
NATA

LumCAT: 10067-E

Luminaire:

Report No: NT2016031901

Voltage(V): 56.0000

Test No: GC2016031901

Current(A): 1.6000

LampCAT: CITIZEN CLL05X

Power (W): 89.6000

Lamp flux(lm): 8230.0

PF: 0.0000

Number of Lamps: 1

Ballast type: DC

Length(mm): 270

Width(mm): 270

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 7290.71

Efficiency(%): 88.59%

Lumens(lm)/Power(W): 81.37

Central intensity(cd): 107789.400

Maximum intensity(cd): 107789.400

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=9.6

[C90/270]Total=9.6

Field angle(10%Imax): [C0/180]Total=16.9

[C90/270]Total=16.9

Maximum s/h(1/2): C0_180=0.17 C90_270=0.17

Maximum s/h(1/4): C0_180=0.16 C90_270=0.16

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 88.90%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 98.613%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	107789.422	25.788	25.788	.313%	.354%
1.0	105675.258	202.246	228.034	2.457%	3.128%
2.0	98630.789	377.471	605.505	4.587%	8.305%
3.0	86300.906	495.299	1100.804	6.018%	15.099%
4.0	68126.789	521.140	1621.944	6.332%	22.247%
5.0	49812.277	476.085	2098.028	5.785%	28.777%
6.0	34027.609	390.048	2488.076	4.739%	34.127%
7.0	21617.482	288.903	2776.978	3.510%	38.089%
8.0	12774.736	194.966	2971.944	2.369%	40.763%
9.0	8297.412	142.340	3114.284	1.730%	42.716%
10.0	5690.905	108.369	3222.653	1.317%	44.202%
11.0	4367.487	91.387	3314.039	1.110%	45.456%
12.0	3528.014	80.438	3394.477	.977%	46.559%
13.0	3163.128	78.029	3472.506	.948%	47.629%
14.0	2976.762	78.972	3551.478	.960%	48.712%
15.0	2867.888	81.397	3632.875	.989%	49.829%
16.0	2807.188	84.852	3717.727	1.031%	50.993%
17.0	2776.081	89.006	3806.733	1.081%	52.213%
18.0	2734.927	92.679	3899.412	1.126%	53.485%
19.0	2706.022	96.611	3996.022	1.174%	54.810%
20.0	2671.887	100.212	4096.235	1.218%	56.184%
21.0	2644.634	103.931	4200.166	1.263%	57.610%
22.0	2619.859	107.623	4307.789	1.308%	59.086%
23.0	2594.808	111.182	4418.971	1.351%	60.611%
24.0	2568.381	114.558	4533.529	1.392%	62.182%
25.0	2543.743	117.889	4651.418	1.432%	63.799%
26.0	2519.794	121.132	4772.55	1.472%	65.461%
27.0	2491.853	124.057	4896.607	1.507%	67.162%
28.0	2464.737	126.891	5023.498	1.542%	68.903%
29.0	2438.999	129.669	5153.167	1.576%	70.681%
30.0	2412.571	132.282	5285.449	1.607%	72.496%
31.0	2382.566	134.566	5420.015	1.635%	74.341%
32.0	2354.349	136.815	5556.83	1.662%	76.218%
33.0	2325.582	138.897	5695.727	1.688%	78.123%
34.0	2297.641	140.895	5836.622	1.712%	80.056%
35.0	2264.057	142.407	5979.028	1.730%	82.009%
36.0	2232.950	143.929	6122.958	1.749%	83.983%
37.0	2203.632	145.430	6268.388	1.767%	85.978%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	2170.736	146.555	6414.943	1.781%	87.988%
39.0	2131.509	147.099	6562.042	1.787%	90.006%
40.0	2065.303	145.580	6707.622	1.769%	92.002%
41.0	1876.184	134.980	6842.603	1.640%	93.854%
42.0	1549.287	113.683	6956.285	1.381%	95.413%
43.0	1208.887	90.411	7046.696	1.099%	96.653%
44.0	867.180	66.059	7112.755	.803%	97.559%
45.0	502.706	38.981	7151.736	.474%	98.094%
46.0	223.846	17.658	7169.394	.215%	98.336%
47.0	135.521	10.869	7180.263	.132%	98.485%
48.0	48.009	3.912	7184.175	.048%	98.539%
49.0	39.352	3.257	7187.432	.040%	98.583%
50.0	30.584	2.569	7190.001	.031%	98.619%
51.0	29.634	2.525	7192.527	.031%	98.653%
52.0	29.028	2.508	7195.035	.030%	98.688%
53.0	28.505	2.496	7197.532	.030%	98.722%
54.0	27.927	2.478	7200.009	.030%	98.756%
55.0	27.528	2.473	7202.482	.030%	98.790%
56.0	27.129	2.466	7204.948	.030%	98.824%
57.0	26.744	2.460	7207.408	.030%	98.857%
58.0	26.386	2.454	7209.862	.030%	98.891%
59.0	26.083	2.452	7212.314	.030%	98.925%
60.0	25.808	2.451	7214.765	.030%	98.958%
61.0	25.574	2.453	7217.217	.030%	98.992%
62.0	25.353	2.455	7219.672	.030%	99.026%
63.0	25.188	2.461	7222.133	.030%	99.059%
64.0	25.051	2.469	7224.602	.030%	99.093%
65.0	24.941	2.479	7227.081	.030%	99.127%
66.0	24.858	2.490	7229.571	.030%	99.161%
67.0	24.789	2.502	7232.074	.030%	99.196%
68.0	24.748	2.516	7234.59	.031%	99.230%
69.0	24.707	2.529	7237.119	.031%	99.265%
70.0	24.707	2.546	7239.665	.031%	99.300%
71.0	24.830	2.575	7242.24	.031%	99.335%
72.0	24.817	2.588	7244.828	.031%	99.371%
73.0	24.748	2.595	7247.423	.032%	99.406%
74.0	24.762	2.610	7250.034	.032%	99.442%
75.0	24.734	2.620	7252.654	.032%	99.478%

