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Nata

LumCAT: 2-2135-M
Luminaire: BJB 47.360.1010
Report No: NATA0100
Test No: GC2019102103
LampCAT: CITIZEN CLU038
Lamp flux(lm): 1963.0
Number of Lamps: 1
Length(mm): 0
Phm Type: C

Voltage(V): 35.2800
Current(A): 0.4270
Power (W): 15.0600
PF: 0.0000
Ballast type: DC
Width(mm): 0
Height(mm): 0

Photometric Results

Lumens(lm): 1497.59
Efficiency(%): 76.29%
Lumens(lm)/Power(W): 99.44
Central intensity(cd): 10890.840
Maximum intensity(cd): 10890.840
Angle of maximum intensity: $C=0.0$ $\gamma=0.0$
Beam Angle(50%Imax): [C0/180]Total=18.1
[C90/270]Total=18.1
Field angle(10%Imax): [C0/180]Total=38.1
[C90/270]Total=38.1
Maximum s/h(1/2): C0_180=0.31 C90_270=0.31
Maximum s/h(1/4): C0_180=0.33 C90_270=0.33
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 76.29%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.215%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10890.844	0.000	0	.000%	.000%
1.0	10848.164	10.402	10.402	.530%	.695%
2.0	10693.336	30.918	41.32	1.575%	2.759%
3.0	10351.266	50.332	91.652	2.564%	6.120%
4.0	9802.477	67.461	159.113	3.437%	10.625%
5.0	9093.445	81.289	240.402	4.141%	16.053%
6.0	8151.047	90.624	331.027	4.617%	22.104%
7.0	7211.531	95.355	426.382	4.858%	28.471%
8.0	6361.734	97.141	523.523	4.949%	34.958%
9.0	5485.500	96.015	619.538	4.891%	41.369%
10.0	4704.398	92.215	711.753	4.698%	47.527%
11.0	4081.500	87.789	799.543	4.472%	53.389%
12.0	3516.609	83.058	882.601	4.231%	58.935%
13.0	2960.578	76.868	959.469	3.916%	64.067%
14.0	2551.641	70.556	1030.025	3.594%	68.779%
15.0	2202.398	65.266	1095.29	3.325%	73.137%
16.0	1876.992	59.774	1155.065	3.045%	77.128%
17.0	1585.055	53.913	1208.978	2.746%	80.728%
18.0	1342.673	48.272	1257.25	2.459%	83.951%
19.0	1096.966	42.445	1299.695	2.162%	86.786%
20.0	913.929	36.805	1336.5	1.875%	89.243%
21.0	717.588	31.328	1367.828	1.596%	91.335%
22.0	532.498	25.121	1392.949	1.280%	93.013%
23.0	389.728	19.351	1412.3	.986%	94.305%
24.0	279.900	14.640	1426.94	.746%	95.282%
25.0	146.679	9.699	1436.64	.494%	95.930%
26.0	75.642	5.248	1441.888	.267%	96.280%
27.0	35.648	2.723	1444.61	.139%	96.462%
28.0	17.754	1.352	1445.962	.069%	96.553%
29.0	14.238	0.837	1446.799	.043%	96.608%
30.0	13.282	0.743	1447.543	.038%	96.658%
31.0	12.452	0.716	1448.259	.036%	96.706%
32.0	11.855	0.696	1448.955	.035%	96.752%
33.0	11.391	0.685	1449.64	.035%	96.798%
34.0	10.983	0.677	1450.317	.034%	96.843%
35.0	10.652	0.672	1450.989	.034%	96.888%
36.0	10.406	0.671	1451.659	.034%	96.933%
37.0	10.209	0.672	1452.332	.034%	96.978%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	10.069	0.677	1453.009	.034%	97.023%
39.0	9.935	0.683	1453.691	.035%	97.069%
40.0	9.823	0.689	1454.38	.035%	97.115%
41.0	9.766	0.698	1455.078	.036%	97.161%
42.0	9.703	0.707	1455.785	.036%	97.208%
43.0	9.675	0.718	1456.503	.037%	97.256%
44.0	9.654	0.730	1457.233	.037%	97.305%
45.0	9.647	0.742	1457.974	.038%	97.355%
46.0	9.633	0.754	1458.728	.038%	97.405%
47.0	9.668	0.768	1459.496	.039%	97.456%
48.0	9.689	0.783	1460.279	.040%	97.508%
49.0	9.724	0.797	1461.076	.041%	97.562%
50.0	9.759	0.812	1461.888	.041%	97.616%
51.0	9.795	0.827	1462.715	.042%	97.671%
52.0	9.851	0.843	1463.558	.043%	97.727%
53.0	9.921	0.860	1464.419	.044%	97.785%
54.0	9.963	0.876	1465.295	.045%	97.843%
55.0	10.020	0.892	1466.187	.045%	97.903%
56.0	10.062	0.907	1467.094	.046%	97.964%
57.0	10.090	0.921	1468.016	.047%	98.025%
58.0	10.139	0.935	1468.951	.048%	98.088%
59.0	10.153	0.949	1469.9	.048%	98.151%
60.0	10.174	0.960	1470.86	.049%	98.215%
61.0	10.230	0.974	1471.834	.050%	98.280%
62.0	10.230	0.986	1472.82	.050%	98.346%
63.0	10.238	0.995	1473.815	.051%	98.412%
64.0	10.245	1.005	1474.82	.051%	98.479%
65.0	10.230	1.013	1475.834	.052%	98.547%
66.0	10.174	1.018	1476.852	.052%	98.615%
67.0	10.104	1.020	1477.871	.052%	98.683%
68.0	9.956	1.016	1478.888	.052%	98.751%
69.0	9.724	1.004	1479.892	.051%	98.818%
70.0	9.443	0.984	1480.876	.050%	98.884%
71.0	9.274	0.967	1481.843	.049%	98.948%
72.0	9.063	0.953	1482.797	.049%	99.012%
73.0	8.831	0.936	1483.733	.048%	99.075%
74.0	8.620	0.917	1484.65	.047%	99.136%
75.0	8.423	0.901	1485.551	.046%	99.196%

