



NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

Nata

LumCAT: 2-1680-M	
Luminaire: 92.70.126.00	
Report No: NATA0100	Voltage(V): 36.2000
Test No: GC2018082014	Current(A): 0.3900
LampCAT: LUMINUS CHM-9-AA10	Power (W): 14.1180
Lamp flux(lm): 1813.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 70	Width(mm): 70
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1654.16
Efficiency(%): 91.24%
Lumens(lm)/Power(W): 117.56
Central intensity(cd): 6089.789
Maximum intensity(cd): 6089.789
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=24.1
[C90/270]Total=24.1
Field angle(10%Imax): [C0/180]Total=59.8
[C90/270]Total=59.8
Maximum s/h(1/2): C0_180=0.41 C90_270=0.41
Maximum s/h(1/4): C0_180=0.39 C90_270=0.39
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.55%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.317%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	6089.788	5.828	5.828	.321%	.352%
2.0	6040.169	46.231	52.059	2.550%	3.147%
4.0	5888.420	90.084	142.143	4.969%	8.593%
6.0	5498.414	126.048	268.191	6.952%	16.213%
8.0	4808.075	146.755	414.946	8.095%	25.085%
10.0	3967.089	151.080	566.026	8.333%	34.218%
12.0	3063.957	139.710	705.736	7.706%	42.664%
14.0	2172.044	115.242	820.977	6.356%	49.631%
16.0	1511.780	91.389	912.366	5.041%	55.156%
18.0	1081.659	73.306	985.672	4.043%	59.587%
20.0	868.873	65.174	1050.845	3.595%	63.527%
22.0	760.467	62.477	1113.322	3.446%	67.304%
24.0	698.817	62.336	1175.659	3.438%	71.073%
26.0	660.773	63.527	1239.186	3.504%	74.913%
28.0	634.380	65.317	1304.503	3.603%	78.862%
30.0	607.561	66.623	1371.126	3.675%	82.890%
32.0	586.206	68.128	1439.254	3.758%	87.008%
34.0	555.966	68.183	1507.437	3.761%	91.130%
36.0	440.025	56.723	1564.16	3.129%	94.559%
38.0	270.919	36.580	1600.74	2.018%	96.771%
40.0	89.618	12.634	1613.374	.697%	97.534%
42.0	24.652	3.618	1616.991	.200%	97.753%
44.0	14.074	2.144	1619.135	.118%	97.883%
46.0	10.798	1.703	1620.839	.094%	97.986%
48.0	9.931	1.619	1622.457	.089%	98.084%
50.0	9.497	1.596	1624.053	.088%	98.180%
52.0	9.119	1.576	1625.629	.087%	98.275%
54.0	8.775	1.557	1627.186	.086%	98.369%
56.0	8.513	1.548	1628.734	.085%	98.463%
58.0	8.265	1.537	1630.271	.085%	98.556%
60.0	8.059	1.531	1631.802	.084%	98.648%
62.0	7.894	1.529	1633.33	.084%	98.741%
64.0	7.749	1.528	1634.858	.084%	98.833%
66.0	7.625	1.528	1636.385	.084%	98.926%
68.0	7.529	1.531	1637.916	.084%	99.018%
70.0	7.433	1.532	1639.448	.084%	99.111%
72.0	7.364	1.536	1640.984	.085%	99.204%
74.0	7.302	1.539	1642.523	.085%	99.297%