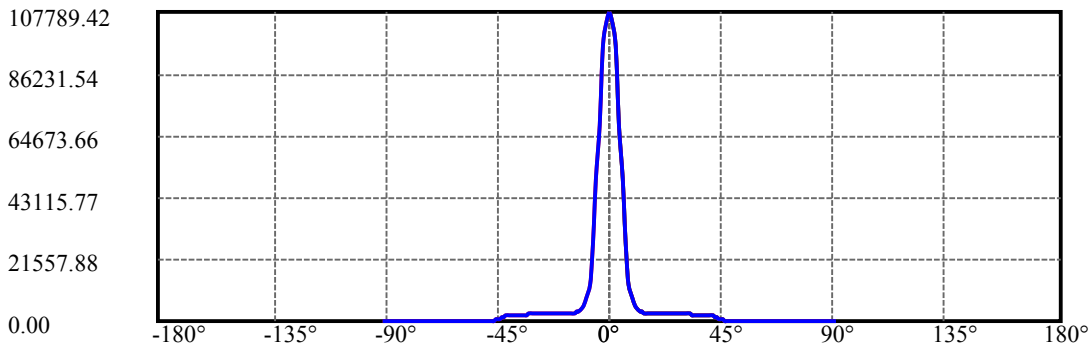
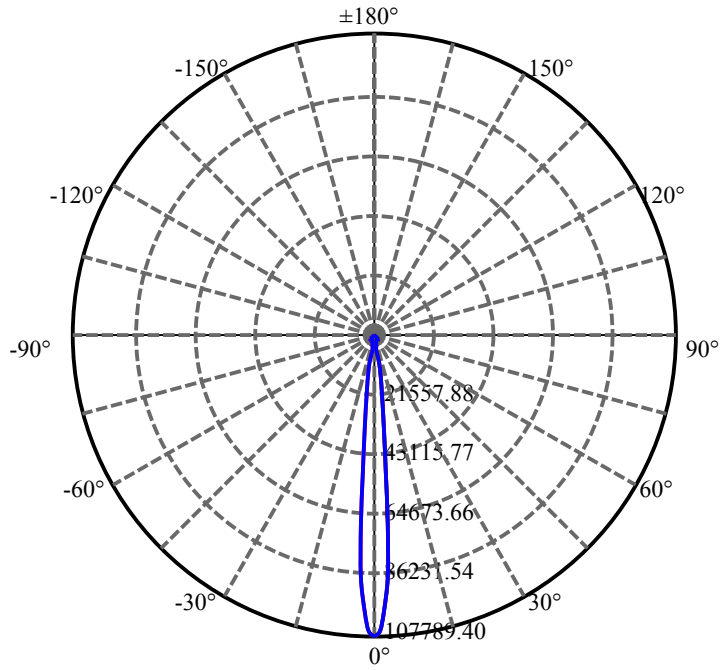
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	24.596	2.617	7255.271	.032%	99.514%
77.0	24.404	2.608	7257.878	.032%	99.550%
78.0	24.280	2.604	7260.483	.032%	99.585%
79.0	24.239	2.609	7263.092	.032%	99.621%
80.0	24.211	2.615	7265.706	.032%	99.657%
81.0	24.197	2.621	7268.327	.032%	99.693%
82.0	24.184	2.626	7270.953	.032%	99.729%
83.0	24.142	2.628	7273.581	.032%	99.765%
84.0	24.115	2.630	7276.211	.032%	99.801%
85.0	24.087	2.631	7278.842	.032%	99.837%
86.0	24.046	2.630	7281.473	.032%	99.873%
87.0	23.991	2.627	7284.1	.032%	99.909%
88.0	23.977	2.628	7286.728	.032%	99.945%
89.0	24.087	2.641	7289.369	.032%	99.982%
90.0	24.473	1.342	7290.711	.016%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	5285.45	64.22%	72.50%
0-40	6707.62	81.50%	92.00%
0-60	7214.76	87.66%	98.96%
0-90	7289.37	88.57%	99.98%
0-120	7289.37	88.57%	99.98%
0-180	7290.71	88.59%	100.00%
60-90	77.06	0.94%	1.06%
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%
0-33.97	5832.57	70.87%	80.00%

ZONAL LUMEN SUMMARY

0-10	3222.65
10-20	873.58
20-30	1189.21
30-40	1422.17
40-50	482.38
50-60	24.76
60-70	24.90
70-80	26.04
80-90	23.66
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: —————