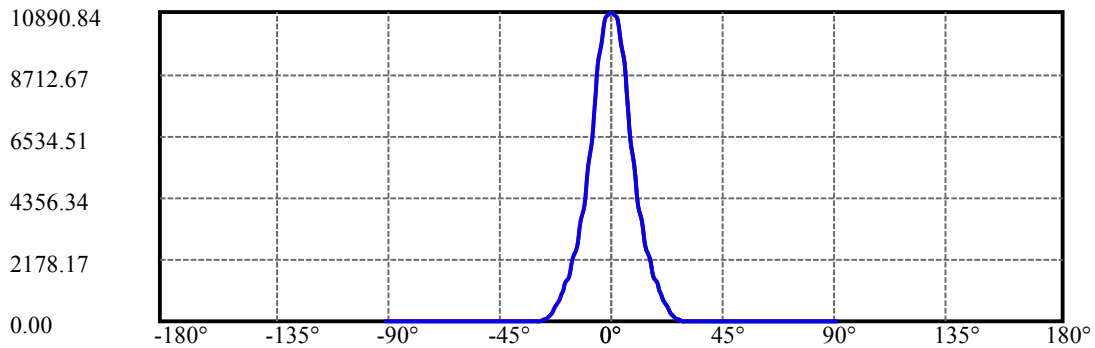
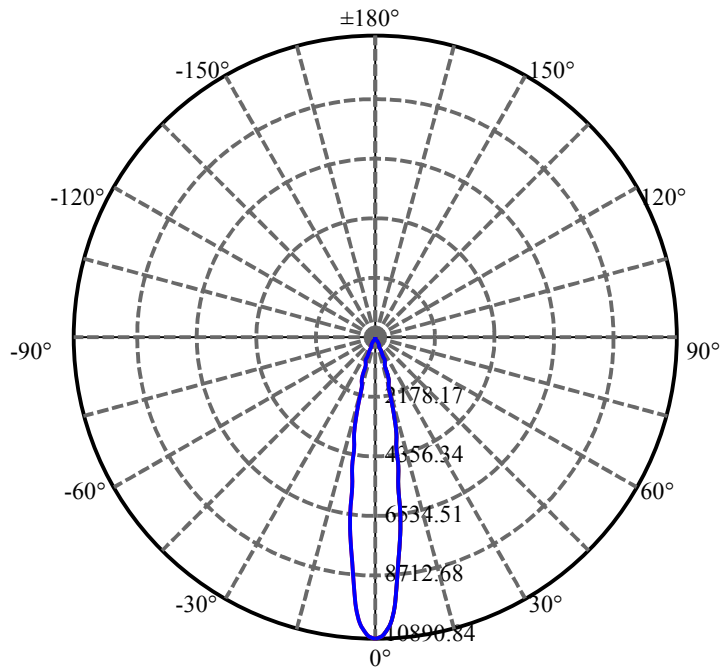
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.191	0.882	1486.433	.045%	99.255%
77.0	8.009	0.864	1487.296	.044%	99.313%
78.0	7.861	0.850	1488.146	.043%	99.369%
79.0	7.685	0.835	1488.981	.043%	99.425%
80.0	7.545	0.821	1489.802	.042%	99.480%
81.0	7.453	0.811	1490.613	.041%	99.534%
82.0	7.327	0.801	1491.415	.041%	99.588%
83.0	7.242	0.792	1492.207	.040%	99.640%
84.0	7.193	0.786	1492.993	.040%	99.693%
85.0	7.165	0.784	1493.777	.040%	99.745%
86.0	7.116	0.781	1494.557	.040%	99.797%
87.0	6.989	0.772	1495.329	.039%	99.849%
88.0	6.912	0.761	1496.091	.039%	99.900%
89.0	6.834	0.753	1496.844	.038%	99.950%
90.0	6.799	0.748	1497.592	.038%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1447.54	73.74%	96.66%
0-40	1454.38	74.09%	97.11%
0-60	1470.86	74.93%	98.22%
0-90	1496.84	76.25%	99.95%
0-120	1496.84	76.25%	99.95%
0-180	1497.59	76.29%	100.00%
60-90	26.94	1.37%	1.80%
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%
0-16.80	1198.07	61.03%	80.00%

ZONAL LUMEN SUMMARY

0-10	711.75
10-20	624.75
20-30	111.04
30-40	6.84
40-50	7.51
50-60	8.97
60-70	10.02
70-80	8.93
80-90	7.04
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: —————

