
NATA

LumCAT: 3-2033-M	
Luminaire: 92.70.131.00	
Report No: NATA0100	Voltage(V): 34.3600
Test No: GC2019123013	Current(A): 0.6000
LampCAT: LUMINUS CXM-14-AC40	Power (W): 20.6000
Lamp flux(lm): 2608.0	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): 2313.94
Efficiency(%): 88.72%
Lumens(lm)/Power(W): 112.33
Central intensity(cd): 16306.880
Maximum intensity(cd): 16306.880
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=15.8
[C90/270]Total=15.8
Field angle(10%Imax): [C0/180]Total=31.7
[C90/270]Total=31.7
Maximum s/h(1/2): C0_180=0.27 C90_270=0.27
Maximum s/h(1/4): C0_180=0.27 C90_270=0.27
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.72%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.551%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	16306.875	0.000	0	.000%	.000%
1.0	16135.313	15.523	15.523	.595%	.671%
2.0	15638.906	45.605	61.128	1.749%	2.642%
3.0	14831.016	72.874	134.002	2.794%	5.791%
4.0	13663.406	95.380	229.382	3.657%	9.913%
5.0	12374.648	112.014	341.397	4.295%	14.754%
6.0	10992.938	122.803	464.2	4.709%	20.061%
7.0	9276.258	125.811	590.01	4.824%	25.498%
8.0	8037.000	123.908	713.918	4.751%	30.853%
9.0	6551.016	118.228	832.146	4.533%	35.962%
10.0	5191.664	106.267	938.413	4.075%	40.555%
11.0	4193.930	93.781	1032.194	3.596%	44.608%
12.0	3403.617	83.052	1115.246	3.185%	48.197%
13.0	2669.555	72.073	1187.319	2.764%	51.312%
14.0	2186.578	62.158	1249.477	2.383%	53.998%
15.0	1842.539	55.314	1304.791	2.121%	56.388%
16.0	1597.711	50.409	1355.2	1.933%	58.567%
17.0	1427.484	47.110	1402.311	1.806%	60.603%
18.0	1282.620	44.684	1446.994	1.713%	62.534%
19.0	1187.831	42.981	1489.975	1.648%	64.391%
20.0	1104.638	41.959	1531.934	1.609%	66.205%
21.0	1046.384	41.304	1573.238	1.584%	67.990%
22.0	998.332	41.089	1614.327	1.576%	69.765%
23.0	960.778	41.107	1655.435	1.576%	71.542%
24.0	929.018	41.318	1696.752	1.584%	73.328%
25.0	901.638	41.625	1738.377	1.596%	75.126%
26.0	880.495	42.067	1780.445	1.613%	76.944%
27.0	861.666	42.622	1823.067	1.634%	78.786%
28.0	844.095	43.186	1866.253	1.656%	80.653%
29.0	827.944	43.745	1909.999	1.677%	82.543%
30.0	813.846	44.328	1954.327	1.700%	84.459%
31.0	784.034	44.467	1998.793	1.705%	86.381%
32.0	737.304	43.585	2042.378	1.671%	88.264%
33.0	678.804	41.719	2084.097	1.600%	90.067%
34.0	597.916	38.637	2122.734	1.481%	91.737%
35.0	506.770	34.307	2157.042	1.315%	93.220%
36.0	414.703	29.340	2186.382	1.125%	94.488%
37.0	337.296	24.526	2210.908	.940%	95.547%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	236.531	19.154	2230.061	.734%	96.375%
39.0	156.713	13.422	2243.484	.515%	96.955%
40.0	90.443	8.620	2252.104	.331%	97.328%
41.0	52.341	5.084	2257.188	.195%	97.548%
42.0	29.686	2.980	2260.168	.114%	97.676%
43.0	19.610	1.826	2261.994	.070%	97.755%
44.0	17.030	1.383	2263.377	.053%	97.815%
45.0	15.117	1.235	2264.613	.047%	97.868%
46.0	13.992	1.138	2265.751	.044%	97.918%
47.0	13.134	1.079	2266.83	.041%	97.964%
48.0	12.860	1.051	2267.881	.040%	98.010%
49.0	12.607	1.046	2268.927	.040%	98.055%
50.0	12.382	1.042	2269.969	.040%	98.100%
51.0	12.220	1.041	2271.009	.040%	98.145%
52.0	12.030	1.041	2272.05	.040%	98.190%
53.0	11.876	1.040	2273.09	.040%	98.235%
54.0	11.728	1.040	2274.13	.040%	98.280%
55.0	11.588	1.041	2275.171	.040%	98.325%
56.0	11.461	1.041	2276.213	.040%	98.370%
57.0	11.341	1.043	2277.255	.040%	98.415%
58.0	11.243	1.044	2278.3	.040%	98.460%
59.0	11.187	1.049	2279.348	.040%	98.505%
60.0	11.109	1.053	2280.401	.040%	98.551%
61.0	11.046	1.057	2281.459	.041%	98.596%
62.0	10.997	1.062	2282.521	.041%	98.642%
63.0	10.941	1.067	2283.588	.041%	98.688%
64.0	10.898	1.072	2284.66	.041%	98.735%
65.0	10.877	1.078	2285.737	.041%	98.781%
66.0	10.828	1.083	2286.82	.042%	98.828%
67.0	10.786	1.087	2287.907	.042%	98.875%
68.0	10.772	1.092	2288.999	.042%	98.922%
69.0	10.751	1.098	2290.097	.042%	98.970%
70.0	10.716	1.102	2291.199	.042%	99.017%
71.0	10.688	1.106	2292.306	.042%	99.065%
72.0	10.673	1.111	2293.416	.043%	99.113%
73.0	10.638	1.114	2294.531	.043%	99.161%
74.0	10.638	1.119	2295.649	.043%	99.210%
75.0	10.631	1.124	2296.773	.043%	99.258%

