
Nata

LumCAT: 4-2275-M
Luminaire: 92.76.129.00
Report No: GC2017061708
Test No: NT-0010
LampCAT: CREE CXA1820
Lamp flux(lm): 2283.0
Number of Lamps: 1
Length(mm): 100
Phm Type: C

Voltage(V): 36.0000
Current(A): 0.5000
Power (W): 18.0000
PF: 0.0000
Ballast type: DC
Width(mm): 100
Height(mm): 0

Photometric Results

Lumens(lm): 2059.19
Efficiency(%): 90.20%
Lumens(lm)/Power(W): 114.40
Central intensity(cd): 12161.960
Maximum intensity(cd): 12161.960
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=17.6
 [C90/270]Total=17.6
Field angle(10%Imax): [C0/180]Total=36.6
 [C90/270]Total=36.6
Maximum s/h(1/2): C0_180=0.30 C90_270=0.30
Maximum s/h(1/4): C0_180=0.31 C90_270=0.31
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 90.20%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.779%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	12161.959	0.000	0	.000%	.000%
1.0	12022.941	11.572	11.572	.507%	.562%
2.0	11655.165	33.985	45.557	1.489%	2.212%
3.0	11264.127	54.815	100.373	2.401%	4.874%
4.0	10585.143	73.136	173.509	3.204%	8.426%
5.0	9780.907	87.614	261.123	3.838%	12.681%
6.0	8869.586	98.013	359.136	4.293%	17.441%
7.0	7852.832	103.796	462.932	4.546%	22.481%
8.0	6924.168	105.756	568.688	4.632%	27.617%
9.0	5858.827	103.599	672.287	4.538%	32.648%
10.0	4864.508	97.042	769.329	4.251%	37.361%
11.0	4124.413	89.818	859.147	3.934%	41.723%
12.0	3456.166	82.867	942.014	3.630%	45.747%
13.0	2813.244	74.402	1016.416	3.259%	49.360%
14.0	2394.540	66.659	1083.075	2.920%	52.597%
15.0	1991.252	60.210	1143.285	2.637%	55.521%
16.0	1711.703	54.259	1197.544	2.377%	58.156%
17.0	1441.514	49.104	1246.648	2.151%	60.541%
18.0	1257.708	44.504	1291.152	1.949%	62.702%
19.0	1107.955	41.158	1332.31	1.803%	64.701%
20.0	973.480	38.096	1370.406	1.669%	66.551%
21.0	913.661	36.237	1406.643	1.587%	68.311%
22.0	870.235	35.848	1442.491	1.570%	70.051%
23.0	845.859	36.008	1478.499	1.577%	71.800%
24.0	825.474	36.541	1515.041	1.601%	73.575%
25.0	808.379	37.150	1552.191	1.627%	75.379%
26.0	791.904	37.775	1589.966	1.655%	77.213%
27.0	774.299	38.318	1628.283	1.678%	79.074%
28.0	754.617	38.709	1666.992	1.696%	80.954%
29.0	737.274	39.032	1706.024	1.710%	82.849%
30.0	722.436	39.412	1745.436	1.726%	84.763%
31.0	706.208	39.757	1785.193	1.741%	86.694%
32.0	687.214	39.920	1825.113	1.749%	88.633%
33.0	648.895	39.362	1864.475	1.724%	90.544%
34.0	592.324	37.563	1902.038	1.645%	92.368%
35.0	493.911	33.734	1935.773	1.478%	94.007%
36.0	410.308	28.791	1964.563	1.261%	95.405%
37.0	272.254	22.261	1986.825	.975%	96.486%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	176.249	14.970	2001.795	.656%	97.213%
39.0	97.298	9.337	2011.132	.409%	97.666%
40.0	43.550	4.912	2016.044	.215%	97.905%
41.0	20.632	2.285	2018.33	.100%	98.016%
42.0	15.898	1.327	2019.657	.058%	98.080%
43.0	13.048	1.072	2020.729	.047%	98.132%
44.0	11.328	0.920	2021.649	.040%	98.177%
45.0	10.433	0.836	2022.486	.037%	98.218%
46.0	9.745	0.789	2023.275	.035%	98.256%
47.0	9.525	0.766	2024.041	.034%	98.293%
48.0	9.346	0.763	2024.804	.033%	98.330%
49.0	9.194	0.761	2025.565	.033%	98.367%
50.0	9.071	0.762	2026.327	.033%	98.404%
51.0	8.947	0.762	2027.089	.033%	98.441%
52.0	8.864	0.764	2027.853	.033%	98.478%
53.0	8.726	0.765	2028.619	.034%	98.515%
54.0	8.644	0.766	2029.384	.034%	98.553%
55.0	8.561	0.768	2030.152	.034%	98.590%
56.0	8.520	0.772	2030.924	.034%	98.627%
57.0	8.451	0.776	2031.7	.034%	98.665%
58.0	8.410	0.780	2032.48	.034%	98.703%
59.0	8.355	0.784	2033.264	.034%	98.741%
60.0	8.327	0.788	2034.052	.035%	98.779%
61.0	8.245	0.791	2034.843	.035%	98.818%
62.0	8.203	0.793	2035.635	.035%	98.856%
63.0	8.190	0.797	2036.432	.035%	98.895%
64.0	8.162	0.802	2037.235	.035%	98.934%
65.0	8.148	0.807	2038.042	.035%	98.973%
66.0	8.121	0.812	2038.854	.036%	99.013%
67.0	8.080	0.815	2039.668	.036%	99.052%
68.0	8.024	0.816	2040.484	.036%	99.092%
69.0	8.024	0.819	2041.303	.036%	99.131%
70.0	7.997	0.823	2042.126	.036%	99.171%
71.0	8.011	0.827	2042.953	.036%	99.212%
72.0	7.969	0.831	2043.784	.036%	99.252%
73.0	7.942	0.832	2044.616	.036%	99.292%
74.0	7.928	0.834	2045.45	.037%	99.333%
75.0	7.914	0.837	2046.287	.037%	99.374%

