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Nata

LumCAT: 1709-M	
Luminaire: 92.70.124.00	
Report No: NT2017091501	Voltage(V): 35.4000
Test No: GC2017081501	Current(A): 0.3000
LampCAT: CITIZEN CLU026	Power (W): 10.6200
Lamp flux(lm): 1398.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 46	Width(mm): 46
Phm Type: C	Height(mm): 00

Photometric Results

Lumens(lm): 1273.39
Efficiency(%): 91.09%
Lumens(lm)/Power(W): 119.90
Central intensity(cd): 4942.140
Maximum intensity(cd): 4942.140
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=17.7
[C90/270]Total=17.7
Field angle(10%Imax): [C0/180]Total=56.2
[C90/270]Total=56.2
Maximum s/h(1/2): C0_180=0.30 C90_270=0.30
Maximum s/h(1/4): C0_180=0.32 C90_270=0.32
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.09%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.756%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4942.140	0.000	0	.000%	.000%
1.0	4910.558	4.714	4.714	.337%	.370%
2.0	4816.229	13.961	18.675	.999%	1.467%
3.0	4624.718	22.580	41.255	1.615%	3.240%
4.0	4366.285	30.096	71.351	2.153%	5.603%
5.0	4030.150	36.121	107.472	2.584%	8.440%
6.0	3631.197	40.262	147.734	2.880%	11.602%
7.0	3191.550	42.349	190.083	3.029%	14.927%
8.0	2817.919	43.009	233.091	3.076%	18.305%
9.0	2415.419	42.413	275.505	3.034%	21.636%
10.0	2055.840	40.463	315.968	2.894%	24.813%
11.0	1777.443	38.302	354.27	2.740%	27.821%
12.0	1507.998	35.915	390.185	2.569%	30.642%
13.0	1279.396	33.079	423.264	2.366%	33.239%
14.0	1133.185	30.881	454.145	2.209%	35.664%
15.0	1020.609	29.568	483.713	2.115%	37.986%
16.0	921.855	28.463	512.176	2.036%	40.222%
17.0	847.476	27.553	539.729	1.971%	42.385%
18.0	780.333	26.839	566.568	1.920%	44.493%
19.0	731.728	26.307	592.875	1.882%	46.559%
20.0	689.252	26.008	618.883	1.860%	48.601%
21.0	652.334	25.761	644.644	1.843%	50.624%
22.0	622.874	25.626	670.27	1.833%	52.637%
23.0	594.589	25.546	695.815	1.827%	54.643%
24.0	569.003	25.440	721.256	1.820%	56.641%
25.0	545.427	25.340	746.595	1.813%	58.631%
26.0	526.694	25.308	771.903	1.810%	60.618%
27.0	508.711	25.331	797.234	1.812%	62.607%
28.0	495.536	25.425	822.66	1.819%	64.604%
29.0	484.023	25.628	848.288	1.833%	66.617%
30.0	473.679	25.858	874.145	1.850%	68.647%
31.0	464.705	26.114	900.259	1.868%	70.698%
32.0	456.413	26.389	926.648	1.888%	72.770%
33.0	447.738	26.637	953.285	1.905%	74.862%
34.0	439.933	26.864	980.148	1.922%	76.972%
35.0	431.731	27.071	1007.219	1.936%	79.098%
36.0	422.806	27.209	1034.428	1.946%	81.234%
37.0	412.079	27.229	1061.657	1.948%	83.373%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	393.812	26.900	1088.557	1.924%	85.485%
39.0	366.473	25.951	1114.507	1.856%	87.523%
40.0	334.084	24.433	1138.94	1.748%	89.442%
41.0	297.826	22.502	1161.442	1.610%	91.209%
42.0	258.912	20.227	1181.669	1.447%	92.797%
43.0	213.813	17.511	1199.18	1.253%	94.173%
44.0	173.341	14.612	1213.793	1.045%	95.320%
45.0	132.889	11.769	1225.562	.842%	96.244%
46.0	97.091	8.994	1234.556	.643%	96.951%
47.0	64.646	6.433	1240.988	.460%	97.456%
48.0	42.393	4.327	1245.315	.310%	97.796%
49.0	25.822	2.801	1248.117	.200%	98.016%
50.0	17.969	1.826	1249.942	.131%	98.159%
51.0	14.059	1.355	1251.297	.097%	98.265%
52.0	11.304	1.088	1252.386	.078%	98.351%
53.0	9.036	0.885	1253.271	.063%	98.420%
54.0	7.819	0.743	1254.014	.053%	98.479%
55.0	6.991	0.661	1254.675	.047%	98.531%
56.0	6.532	0.611	1255.286	.044%	98.579%
57.0	6.177	0.581	1255.867	.042%	98.624%
58.0	6.017	0.564	1256.431	.040%	98.668%
59.0	5.941	0.559	1256.99	.040%	98.712%
60.0	5.843	0.557	1257.547	.040%	98.756%
61.0	5.739	0.553	1258.099	.040%	98.800%
62.0	5.628	0.548	1258.647	.039%	98.843%
63.0	5.558	0.544	1259.191	.039%	98.885%
64.0	5.440	0.540	1259.731	.039%	98.928%
65.0	5.343	0.534	1260.264	.038%	98.970%
66.0	5.259	0.529	1260.793	.038%	99.011%
67.0	5.217	0.527	1261.32	.038%	99.052%
68.0	5.162	0.526	1261.846	.038%	99.094%
69.0	5.113	0.524	1262.37	.037%	99.135%
70.0	5.078	0.523	1262.893	.037%	99.176%
71.0	5.036	0.523	1263.416	.037%	99.217%
72.0	5.009	0.522	1263.938	.037%	99.258%
73.0	4.995	0.523	1264.462	.037%	99.299%
74.0	4.960	0.523	1264.985	.037%	99.340%
75.0	4.925	0.522	1265.507	.037%	99.381%