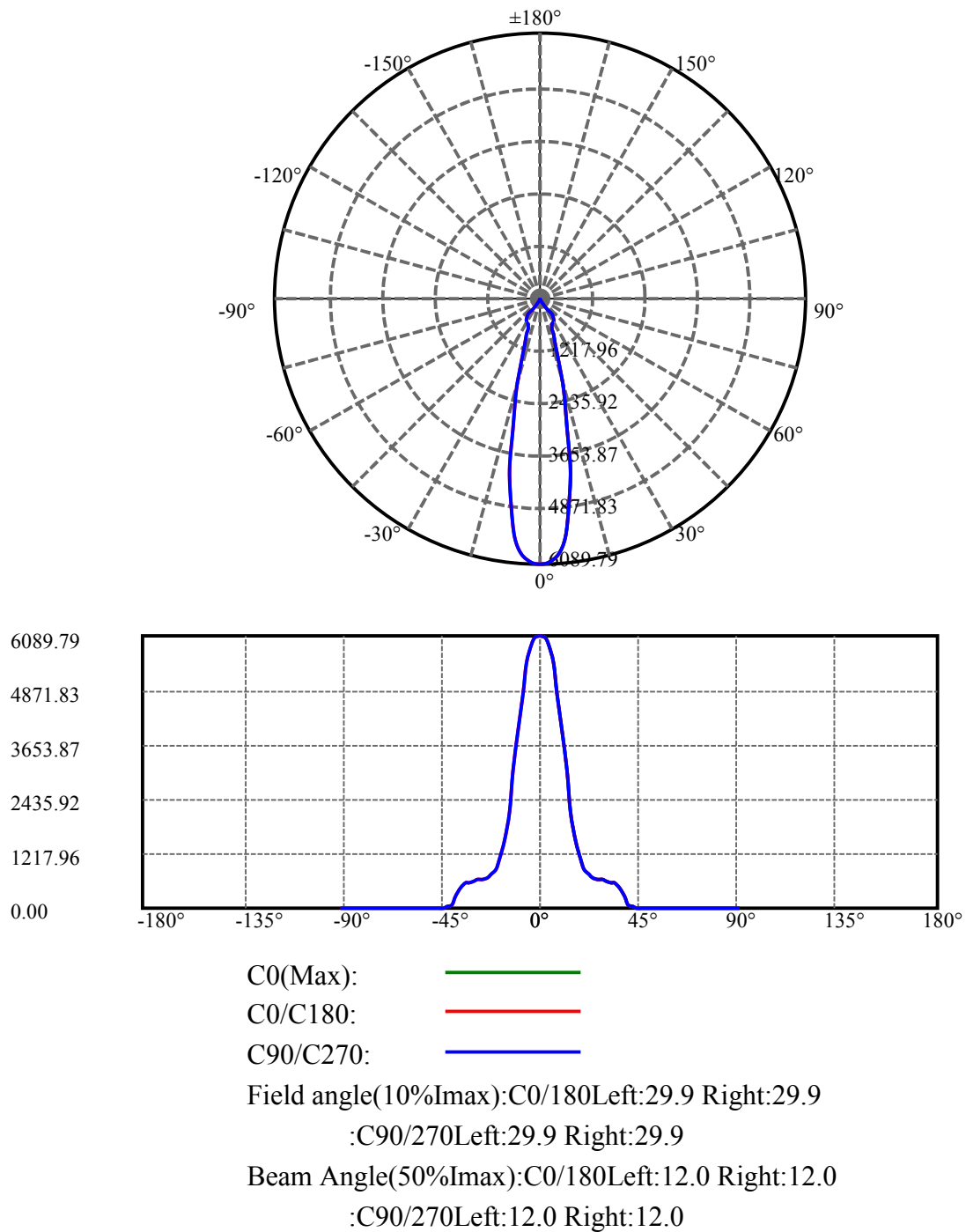
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	7.261	1.545	1644.068	.085%	99.390%
78.0	7.219	1.549	1645.617	.085%	99.484%
80.0	7.199	1.555	1647.172	.086%	99.578%
82.0	7.164	1.556	1648.728	.086%	99.672%
84.0	7.150	1.560	1650.287	.086%	99.766%
86.0	7.095	1.552	1651.84	.086%	99.860%
88.0	7.054	1.546	1653.386	.085%	99.953%
90.0	7.047	0.773	1654.159	.043%	100.000%