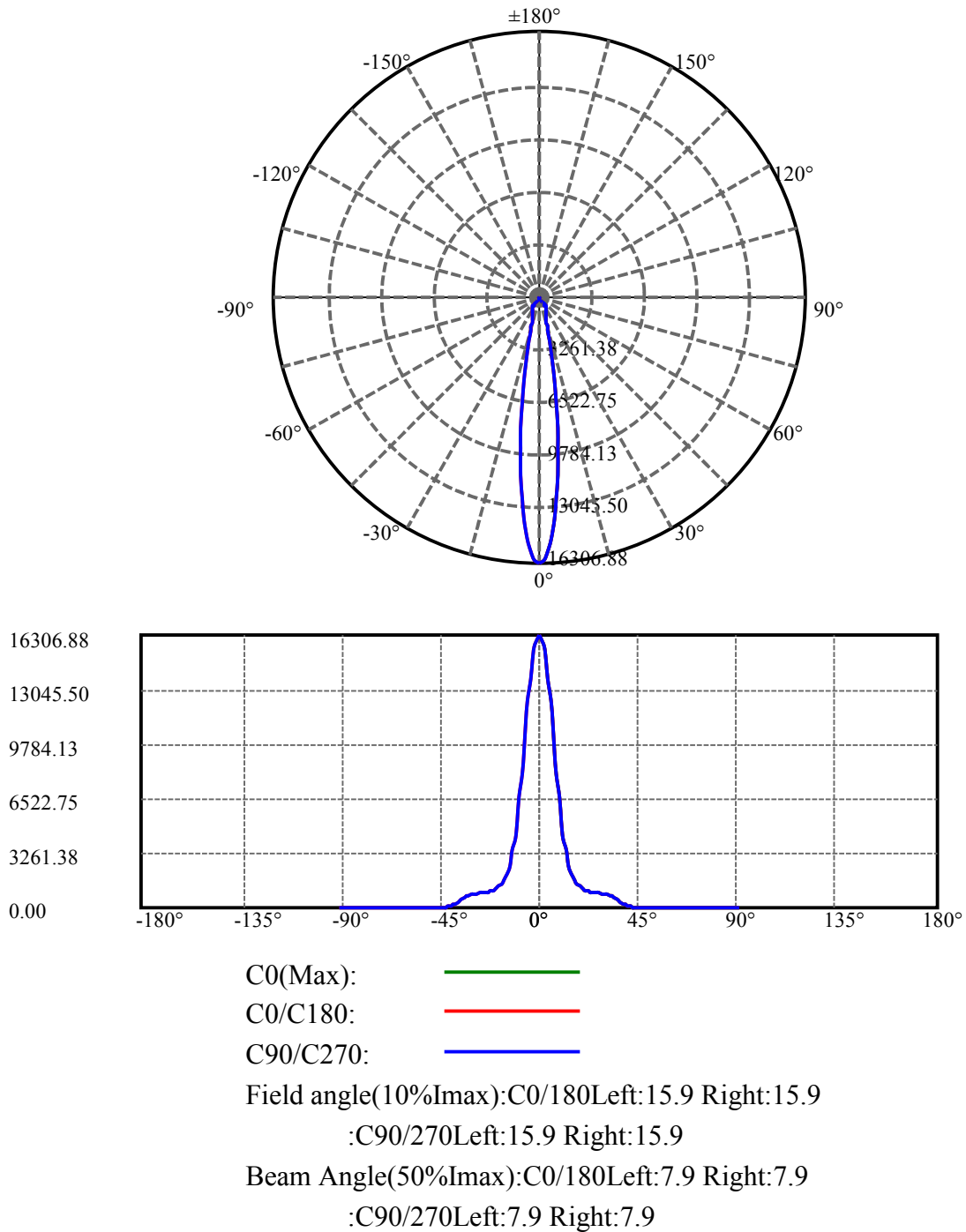
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	10.617	1.128	2297.901	.043%	99.307%
77.0	10.610	1.132	2299.033	.043%	99.356%
78.0	10.589	1.135	2300.168	.044%	99.405%
79.0	10.589	1.138	2301.306	.044%	99.454%
80.0	10.582	1.141	2302.447	.044%	99.503%
81.0	10.561	1.143	2303.59	.044%	99.553%
82.0	10.568	1.146	2304.736	.044%	99.602%
83.0	10.561	1.149	2305.885	.044%	99.652%
84.0	10.561	1.151	2307.035	.044%	99.702%
85.0	10.547	1.152	2308.187	.044%	99.752%
86.0	10.498	1.150	2309.338	.044%	99.801%
87.0	10.512	1.150	2310.488	.044%	99.851%
88.0	10.477	1.150	2311.637	.044%	99.901%
89.0	10.484	1.149	2312.786	.044%	99.950%
90.0	10.491	1.150	2313.936	.044%	100.000%