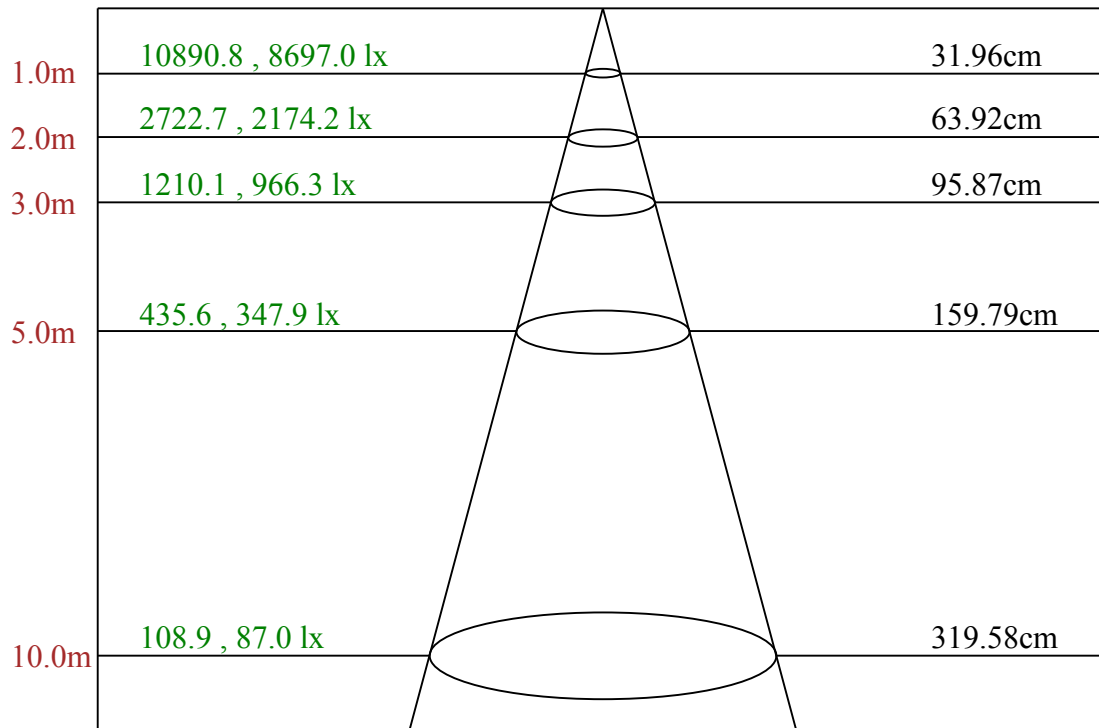
C90/C270: —————

Field angle(10%Imax):C0/180Left:19.0 Right:19.0

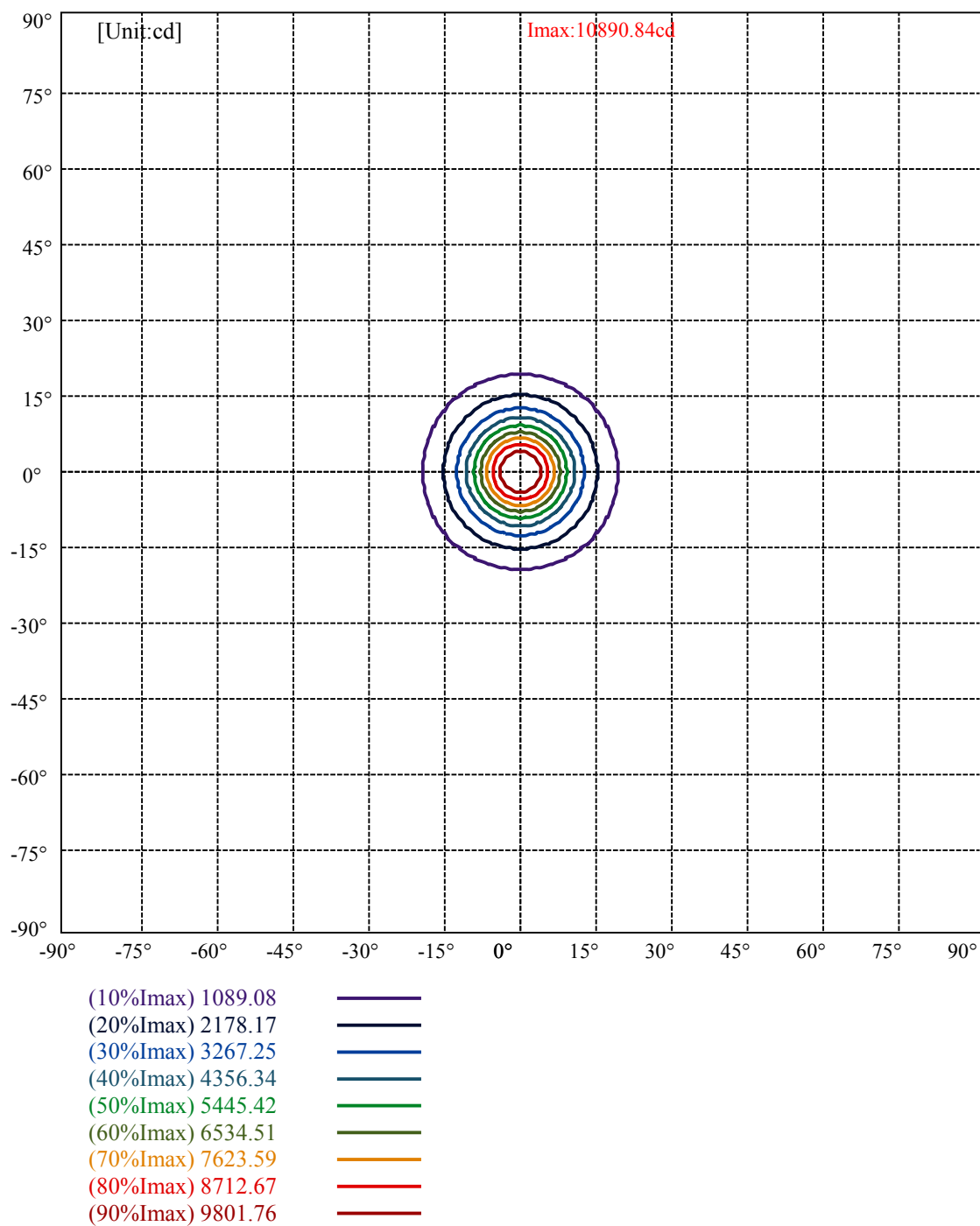
:C90/270Left:19.0 Right:19.0

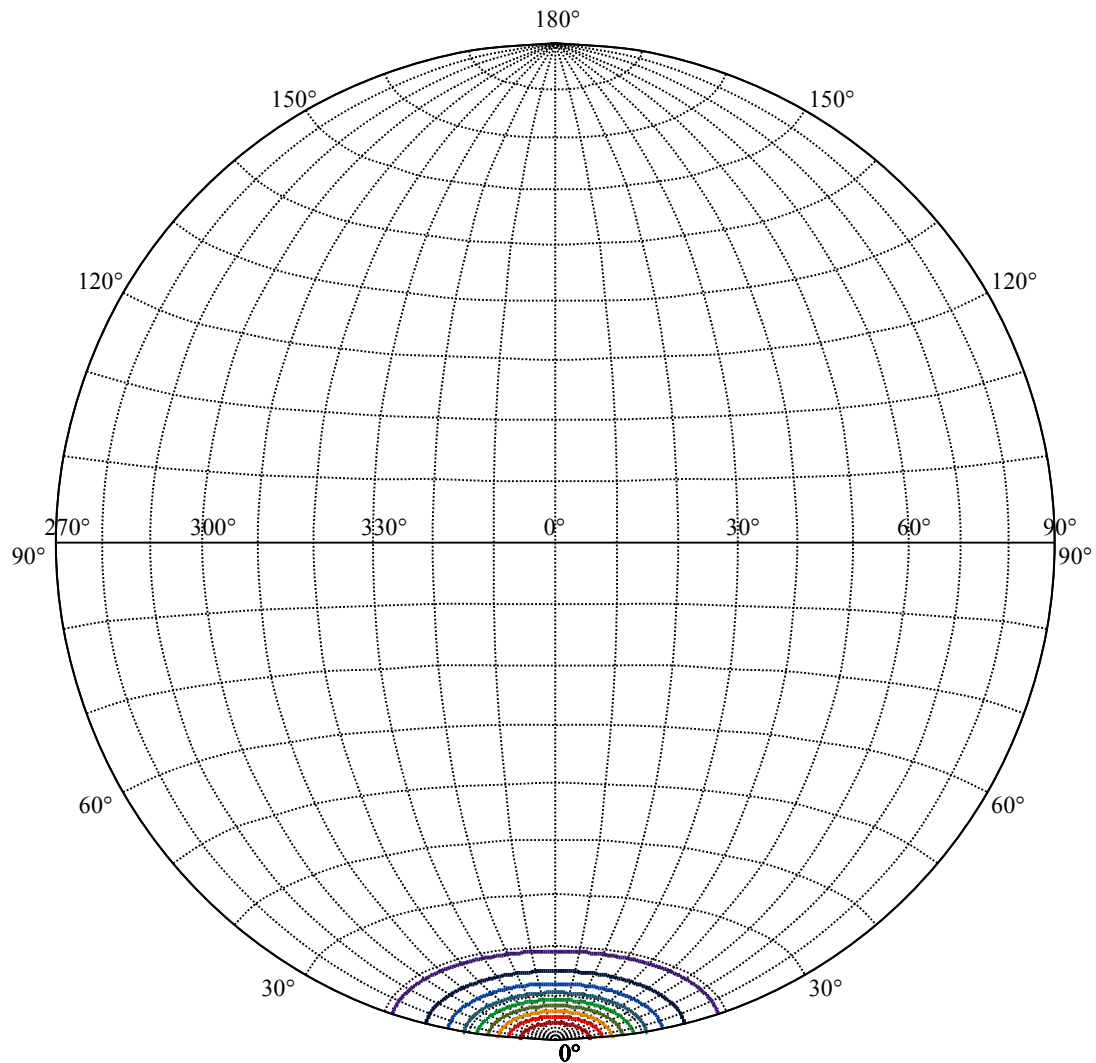
Beam Angle(50%Imax):C0/180Left:9.1 Right:9.1

