	0.84	0.82	0.80	0.82	0.80	0.79	0.81	0.79	0.77	0.76
4	0.84	0.80	0.78	0.83	0.80	0.77	0.81	0.79	0.76	0.80	0.77	0.76	0.78	0.76	0.75	0.74
5	0.81	0.77	0.74	0.80	0.77	0.74	0.79	0.76	0.73	0.77	0.75	0.73	0.76	0.74	0.72	0.71
6	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.70	0.74	0.72	0.70	0.69
7	0.75	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.72	0.70	0.68	0.67
8	0.73	0.69	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.68	0.66	0.70	0.68	0.66	0.65
9	0.71	0.67	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.69	0.66	0.64	0.63
10	0.69	0.65	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.64	0.63	0.62



Nata 3-2115-N

Intensity data(cd)										Appendix Page: 16 Total:18	
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0		
0.0	16962.88	17045.46	16858.27	16142.54	15112.98	13747.58	11820.61	10301.05	8930.15		
45.0	17122.54	17045.46	16538.94	15735.12	14545.90	12690.50	11126.90	9618.35	8186.89		
90.0	17045.46	16775.69	15966.36	14892.76	13499.83	10982.65	10041.19	8677.44	7298.28		
135.0	17056.47	16869.28	16285.68	15234.11	13945.79	12470.27	10581.84	9166.89	7840.03		
180.0	16962.88	16571.98	15839.73	14578.93	12987.80	10870.34	9950.34	8457.21	7249.83		
225.0	17122.54	16918.83	16335.23	15278.15	13973.31	10902.27	10716.73	9131.65	7810.85		
270.0	17045.46	17056.47	16682.09	15977.37	14881.74	13279.60	11534.32	10042.29	8561.27		
315.0	17056.47	16990.41	16489.39	15680.06	14496.35	12839.15	10895.11	9627.71	8208.91		
360.0	16962.88	17045.46	16858.27	16142.54	15112.98	13747.58	11820.61	10301.05	8930.15		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	7487.67	6546.21	5736.88	4977.10	4327.43	3837.43	3358.44	2967.54	2807.88		
45.0	7019.69	6149.80	5318.45	4696.31	4096.20	3584.17	3198.78	2840.91	2650.97		
90.0	6493.90	5612.45	4808.63	4332.94	3803.30	3303.38	3002.78	2709.33	2357.52		
135.0	6738.90	5896.54	5186.31	4498.11	3925.52	3490.58	3072.15	2796.87	2500.11		
180.0	6346.90	5483.07	4761.83	4223.93	3755.95	3261.54	2925.70	2643.81	2363.02		
225.0	6839.11	5919.11	5134.01	4539.95	4031.23	3500.49	3137.66	2819.44	2510.57		
270.0	7333.51	6436.09	5582.72	4922.04	4288.89	3754.85	3347.43	2989.56	2829.90		
315.0	7160.08	6175.68	5334.97	4701.82	4094.54	3583.07	3197.68	2862.93	2504.52		
360.0	7487.67	6546.21	5736.88	4977.10	4327.43	3837.43	3358.44	2967.54	2807.88		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	2387.80	2173.08	1964.96	1786.58	1654.44	1506.89	1367.60	1249.78	1161.14		
45.0	2292.00	2086.09	1869.72	1721.06	1586.73	1437.52	1303.74	1198.58	1117.09		
90.0	2165.37	1973.77	1797.59	1650.04	1524.51	1376.96	1239.87	1095.13	1066.94		
135.0	2224.28	2038.74	1864.76	1655.55	1510.20	1380.26	1236.02	1123.70	1028.45		
180.0	2122.42	1940.74	1760.70	1598.84	1464.50	1327.96	1223.35	1094.80	1048.16		
225.0	2252.91	2058.56	1866.96	1698.49	1566.35	1437.52	1298.78	1192.52	1096.72		
270.0	2369.08	2153.26	1946.24	1776.12	1643.43	1513.50	1347.78	1227.21	1136.91		
315.0	2263.37	2060.21	1863.11	1694.09	1563.60	1419.35	1287.77	1186.47	1081.25		
360.0	2387.80	2173.08	1964.96	1786.58	1654.44	1506.89	1367.60	1249.78	1161.14		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	1065.34	970.64	862.18	731.15	596.81	481.74	354.01	286.29	148.32		
45.0	1014.69	906.78	786.21	646.36	514.78	399.16	288.50	168.64	109.23		
90.0	961.56	832.40	706.32	570.99	455.59	334.96	218.24	137.97	82.97		
135.0	923.30	800.52	687.65	573.69	458.62	344.10	281.34	156.03	98.00		
180.0	953.36	841.37	691.18	571.38	452.73	310.96	213.34	136.32	85.94		
225.0	1023.33	895.38	771.84	629.13	509.27	377.08	254.75	165.39	100.20		
270.0	1049.93	941.46	823.64	683.25	550.01	438.80	322.63	285.19	130.15		
315.0	1013.04	900.34	772.44	654.18	538.67	400.20	291.30	195.17	108.63		
360.0	1065.34	970.64	862.18	731.15	596.81	481.74	354.01	286.29	148.32		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	87.65	71.35	58.69	50.49	45.37	40.58	36.23	33.58	31.11		
45.0	74.27	62.98	53.40	46.08	40.52	36.23	32.37	30.12	28.30		
90.0	65.46	55.39	48.45	41.84	37.16	33.75	30.94	28.52	27.31		
135.0	72.18	61.55	52.58	45.59	40.41	36.94	33.42	31.00	29.46		
180.0	68.32	57.64	49.50	44.21	38.87	34.91	32.32	29.79	27.97		
225.0	70.20	59.52	50.71	43.71	38.43	34.47	31.05	28.57	27.09		
270.0	82.14	67.72	56.71	48.28	42.50	37.88	33.47	30.94	28.74		
315.0	77.19	65.30	54.18	47.46	42.34	37.93	34.52	31.82	29.68		
360.0	87.65	71.35	58.69	50.49	45.37	40.58	36.23	33.58	31.11		