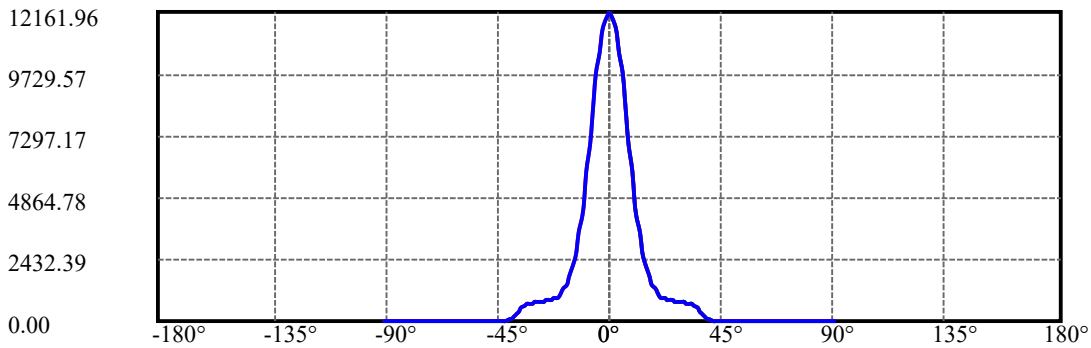
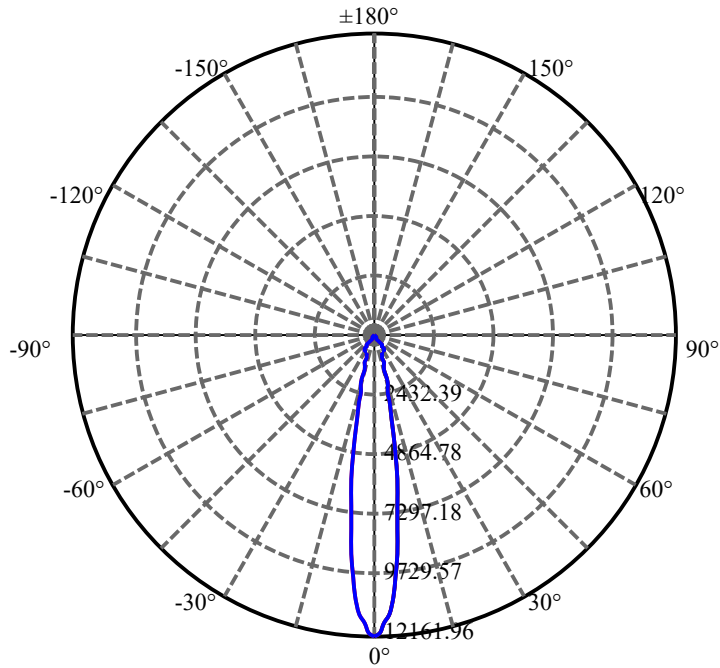
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.901	0.840	2047.127	.037%	99.414%
77.0	7.887	0.842	2047.969	.037%	99.455%
78.0	7.914	0.846	2048.814	.037%	99.496%
79.0	8.148	0.863	2049.677	.038%	99.538%
80.0	8.217	0.882	2050.56	.039%	99.581%
81.0	8.190	0.887	2051.447	.039%	99.624%
82.0	8.052	0.881	2052.328	.039%	99.667%
83.0	7.928	0.869	2053.196	.038%	99.709%
84.0	7.901	0.862	2054.059	.038%	99.751%
85.0	7.846	0.859	2054.918	.038%	99.793%
86.0	7.832	0.857	2055.775	.038%	99.834%
87.0	7.763	0.853	2056.629	.037%	99.876%
88.0	7.777	0.851	2057.48	.037%	99.917%
89.0	7.790	0.853	2058.333	.037%	99.959%
90.0	7.790	0.854	2059.187	.037%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1745.44	76.45%	84.76%
0-40	2016.04	88.31%	97.90%
0-60	2034.05	89.10%	98.78%
0-90	2058.33	90.16%	99.96%
0-120	2058.33	90.16%	99.96%
0-180	2059.19	90.20%	100.00%
60-90	25.07	1.10%	1.22%
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%
0-27.49	1647.35	72.16%	80.00%

ZONAL LUMEN SUMMARY

0-10	769.33
10-20	601.08
20-30	375.03
30-40	270.61
40-50	10.28
50-60	7.72
60-70	8.07
70-80	8.43
80-90	7.77
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: —————