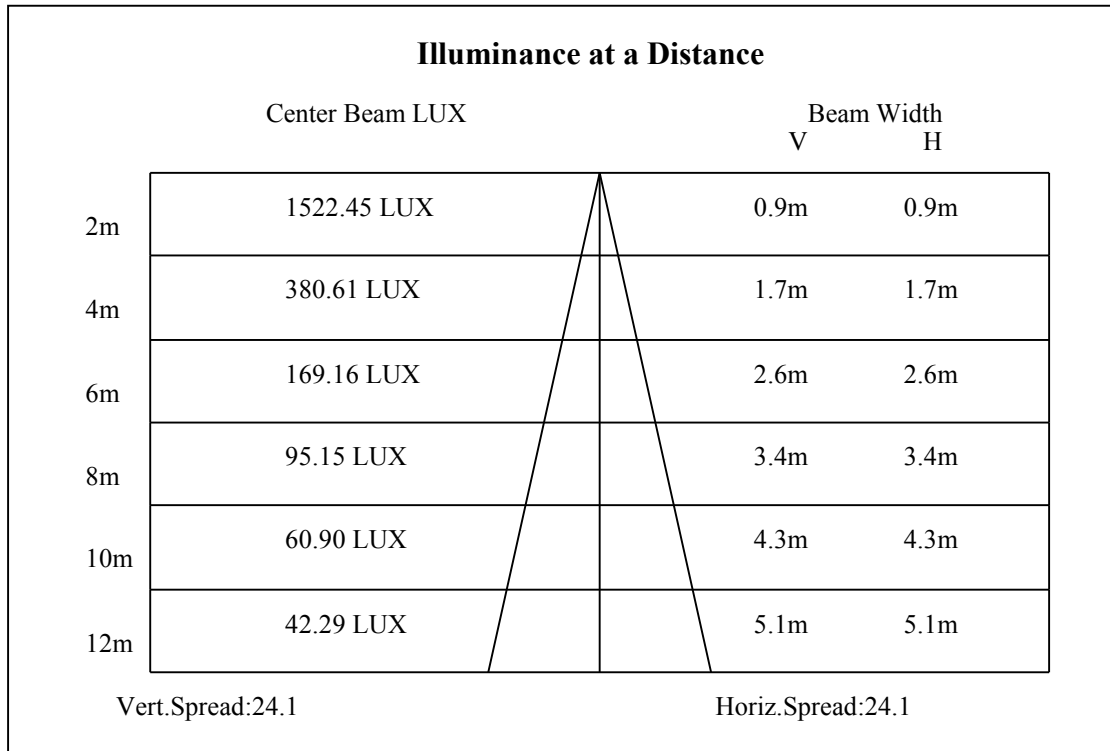
ZONAL LUMEN SUMMARY

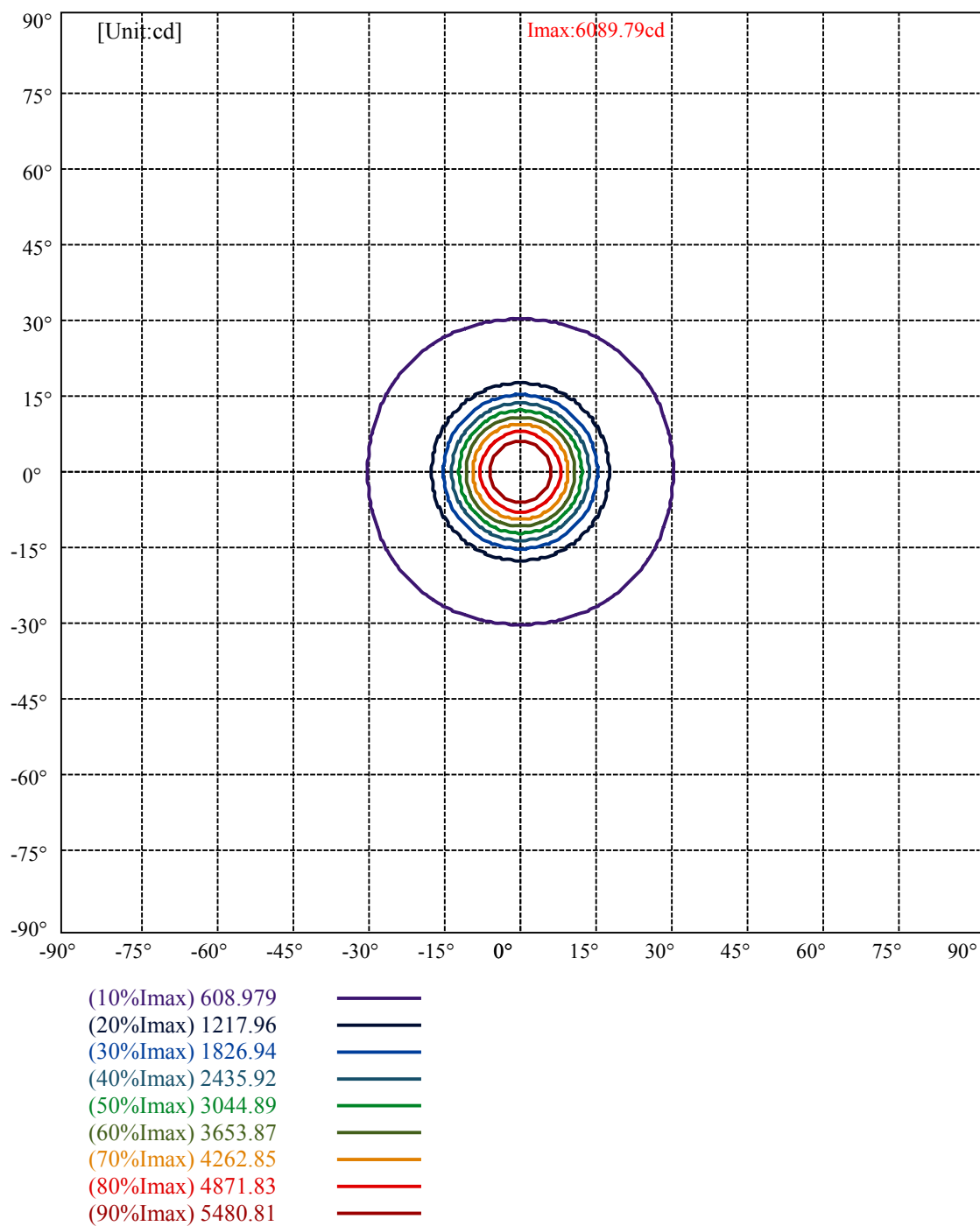
Zone	Lumens	%Lamp	%Fixt
0-30	1371.13	75.63%	82.89%
0-40	1613.37	88.99%	97.53%
0-60	1631.80	90.01%	98.65%
0-90	1653.39	91.20%	99.95%
0-120	1653.39	91.20%	99.95%
0-180	1654.16	91.24%	100.00%
60-90	23.11	1.27%	1.40%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.57	1323.33	72.99%	80.00%

