
Nata

Client:

LumCAT: 3-1698-N

Luminaire: 92.70.065.00+92.70.089.00

Report No: nata0100

Test No: GC2018052101

LampCAT: LUMINUS CHM-9 XH20

Lamp flux(lm): 1556.1

Number of Lamps: 1

Length(mm): 79

Phm Type: C

Voltage(V): 35.1000

Current(A): 0.4000

Power (W): 14.0400

PF: 0.0000

Ballast type: DC

Width(mm): 79

Height(mm): 0

Photometric Results

Lumens(lm): 1251.28, Efficiency(%): 80.41% , Luminous Efficacy(lm/W): 89.12

Central intensity(cd): 13249.320, Maximum intensity(cd): 13249.320

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=13.2

[C90/270]Total=13.2

Field angle(10%Imax): [C0/180]Total=25.6

[C90/270]Total=25.6

Maximum s/h(1/2): C0_180=0.23 C90_270=0.23

Maximum s/h(1/4): C0_180=0.23 C90_270=0.23

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 81.21%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.416%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	13249.323	12.679	12.679	.815%	1.013%
2.0	12479.290	95.516	108.195	6.138%	8.647%
4.0	10362.509	158.531	266.726	10.188%	21.316%
6.0	7479.550	171.465	438.191	11.019%	35.019%
8.0	4776.969	145.805	583.996	9.370%	46.672%
10.0	2696.064	102.675	686.671	6.598%	54.878%
12.0	1564.400	71.333	758.004	4.584%	60.578%
14.0	946.082	50.196	808.2	3.226%	64.590%
16.0	746.090	45.102	853.302	2.898%	68.195%
18.0	628.331	42.583	895.885	2.736%	71.598%
20.0	540.915	40.574	936.459	2.607%	74.840%
22.0	459.232	37.729	974.188	2.425%	77.855%
24.0	380.798	33.968	1008.156	2.183%	80.570%
26.0	317.311	30.506	1038.662	1.960%	83.008%
28.0	265.021	27.287	1065.949	1.754%	85.189%
30.0	223.102	24.465	1090.414	1.572%	87.144%
32.0	180.028	20.923	1111.337	1.345%	88.816%
34.0	150.662	18.477	1129.814	1.187%	90.293%
36.0	125.033	16.118	1145.931	1.036%	91.581%
38.0	106.266	14.348	1160.28	.922%	92.728%
40.0	90.437	12.749	1173.029	.819%	93.747%
42.0	77.361	11.353	1184.381	.730%	94.654%
44.0	65.820	10.028	1194.409	.644%	95.455%
46.0	54.582	8.611	1203.02	.553%	96.143%
48.0	44.107	7.189	1210.208	.462%	96.718%
50.0	34.252	5.754	1215.963	.370%	97.178%
52.0	26.709	4.616	1220.579	.297%	97.547%
54.0	20.275	3.597	1224.176	.231%	97.834%
56.0	15.553	2.828	1227.004	.182%	98.060%
58.0	12.050	2.241	1229.245	.144%	98.239%
60.0	9.841	1.869	1231.114	.120%	98.389%
62.0	8.747	1.694	1232.808	.109%	98.524%
64.0	8.190	1.614	1234.423	.104%	98.653%
66.0	7.846	1.572	1235.994	.101%	98.779%
68.0	7.495	1.524	1237.518	.098%	98.900%
70.0	7.219	1.488	1239.006	.096%	99.019%
72.0	6.923	1.444	1240.45	.093%	99.135%
74.0	6.696	1.412	1241.862	.091%	99.248%