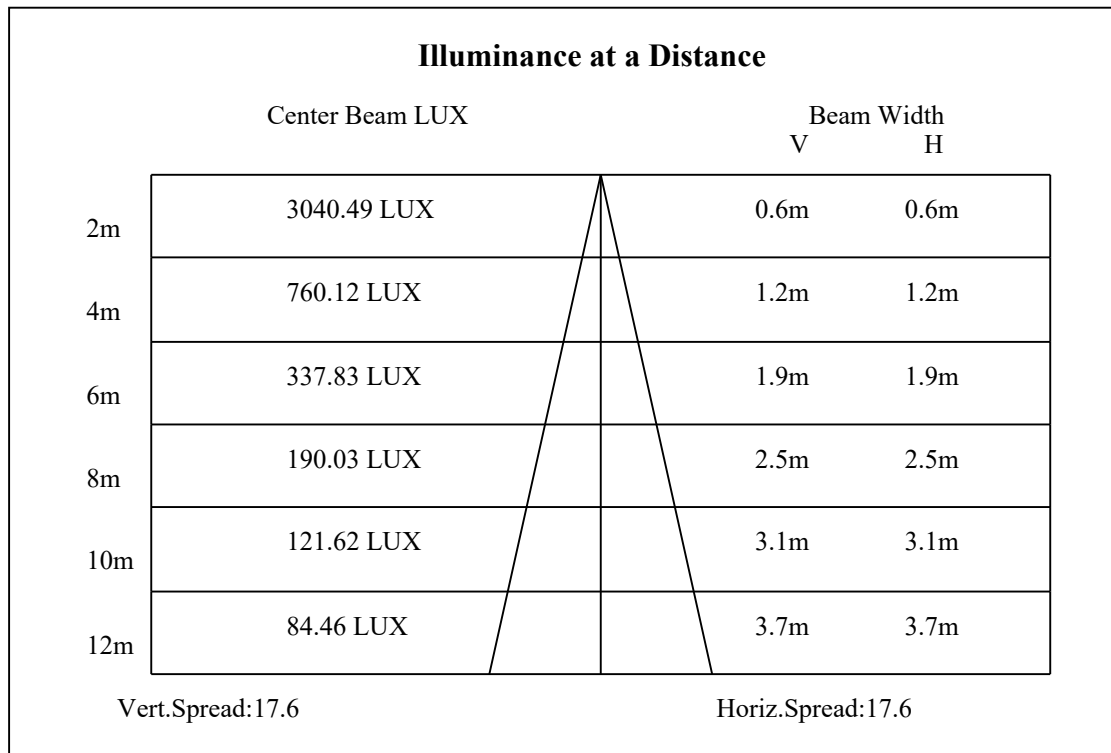
C90/C270: —————

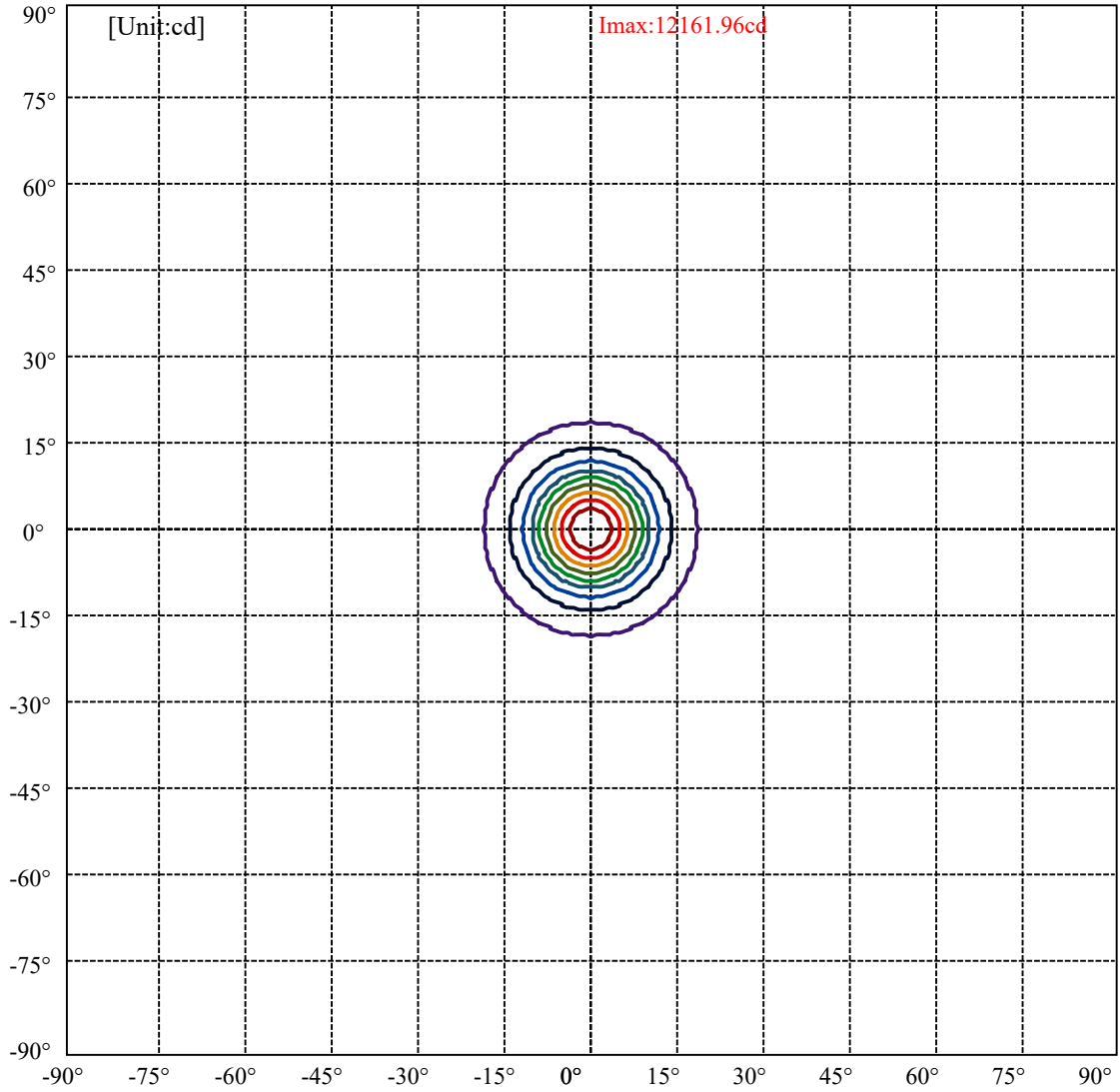
Field angle(10%Imax):C0/180Left:18.3 Right:18.3