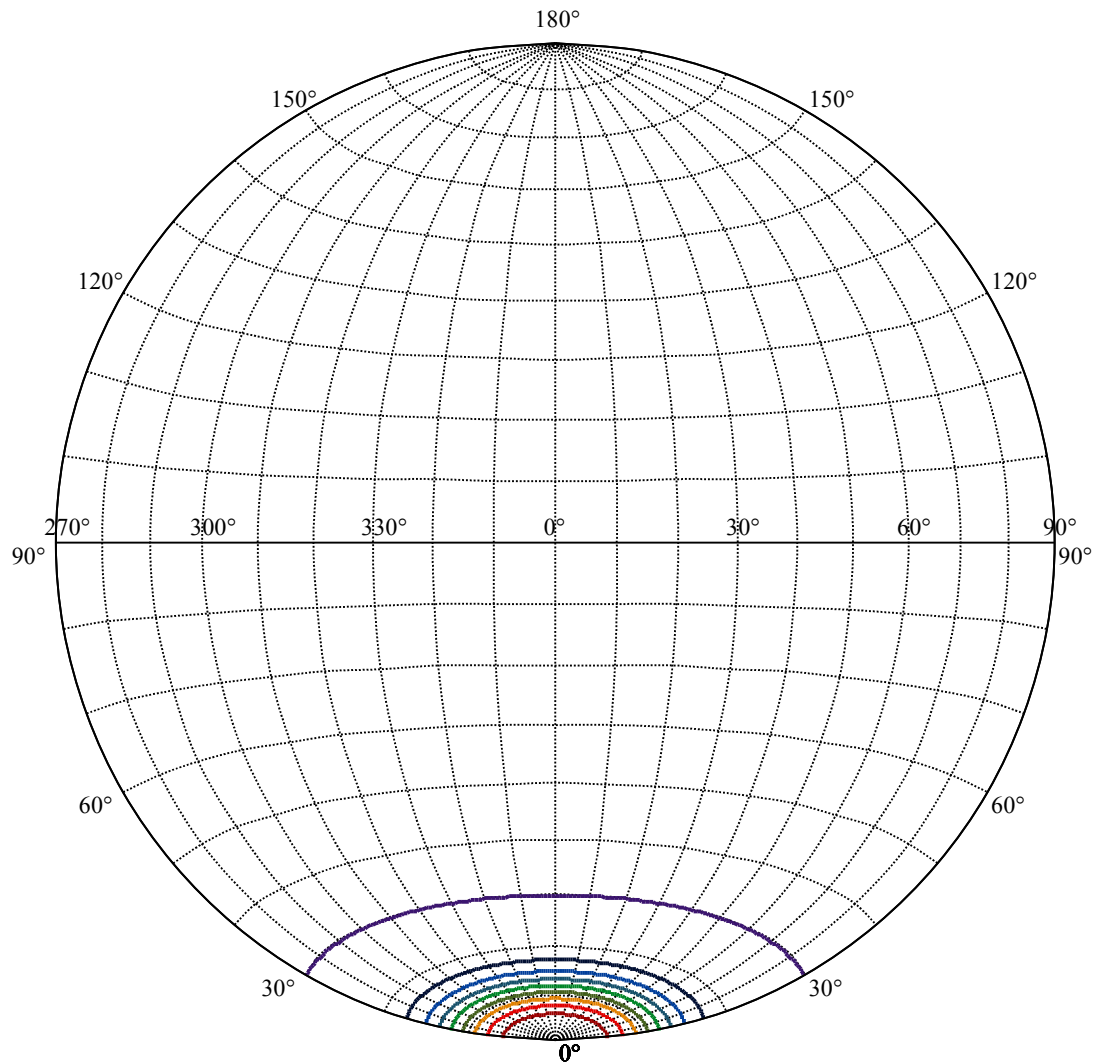
ZONAL LUMEN SUMMARY

0-10	566.03
10-20	484.82
20-30	320.28
30-40	242.25
40-50	10.68
50-60	7.75
60-70	7.65
70-80	7.72
80-90	6.21
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









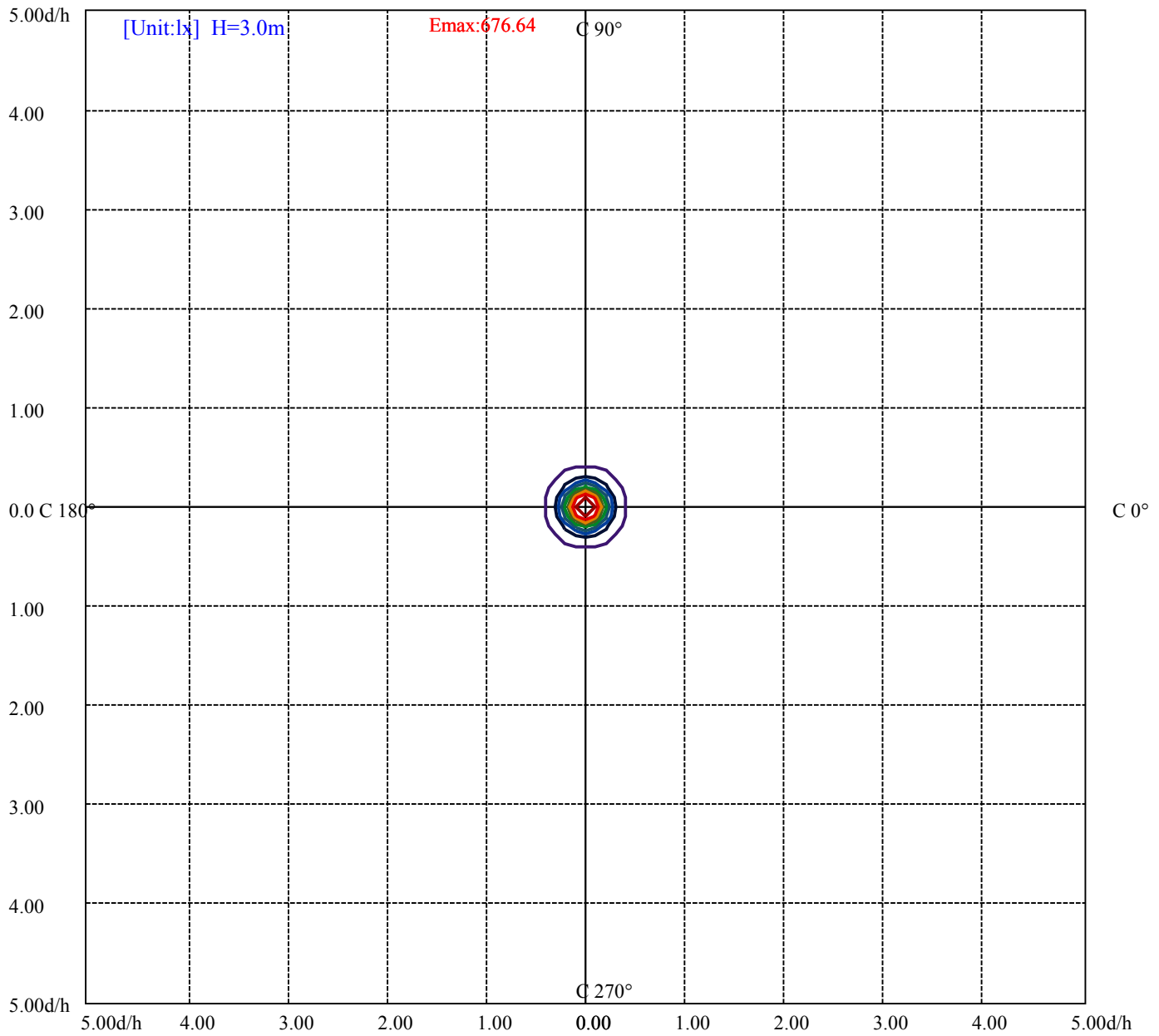
House

[Unit:cd]