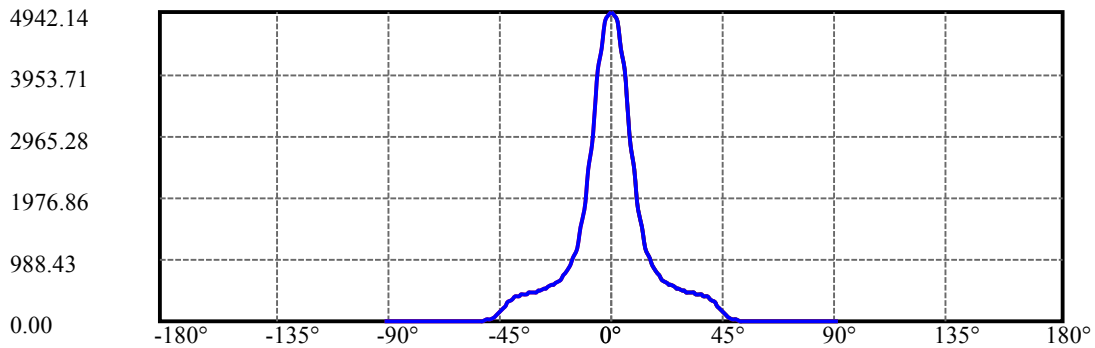
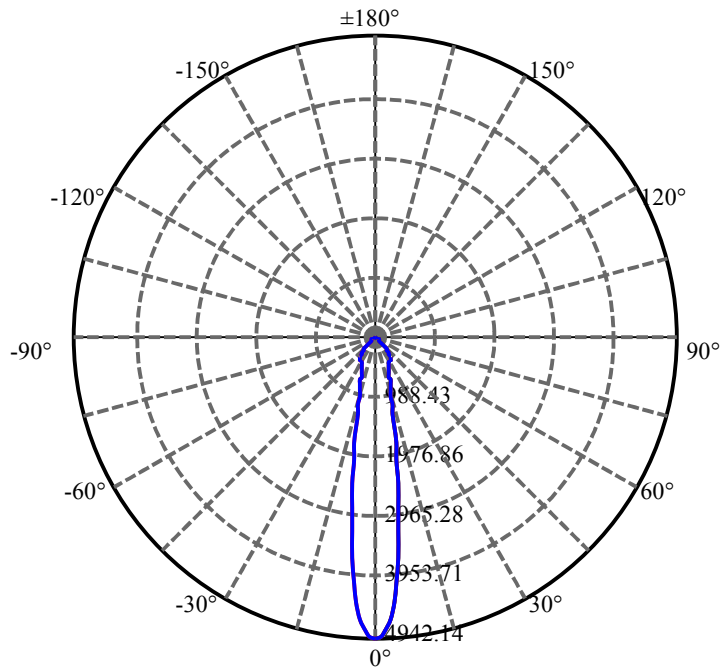
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	4.918	0.523	1266.03	.037%	99.422%
77.0	4.911	0.524	1266.554	.037%	99.463%
78.0	4.918	0.526	1267.08	.038%	99.505%
79.0	4.904	0.528	1267.608	.038%	99.546%
80.0	4.870	0.527	1268.135	.038%	99.588%
81.0	4.835	0.525	1268.659	.038%	99.629%
82.0	4.870	0.526	1269.186	.038%	99.670%
83.0	4.828	0.527	1269.713	.038%	99.712%
84.0	4.849	0.527	1270.24	.038%	99.753%
85.0	4.835	0.528	1270.769	.038%	99.794%
86.0	4.814	0.527	1271.296	.038%	99.836%
87.0	4.779	0.525	1271.821	.038%	99.877%
88.0	4.758	0.522	1272.343	.037%	99.918%
89.0	4.758	0.522	1272.865	.037%	99.959%
90.0	4.744	0.521	1273.386	.037%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	874.15	62.53%	68.65%
0-40	1138.94	81.47%	89.44%
0-60	1257.55	89.95%	98.76%
0-90	1272.86	91.05%	99.96%
0-120	1272.86	91.05%	99.96%
0-180	1273.39	91.09%	100.00%
60-90	15.88	1.14%	1.25%
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%
0-35.42	1018.71	72.87%	80.00%

ZONAL LUMEN SUMMARY

0-10	315.97
10-20	302.91
20-30	255.26
30-40	264.79
40-50	111.00
50-60	7.60
60-70	5.35
70-80	5.24
80-90	4.73
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:

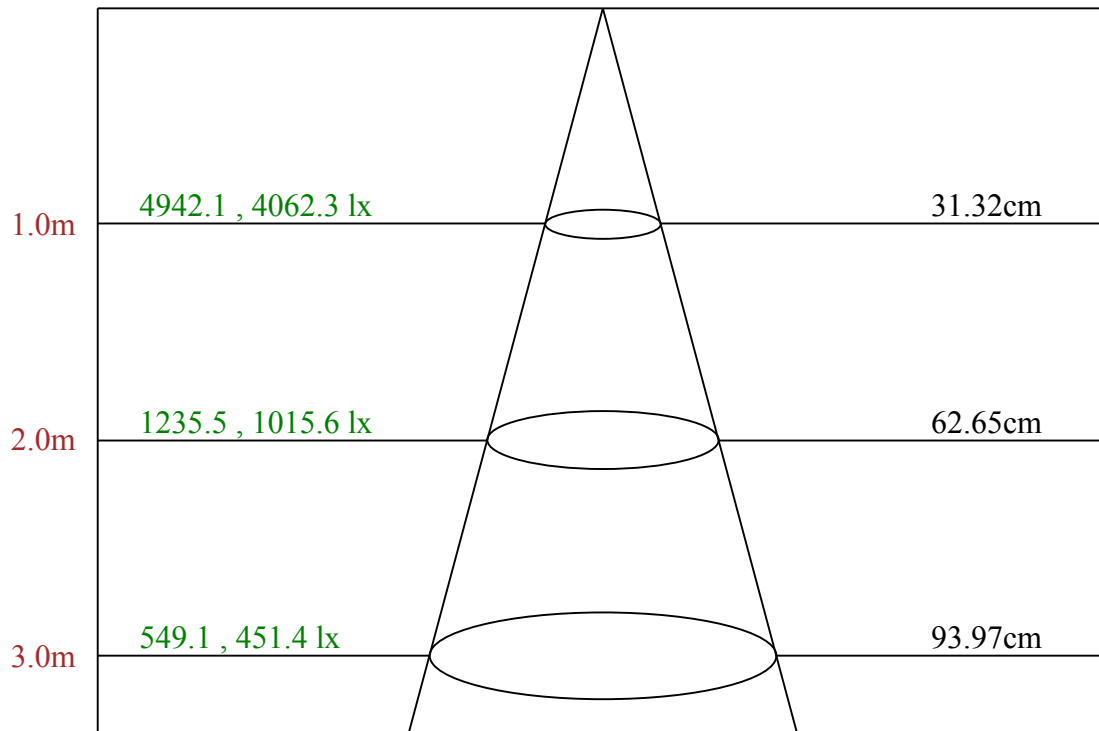
C90/C270:

Field angle(10%Imax):C0/180Left:28.1 Right:28.1

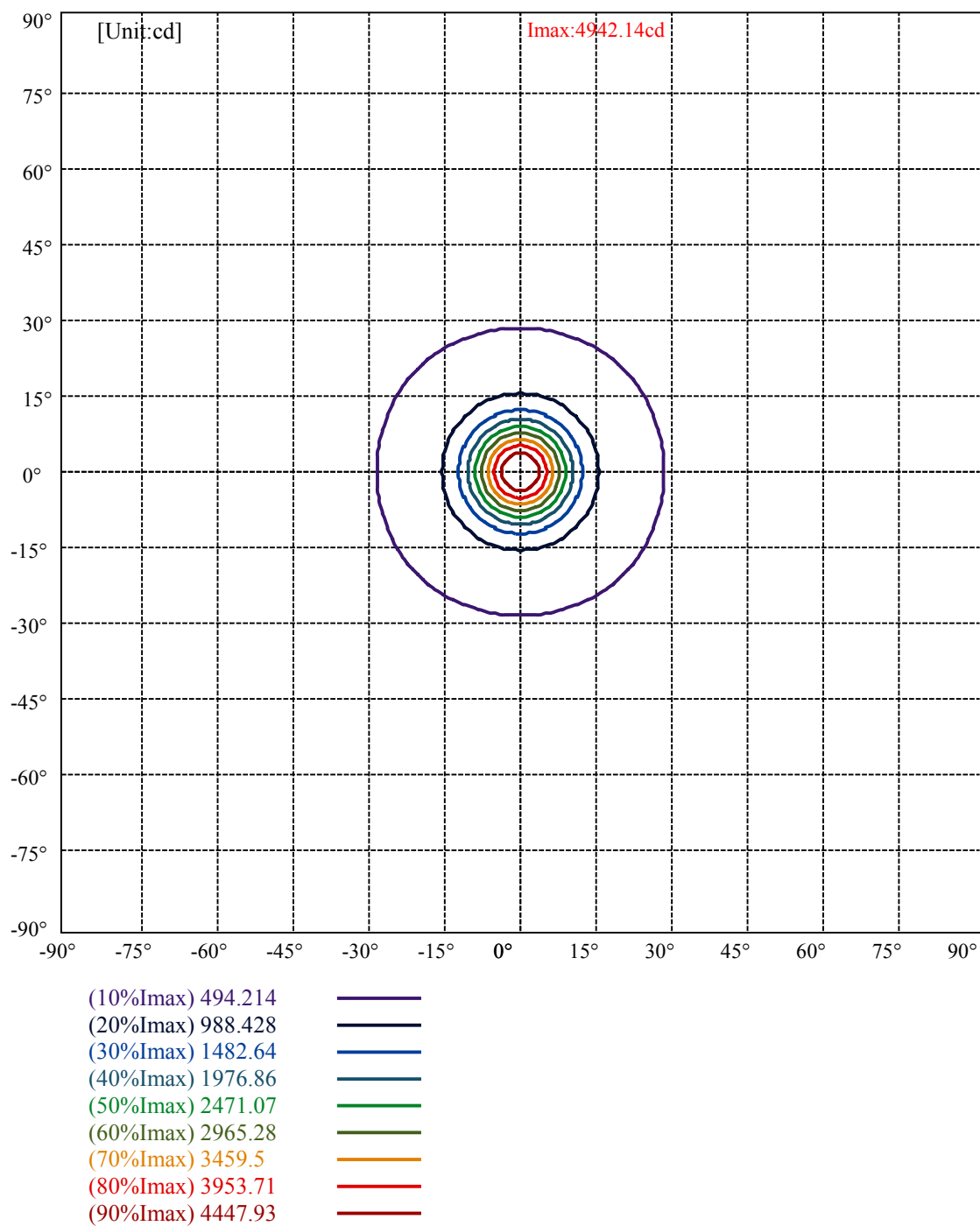
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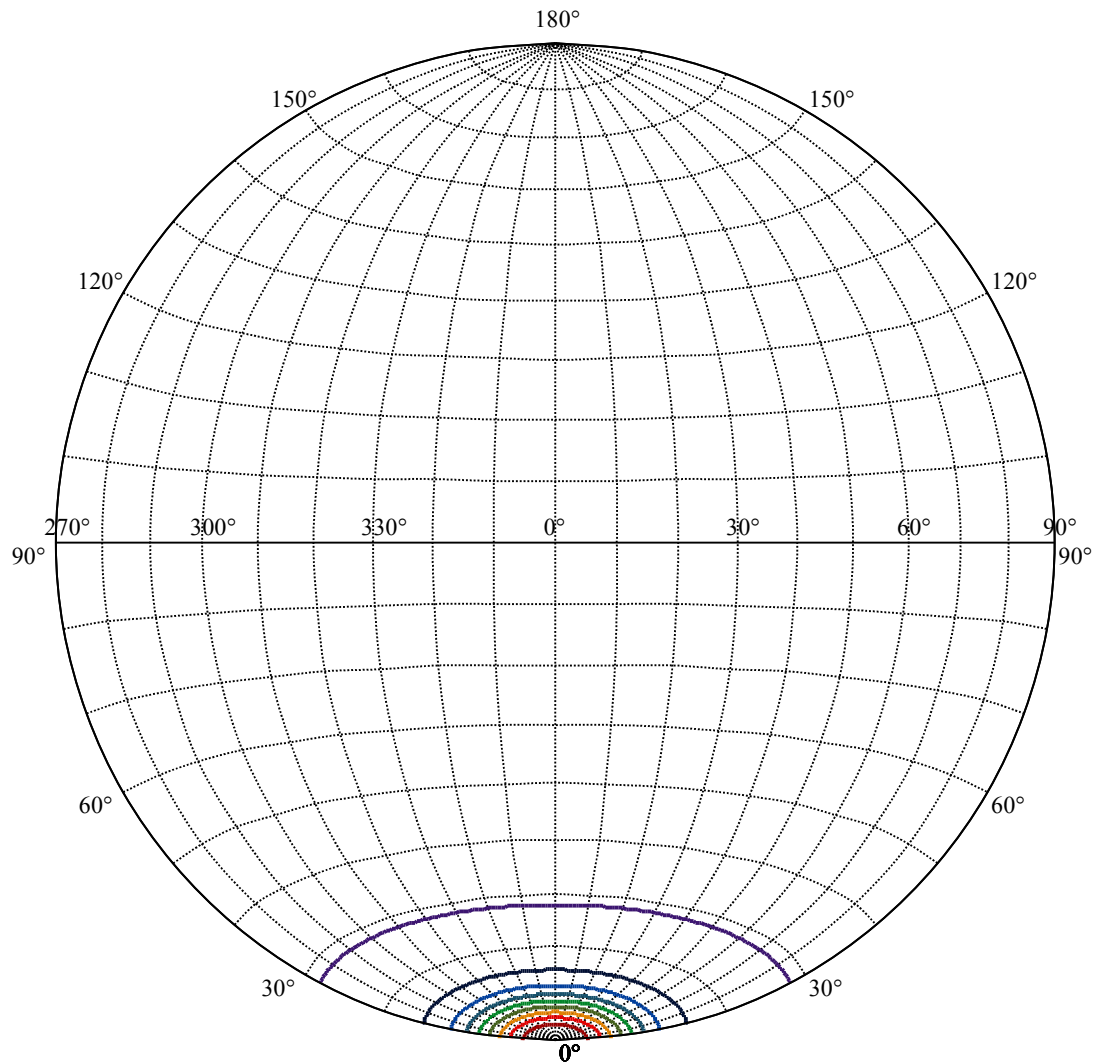
Beam Angle(50%Imax):C0/180Left:8.9 Right:8.9