:C90/270Left:18.3 Right:18.3

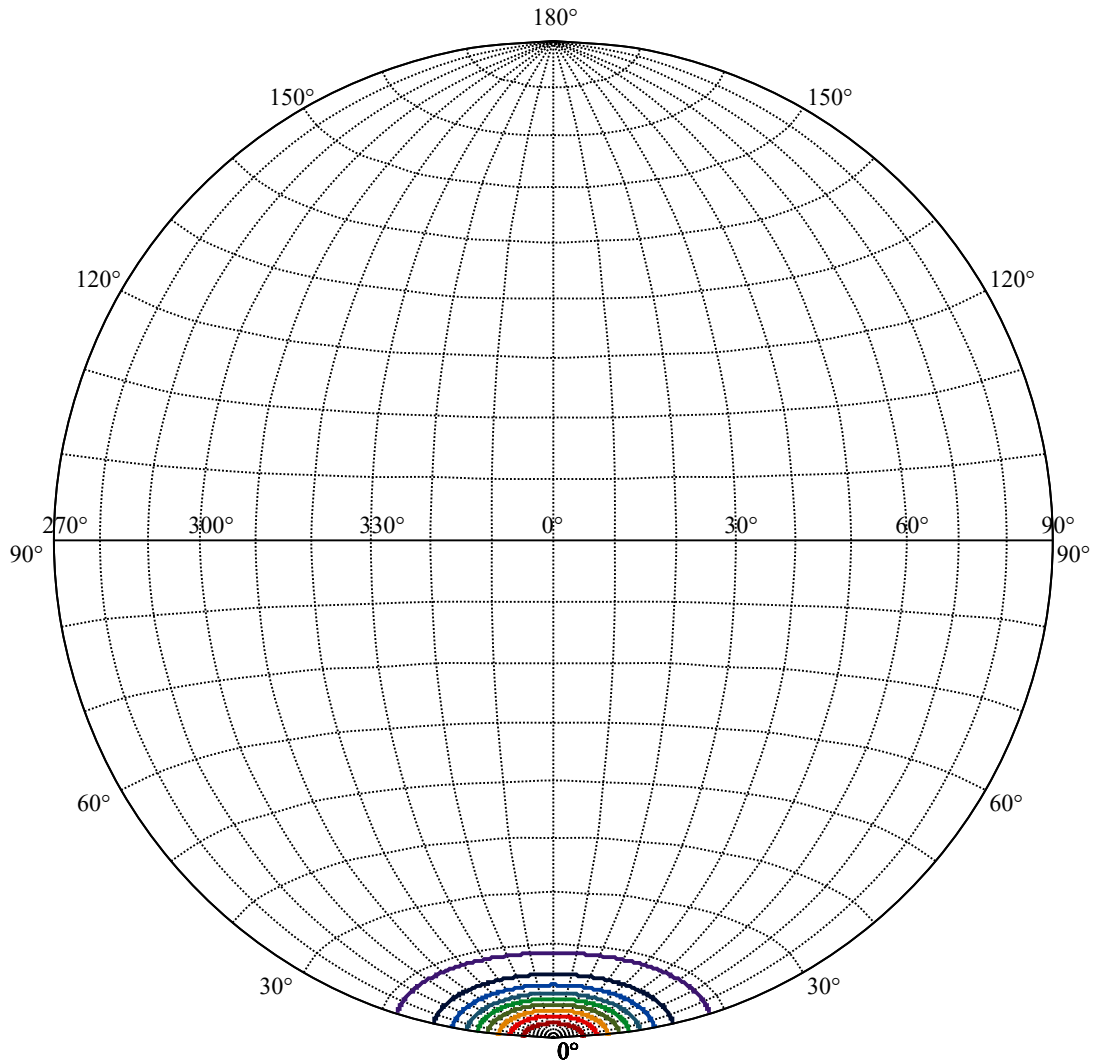
Beam Angle(50%Imax):C0/180Left:8.8 Right:8.8

:C90/270Left:8.8 Right:8.8





(10%Imax) 1216.2	—
(20%Imax) 2432.39	—
(30%Imax) 3648.59	—
(40%Imax) 4864.78	—
(50%Imax) 6080.98	—
(60%Imax) 7297.17	—
(70%Imax) 8513.37	—
(80%Imax) 9729.57	—
(90%Imax) 10945.8	—