:C90/270Left:9.1 Right:9.1



Max , Ave Beam angle of C0 plane 18.16





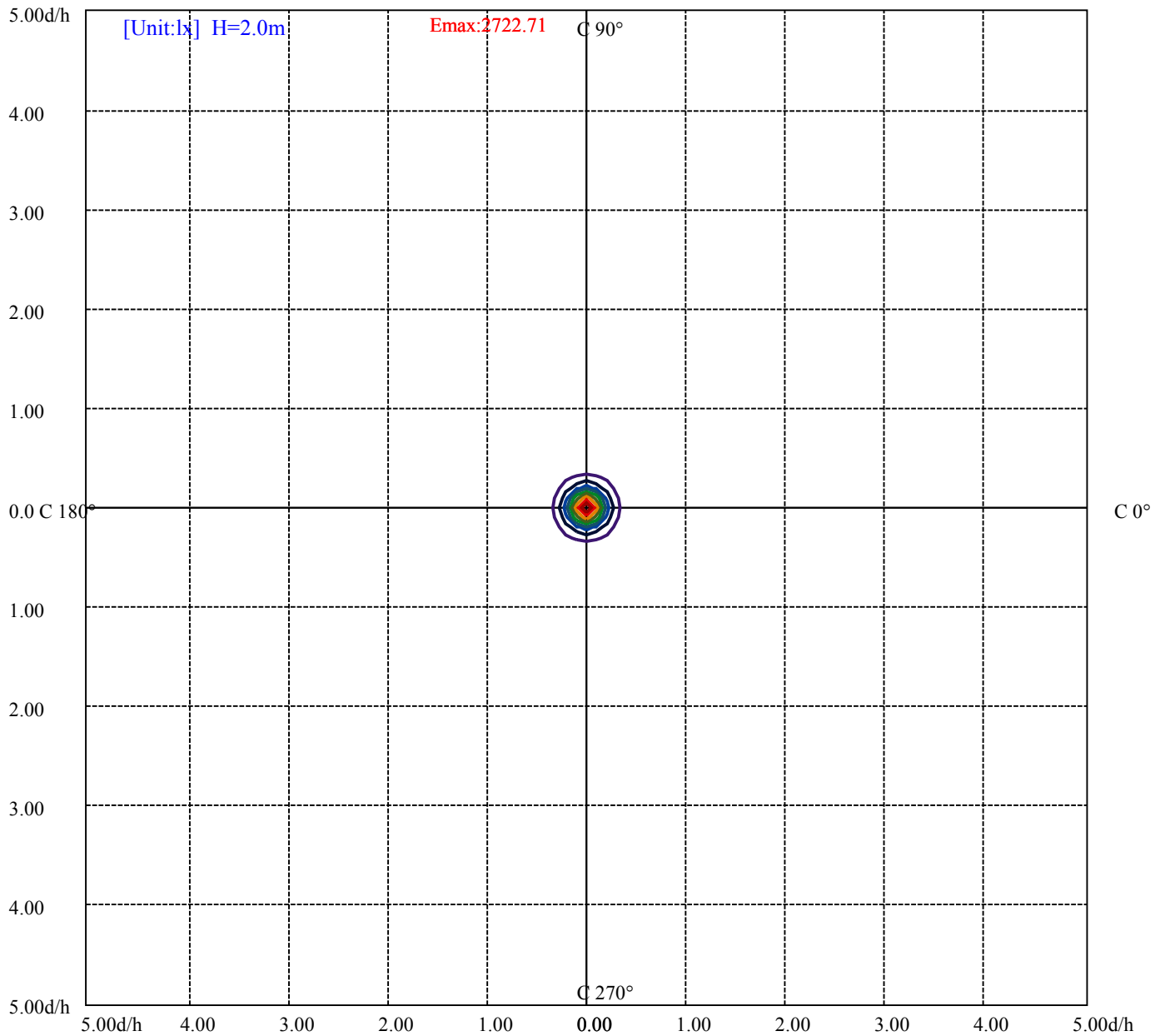
House

[Unit:cd]