:C90/270Left:8.9 Right:8.9



Max , Ave Beam angle of C0 plane 17.80





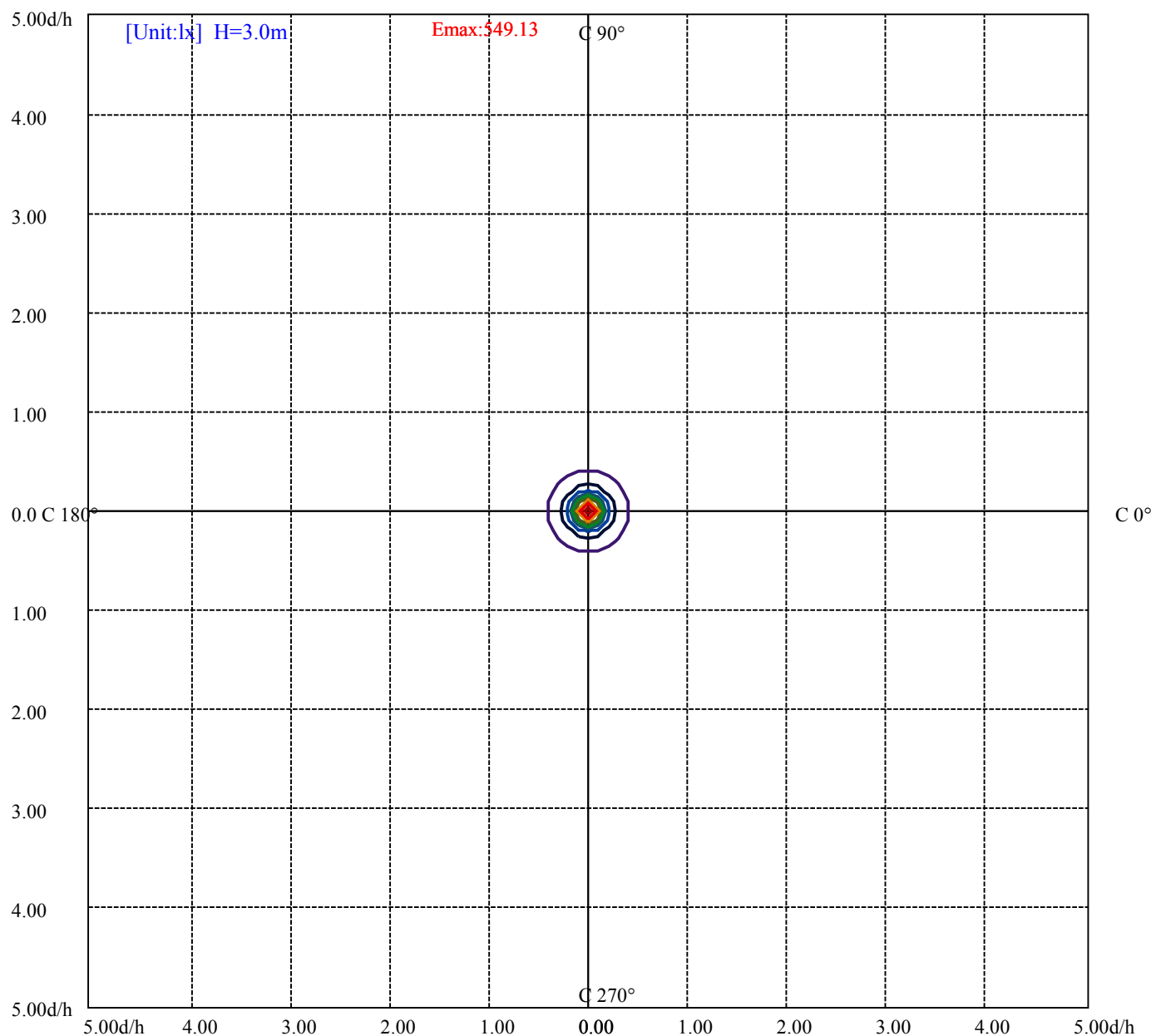
House

[Unit:cd]

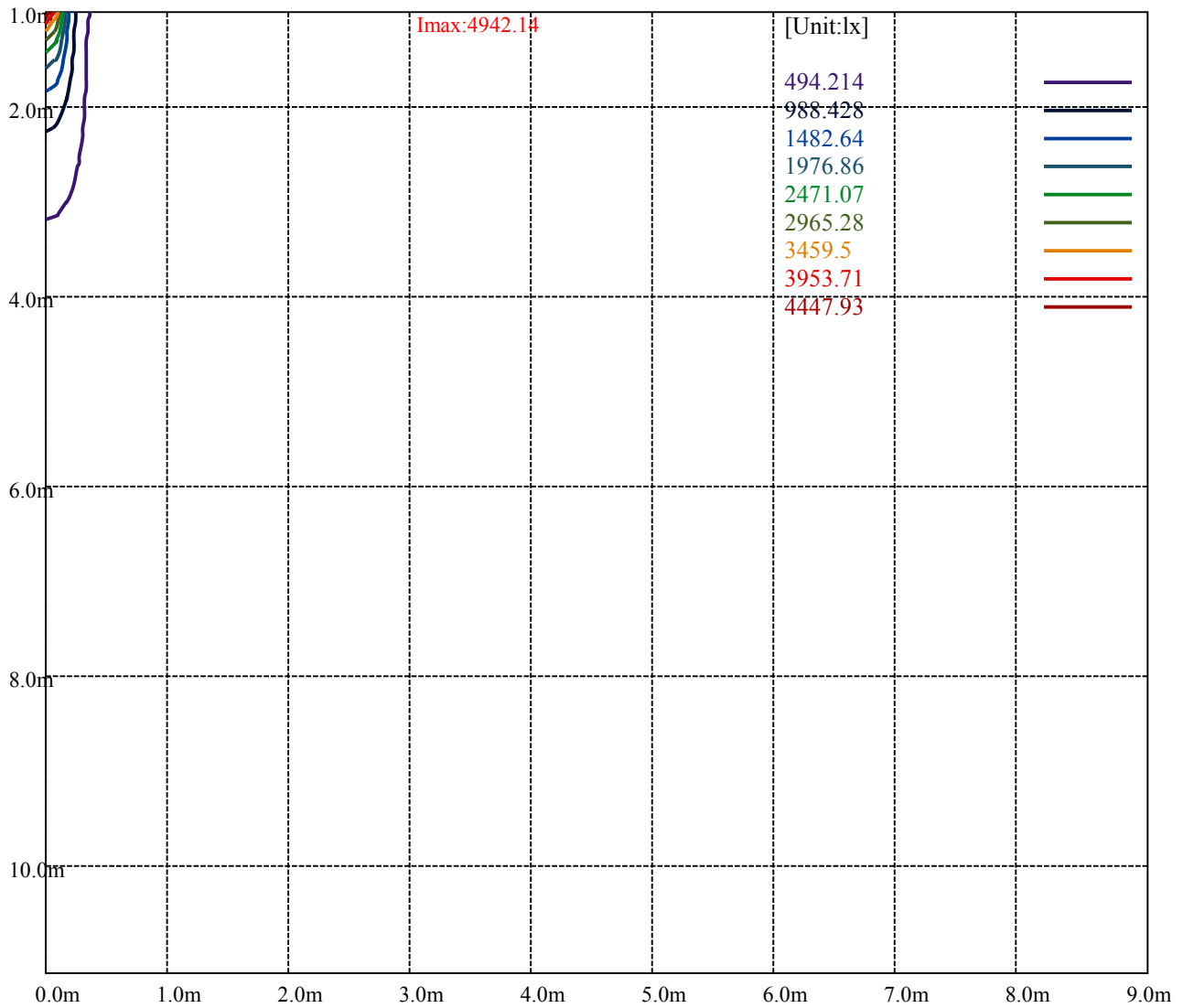
Road

Imax:4942.14

(10%Imax)	494.214	—
(20%Imax)	988.428	—
(30%Imax)	1482.64	—
(40%Imax)	1976.86	—
(50%Imax)	2471.07	—
(60%Imax)	2965.28	—
(70%Imax)	3459.5	—
(80%Imax)	3953.71	—
(90%Imax)	4447.93	—



(10%Emax)	54.91267	—
(20%Emax)	109.8252	—
(30%Emax)	164.7378	—
(40%Emax)	219.65	—
(50%Emax)	274.5634	—
(60%Emax)	329.4756	—
(70%Emax)	384.3878	—
(80%Emax)	439.3011	—
(90%Emax)	494.2133	—