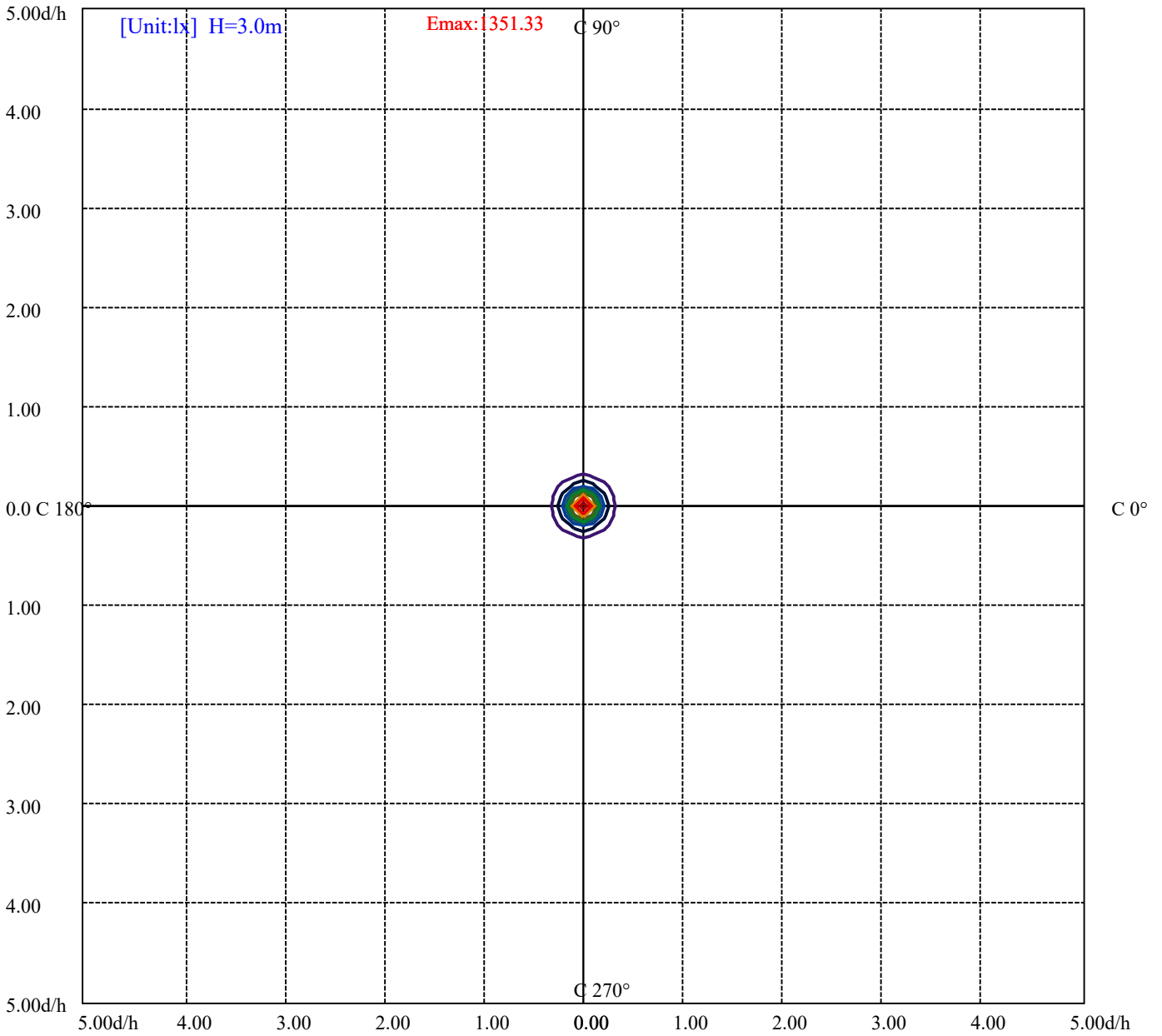
House

[Unit:cd]

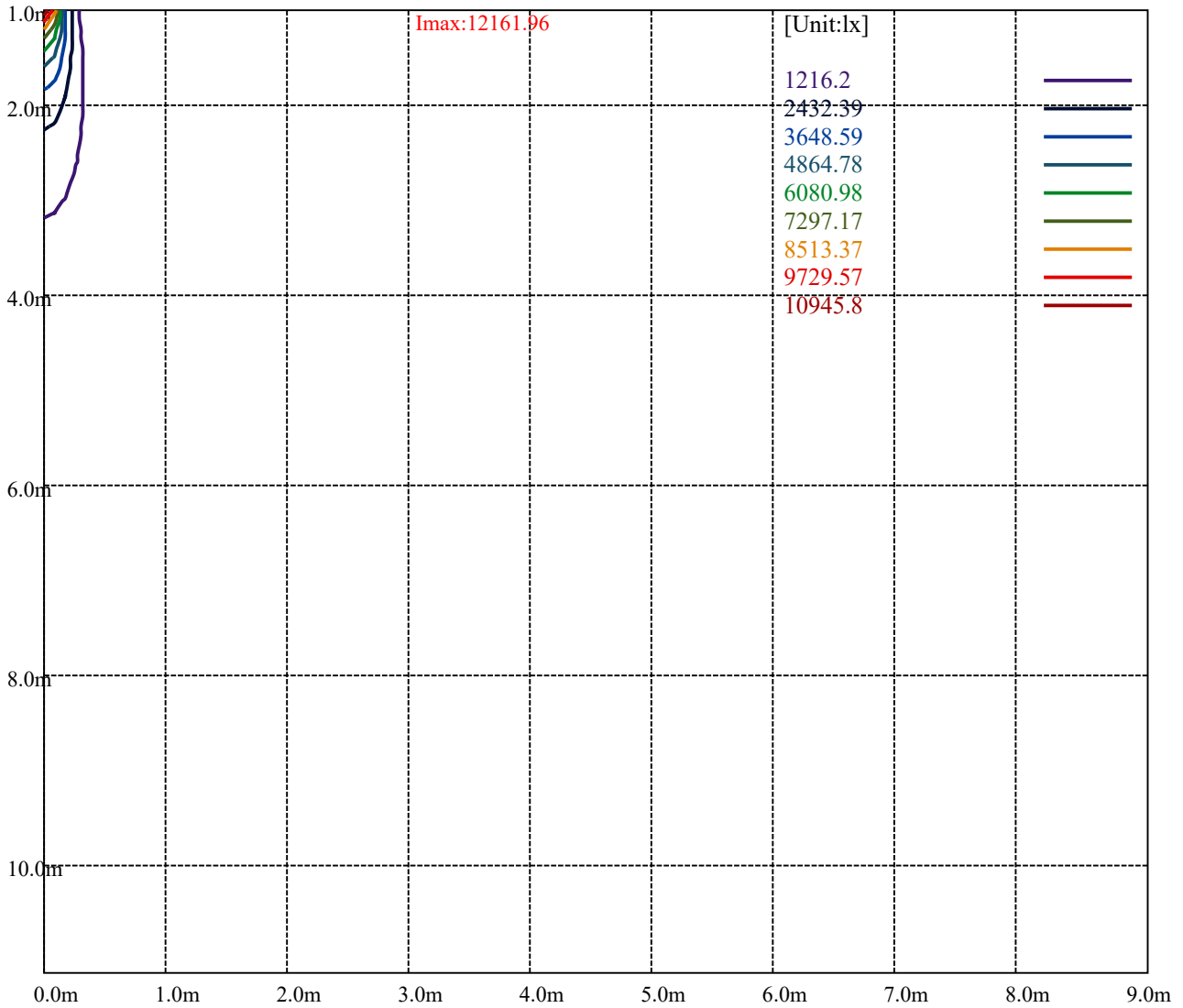
Road

Imax:12161.96

(10%Imax) 1216.2	—
(20%Imax) 2432.39	—
(30%Imax) 3648.59	—
(40%Imax) 4864.78	—
(50%Imax) 6080.98	—
(60%Imax) 7297.17	—
(70%Imax) 8513.37	—
(80%Imax) 9729.57	—
(90%Imax) 10945.8	—