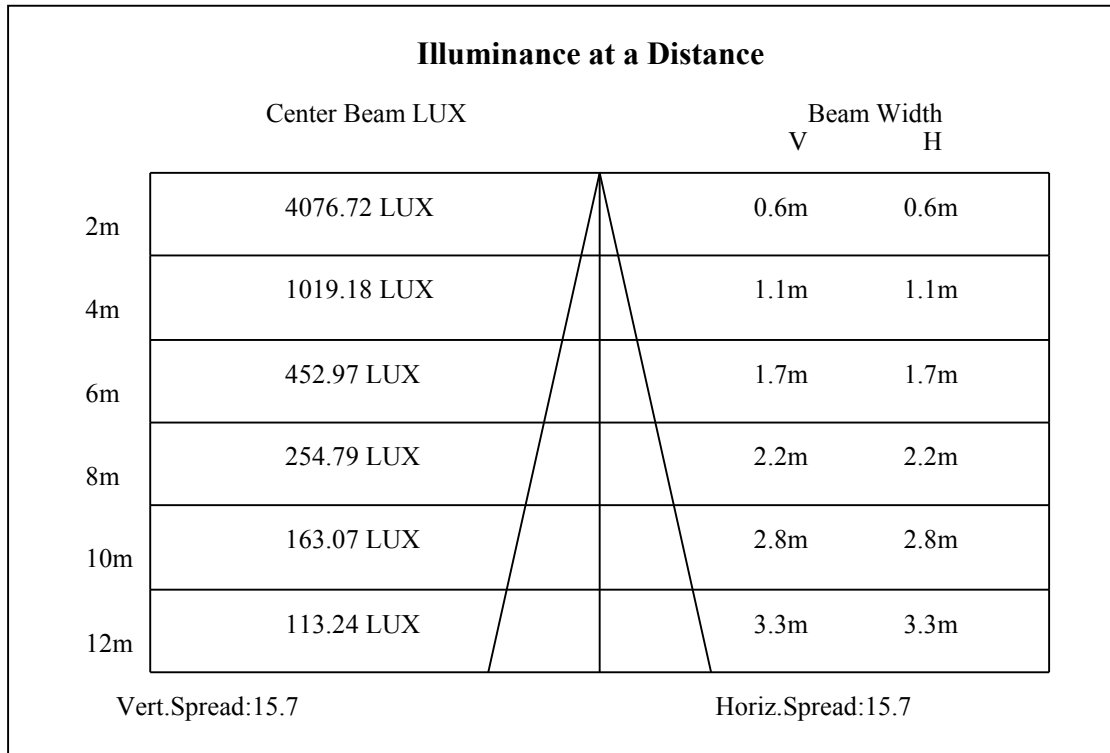
ZONAL LUMEN SUMMARY

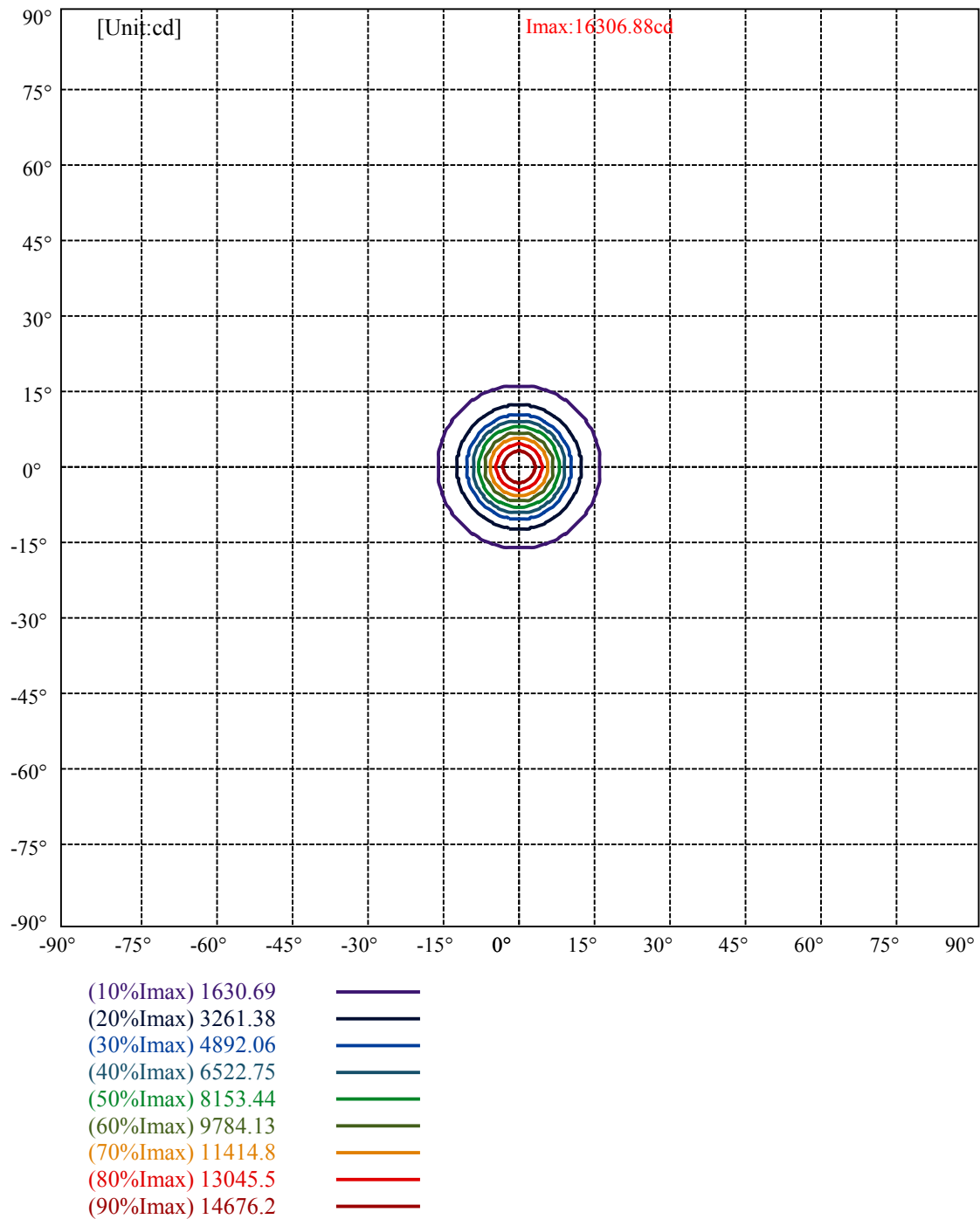
Zone	Lumens	%Lamp	%Fixt
0-30	1954.33	74.94%	84.46%
0-40	2252.10	86.35%	97.33%
0-60	2280.40	87.44%	98.55%
0-90	2312.79	88.68%	99.95%
0-120	2312.79	88.68%	99.95%
0-180	2313.94	88.72%	100.00%
60-90	33.44	1.28%	1.45%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.65	1851.15	70.98%	80.00%