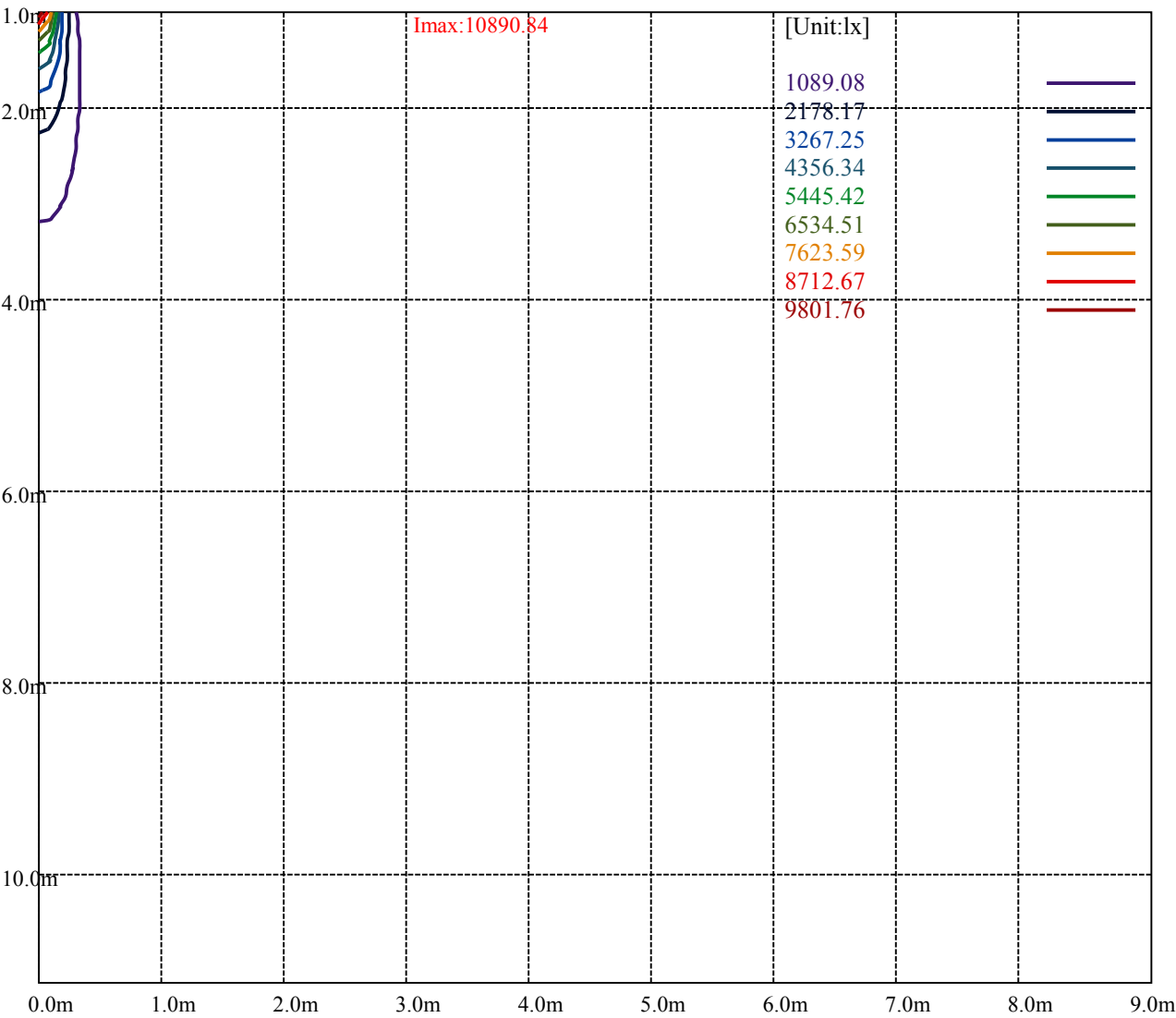
Road

Imax:10890.84

(10%Imax)	1089.08	—
(20%Imax)	2178.17	—
(30%Imax)	3267.25	—
(40%Imax)	4356.34	—
(50%Imax)	5445.42	—
(60%Imax)	6534.51	—
(70%Imax)	7623.59	—
(80%Imax)	8712.67	—
(90%Imax)	9801.76	—



(10%Emax)	272.27	—
(20%Emax)	544.5425	—
(30%Emax)	816.8125	—
(40%Emax)	1089.083	—
(50%Emax)	1361.355	—
(60%Emax)	1633.625	—
(70%Emax)	1905.897	—
(80%Emax)	2178.167	—
(90%Emax)	2450.438	—



Luminance Table

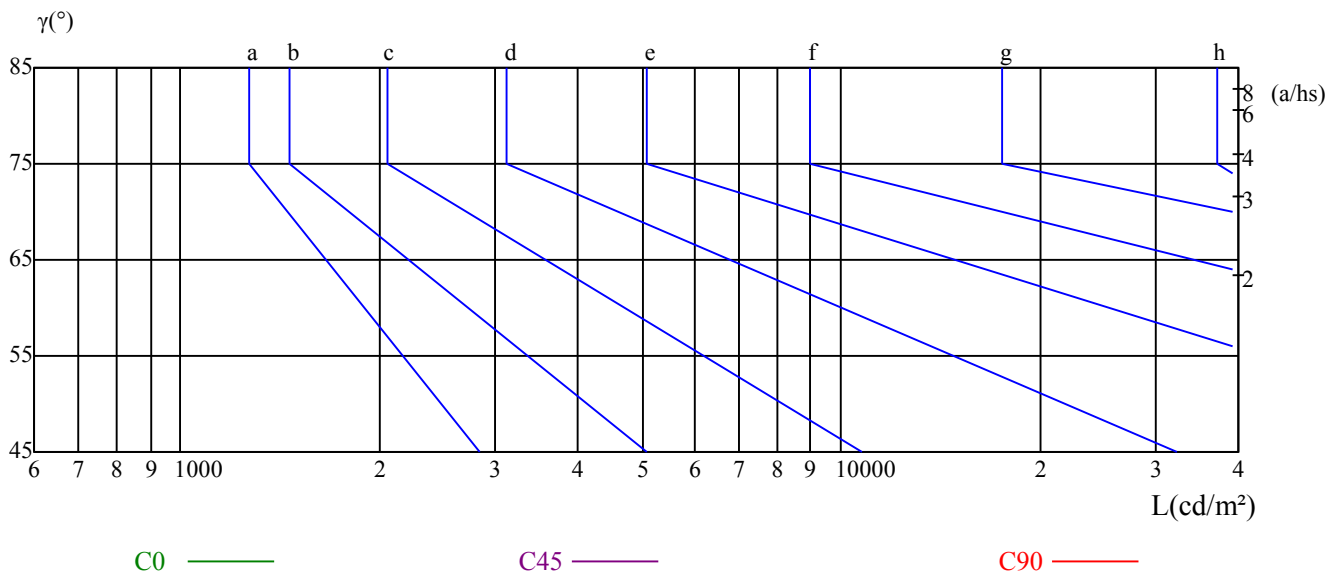
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