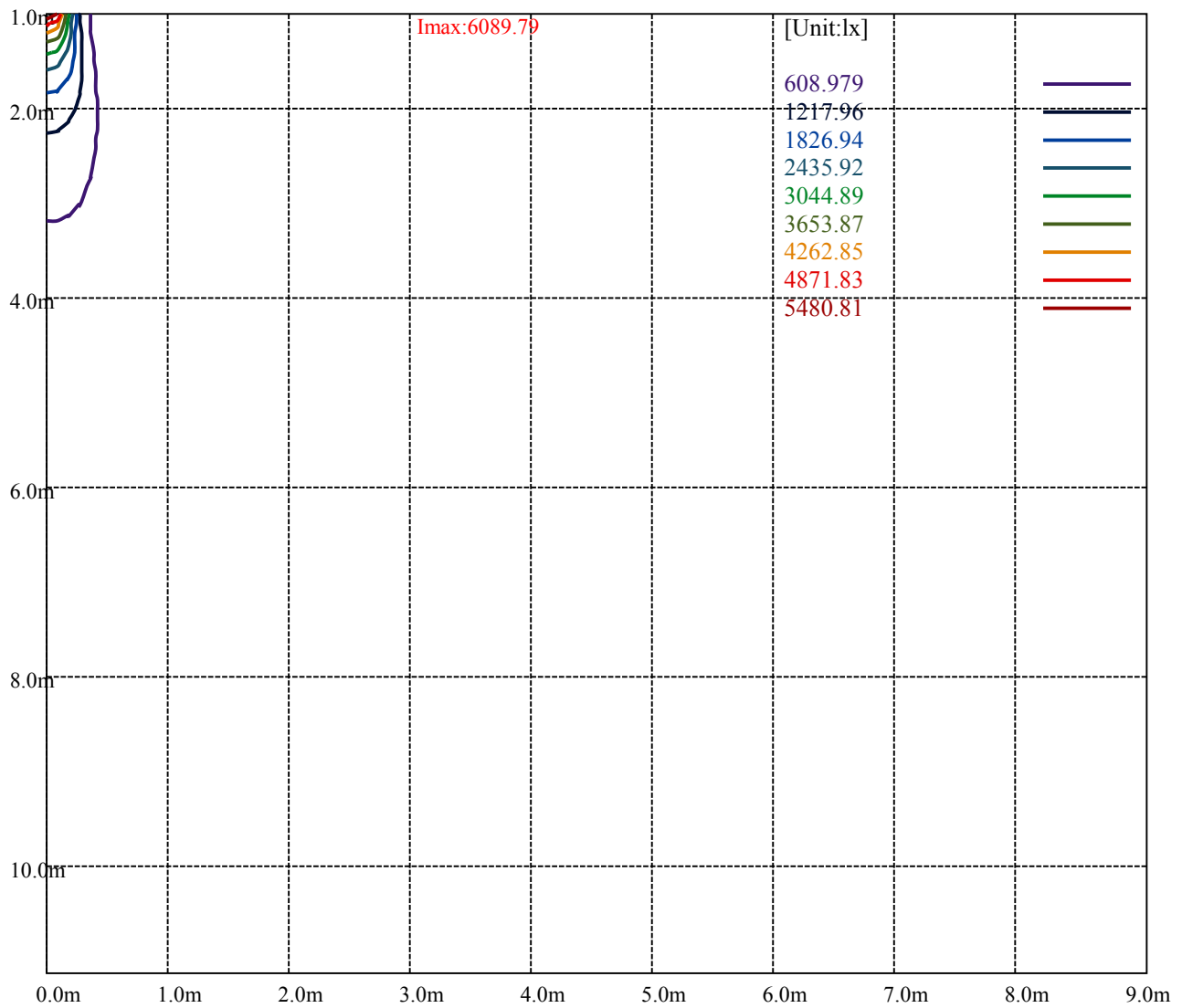
Road

Imax:6089.79

(10%Imax)	608.979	—
(20%Imax)	1217.96	—
(30%Imax)	1826.94	—
(40%Imax)	2435.92	—
(50%Imax)	3044.89	—
(60%Imax)	3653.87	—
(70%Imax)	4262.85	—
(80%Imax)	4871.83	—
(90%Imax)	5480.81	—



(10%Emax)	67.66422	
(20%Emax)	135.3289	
(30%Emax)	202.9933	
(40%Emax)	270.6566	
(50%Emax)	338.3211	
(60%Emax)	405.9856	
(70%Emax)	473.65	
(80%Emax)	541.3145	
(90%Emax)	608.9789	