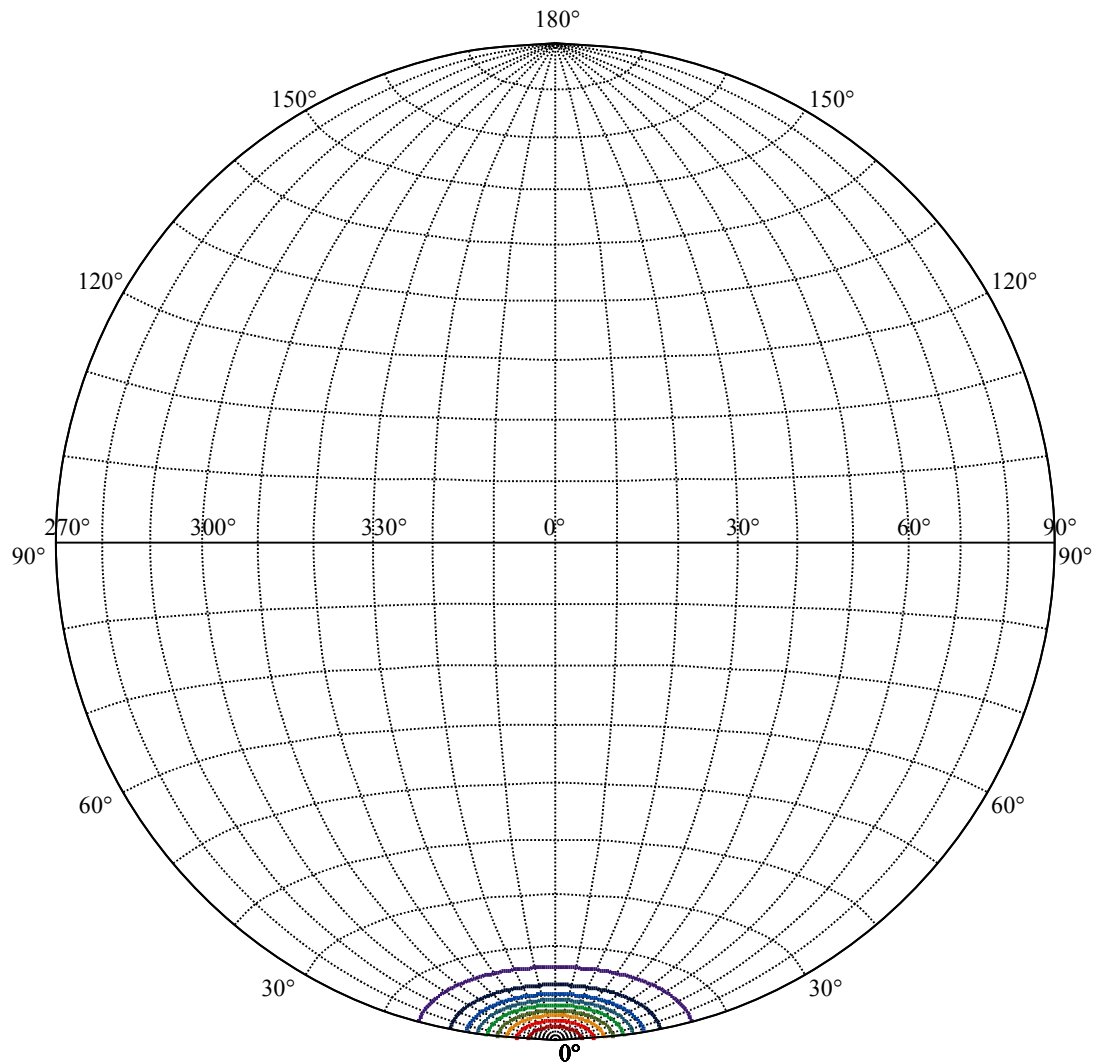
ZONAL LUMEN SUMMARY

0-10	938.41
10-20	593.52
20-30	422.39
30-40	297.78
40-50	17.86
50-60	10.43
60-70	10.80
70-80	11.25
80-90	10.34
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