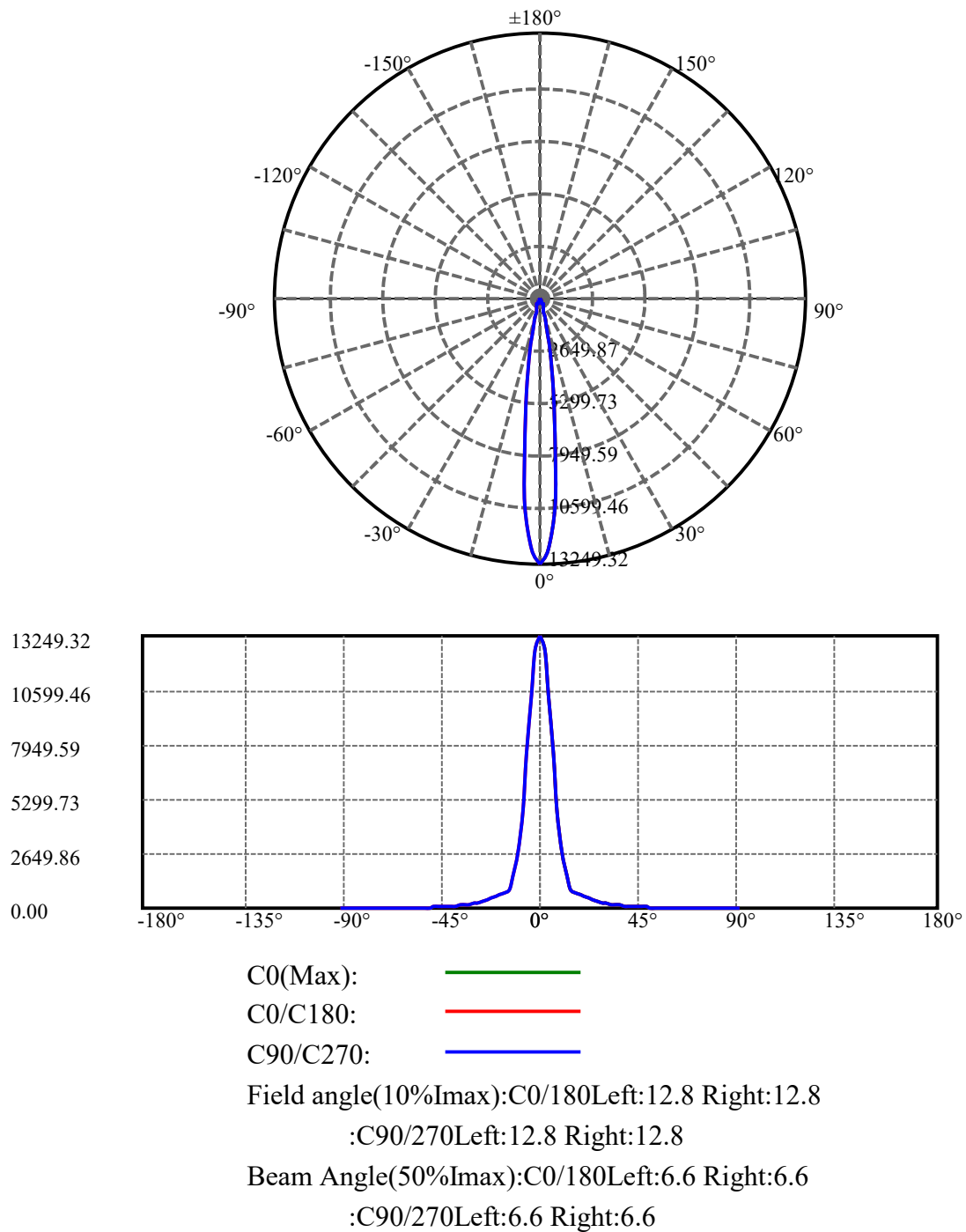
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	6.497	1.382	1243.244	.089%	99.358%
78.0	6.345	1.361	1244.606	.087%	99.467%
80.0	6.201	1.339	1245.945	.086%	99.574%
82.0	5.987	1.300	1247.245	.084%	99.678%
84.0	5.678	1.238	1248.484	.080%	99.777%
86.0	5.334	1.167	1249.651	.075%	99.870%
88.0	4.996	1.095	1250.746	.070%	99.958%
90.0	4.845	0.531	1251.277	.034%	100.000%