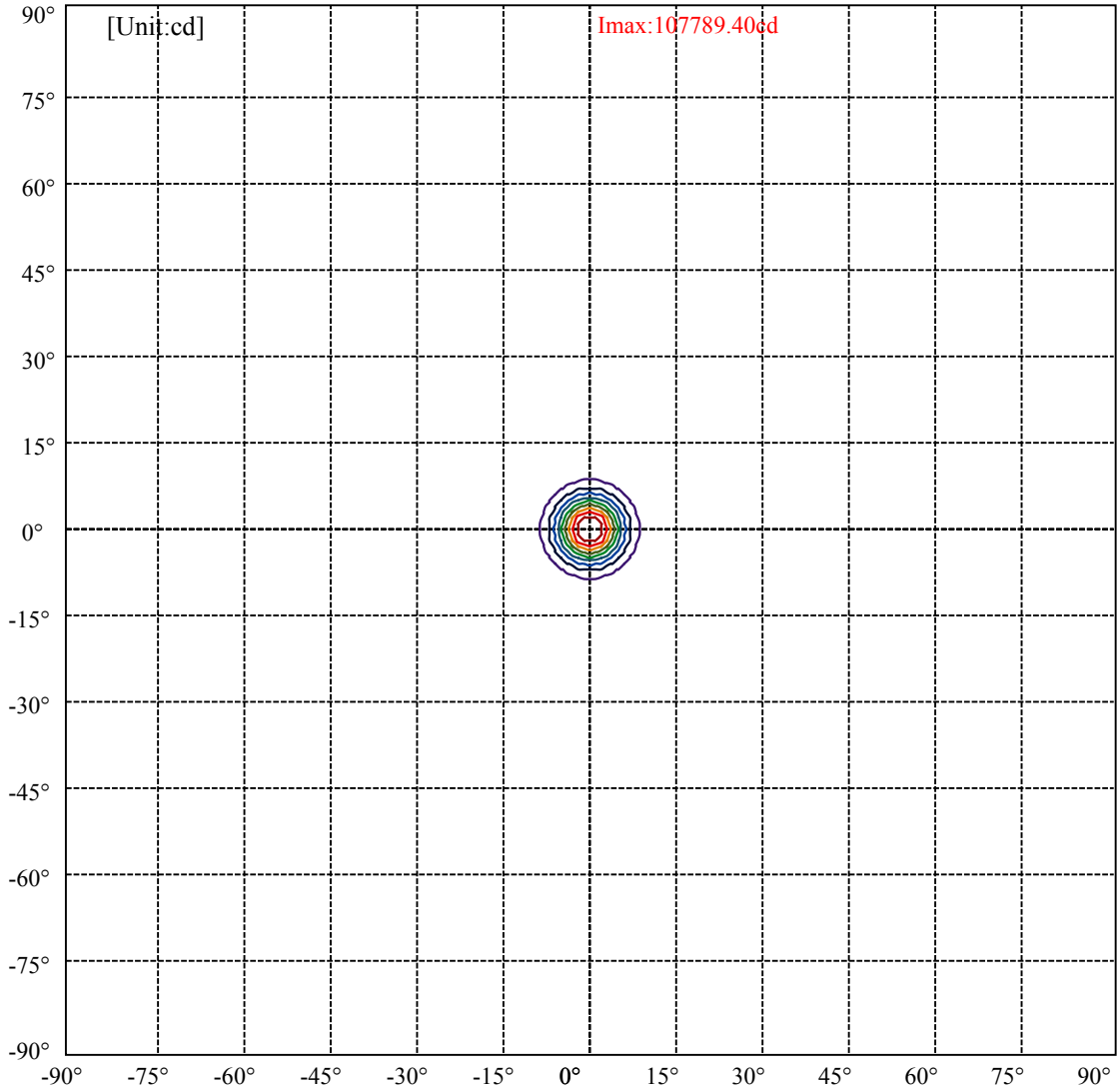
C90/C270: —————

Field angle(10%Imax):C0/180Left:8.4 Right:8.4

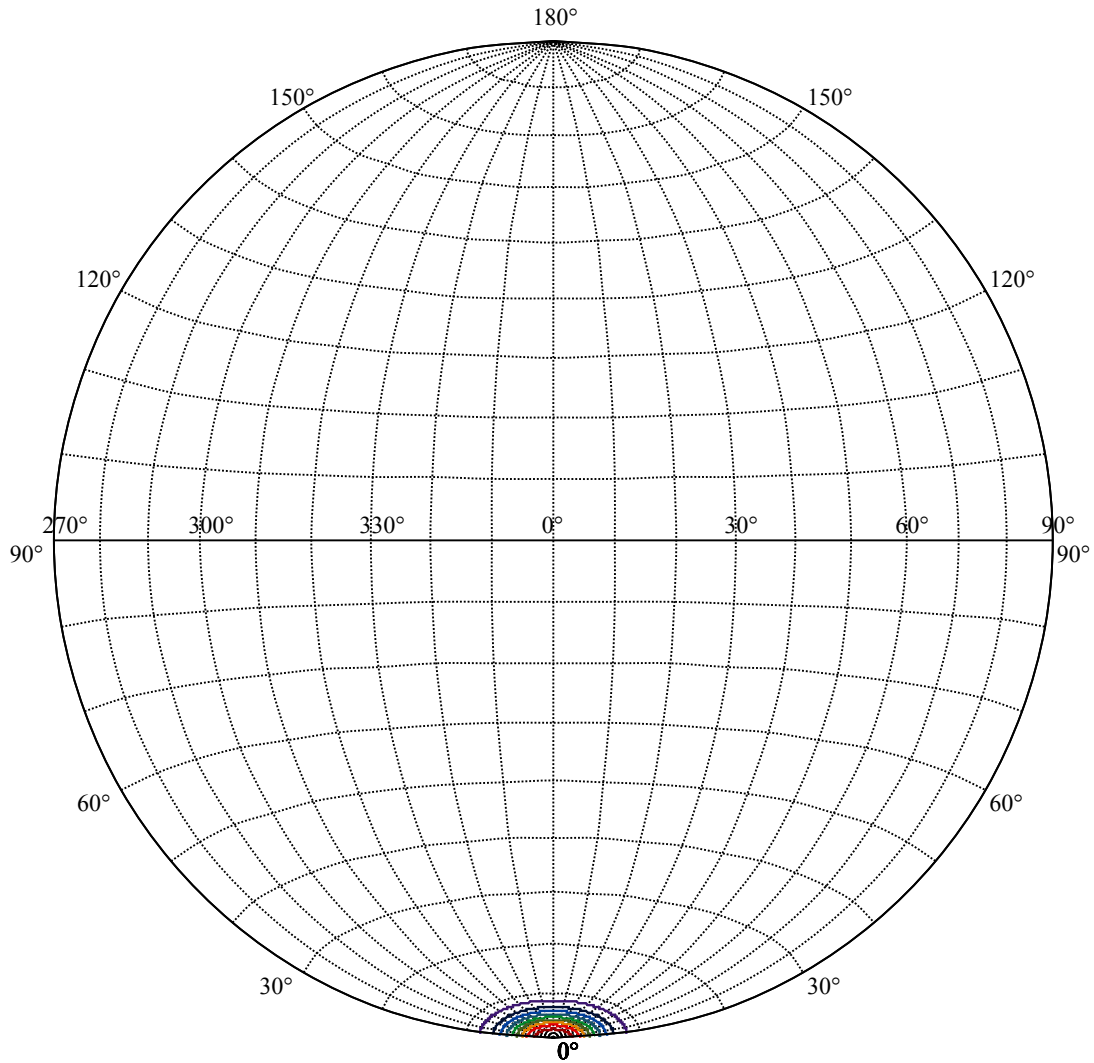
:C90/270Left:8.4 Right:8.4

Beam Angle(50%Imax):C0/180Left:4.8 Right:4.8

:C90/270Left:4.8 Right:4.8



(10%I _{max}) 10778.9	—
(20%I _{max}) 21557.9	—
(30%I _{max}) 32336.8	—
(40%I _{max}) 43115.8	—
(50%I _{max}) 53894.7	—
(60%I _{max}) 64673.7	—
(70%I _{max}) 75452.6	—
(80%I _{max}) 86231.5	—
(90%I _{max}) 97010.5	—