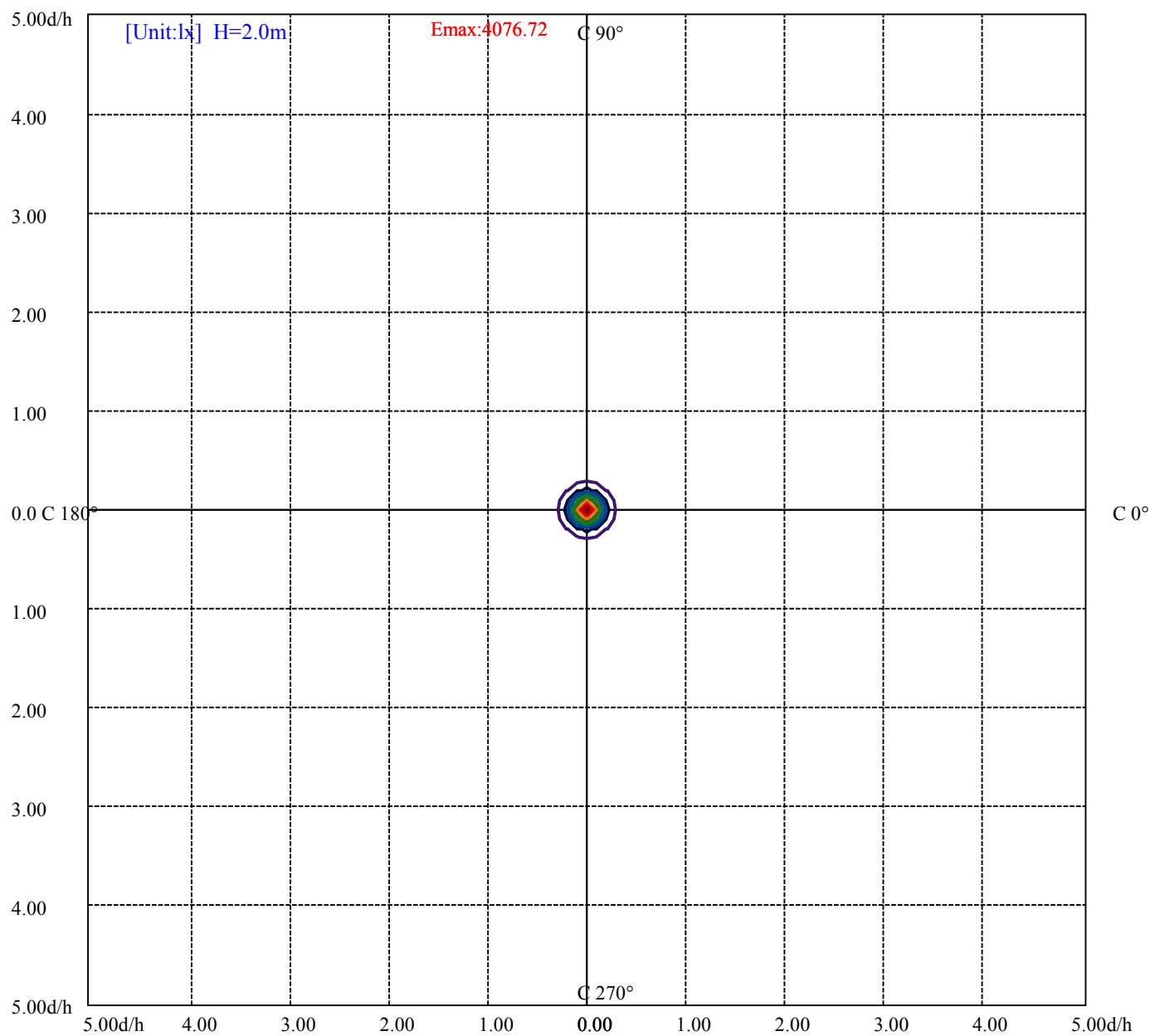
House

[Unit:cd]

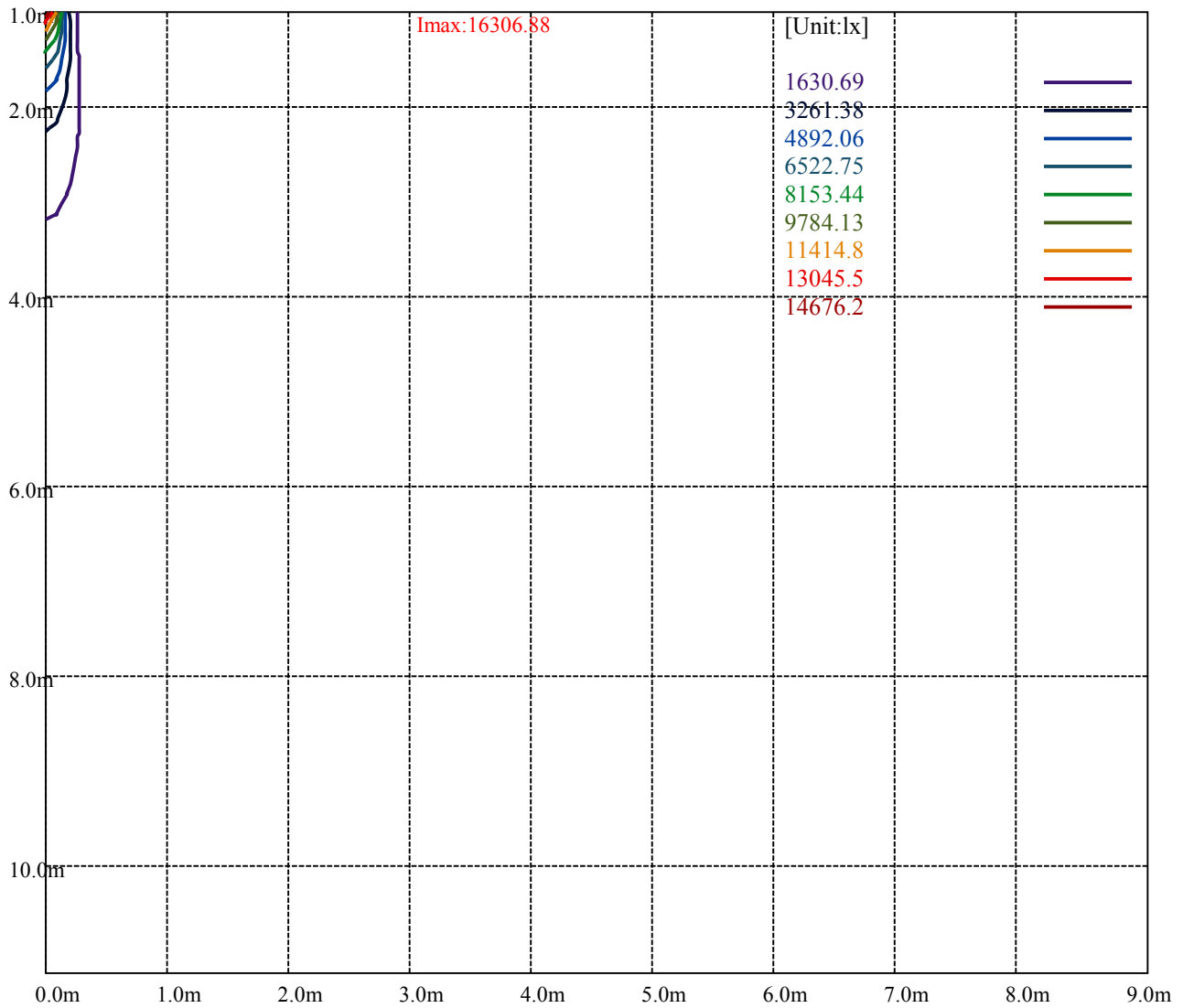
Road

Imax:16306.88

(10%Imax)	1630.69	—
(20%Imax)	3261.38	—
(30%Imax)	4892.06	—
(40%Imax)	6522.75	—
(50%Imax)	8153.44	—
(60%Imax)	9784.13	—
(70%Imax)	11414.8	—
(80%Imax)	13045.5	—
(90%Imax)	14676.2	—



(10%Emax) 407.67	—
(20%Emax) 815.3425	—
(30%Emax) 1223.012	—
(40%Emax) 1630.685	—
(50%Emax) 2038.355	—
(60%Emax) 2446.028	—
(70%Emax) 2853.7	—
(80%Emax) 3261.375	—
(90%Emax) 3669.05	—