Luminance Table

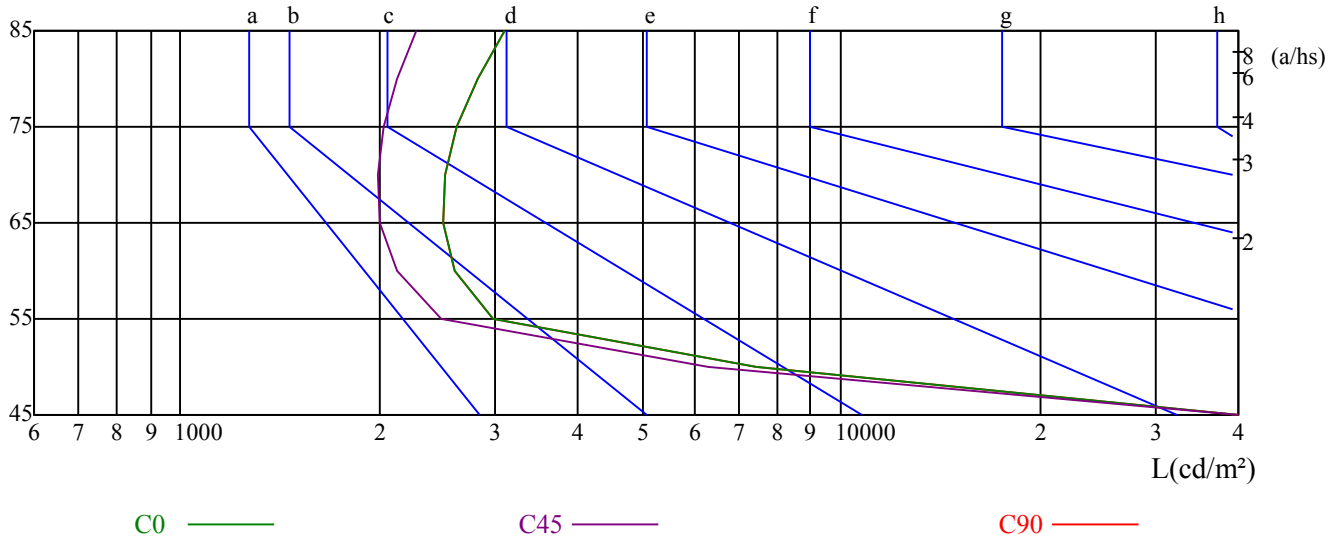
γ	45	50	55	60	65	70	75	80	85
C0	53757	7433	2982	2593	2491	2513	2619	2820	3101
C45	46202	6293	2486	2126	2006	1986	2025	2127	2271
C90	53757	7433	2982	2593	2491	2513	2619	2820	3101

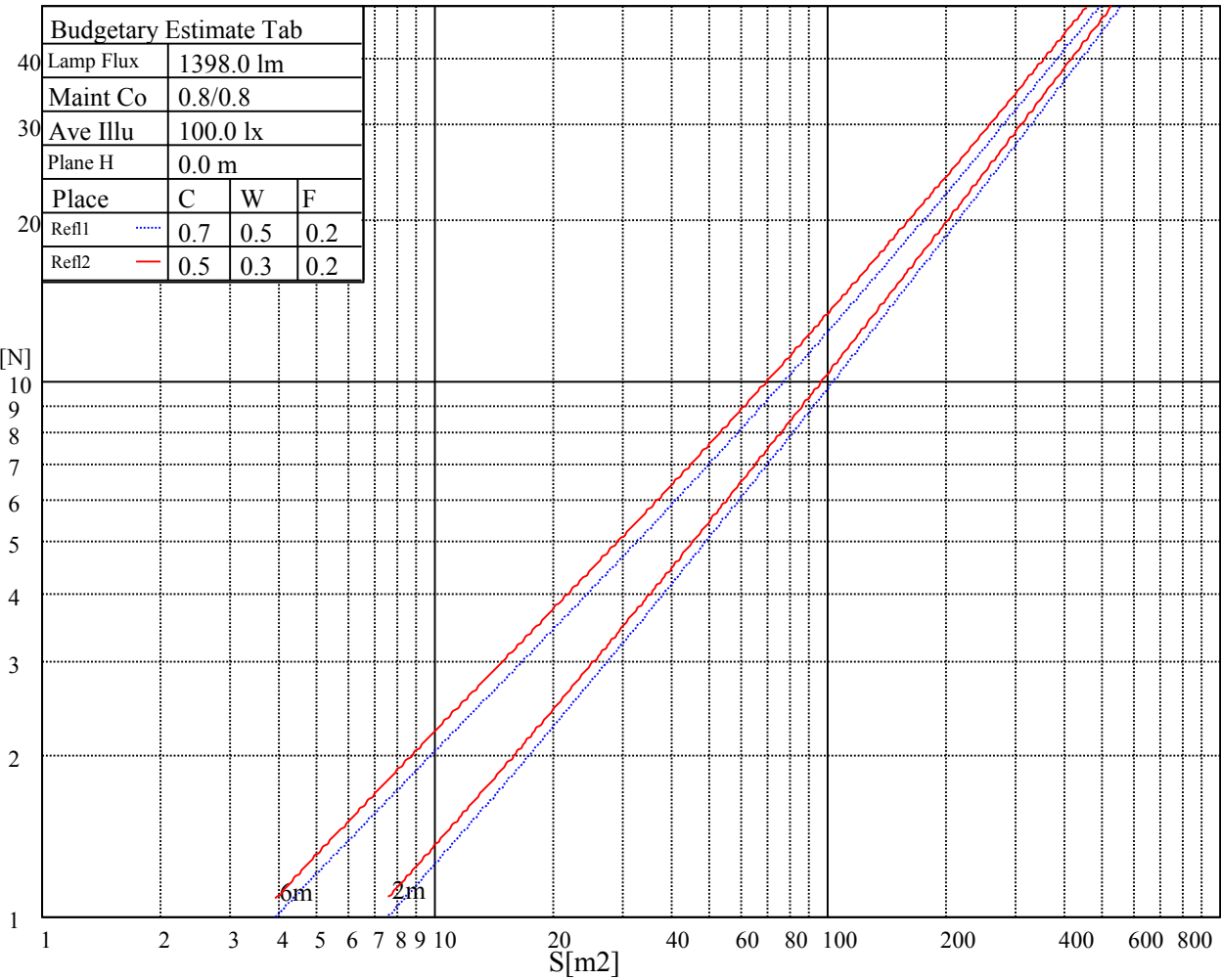
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5974	5974	5974	8993	8993	8993	26216	26216	26216