Luminance Table

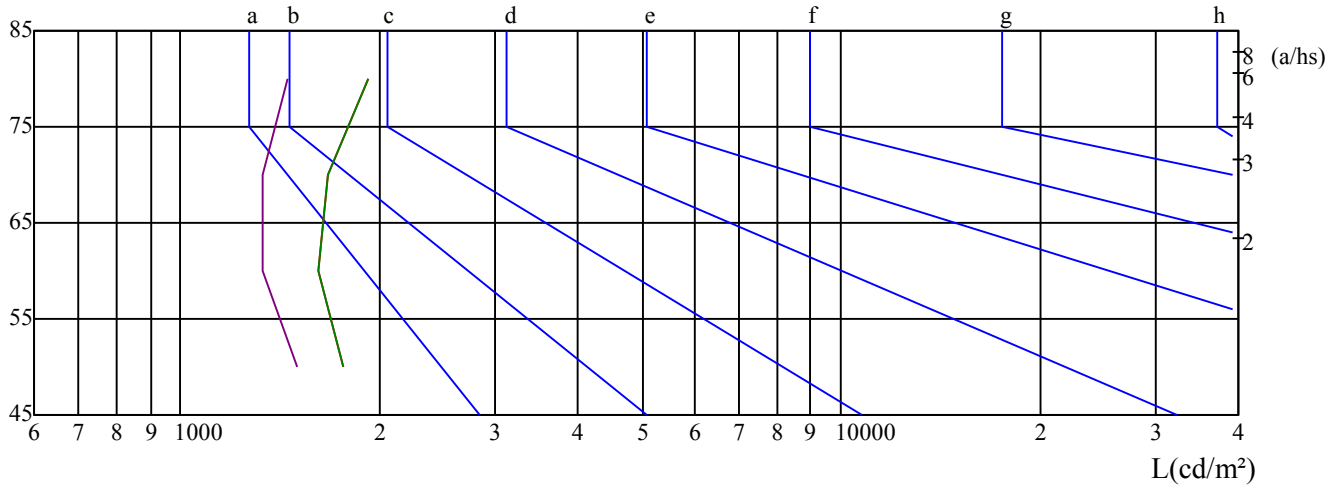
γ	45	50	55	60	65	70	75	80	85
C0	0	1758	0	1613	0	1675	0	1922	0
C45	0	1499	0	1332	0	1331	0	1456	0
C90	0	1758	0	1613	0	1675	0	1922	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3489	3489	3489	5486	5486	5486	16083	16083	16083

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

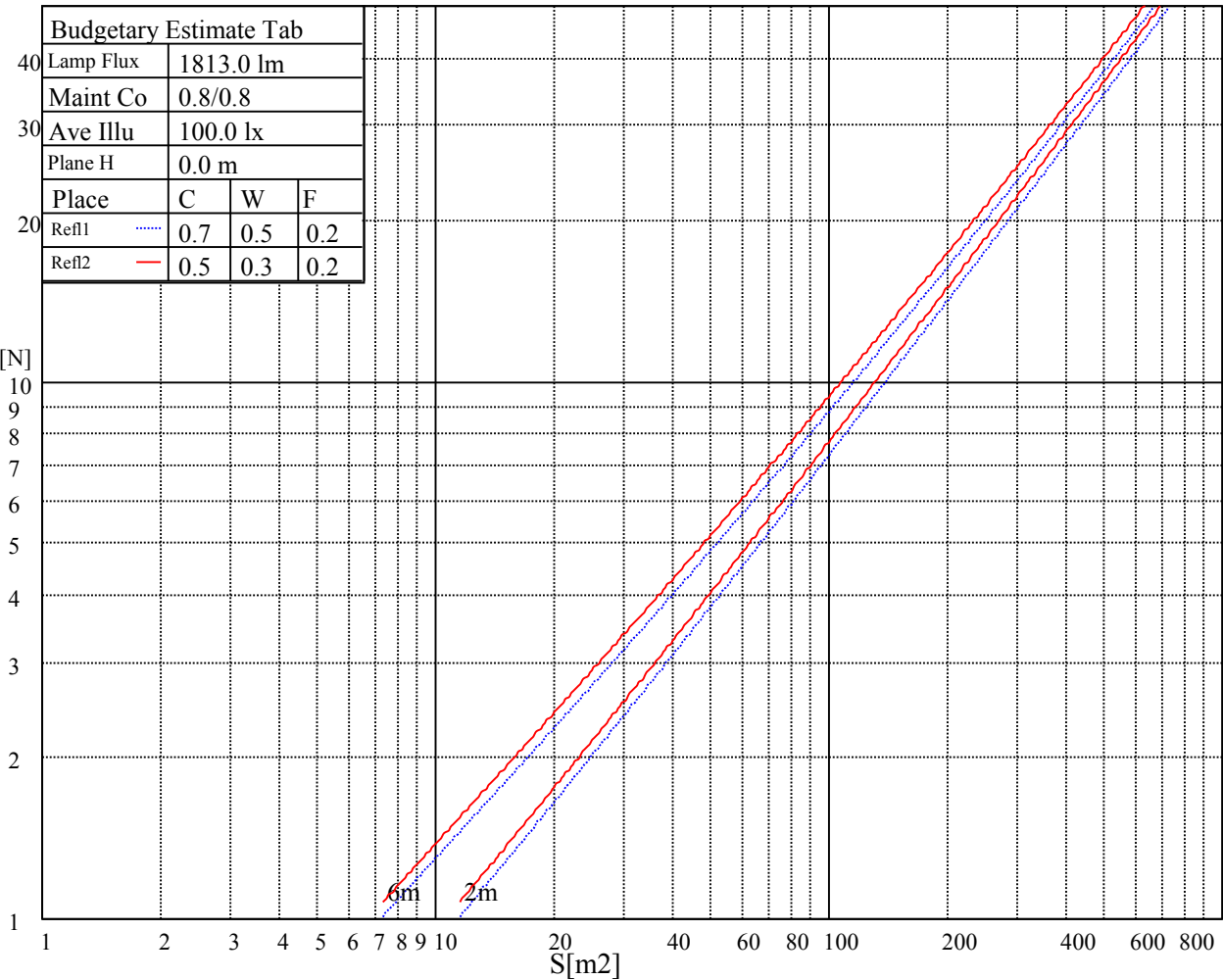
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