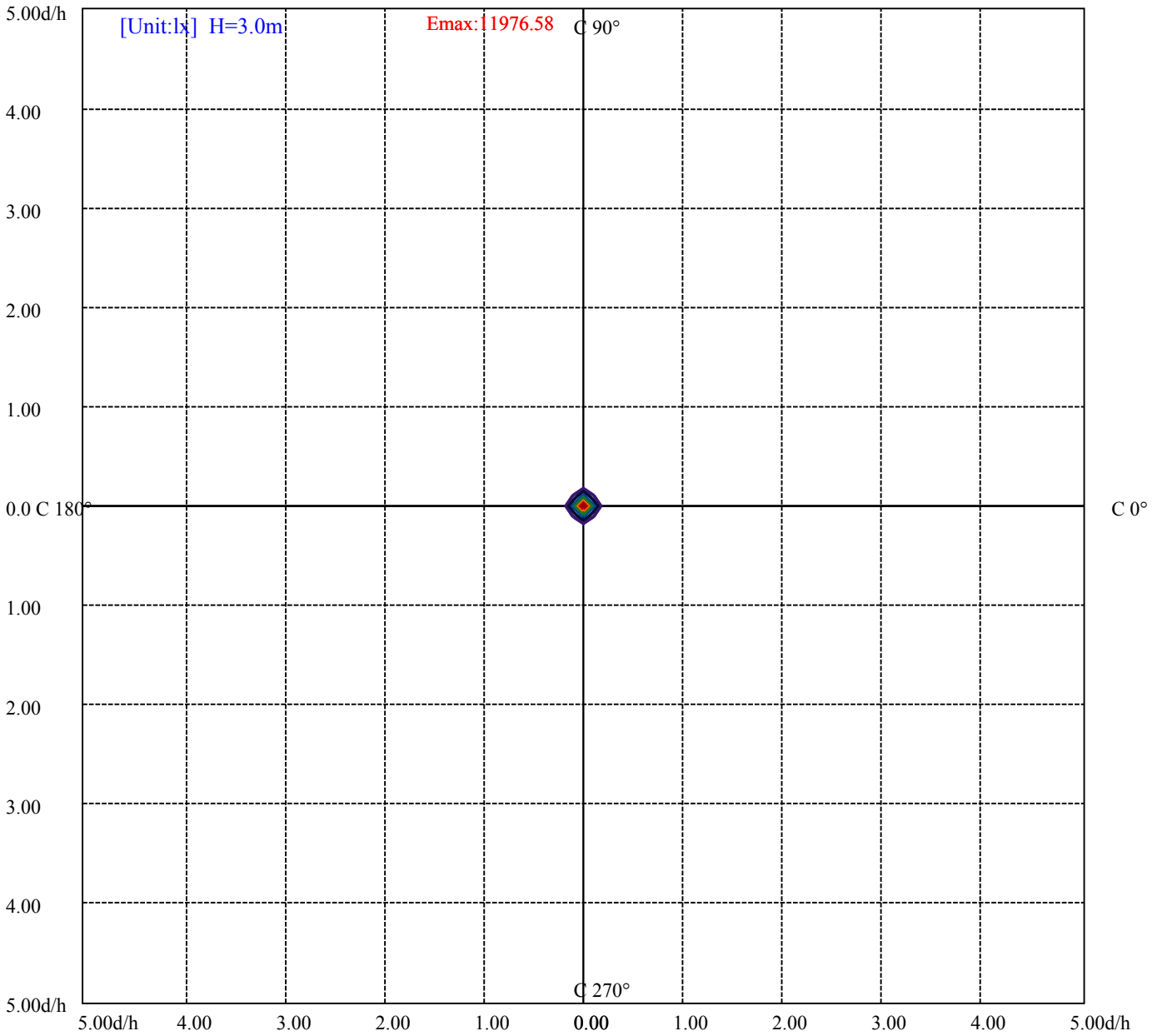
House

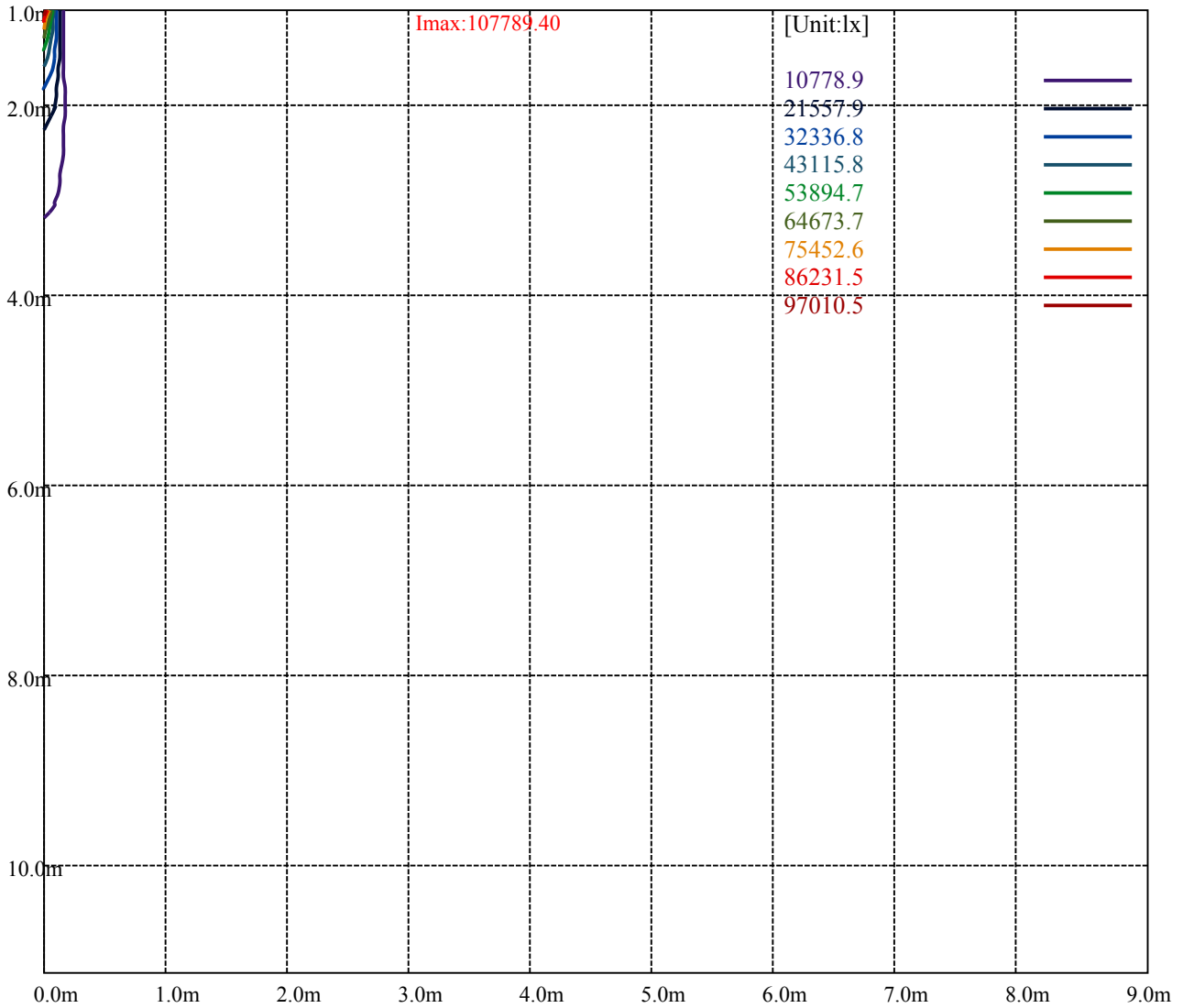
[Unit:cd]

Road

Imax:107789.40

(10%Imax)	10778.9	—
(20%Imax)	21557.9	—
(30%Imax)	32336.8	—
(40%Imax)	43115.8	—
(50%Imax)	53894.7	—
(60%Imax)	64673.7	—
(70%Imax)	75452.6	—
(80%Imax)	86231.5	—
(90%Imax)	97010.5	—