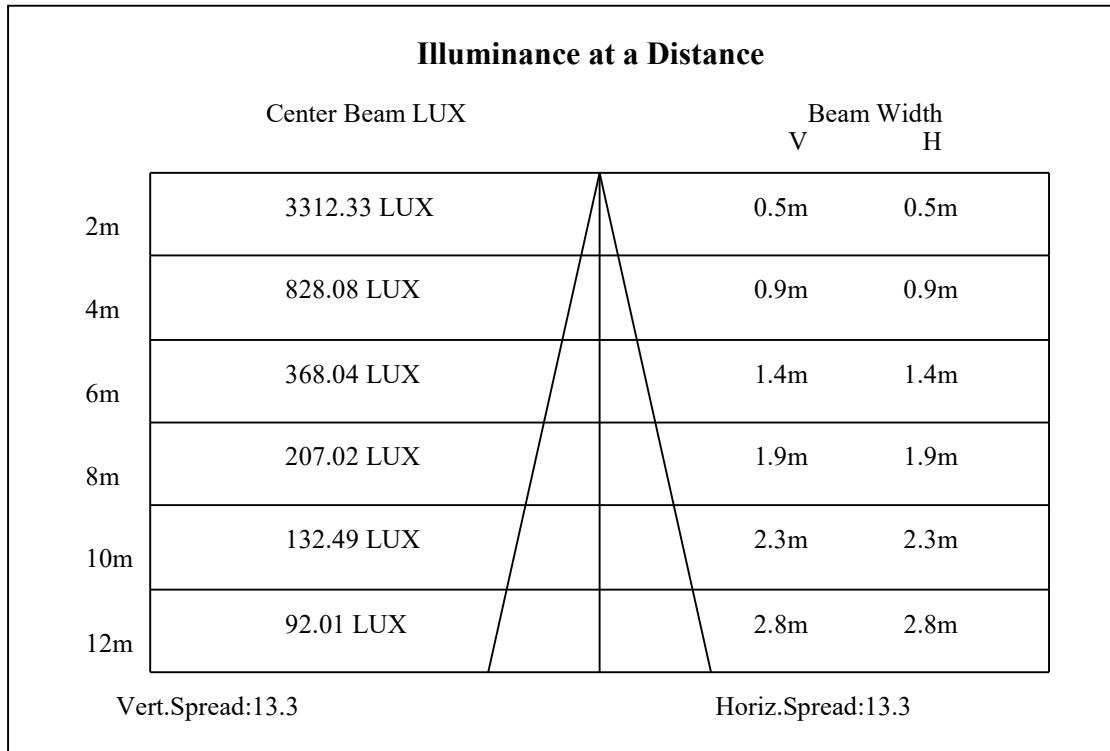
ZONAL LUMEN SUMMARY

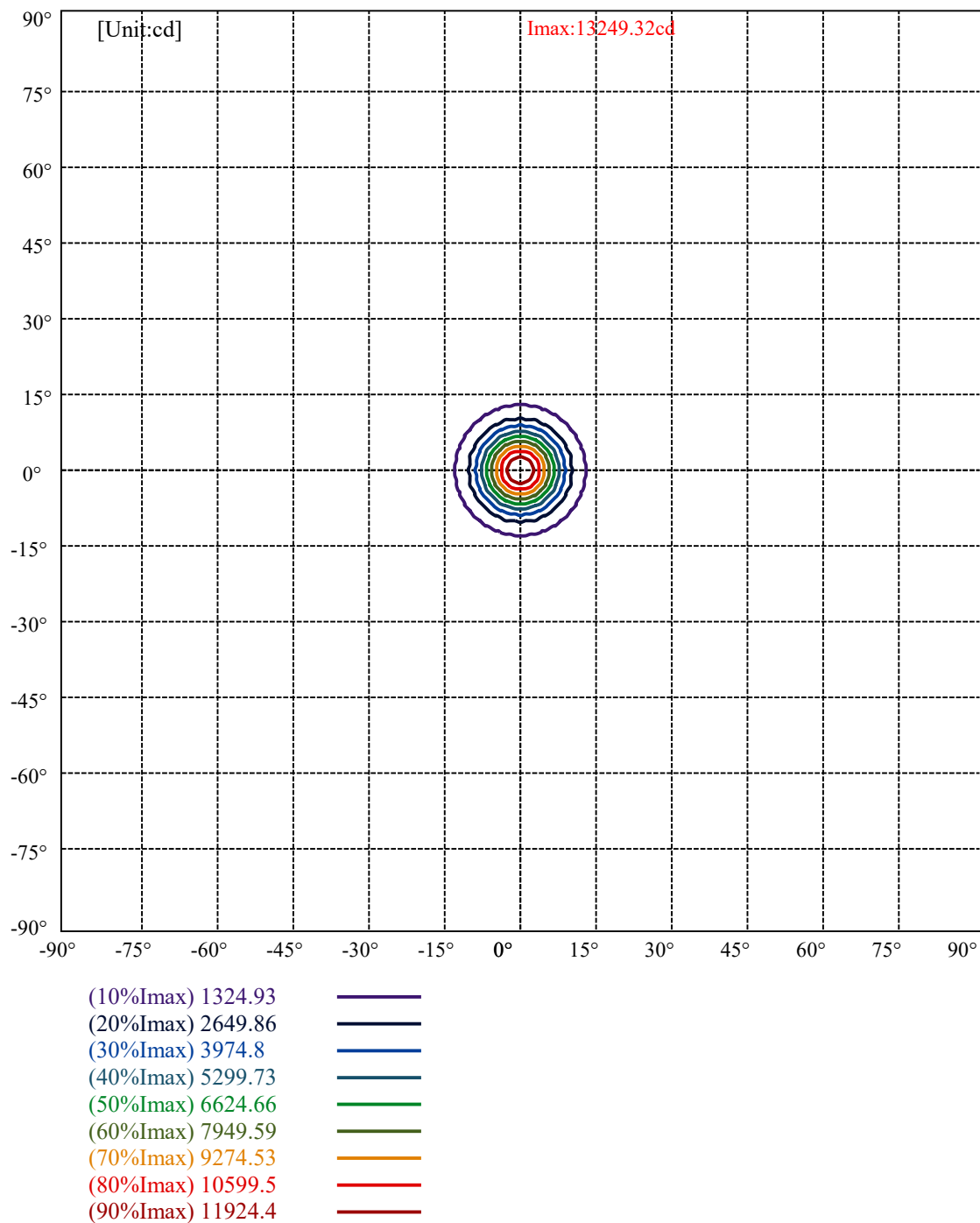
Zone	Lumens	%Lamp	%Fixt
0-30	1090.41	70.07%	87.14%
0-40	1173.03	75.38%	93.75%
0-60	1231.11	79.11%	98.39%
0-90	1250.75	80.38%	99.96%
0-120	1250.75	80.38%	99.96%
0-180	1251.28	80.41%	100.00%
60-90	21.50	1.38%	1.72%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-23.58	1001.02	64.33%	80.00%