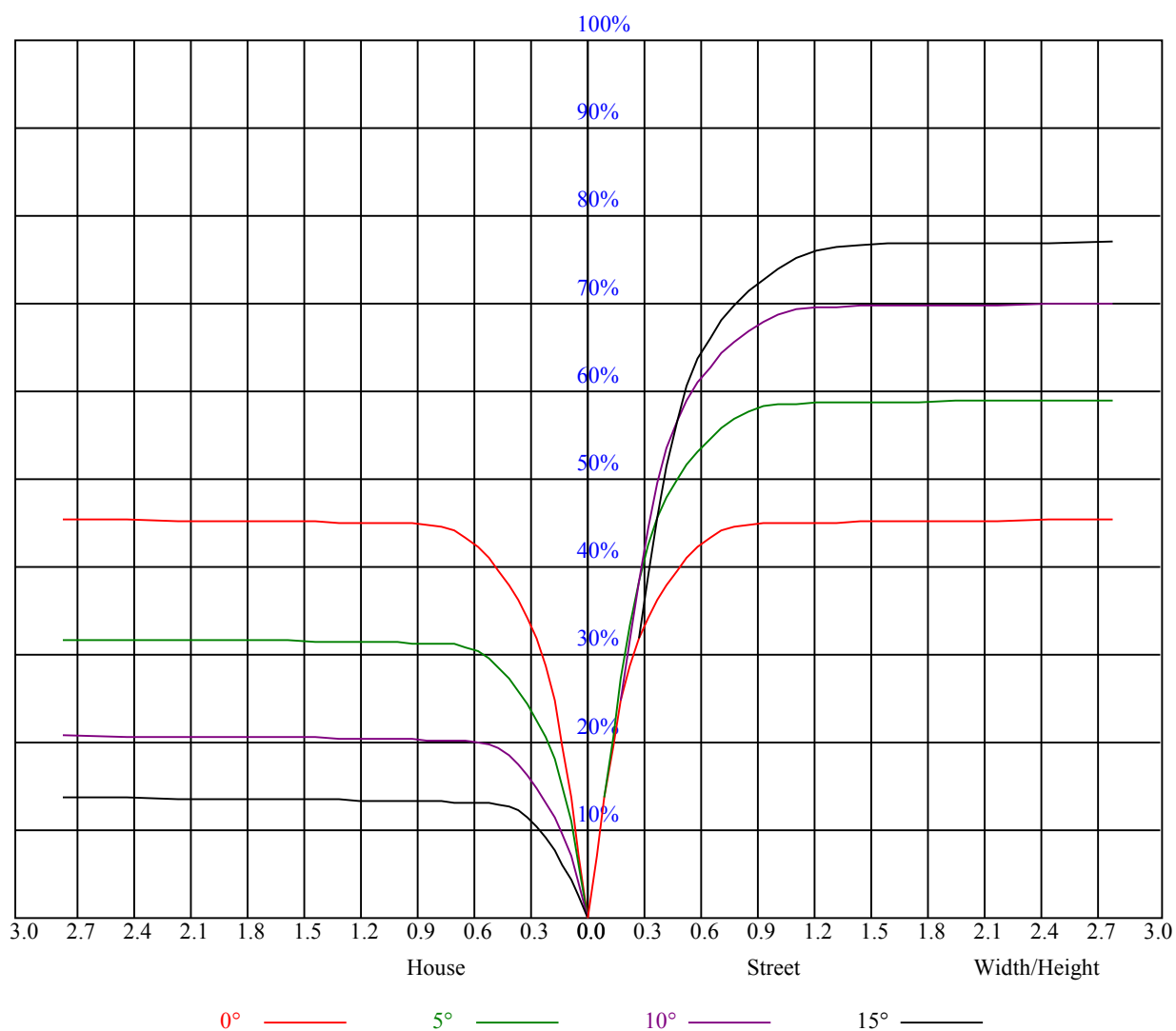
C0 ———

C45 ———

C90 ———



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	1.09	1.09	1.09	1.06	1.06	1.06	1.02	1.02	1.02	0.97	0.97	0.97	0.93	0.93	0.93	0.92
1	1.02	1.00	0.98	1.00	0.98	0.97	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87
2	0.96	0.93	0.91	0.95	0.92	0.90	0.92	0.90	0.88	0.89	0.87	0.86	0.87	0.85	0.84	0.83
3	0.92	0.88	0.85	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.84	0.81	0.84	0.82	0.80	0.79
4	0.87	0.83	0.80	0.86	0.82	0.80	0.84	0.81	0.79	0.83	0.80	0.78	0.81	0.79	0.77	0.76
5	0.83	0.79	0.76	0.83	0.79	0.76	0.81	0.78	0.75	0.80	0.77	0.74	0.78	0.76	0.74	0.73
6	0.80	0.76	0.72	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
7	0.77	0.73	0.69	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.69	0.73	0.70	0.68	0.67
8	0.74	0.70	0.67	0.74	0.69	0.67	0.73	0.69	0.66	0.72	0.69	0.66	0.71	0.68	0.66	0.65
9	0.71	0.67	0.64	0.71	0.67	0.64	0.70	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.64	0.63
10	0.69	0.65	0.62	0.69	0.65	0.62	0.68	0.64	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.61