- (10%Emax) 135.1322
- (20%Emax) 270.2655
- (30%Emax) 405.3978
- (40%Emax) 540.53
- (50%Emax) 675.6633
- (60%Emax) 810.7956
- (70%Emax) 945.929
- (80%Emax) 1081.061
- (90%Emax) 1216.189



Luminance Table

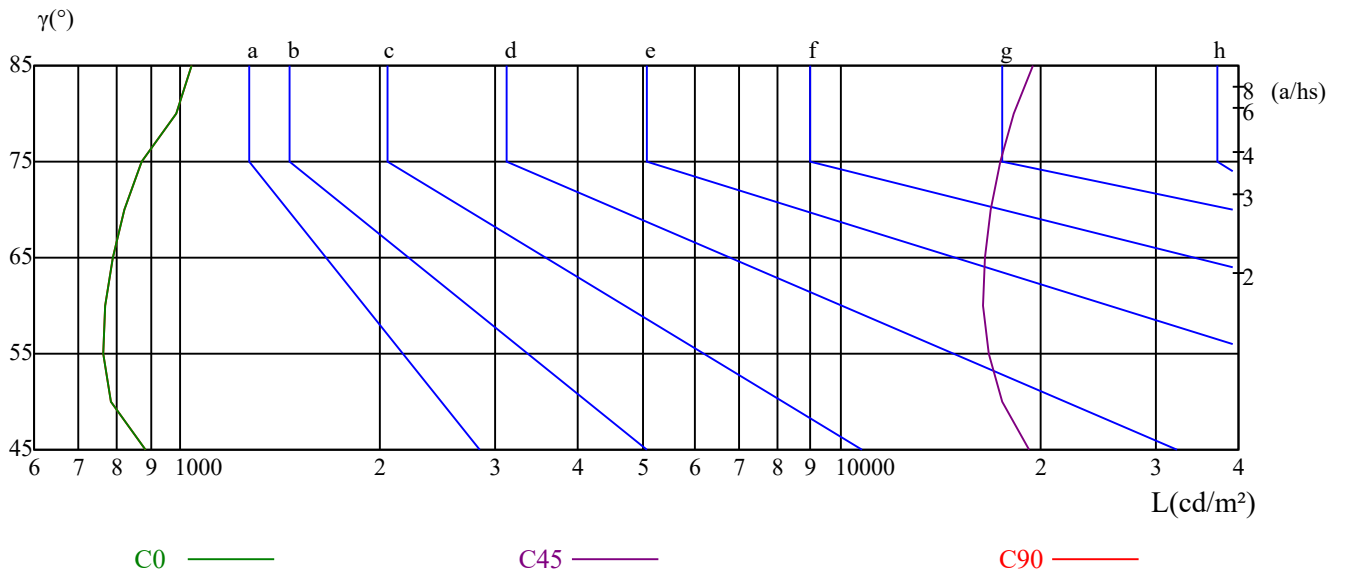
γ	45	50	55	60	65	70	75	80	85
C0	884	785	763	771	791	823	874	986	1040
C45	19298	17512	16715	16452	16486	16807	17426	18314	19521
C90	884	785	763	771	791	823	874	986	1040

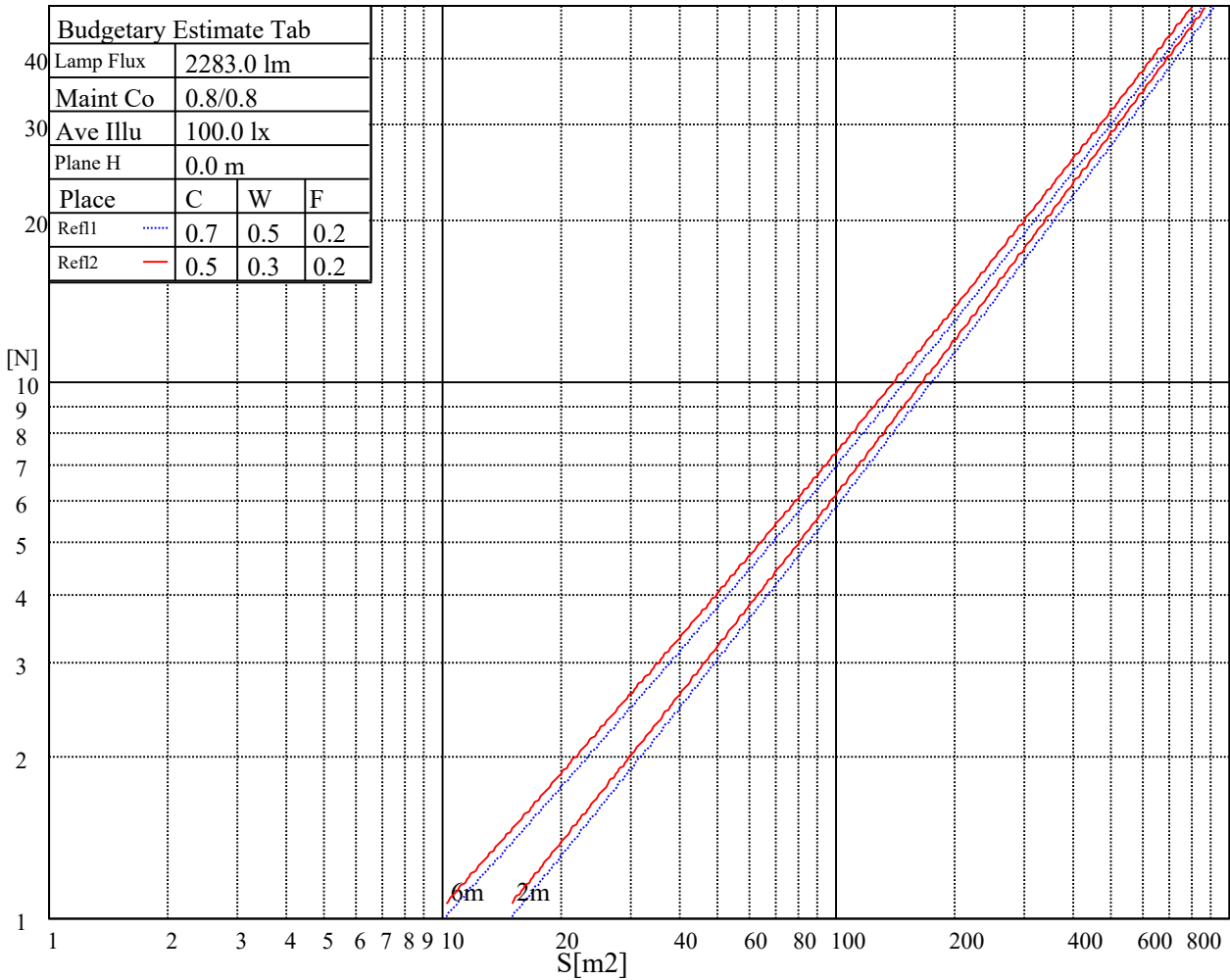
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
1928	1928	49985	3058	3058	79050	9002	9002	230934