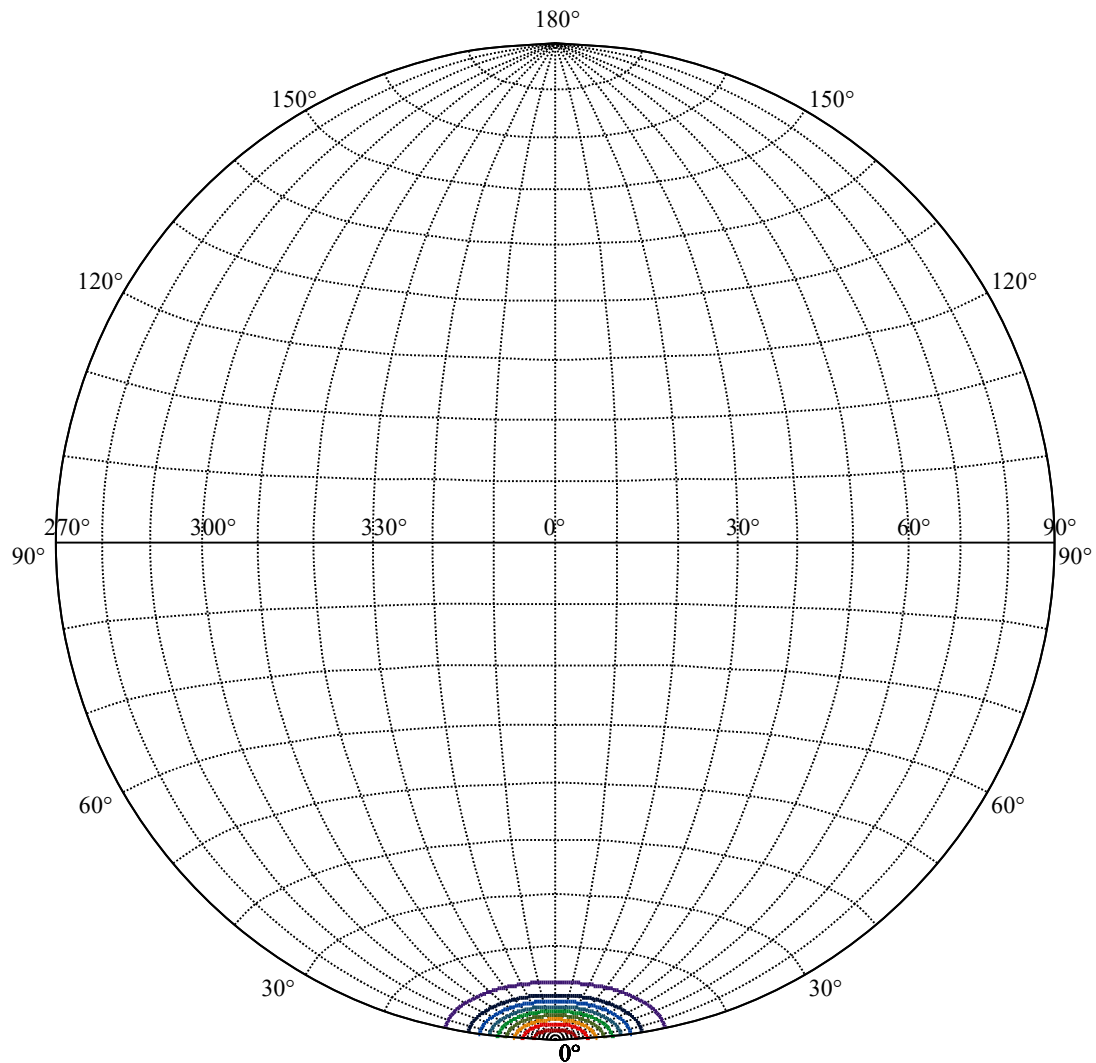
ZONAL LUMEN SUMMARY

0-10	686.67
10-20	249.79
20-30	153.96
30-40	82.61
40-50	42.93
50-60	15.15
60-70	7.89
70-80	6.94
80-90	4.80
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