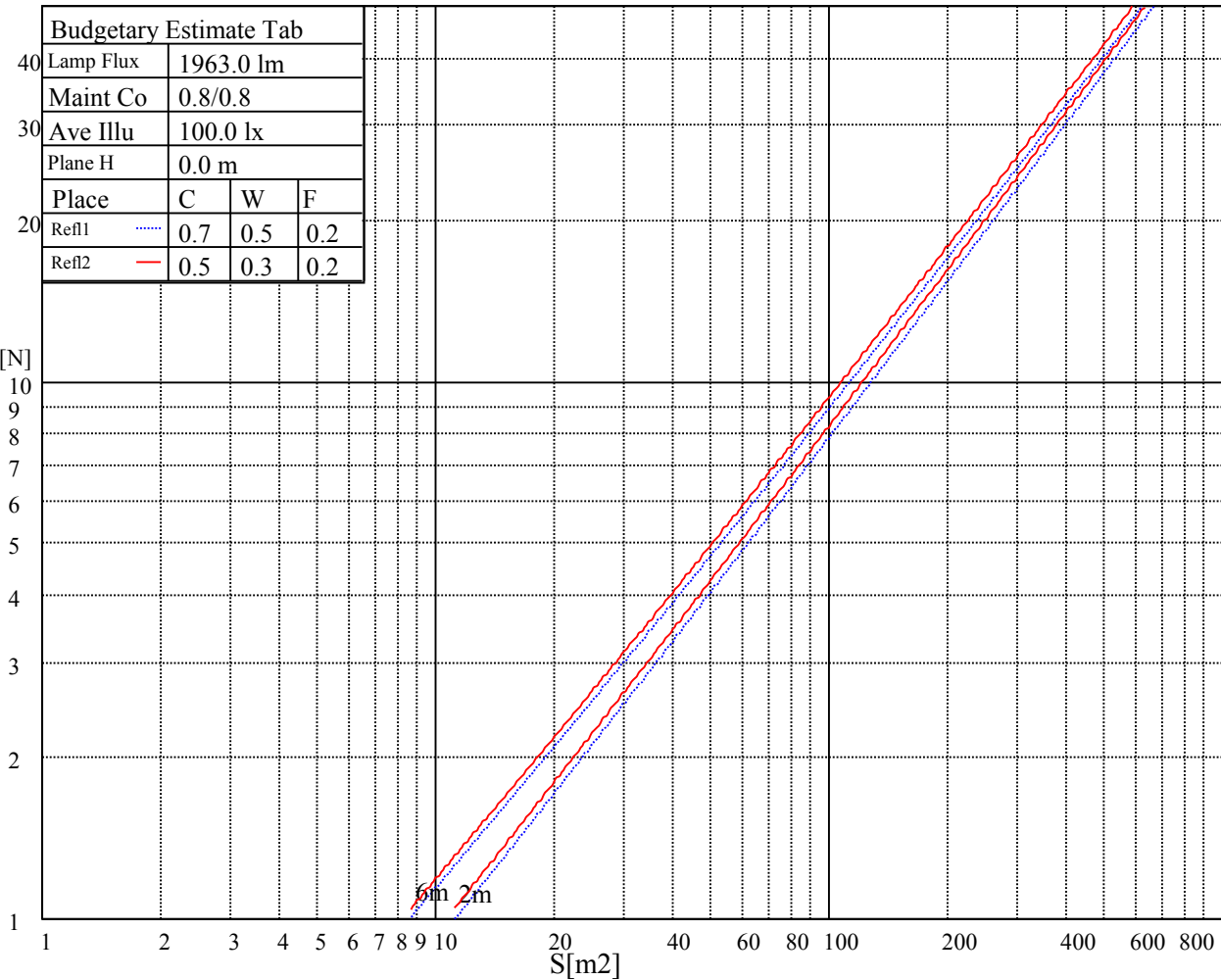
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