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

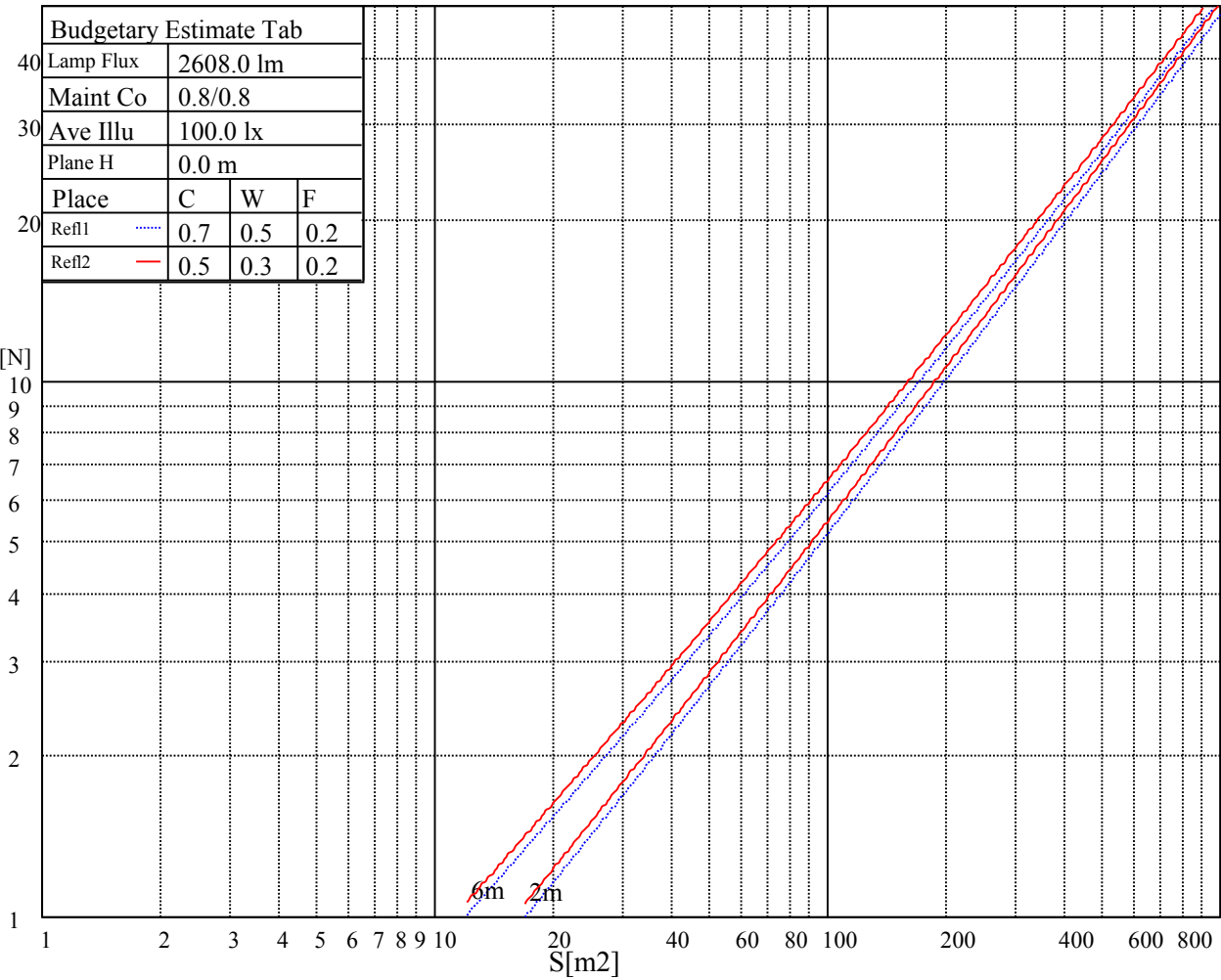
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

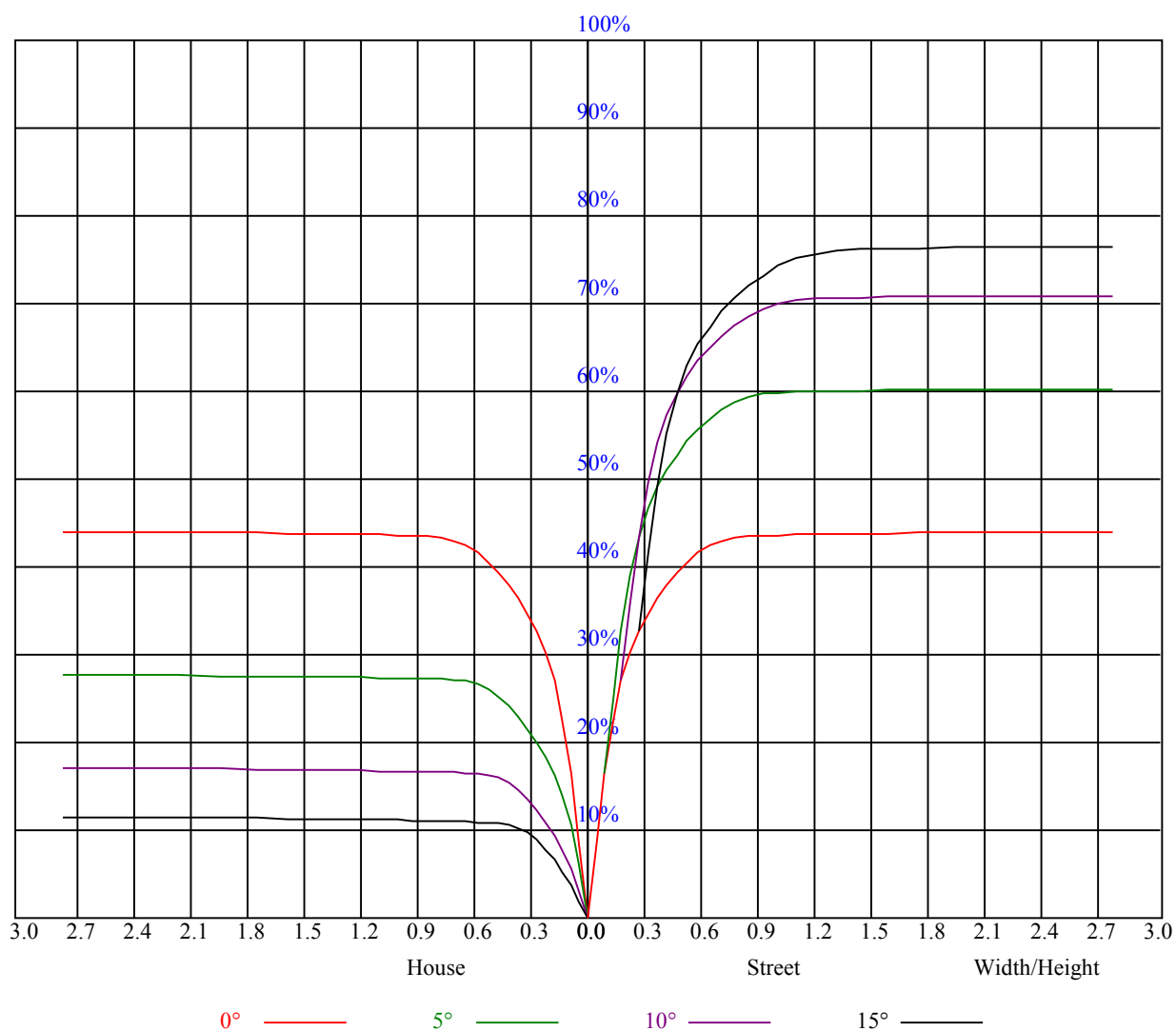
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance 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	1.06	1.06	1.06	1.03	1.03	1.03	0.99	0.99	0.99	0.94	0.94	0.94	0.91	0.91	0.91	0.89
1	1.00	0.98	0.96	0.98	0.96	0.94	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85
2	0.94	0.91	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.83	0.81
3	0.90	0.86	0.84	0.89	0.86	0.83	0.86	0.84	0.82	0.84	0.82	0.80	0.83	0.81	0.79	0.78
4	0.86	0.82	0.79	0.85	0.82	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
5	0.83	0.79	0.76	0.82	0.78	0.75	0.80	0.77	0.75	0.79	0.76	0.74	0.78	0.75	0.73	0.72
6	0.79	0.75	0.73	0.79	0.75	0.72	0.78	0.74	0.72	0.76	0.74	0.71	0.75	0.73	0.71	0.70
7	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.71	0.69	0.68
8	0.74	0.70	0.67	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.71	0.69	0.66	0.66
9	0.72	0.68	0.65	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.69	0.67	0.65	0.64
10	0.70	0.66	0.63	0.69	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.62