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

 $\gamma(^{\circ})$ 



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	1.08	1.08	1.08	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.01	0.99	0.97	0.99	0.97	0.95	0.95	0.94	0.92	0.92	0.91	0.90	0.89	0.88	0.87	0.85
2	0.94	0.91	0.88	0.93	0.90	0.87	0.90	0.87	0.85	0.87	0.85	0.83	0.85	0.83	0.82	0.80
3	0.89	0.84	0.81	0.87	0.83	0.80	0.85	0.82	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.75
4	0.83	0.79	0.75	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.75	0.73	0.77	0.74	0.72	0.71
5	0.79	0.74	0.70	0.78	0.73	0.70	0.76	0.72	0.69	0.75	0.71	0.69	0.73	0.70	0.68	0.67
6	0.74	0.69	0.66	0.74	0.69	0.66	0.72	0.68	0.65	0.71	0.68	0.65	0.70	0.67	0.64	0.63
7	0.71	0.66	0.62	0.70	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.60
8	0.67	0.62	0.59	0.67	0.62	0.59	0.66	0.62	0.58	0.65	0.61	0.58	0.64	0.61	0.58	0.57
9	0.64	0.59	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.55	0.61	0.58	0.55	0.54
10	0.61	0.57	0.53	0.61	0.56	0.53	0.60	0.56	0.53	0.60	0.56	0.53	0.59	0.55	0.53	0.52

Nata 1709-M

Intensity data(cd)									Appendix Page: 15 Total:17	
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	
0.0	4885.65	4952.44	4973.58	4930.73	4804.40	4538.94	4250.11	3886.15	3493.81	
45.0	4966.91	4979.15	4928.51	4783.81	4586.25	4265.14	3851.09	3442.61	3041.36	
90.0	4958.56	4912.92	4810.52	4602.39	4287.40	3938.46	3534.99	3024.11	2647.35	
135.0	4957.44	4898.45	4783.26	4525.03	4242.32	3891.72	3379.17	2984.60	2620.63	
180.0	4885.65	4749.86	4521.69	4192.79	3843.30	3397.53	3001.85	2582.23	2201.02	
225.0	4966.91	4894.00	4740.96	4513.90	4186.11	3833.28	3428.70	2945.64	2586.13	
270.0	4958.56	4947.43	4868.96	4696.44	4481.62	4136.58	3716.41	3319.06	2941.74	
315.0	4957.44	4950.21	4902.35	4752.65	4498.88	4239.54	3887.26	3348.00	3011.31	
360.0	4885.65	4952.44	4973.58	4930.73	4804.40	4538.94	4250.11	3886.15	3493.81	
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	
0.0	2989.60	2612.84	2268.36	1915.53	1620.02	1398.52	1204.30	1064.06	963.89	
45.0	2566.65	2215.49	1902.73	1602.21	1363.46	1198.74	1059.05	952.76	877.63	
90.0	2293.40	1903.84	1642.28	1420.79	1100.62	1071.96	969.78	877.51	809.45	
135.0	2195.46	1891.04	1631.70	1390.18	1200.96	1071.29	957.76	872.62	808.62	
180.0	1903.28	1616.68	1381.83	1096.17	1082.37	951.42	868.78	801.61	742.78	
225.0	2251.66	1875.46	1618.35	1405.76	1109.64	1065.45	967.28	878.02	814.91	
270.0	2487.63	2164.29	1870.45	1593.86	1365.69	1205.97	1065.73	957.21	881.52	
315.0	2635.66	2167.07	1903.84	1639.50	1392.40	1102.12	1072.18	971.06	881.02	
360.0	2989.60	2612.84	2268.36	1915.53	1620.02	1398.52	1204.30	1064.06	963.89	
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0	
0.0	880.96	820.86	763.54	719.58	684.51	650.57	618.85	591.02	569.32	
45.0	801.38	750.74	707.89	667.82	638.32	610.50	579.89	558.19	537.59	
90.0	746.57	697.54	661.25	626.58	596.03	571.26	546.89	523.13	506.10	
135.0	746.29	704.55	667.26	632.76	606.05	578.22	554.29	533.70	517.56	
180.0	692.64	657.91	624.41	595.14	572.04	546.55	528.13	509.66	494.97	
225.0	752.85	703.66	666.87	631.70	600.09	576.33	553.62	526.91	510.10	
270.0	812.51	761.87	712.90	674.50	645.00	612.72	584.34	560.97	539.82	
315.0	809.45	756.69	709.89	670.60	640.94	610.55	586.01	559.86	538.10	
360.0	880.96	820.86	763.54	719.58	684.51	650.57	618.85	591.02	569.32	
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	
0.0	540.38	523.13	510.88	495.86	485.28	477.49	466.92	458.57	450.78	
45.0	518.12	505.87	495.30	484.17	472.48	465.25	456.90	449.11	440.20	
90.0	493.24	481.33	468.92	460.57	451.56	443.43	435.47	427.96	418.89	
135.0	499.19	488.06	477.49	467.47	459.68	450.78	442.43	434.08	425.73	
180.0	483.17	471.59	461.85	453.06	446.21	437.59	429.19	422.45	414.38	
225.0	496.80	482.28	472.98	464.75	455.95	448.33	441.60	433.64	425.96	
270.0	517.56	504.76	492.52	480.83	471.93	463.58	453.00	444.66	437.42	
315.0	521.23	507.26	492.24	482.72	474.54	464.86	456.40	449.00	440.48	
360.0	540.38	523.13	510.88	495.86	485.28	477.49	466.92	458.57	450.78	
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	
0.0	440.20	432.97	425.73	408.48	385.67	355.61	316.10	284.38	238.58	
45.0	432.41	422.95	409.60	386.22	352.27	316.66	284.38	226.95	190.77	
90.0	411.60	400.52	376.32	344.82	311.48	271.58	233.51	189.44	145.58	
135.0	417.39	406.81	382.88	353.39	317.21	284.38	227.50	188.88	150.54	
180.0	402.58	384.83	353.61	317.99	282.88	238.75	199.23	154.04	114.53	
225.0	418.39	405.37	387.17	357.62	318.33	283.16	243.31	198.18	160.05	
270.0	428.52	419.61	405.14	378.43	348.94	314.43	284.94	229.90	190.61	
315.0	431.36	423.56	410.04	384.83	355.89	318.05	282.32	238.75	196.06	
360.0	440.20	432.97	425.73	408.48	385.67	355.61	316.10	284.38	238.58	