Luminance Table

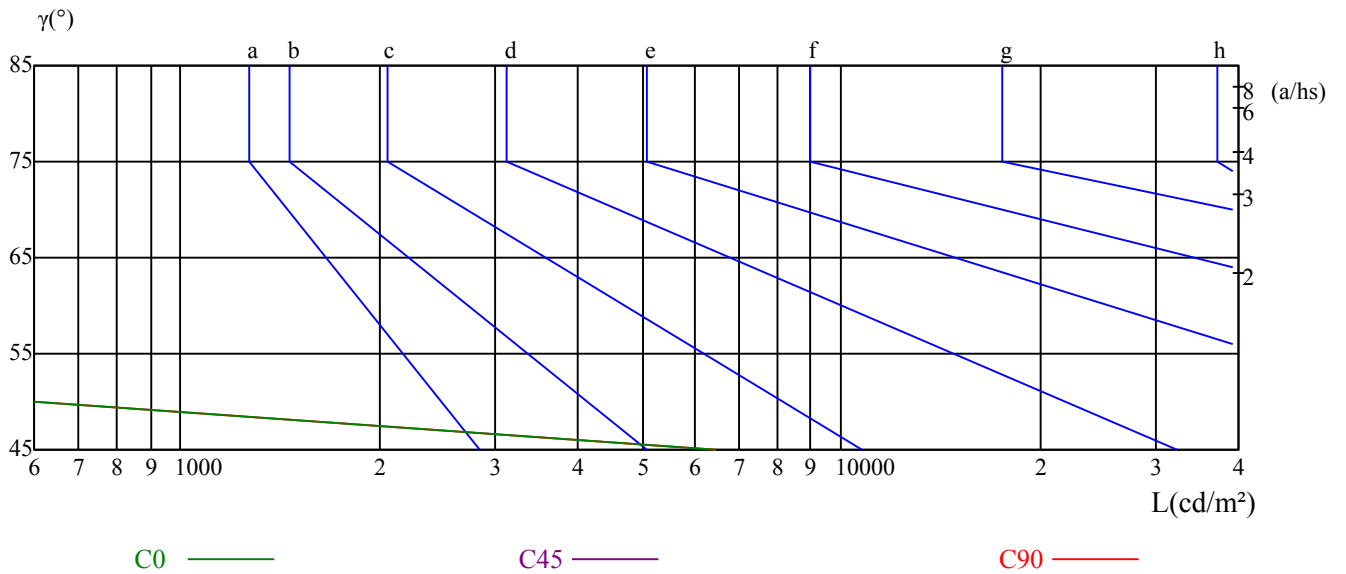
γ	45	50	55	60	65	70	75	80	85
C0	6485	408	383	378	389	416	455	496	561
C45	0	0	0	0	0	0	0	0	0
C90	6485	408	383	378	389	416	455	496	561

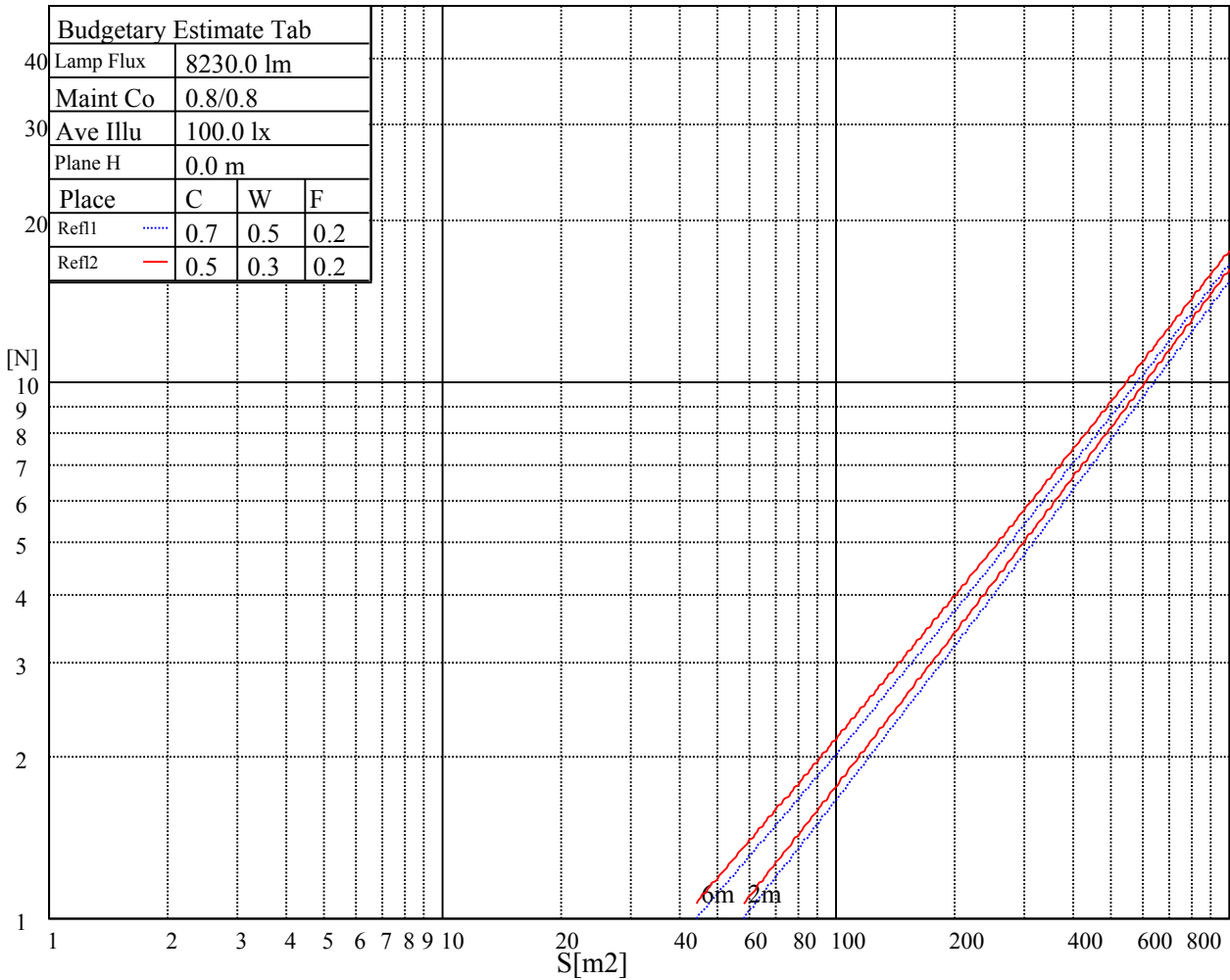
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
810	810	0	1311	1311	0	3791	3791	0