NATA 3-2033-M

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	16391.25	15738.75	14670.00	13331.25	11936.25	10254.38	8583.75	7183.13	5895.00		
45.0	16408.13	15828.75	14900.63	13848.75	12414.38	10833.75	9360.00	7689.38	6322.50		
90.0	16261.88	15969.38	15339.38	14506.88	13303.13	11142.00	10406.25	8530.31	7273.13		
135.0	16166.25	16481.25	16486.88	16121.25	15480.00	14467.50	13173.75	11801.25	10361.25		
180.0	16391.25	16762.50	16790.63	16470.00	15750.00	14850.00	13708.13	11072.25	10514.81		
225.0	16408.13	16621.88	16537.50	16020.00	15266.25	14236.88	12667.50	11072.81	9784.13		
270.0	16261.88	16216.88	15834.38	15069.38	14107.50	12903.75	11199.38	9759.38	8325.00		
315.0	16166.25	15463.13	14551.88	13280.63	11049.75	10308.94	8844.75	7101.56	5820.19		
360.0	16391.25	15738.75	14670.00	13331.25	11936.25	10254.38	8583.75	7183.13	5895.00		
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	4500.00	3583.13	2896.88	2605.50	1963.13	1705.50	1514.81	1339.88	1236.38		
45.0	4983.75	3830.63	3043.13	2885.63	2021.06	1751.06	1549.69	1368.00	1258.31		
90.0	5936.63	4335.19	3515.63	2813.63	2274.75	1902.94	1664.44	1486.69	1324.69		
135.0	8544.38	7121.25	5788.13	4477.50	3414.38	2885.63	2225.81	1864.13	1634.63		
180.0	9019.69	7213.50	5888.81	4712.06	3607.88	2804.06	2315.25	1924.88	1676.81		
225.0	8134.31	6571.69	5309.44	4084.31	3223.69	2550.38	2094.19	1799.44	1580.63		
270.0	6615.00	5371.88	4275.00	3290.63	2880.00	2198.25	1861.88	1639.69	1454.63		
315.0	4674.38	3506.06	2834.44	2359.69	1971.56	1694.81	1514.25	1359.00	1253.81		
360.0	4500.00	3583.13	2896.88	2605.50	1963.13	1705.50	1514.81	1339.88	1236.38		
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	1154.25	1082.81	1026.00	984.94	947.81	921.38	897.75	873.00	855.00		
45.0	1164.94	1091.81	1031.06	987.19	944.44	912.94	891.56	867.94	850.50		
90.0	1224.00	1115.04	1070.78	1015.71	975.88	939.83	911.81	891.23	866.59		
135.0	1430.44	1310.06	1200.94	1114.31	1051.88	1006.31	961.31	933.19	910.69		
180.0	1469.81	1319.63	1216.69	1115.04	1054.80	1005.98	967.33	929.25	906.13		
225.0	1386.00	1270.69	1121.85	1098.68	1039.05	997.76	963.17	929.03	907.59		
270.0	1315.69	1219.50	1135.69	1068.75	1021.50	981.56	941.06	916.31	893.81		
315.0	1115.83	1093.11	1034.10	986.46	951.30	920.48	898.14	873.17	853.65		
360.0	1154.25	1082.81	1026.00	984.94	947.81	921.38	897.75	873.00	855.00		
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	838.13	822.38	807.75	795.94	739.13	668.81	596.81	476.44	386.44		
45.0	834.75	818.44	803.81	790.31	738.56	670.50	579.38	491.06	390.38		
90.0	850.39	834.53	819.23	804.26	783.28	713.98	642.38	560.59	452.14		
135.0	886.50	866.81	851.63	835.31	819.56	804.94	771.75	705.94	631.13		
180.0	887.01	867.66	847.18	833.40	819.51	801.39	782.04	733.56	655.03		
225.0	887.18	866.25	849.09	835.82	819.96	803.53	765.06	692.78	613.29		
270.0	871.31	853.31	839.25	825.75	808.31	776.81	717.75	636.19	540.56		
315.0	838.07	823.39	805.61	789.98	743.96	658.46	575.27	486.79	385.20		
360.0	838.13	822.38	807.75	795.94	739.13	668.81	596.81	476.44	386.44		
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	308.81	232.54	111.60	55.35	25.88	22.50	18.51	15.58	14.40		
45.0	303.19	292.50	129.83	63.00	27.84	22.84	18.79	15.47	13.78		
90.0	363.83	277.54	185.01	105.47	51.53	25.14	21.71	17.61	15.41		
135.0	537.75	451.69	351.00	297.00	169.03	99.17	45.79	22.95	20.25		
180.0	563.96	477.73	378.56	278.94	194.46	109.24	51.69	23.46	20.25		
225.0	515.14	414.90	325.29	226.58	139.33	75.32	34.76	23.91	20.25		
270.0	439.31	349.31	291.94	173.08	88.31	41.57	26.72	21.83	17.89		
315.0	285.64	202.16	119.03	54.28	27.17	22.95	19.52	16.09	14.01		
360.0	308.81	232.54	111.60	55.35	25.88	22.50	18.51	15.58	14.40		