Nata 1709-M

Intensity data(cd)

Appendix Page: 16 Total:17

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	189.27	150.37	115.81	79.58	47.92	29.44	18.31	15.86	12.47
45.0	148.14	108.74	74.52	49.25	27.27	17.86	15.47	12.52	9.63
90.0	112.42	80.92	47.25	29.72	18.59	15.81	12.91	10.30	8.40
135.0	105.18	73.35	46.41	27.99	18.31	15.25	11.80	9.41	7.62
180.0	82.20	53.76	29.72	19.53	16.03	11.97	9.52	7.96	7.23
225.0	122.04	82.20	50.20	31.00	20.03	15.69	12.24	9.13	7.46
270.0	146.98	108.19	77.08	52.59	27.55	19.14	16.31	12.24	9.41
315.0	156.88	119.21	76.19	49.47	30.89	18.59	15.92	13.02	10.07
360.0	189.27	150.37	115.81	79.58	47.92	29.44	18.31	15.86	12.47
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	9.52	7.90	7.35	6.57	6.40	6.29	6.12	6.01	5.84
45.0	8.01	7.46	7.07	6.46	6.23	6.18	6.01	5.90	5.84
90.0	7.79	6.46	6.12	6.07	5.95	5.95	5.90	5.79	5.68
135.0	6.90	6.12	6.07	5.90	5.79	5.73	5.68	5.62	5.57
180.0	6.90	6.18	5.84	5.73	5.62	5.57	5.51	5.45	5.34
225.0	6.79	6.23	6.12	5.95	5.79	5.73	5.62	5.62	5.45
270.0	8.24	7.57	6.34	6.12	6.07	5.95	5.90	5.68	5.57
315.0	8.40	8.01	7.35	6.62	6.29	6.12	6.01	5.84	5.73
360.0	9.52	7.90	7.35	6.57	6.40	6.29	6.12	6.01	5.84
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	5.73	5.57	5.51	5.34	5.23	5.18	5.18	5.12	5.01
45.0	5.79	5.62	5.29	5.18	5.23	5.18	5.12	5.06	4.95
90.0	5.62	5.40	5.29	5.23	5.18	5.06	5.01	5.01	5.01
135.0	5.45	5.34	5.29	5.23	5.29	5.23	5.18	5.12	5.12
180.0	5.29	5.29	5.23	5.18	5.12	5.12	5.06	5.06	4.95
225.0	5.40	5.29	5.29	5.23	5.18	5.12	5.06	5.01	5.01
270.0	5.51	5.45	5.40	5.34	5.18	5.18	5.12	5.06	5.06
315.0	5.68	5.57	5.45	5.34	5.34	5.23	5.18	5.18	5.18
360.0	5.73	5.57	5.51	5.34	5.23	5.18	5.18	5.12	5.01
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	5.01	5.01	5.01	4.90	4.90	4.90	4.95	4.95	4.95
45.0	4.95	4.95	4.95	4.95	4.84	4.84	4.84	4.90	4.90
90.0	4.95	4.95	4.90	4.84	4.90	4.90	4.90	4.84	4.79
135.0	5.06	5.12	5.06	5.01	4.95	4.95	5.01	5.01	4.95
180.0	4.90	4.90	4.90	4.90	4.90	4.84	4.84	4.84	4.79
225.0	5.01	5.01	4.90	4.90	4.90	4.90	4.90	4.90	4.84
270.0	5.06	4.95	4.95	4.95	4.95	4.95	4.90	4.84	4.84
315.0	5.12	5.06	5.01	4.95	5.01	5.01	5.01	4.95	4.90
360.0	5.01	5.01	5.01	4.90	4.90	4.90	4.95	4.95	4.95
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	4.84	4.84	4.84	4.90	4.90	4.90	4.84	4.84	4.79
45.0	4.84	4.84	4.79	4.84	4.84	4.84	4.79	4.73	4.79
90.0	4.79	4.84	4.79	4.79	4.79	4.73	4.79	4.73	4.79
135.0	4.90	4.95	4.90	4.90	4.84	4.79	4.73	4.73	4.73
180.0	4.79	4.84	4.79	4.84	4.73	4.73	4.73	4.73	4.73
225.0	4.79	4.84	4.79	4.84	4.84	4.79	4.73	4.79	4.73
270.0	4.84	4.84	4.84	4.79	4.79	4.79	4.79	4.79	4.73
315.0	4.90	4.95	4.90	4.90	4.95	4.95	4.84	4.73	4.79
360.0	4.84	4.84	4.84	4.90	4.90	4.90	4.84	4.84	4.79

Intensity data(cd)

Appendix Page: 17 Total:17

C/ $\gamma(^{\circ})$	90.0
0.0	4.79
45.0	4.79
90.0	4.73
135.0	4.79
180.0	4.73
225.0	4.79
270.0	4.67
315.0	4.67
360.0	4.79