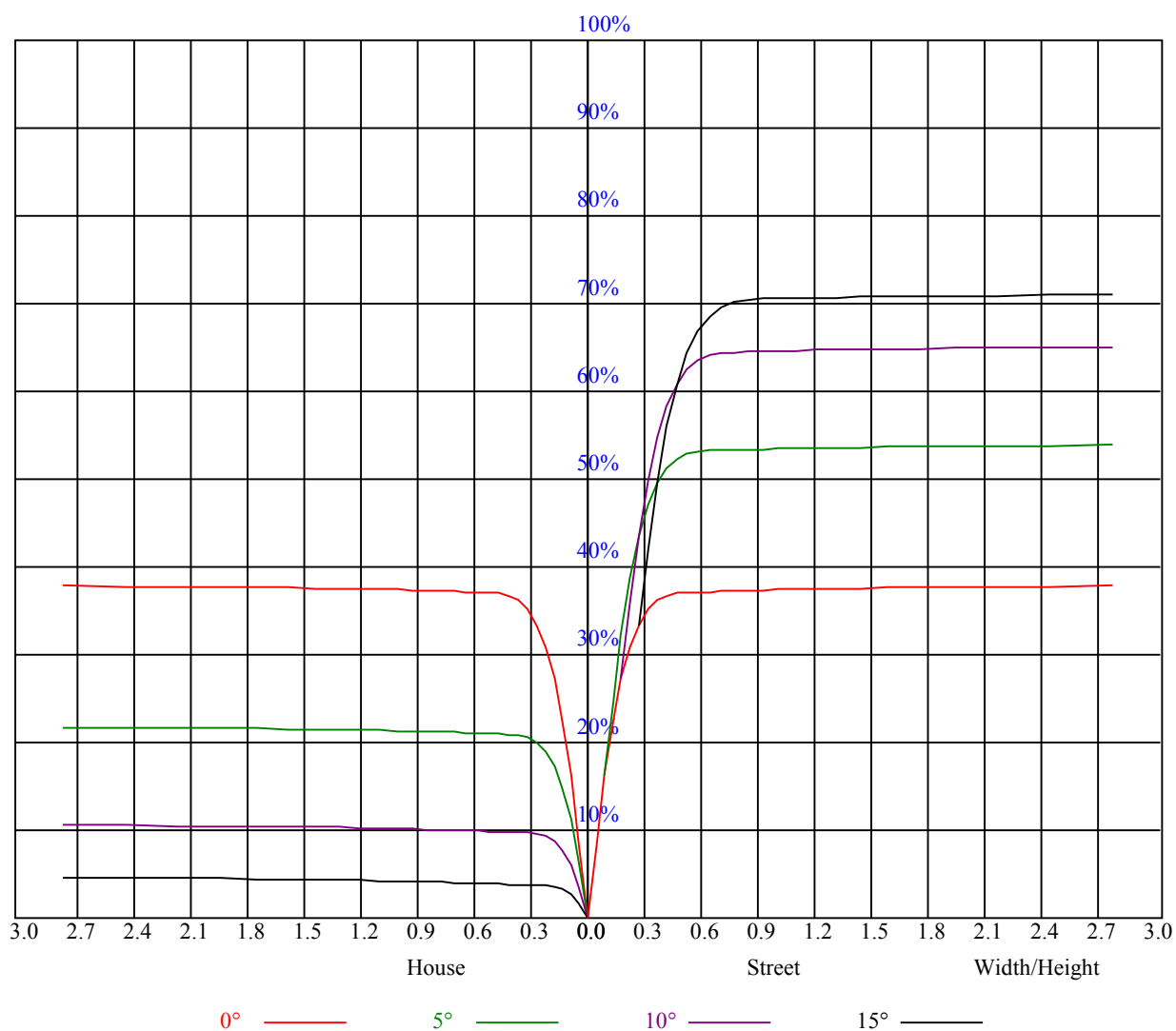
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	0.91	0.91	0.91	0.89	0.89	0.89	0.85	0.85	0.85	0.81	0.81	0.81	0.78	0.78	0.78	0.76
1	0.86	0.85	0.83	0.85	0.83	0.82	0.82	0.81	0.80	0.79	0.78	0.77	0.76	0.76	0.75	0.74
2	0.82	0.80	0.78	0.81	0.79	0.78	0.79	0.77	0.76	0.77	0.75	0.74	0.75	0.74	0.73	0.72
3	0.79	0.77	0.75	0.78	0.76	0.74	0.77	0.75	0.73	0.75	0.73	0.72	0.73	0.72	0.71	0.70
4	0.77	0.74	0.72	0.76	0.73	0.71	0.75	0.72	0.71	0.73	0.71	0.70	0.72	0.70	0.69	0.68
5	0.74	0.72	0.69	0.74	0.71	0.69	0.73	0.70	0.69	0.72	0.70	0.68	0.71	0.69	0.68	0.67
6	0.72	0.70	0.68	0.72	0.69	0.67	0.71	0.69	0.67	0.70	0.68	0.66	0.69	0.67	0.66	0.65
7	0.71	0.68	0.66	0.70	0.68	0.66	0.69	0.67	0.65	0.69	0.67	0.65	0.68	0.66	0.65	0.64
8	0.69	0.66	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.67	0.65	0.64	0.67	0.65	0.63	0.63
9	0.67	0.65	0.63	0.67	0.65	0.63	0.67	0.64	0.63	0.66	0.64	0.62	0.66	0.64	0.62	0.62
10	0.66	0.63	0.62	0.66	0.63	0.62	0.65	0.63	0.61	0.65	0.63	0.61	0.64	0.63	0.61	0.61



Nata 2-2135-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	10878.19	10813.50	10596.38	10163.81	9539.44	8654.06	7678.69	6808.50	5987.25
45.0	10900.13	10886.06	10745.44	10443.94	9986.63	9322.31	8303.06	7389.56	6491.81
90.0	10914.19	10917.00	10838.25	10651.50	10197.00	9559.69	8681.63	7669.69	6753.38
135.0	10870.88	10926.00	10914.75	10774.13	10485.56	10056.38	9255.38	8455.50	7582.50
180.0	10878.19	10875.38	10789.31	10521.00	10048.50	9419.63	8651.81	7569.00	6687.56
225.0	10900.13	10847.25	10696.50	10357.31	9718.88	8966.81	8008.31	7006.50	6160.50
270.0	10914.19	10836.56	10631.25	10184.63	9554.06	8757.00	7628.06	6730.88	5909.63
315.0	10870.88	10683.56	10334.81	9713.81	8889.75	8011.69	7001.44	6062.63	5321.25
360.0	10878.19	10813.50	10596.38	10163.81	9539.44	8654.06	7678.69	6808.50	5987.25
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	5081.06	4430.81	3848.06	3273.19	2783.81	2413.13	2055.38	1740.94	1490.06
45.0	5492.25	4781.81	4132.69	3566.25	2960.44	2549.25	2208.38	1868.63	1584.00
90.0	5892.75	4951.13	4291.31	3708.56	3078.56	2654.44	2297.25	1955.81	1656.56
135.0	6498.56	5707.13	4974.75	4234.50	3583.69	3089.25	2619.00	2270.25	1942.31
180.0	5868.56	4960.13	4310.44	3737.81	3174.19	2698.88	2343.94	2005.88	1736.44
225.0	5398.88	4542.75	3931.88	3399.75	2887.88	2463.75	2139.75	1820.81	1535.63
270.0	5007.38	4359.94	3786.19	3282.19	2754.56	2394.56	2085.75	1773.00	1492.88
315.0	4644.56	3901.50	3376.69	2930.63	2461.50	2149.88	1869.75	1580.63	1242.56
360.0	5081.06	4430.81	3848.06	3273.19	2783.81	2413.13	2055.38	1740.94	1490.06
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1243.69	1049.63	839.81	640.13	484.31	325.13	291.94	105.36	47.81
45.0	1343.81	1107.56	896.06	706.50	527.06	388.69	291.38	136.69	68.51
90.0	1413.00	1120.44	972.17	758.98	572.01	424.91	279.00	166.67	91.69
135.0	1673.44	1397.81	1164.94	966.94	741.94	583.88	394.88	297.56	162.06
180.0	1457.44	1110.60	1009.29	798.53	605.31	456.64	323.04	182.19	101.98
225.0	1226.81	1071.28	878.79	675.45	494.89	353.59	232.03	120.71	58.56
270.0	1265.63	1044.56	833.06	659.25	483.19	342.00	290.81	110.93	50.40
315.0	1117.58	873.84	717.30	534.94	351.28	243.00	136.13	53.33	24.13
360.0	1243.69	1049.63	839.81	640.13	484.31	325.13	291.94	105.36	47.81
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	18.28	15.19	14.18	13.33	12.49	11.98	11.48	11.03	10.69
45.0	28.29	15.92	14.85	13.95	13.16	12.66	12.26	11.87	11.59
90.0	40.33	15.53	13.89	12.94	12.15	11.59	11.14	10.74	10.46
135.0	88.31	29.31	14.85	13.39	12.15	11.42	10.74	10.24	9.79
180.0	48.88	21.60	14.68	13.78	13.11	12.43	11.98	11.59	11.25
225.0	25.93	16.76	15.58	14.68	13.89	13.22	12.77	12.32	12.04
270.0	20.25	14.57	13.50	12.66	11.87	11.36	10.97	10.69	10.41
315.0	14.91	13.16	12.38	11.53	10.80	10.18	9.79	9.39	9.00
360.0	18.28	15.19	14.18	13.33	12.49	11.98	11.48	11.03	10.69
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	10.46	10.24	10.07	9.96	9.90	9.84	9.79	9.79	9.73
45.0	11.36	11.19	11.08	11.03	10.97	10.91	10.91	10.97	11.03
90.0	10.24	10.07	9.96	9.79	9.62	9.56	9.45	9.39	9.34
135.0	9.45	9.11	8.94	8.72	8.55	8.49	8.38	8.33	8.27
180.0	10.97	10.86	10.69	10.58	10.46	10.41	10.35	10.29	10.24
225.0	11.76	11.59	11.42	11.31	11.19	11.19	11.14	11.14	11.14
270.0	10.24	10.07	9.96	9.79	9.68	9.62	9.56	9.51	9.51
315.0	8.78	8.55	8.44	8.33	8.21	8.10	8.04	7.99	7.99
360.0	10.46	10.24	10.07	9.96	9.90	9.84	9.79	9.79	9.73