Nata 2-1680-M

Intensity data(cd)									
Appendix Page: 15 Total:16									
C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	6090.89	6030.88	5893.24	5566.20	4939.11	4078.03	3234.56	2307.41	1589.48
45.0	6084.83	6012.16	5833.23	5344.88	4604.37	3732.82	2801.82	1954.50	1385.22
90.0	6090.34	5975.27	5709.35	5139.51	4235.49	3371.10	2473.13	1672.61	1093.97
135.0	6093.09	6052.35	5908.10	5461.59	4739.81	3877.07	2942.76	2044.79	1430.37
180.0	6090.89	6083.73	5945.54	5528.76	4809.18	3899.09	2973.05	2109.21	1449.08
225.0	6084.83	6088.14	5997.84	5703.29	5063.54	4253.11	3351.28	2396.05	1696.84
270.0	6090.34	6062.26	5959.30	5711.55	5207.78	4473.33	3592.43	2623.44	1853.75
315.0	6093.09	6016.56	5860.75	5531.52	4865.33	4052.15	3142.62	2268.32	1595.53
360.0	6090.89	6030.88	5893.24	5566.20	4939.11	4078.03	3234.56	2307.41	1589.48
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	1161.14	896.32	782.35	719.59	679.95	651.32	625.44	605.07	580.85
45.0	1015.79	823.09	738.86	684.35	654.62	629.85	605.62	585.80	545.06
90.0	924.73	795.12	716.67	672.84	642.51	619.99	594.61	576.44	526.06
135.0	1040.57	834.66	752.07	691.51	654.62	630.95	602.87	580.85	551.67
180.0	1009.29	821.06	725.97	673.84	640.64	617.13	590.20	570.93	536.85
225.0	1088.52	901.27	769.74	702.13	657.48	631.44	604.30	581.67	560.25
270.0	1322.45	980.55	825.30	735.00	684.35	650.77	623.24	597.36	576.44
315.0	1090.78	898.91	772.77	711.27	672.02	643.61	614.21	591.53	570.55
360.0	1161.14	896.32	782.35	719.59	679.95	651.32	625.44	605.07	580.85
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	483.95	281.89	111.65	25.44	14.26	11.56	10.08	9.52	9.19
45.0	398.61	228.54	48.67	19.21	12.00	10.24	9.80	9.41	9.03
90.0	355.28	172.99	34.41	17.78	10.63	10.02	9.58	9.19	8.92
135.0	408.52	285.19	56.76	20.48	12.33	10.30	9.80	9.41	9.03
180.0	384.13	208.88	52.63	22.24	11.56	10.30	9.80	9.41	9.03
225.0	469.47	303.75	113.58	28.02	16.02	10.90	10.02	9.63	9.19
270.0	536.80	370.53	182.84	39.26	20.70	12.33	10.35	9.80	9.36
315.0	483.45	315.58	116.39	24.78	15.09	10.74	10.02	9.58	9.19
360.0	483.95	281.89	111.65	25.44	14.26	11.56	10.08	9.52	9.19
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	8.81	8.53	8.31	8.04	7.87	7.71	7.60	7.49	7.38
45.0	8.70	8.42	8.20	7.98	7.87	7.71	7.60	7.49	7.38
90.0	8.64	8.37	8.15	7.98	7.82	7.71	7.60	7.54	7.49
135.0	8.70	8.42	8.20	8.04	7.87	7.71	7.60	7.54	7.43
180.0	8.75	8.48	8.20	8.04	7.87	7.76	7.60	7.49	7.38
225.0	8.81	8.59	8.31	8.09	7.93	7.76	7.65	7.54	7.43
270.0	8.97	8.70	8.42	8.20	8.04	7.87	7.76	7.65	7.60
315.0	8.81	8.59	8.31	8.09	7.87	7.76	7.60	7.49	7.38
360.0	8.81	8.53	8.31	8.04	7.87	7.71	7.60	7.49	7.38
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	7.32	7.27	7.21	7.16	7.16	7.10	7.10	7.10	7.05
45.0	7.32	7.27	7.21	7.21	7.16	7.16	7.10	7.10	7.05
90.0	7.43	7.38	7.32	7.32	7.32	7.32	7.32	7.05	7.05
135.0	7.32	7.27	7.27	7.21	7.16	7.16	7.16	7.10	7.05
180.0	7.32	7.27	7.21	7.16	7.16	7.10	7.10	7.05	7.05
225.0	7.38	7.27	7.27	7.21	7.16	7.10	7.10	7.05	7.05
270.0	7.49	7.43	7.38	7.32	7.32	7.27	7.21	7.21	7.10
315.0	7.32	7.27	7.21	7.16	7.16	7.10	7.10	7.10	7.05
360.0	7.32	7.27	7.21	7.16	7.16	7.10	7.10	7.10	7.05

Intensity data(cd)

Appendix Page: 16 Total:16

C/γ(°)	90.0
0.0	7.05
45.0	7.05
90.0	7.05
135.0	7.05
180.0	7.05
225.0	7.05
270.0	7.05
315.0	7.05
360.0	7.05