Glare Table

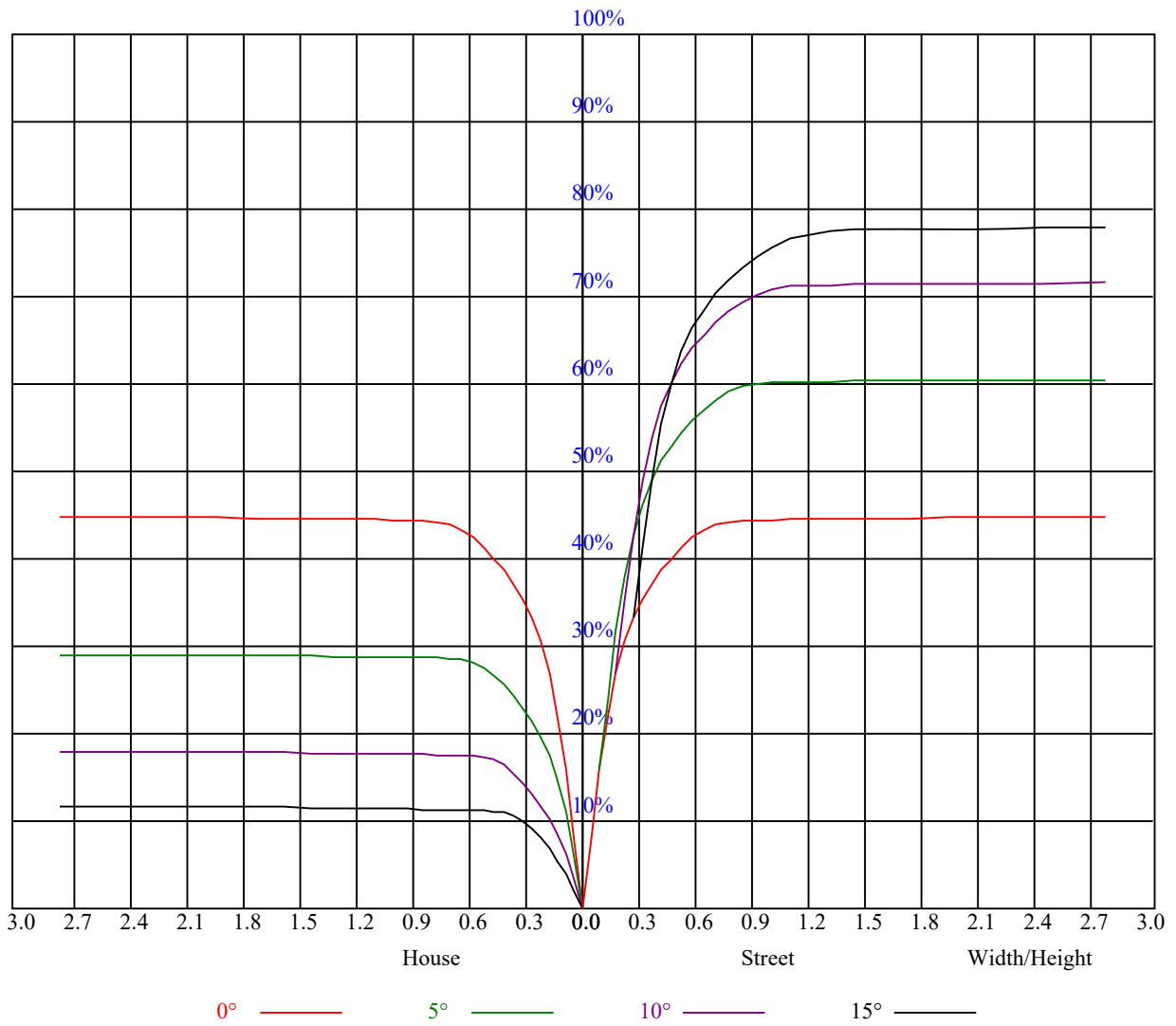
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

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	1.07	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	1.01	0.99	0.98	0.99	0.98	0.96	0.96	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.88	0.86
2	0.96	0.93	0.90	0.94	0.92	0.89	0.92	0.89	0.87	0.89	0.87	0.86	0.87	0.85	0.84	0.83
3	0.91	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.84	0.82	0.84	0.82	0.80	0.79
4	0.87	0.83	0.80	0.86	0.83	0.80	0.84	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
5	0.84	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.76	0.80	0.77	0.75	0.79	0.76	0.74	0.73
6	0.80	0.76	0.73	0.80	0.76	0.73	0.79	0.75	0.73	0.77	0.74	0.72	0.76	0.74	0.72	0.71
7	0.77	0.73	0.70	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.68
8	0.75	0.71	0.68	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
9	0.72	0.68	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.65	0.64
10	0.70	0.66	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.69	0.65	0.63	0.68	0.65	0.63	0.62