Nata 2-2135-M

Intensity data(cd)										Appendix Page: 17 Total:18	
C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0		
0.0	9.73	9.73	9.73	9.73	9.79	9.79	9.84	9.96	10.13		
45.0	11.14	11.31	11.48	11.70	11.87	12.04	12.21	12.43	12.60		
90.0	9.28	9.23	9.17	9.17	9.11	9.11	9.06	9.06	9.00		
135.0	8.27	8.16	8.16	8.10	8.10	8.10	8.10	8.04	8.10		
180.0	10.24	10.24	10.24	10.18	10.18	10.18	10.13	10.13	10.13		
225.0	11.14	11.14	11.31	11.42	11.59	11.76	11.93	12.15	12.38		
270.0	9.45	9.39	9.39	9.34	9.34	9.28	9.23	9.23	9.23		
315.0	7.93	7.88	7.88	7.88	7.82	7.82	7.88	7.82	7.82		
360.0	9.73	9.73	9.73	9.73	9.79	9.79	9.84	9.96	10.13		
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0		
0.0	10.18	10.29	10.41	10.46	10.58	10.58	10.58	10.58	10.52		
45.0	12.83	12.99	13.16	13.28	13.39	13.44	13.44	13.56	13.44		
90.0	9.00	9.00	9.00	8.94	8.94	8.94	8.94	8.94	8.89		
135.0	8.10	8.10	8.04	8.10	8.10	8.04	8.04	8.04	7.99		
180.0	10.13	10.13	10.18	10.18	10.18	10.18	10.18	10.18	10.18		
225.0	12.49	12.66	12.71	12.88	13.05	13.16	13.39	13.73	14.06		
270.0	9.17	9.17	9.17	9.11	9.11	9.11	9.06	9.06	9.06		
315.0	7.82	7.82	7.82	7.76	7.76	7.76	7.76	7.76	7.71		
360.0	10.18	10.29	10.41	10.46	10.58	10.58	10.58	10.58	10.52		
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0		
0.0	10.46	10.41	10.35	10.24	10.07	9.90	9.73	9.51	9.23		
45.0	13.22	12.88	12.66	12.38	11.93	11.31	10.41	9.51	9.11		
90.0	8.83	8.89	8.89	8.89	9.00	9.11	9.28	9.62	9.84		
135.0	7.99	7.93	7.93	7.93	7.88	7.82	7.82	7.82	7.82		
180.0	10.13	10.13	10.13	10.13	10.07	10.01	9.96	9.84	9.73		
225.0	14.51	15.02	15.24	15.24	15.19	14.68	13.73	12.21	11.03		
270.0	9.00	9.00	8.94	8.94	9.06	9.11	9.17	9.34	9.73		
315.0	7.76	7.71	7.71	7.65	7.65	7.71	7.71	7.71	7.71		
360.0	10.46	10.41	10.35	10.24	10.07	9.90	9.73	9.51	9.23		
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0		
0.0	8.94	8.66	8.44	8.21	7.99	7.82	7.65	7.43	7.31		
45.0	8.89	8.66	8.38	8.21	8.10	7.93	7.82	7.65	7.59		
90.0	9.79	9.56	9.11	8.72	8.16	8.04	7.88	7.76	7.76		
135.0	7.82	7.82	7.93	7.99	8.04	8.04	7.93	7.59	7.37		
180.0	9.56	9.39	9.23	9.00	8.72	8.49	8.33	8.10	7.82		
225.0	9.96	9.23	8.89	8.72	8.49	8.27	8.10	7.93	7.76		
270.0	9.84	9.62	9.39	9.00	8.55	8.10	7.93	7.82	7.65		
315.0	7.71	7.71	7.59	7.54	7.48	7.37	7.26	7.20	7.09		
360.0	8.94	8.66	8.44	8.21	7.99	7.82	7.65	7.43	7.31		
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0		
0.0	7.26	7.09	7.03	7.03	6.92	6.92	6.75	6.75	6.75		
45.0	7.48	7.37	7.31	7.26	7.37	7.14	6.92	6.86	6.92		
90.0	7.71	7.48	7.43	7.37	7.37	7.43	6.98	6.92	6.81		
135.0	7.31	7.20	7.14	7.09	7.09	7.03	7.03	6.92	6.86		
180.0	7.65	7.48	7.31	7.20	7.14	7.09	6.98	6.92	6.75		
225.0	7.65	7.54	7.43	7.37	7.31	7.26	7.26	7.20	6.92		
270.0	7.54	7.43	7.31	7.26	7.20	7.20	7.20	6.92	6.86		
315.0	7.03	7.03	6.98	6.98	6.92	6.86	6.81	6.81	6.81		
360.0	7.26	7.09	7.03	7.03	6.92	6.92	6.75	6.75	6.75		

Intensity data(cd)

Appendix Page: 18 Total:18

C/ γ (°)	90.0
0.0	6.69
45.0	6.86
90.0	6.86
135.0	6.81
180.0	6.69
225.0	6.86
270.0	6.81
315.0	6.81
360.0	6.69