Glare Table

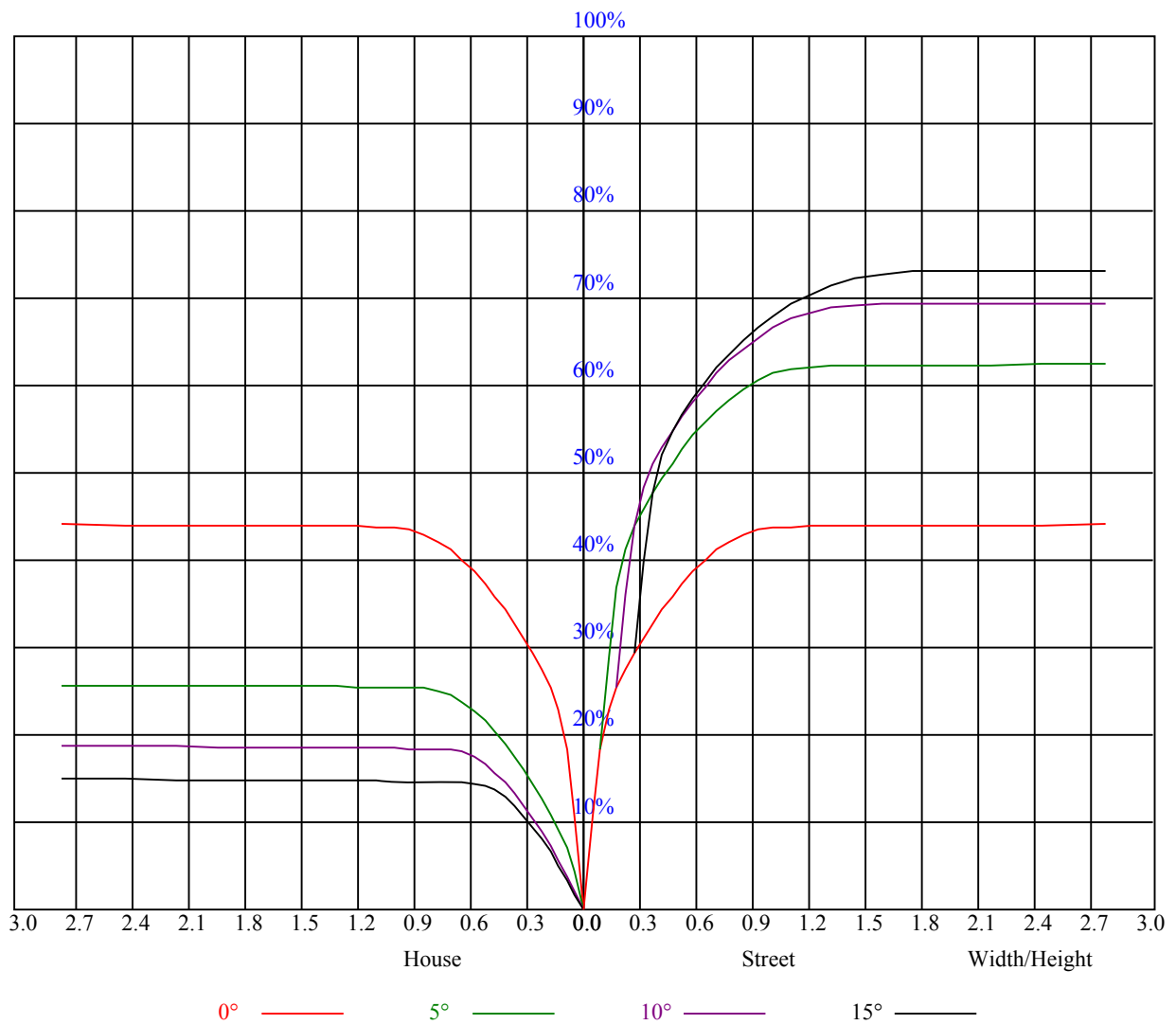
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	<=300				
1.5	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.2	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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 RHOF=20 CU															
0	1.06	1.06	1.06	1.03	1.03	1.03	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	0.99	0.97	0.95	0.97	0.95	0.94	0.94	0.92	0.91	0.90	0.89	0.88	0.87	0.86	0.85	0.84
2	0.93	0.90	0.88	0.92	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.83	0.84	0.83	0.81	0.80
3	0.88	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.83	0.80	0.78	0.81	0.79	0.77	0.76
4	0.84	0.80	0.77	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.75	0.78	0.76	0.74	0.73
5	0.80	0.76	0.73	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.73	0.71	0.75	0.73	0.71	0.69
6	0.77	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.67
7	0.74	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.64
8	0.71	0.67	0.64	0.71	0.66	0.64	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.62
9	0.69	0.64	0.61	0.68	0.64	0.61	0.67	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.61	0.60
10	0.66	0.62	0.60	0.66	0.62	0.59	0.65	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.58