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	12178.48	11649.93	11016.79	10411.17	9365.09	8412.62	7421.60	6193.85	5268.90
90.0	12145.44	12277.58	12183.98	11842.63	11358.14	10818.58	9755.99	8836.55	7977.67
180.0	12178.48	12398.70	12442.75	12134.43	11771.06	10927.59	10401.26	9576.51	8621.83
270.0	12145.44	11765.55	10977.15	10668.28	9846.29	8964.83	7899.49	6804.42	5828.27
360.0	12178.48	11649.93	11016.79	10411.17	9365.09	8412.62	7421.60	6193.85	5268.90
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4432.04	3540.13	2973.05	2785.85	2076.18	1793.19	1559.20	1336.22	1149.58
90.0	6606.77	5637.78	4855.97	3864.96	3154.73	2835.40	2239.14	1925.32	1633.52
180.0	7483.82	6335.34	5368.55	4402.31	3680.52	3018.19	2498.46	2130.68	1803.10
270.0	4912.68	3944.79	3300.08	2771.54	2341.55	1931.38	1668.21	1454.59	1179.86
360.0	4432.04	3540.13	2973.05	2785.85	2076.18	1793.19	1559.20	1336.22	1149.58
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1020.20	922.19	869.34	846.22	827.50	812.08	793.36	771.89	754.27
90.0	1386.87	1201.88	1040.57	943.12	900.17	878.70	858.33	841.81	823.09
180.0	1537.73	1333.47	1093.70	1019.70	929.13	883.93	855.96	838.89	825.90
270.0	1086.04	974.28	890.32	845.61	824.14	808.72	794.24	780.92	764.35
360.0	1020.20	922.19	869.34	846.22	827.50	812.08	793.36	771.89	754.27
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	739.41	720.14	705.82	694.26	681.60	655.72	575.34	468.53	318.78
90.0	797.77	775.19	758.13	739.96	721.24	708.03	694.81	684.90	627.64
180.0	810.87	790.44	773.10	756.47	735.33	716.50	704.12	691.45	664.70
270.0	749.15	732.69	712.04	699.05	686.66	668.60	621.31	524.41	364.53
360.0	739.41	720.14	705.82	694.26	681.60	655.72	575.34	468.53	318.78
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	285.74	92.83	28.90	20.37	16.57	12.99	11.07	10.46	9.97
90.0	512.02	387.05	282.99	139.62	47.18	22.52	18.28	14.09	11.56
180.0	581.84	457.52	338.65	206.96	91.17	31.44	21.25	16.90	13.65
270.0	261.63	151.63	54.45	22.24	19.27	15.58	12.99	10.74	10.13
360.0	285.74	92.83	28.90	20.37	16.57	12.99	11.07	10.46	9.97
C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	9.74	9.47	9.30	9.14	9.03	8.92	8.81	8.75	8.59
90.0	10.41	9.91	9.63	9.47	9.30	9.19	9.03	8.97	8.81
180.0	11.78	10.08	9.80	9.58	9.36	9.19	9.08	8.97	8.86
270.0	9.80	9.52	9.36	9.19	9.08	8.97	8.86	8.75	8.64
360.0	9.74	9.47	9.30	9.14	9.03	8.92	8.81	8.75	8.59
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	8.53	8.48	8.48	8.37	8.37	8.26	8.26	8.20	8.15
90.0	8.75	8.64	8.59	8.53	8.48	8.48	8.37	8.31	8.26
180.0	8.75	8.64	8.59	8.48	8.42	8.37	8.37	8.26	8.20
270.0	8.53	8.48	8.42	8.42	8.37	8.31	8.31	8.20	8.20
360.0	8.53	8.48	8.48	8.37	8.37	8.26	8.26	8.20	8.15
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	8.15	8.09	8.09	8.04	8.04	7.98	7.98	7.93	7.98
90.0	8.26	8.26	8.20	8.20	8.15	8.09	8.09	8.09	8.09
180.0	8.15	8.15	8.15	8.09	8.04	7.98	7.98	7.98	7.93
270.0	8.20	8.15	8.15	8.15	8.09	8.04	8.04	7.98	8.04
360.0	8.15	8.09	8.09	8.04	8.04	7.98	7.98	7.93	7.98

Nata 4-2275-M

Intensity data(cd)										Appendix Page: 17 Total:17
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0	
0.0	7.93	7.93	7.93	7.87	7.87	7.87	7.87	7.87	7.87	7.87
90.0	8.04	7.98	7.98	7.98	7.98	7.98	8.04	8.48	8.37	8.37
180.0	7.93	7.87	7.87	7.87	7.87	7.82	7.82	8.31	8.75	8.75
270.0	7.98	7.98	7.93	7.93	7.87	7.87	7.93	7.93	7.87	7.87
360.0	7.93	7.93	7.93	7.87	7.87	7.87	7.87	7.87	7.87	7.87
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0	
0.0	7.87	7.87	7.93	7.98	7.76	7.76	7.71	7.71	7.76	7.76
90.0	8.26	8.09	7.93	7.93	7.93	7.93	7.82	7.82	7.87	7.87
180.0	8.75	8.37	7.98	7.82	7.82	7.82	7.71	7.76	7.71	7.71
270.0	7.87	7.87	7.87	7.87	7.87	7.82	7.82	7.82	7.82	7.82
360.0	7.87	7.87	7.93	7.98	7.76	7.76	7.71	7.71	7.76	7.76
C/γ(°)	90.0									
0.0	7.71									
90.0	7.87									
180.0	7.71									
270.0	7.87									
360.0	7.71									