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	13.11	12.83	12.60	12.38	12.09	11.93	11.81	11.64	11.48
45.0	13.22	12.88	12.71	12.49	12.32	12.09	11.98	11.81	11.70
90.0	13.61	13.16	12.88	12.66	12.49	12.26	12.09	11.93	11.81
135.0	17.33	15.36	13.56	13.28	12.94	12.77	12.54	12.32	12.15
180.0	17.55	15.69	13.61	13.22	12.99	12.71	12.54	12.32	12.15
225.0	17.10	15.19	13.50	13.16	12.83	12.60	12.38	12.21	11.98
270.0	15.58	13.67	13.39	13.11	12.77	12.54	12.38	12.15	11.98
315.0	13.44	13.16	12.83	12.60	12.43	12.15	12.04	11.87	11.76
360.0	13.11	12.83	12.60	12.38	12.09	11.93	11.81	11.64	11.48
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	11.36	11.31	11.19	11.14	11.03	10.97	10.91	10.86	10.86
45.0	11.59	11.42	11.36	11.25	11.19	11.14	11.08	11.03	10.97
90.0	11.64	11.53	11.48	11.31	11.25	11.19	11.14	11.08	11.03
135.0	11.98	11.87	11.70	11.53	11.42	11.36	11.31	11.19	11.14
180.0	11.98	11.81	11.64	11.42	11.31	11.25	11.14	11.08	10.97
225.0	11.87	11.70	11.53	11.42	11.31	11.25	11.14	11.08	11.03
270.0	11.87	11.64	11.48	11.42	11.31	11.25	11.14	11.08	11.08
315.0	11.53	11.42	11.31	11.25	11.14	11.08	11.03	10.97	10.91
360.0	11.36	11.31	11.19	11.14	11.03	10.97	10.91	10.86	10.86
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.80	10.74	10.74	10.69	10.63	10.63	10.63	10.58	10.58
45.0	10.91	10.91	10.86	10.80	10.80	10.80	10.74	10.74	10.69
90.0	10.97	10.97	10.91	10.91	10.86	10.80	10.80	10.80	10.80
135.0	11.08	11.03	10.97	10.97	10.91	10.86	10.80	10.74	10.74
180.0	10.91	10.86	10.86	10.80	10.74	10.74	10.69	10.69	10.63
225.0	11.03	10.91	10.91	10.86	10.80	10.80	10.80	10.74	10.69
270.0	10.97	10.91	10.91	10.86	10.80	10.80	10.80	10.74	10.74
315.0	10.86	10.86	10.86	10.74	10.74	10.74	10.74	10.69	10.63
360.0	10.80	10.74	10.74	10.69	10.63	10.63	10.63	10.58	10.58
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	10.58	10.52	10.52	10.52	10.52	10.52	10.52	10.52	10.46
45.0	10.69	10.69	10.63	10.63	10.63	10.63	10.58	10.58	10.63
90.0	10.74	10.69	10.74	10.69	10.69	10.63	10.63	10.63	10.63
135.0	10.74	10.69	10.69	10.69	10.69	10.69	10.63	10.63	10.63
180.0	10.63	10.58	10.58	10.58	10.52	10.52	10.52	10.52	10.52
225.0	10.69	10.63	10.63	10.63	10.63	10.63	10.63	10.58	10.58
270.0	10.69	10.69	10.69	10.69	10.69	10.63	10.63	10.69	10.63
315.0	10.63	10.63	10.63	10.63	10.58	10.63	10.58	10.58	10.58
360.0	10.58	10.52	10.52	10.52	10.52	10.52	10.52	10.52	10.46
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	10.46	10.46	10.46	10.46	10.46	10.41	10.46	10.41	10.46
45.0	10.58	10.58	10.58	10.58	10.58	10.52	10.52	10.52	10.52
90.0	10.63	10.63	10.63	10.58	10.58	10.52	10.52	10.52	10.52
135.0	10.58	10.63	10.58	10.63	10.58	10.52	10.52	10.46	10.46
180.0	10.46	10.52	10.46	10.46	10.46	10.46	10.46	10.41	10.41
225.0	10.58	10.58	10.58	10.58	10.58	10.52	10.52	10.52	10.52
270.0	10.63	10.58	10.58	10.63	10.63	10.58	10.58	10.52	10.52
315.0	10.58	10.58	10.63	10.58	10.52	10.46	10.52	10.46	10.46
360.0	10.46	10.46	10.46	10.46	10.46	10.41	10.46	10.41	10.46

Intensity data(cd)

C/γ(°)	90.0
0.0	10.41
45.0	10.52
90.0	10.52
135.0	10.46
180.0	10.41
225.0	10.52
270.0	10.58
315.0	10.52
360.0	10.41