NATA 10067-E

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	105983.57	107838.97	104194.24	97130.50	78273.68	59961.93	42988.04	27836.52	17006.92
90.0	109595.27	108901.56	102515.02	91834.08	72894.67	55992.36	40576.57	28574.27	15173.54
180.0	105983.57	99954.89	89923.62	72569.84	54626.96	36370.26	22242.79	10905.02	8329.48
270.0	109595.27	106005.59	97890.28	83669.21	66711.84	46924.57	30303.04	19154.12	10589.00
360.0	105983.57	107838.97	104194.24	97130.50	78273.68	59961.93	42988.04	27836.52	17006.92
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	11159.93	7179.35	5191.82	3886.98	3341.92	3044.62	2868.44	2796.87	2780.35
90.0	9722.96	6259.91	4679.79	3760.35	3292.37	3072.15	2951.02	2873.94	2835.40
180.0	5282.11	4205.76	3497.73	3041.87	2877.25	2796.31	2744.56	2703.27	2672.44
270.0	7024.65	5118.59	4100.60	3422.86	3140.97	2993.97	2907.53	2854.67	2816.13
360.0	11159.93	7179.35	5191.82	3886.98	3341.92	3044.62	2868.44	2796.87	2780.35
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	2714.83	2675.74	2646.56	2617.93	2593.16	2566.73	2540.85	2517.18	2492.40
90.0	2802.37	2780.35	2729.70	2703.27	2674.64	2647.11	2626.19	2597.01	2571.68
180.0	2641.06	2615.18	2588.20	2563.43	2540.85	2519.38	2491.85	2469.83	2447.81
270.0	2781.45	2752.82	2723.09	2693.91	2670.79	2646.01	2614.63	2590.95	2567.28
360.0	2714.83	2675.74	2646.56	2617.93	2593.16	2566.73	2540.85	2517.18	2492.40
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	2461.57	2437.35	2412.57	2384.49	2355.31	2329.44	2298.60	2271.63	2240.24
90.0	2544.71	2514.98	2489.65	2464.32	2429.09	2404.86	2374.58	2344.30	2312.37
180.0	2422.48	2396.61	2372.38	2345.95	2320.63	2288.69	2263.37	2237.49	2203.91
270.0	2538.65	2510.02	2481.39	2455.52	2425.23	2394.40	2365.77	2337.14	2299.71
360.0	2461.57	2437.35	2412.57	2384.49	2355.31	2329.44	2298.60	2271.63	2240.24
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	2207.21	2178.03	2147.75	2108.66	2074.53	2029.93	1772.82	1442.48	1144.07
90.0	2279.89	2251.26	2218.22	2184.09	2148.30	2087.74	1768.96	1443.03	1076.35
180.0	2175.83	2146.10	2112.51	2066.27	1917.61	1527.82	1078.00	890.26	522.04
270.0	2268.87	2239.14	2204.46	2167.02	2120.77	1859.25	1577.37	1059.78	726.25
360.0	2207.21	2178.03	2147.75	2108.66	2074.53	2029.93	1772.82	1442.48	1144.07
C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	743.81	394.75	289.60	56.32	46.63	32.04	30.39	29.73	29.12
90.0	662.88	309.42	157.02	54.07	44.93	30.39	29.46	28.85	28.41
180.0	210.65	56.76	45.48	38.59	29.95	29.12	28.63	28.13	27.64
270.0	393.49	134.45	49.99	43.05	35.90	30.78	30.06	29.40	28.85
360.0	743.81	394.75	289.60	56.32	46.63	32.04	30.39	29.73	29.12
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	28.35	27.80	27.36	26.87	26.43	26.04	25.66	25.33	25.05
90.0	27.86	27.53	27.20	26.81	26.54	26.32	26.10	25.88	25.77
180.0	27.20	26.87	26.48	26.15	25.82	25.55	25.27	25.11	24.83
270.0	28.30	27.91	27.47	27.14	26.76	26.43	26.21	25.99	25.77
360.0	28.35	27.80	27.36	26.87	26.43	26.04	25.66	25.33	25.05
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	24.83	24.61	24.45	24.33	24.22	24.17	24.11	24.06	24.39
90.0	25.60	25.49	25.38	25.33	25.27	25.22	25.22	25.22	25.27
180.0	24.67	24.56	24.50	24.39	24.33	24.28	24.22	24.17	24.11
270.0	25.66	25.55	25.44	25.38	25.33	25.33	25.27	25.38	25.55
360.0	24.83	24.61	24.45	24.33	24.22	24.17	24.11	24.06	24.39

NATA 10067-E

Appendix Page: 17 Total:17

Intensity data(cd)

C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	24.39	24.22	24.22	24.33	24.22	23.95	23.62	23.56	23.51
90.0	25.27	25.27	25.22	25.05	24.83	24.67	24.56	24.50	24.45
180.0	24.11	24.11	24.11	24.06	24.00	24.00	24.00	24.00	24.00
270.0	25.49	25.38	25.49	25.49	25.33	25.00	24.94	24.89	24.89
360.0	24.39	24.22	24.22	24.33	24.22	23.95	23.62	23.56	23.51
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	23.51	23.45	23.40	23.40	23.40	23.34	23.29	23.23	23.23
90.0	24.39	24.39	24.39	24.28	24.22	24.17	24.06	24.06	24.45
180.0	24.00	24.00	23.95	23.95	23.89	23.84	23.84	23.84	23.95
270.0	24.89	24.89	24.83	24.83	24.83	24.83	24.78	24.78	24.72
360.0	23.51	23.45	23.40	23.40	23.40	23.34	23.29	23.23	23.23
C/γ(°)	90.0								
0.0	23.23								
90.0	25.22								
180.0	24.61								
270.0	24.83								
360.0	23.23								