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	29.07	27.47	26.43	25.49	24.56	23.89	23.45	22.90	22.52
45.0	26.59	25.49	24.50	23.84	23.07	22.57	22.08	21.75	21.42
90.0	25.77	24.67	23.95	23.29	22.74	22.24	21.80	21.53	21.31
135.0	27.64	26.48	25.49	24.72	24.00	23.40	22.85	22.46	22.08
180.0	26.54	25.49	24.50	23.73	23.18	22.57	22.13	21.80	21.53
225.0	25.44	24.39	23.45	22.79	22.19	21.69	21.25	20.92	20.70
270.0	27.03	25.55	24.50	23.62	22.90	22.24	21.69	21.31	20.98
315.0	27.91	26.54	25.38	24.61	23.84	23.18	22.63	22.24	21.97
360.0	29.07	27.47	26.43	25.49	24.56	23.89	23.45	22.90	22.52
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	22.19	21.97	21.80	21.64	21.47	21.47	21.42	21.36	21.69
45.0	21.14	21.09	20.98	20.92	20.92	20.98	20.92	20.98	20.92
90.0	21.09	20.98	20.87	20.76	20.70	20.70	20.65	20.81	20.76
135.0	21.86	21.58	21.42	21.31	21.14	21.20	21.09	21.09	21.20
180.0	21.36	21.25	21.03	20.98	20.92	20.92	20.98	20.98	21.14
225.0	20.59	20.37	20.32	20.21	20.21	20.21	20.21	20.48	20.32
270.0	20.70	20.59	20.48	20.37	20.26	20.32	20.21	20.32	20.37
315.0	21.64	21.47	21.36	21.25	21.14	21.14	21.14	21.14	21.31
360.0	22.19	21.97	21.80	21.64	21.47	21.47	21.42	21.36	21.69
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	21.36	21.75	21.47	20.98	20.21	19.32	18.99	18.06	17.62
45.0	21.14	21.31	20.48	20.32	19.16	18.77	17.84	17.56	16.96
90.0	21.20	20.70	20.37	19.49	18.83	18.17	17.67	17.18	16.85
135.0	21.20	20.70	20.48	19.66	19.16	18.33	17.89	17.45	17.01
180.0	21.36	20.87	20.43	19.66	19.21	18.50	18.11	17.56	17.23
225.0	20.54	20.81	20.26	19.99	19.05	18.66	17.84	17.62	16.96
270.0	20.43	21.03	20.48	20.21	19.43	18.77	18.11	17.67	17.12
315.0	21.58	21.75	21.09	20.76	19.71	19.16	18.28	17.84	17.34
360.0	21.36	21.75	21.47	20.98	20.21	19.32	18.99	18.06	17.62
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	17.18	16.85	16.57	16.35	16.13	15.86	15.58	15.31	15.09
45.0	16.63	16.41	16.13	15.86	15.64	15.42	15.14	14.98	14.70
90.0	16.57	16.30	16.13	15.80	15.64	15.42	15.14	14.92	14.65
135.0	16.74	16.52	16.30	15.97	15.80	15.53	15.25	14.98	14.81
180.0	17.07	16.85	16.41	16.19	15.91	15.53	15.31	15.09	14.76
225.0	16.68	16.46	16.24	15.97	15.75	15.53	15.25	15.09	14.81
270.0	16.79	16.57	16.35	16.08	15.86	15.64	15.42	15.14	14.92
315.0	17.01	16.79	16.57	16.35	16.08	15.86	15.64	15.36	15.14
360.0	17.18	16.85	16.57	16.35	16.13	15.86	15.58	15.31	15.09
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	14.81	14.48	14.26	14.04	13.82	13.60	13.38	13.16	12.88
45.0	14.42	14.20	14.04	13.82	13.65	13.43	13.21	12.94	12.66
90.0	14.37	14.20	13.93	13.71	13.54	13.38	13.10	12.88	12.61
135.0	14.53	14.20	14.04	13.76	13.54	13.38	13.21	12.88	12.66
180.0	14.48	14.31	14.04	13.76	13.60	13.32	13.10	12.88	12.66
225.0	14.48	14.26	14.04	13.82	13.65	13.49	13.21	13.05	12.77
270.0	14.65	14.42	14.20	13.93	13.71	13.54	13.32	13.16	12.88
315.0	14.92	14.65	14.42	14.20	14.04	13.87	13.60	13.32	12.99
360.0	14.81	14.48	14.26	14.04	13.82	13.60	13.38	13.16	12.88

Intensity data(cd)

Appendix Page: 18 Total:18

C/γ(°)	90.0
0.0	12.66
45.0	12.61
90.0	12.61
135.0	12.61
180.0	12.66
225.0	12.66
270.0	12.61
315.0	12.66
360.0	12.66