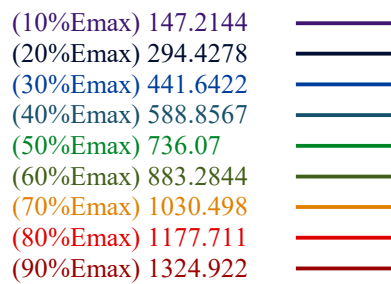
House

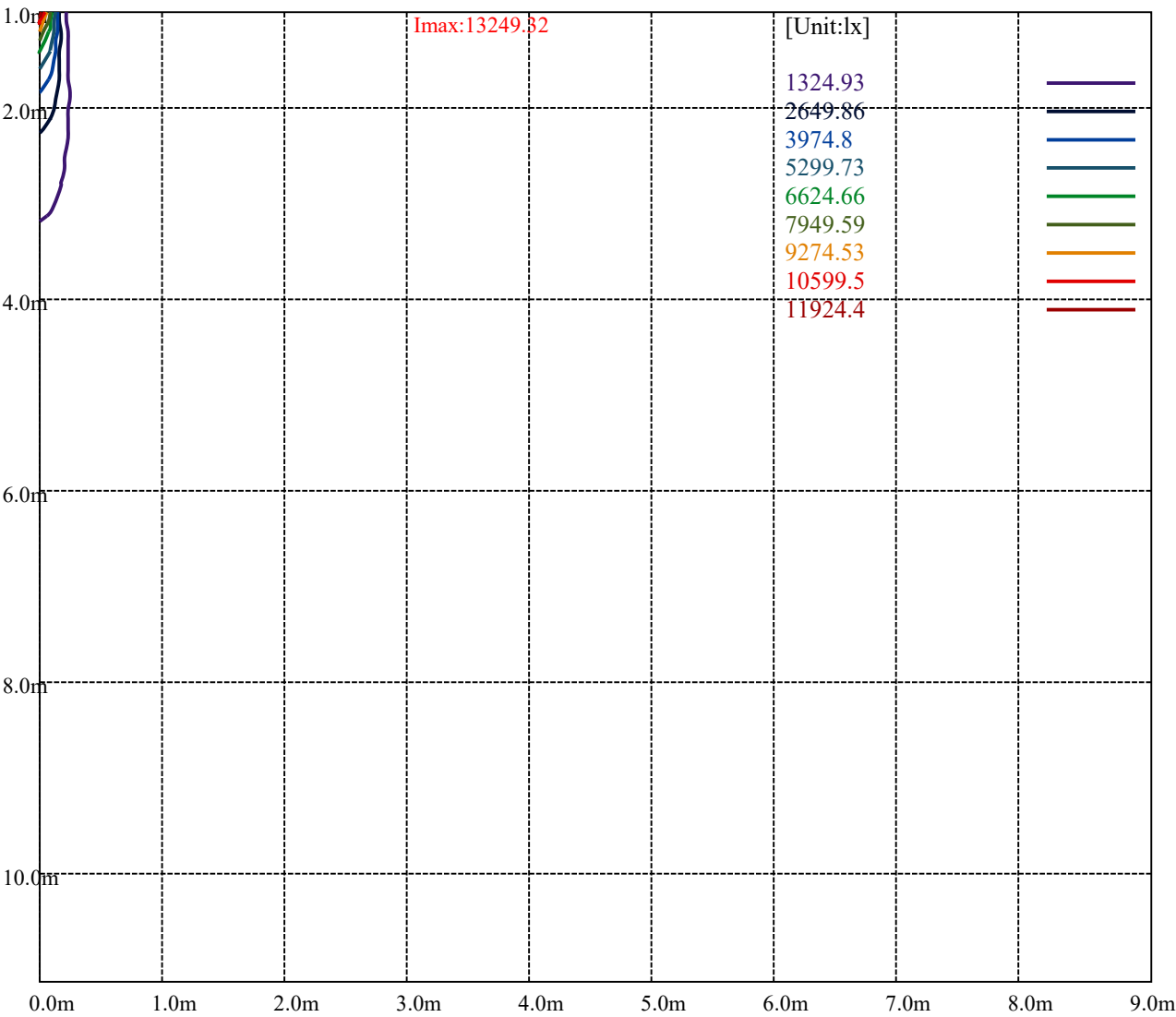
[Unit:cd]

Road

Imax:13249.32

(10%Imax)	1324.93	—
(20%Imax)	2649.86	—
(30%Imax)	3974.8	—
(40%Imax)	5299.73	—
(50%Imax)	6624.66	—
(60%Imax)	7949.59	—
(70%Imax)	9274.53	—
(80%Imax)	10599.5	—
(90%Imax)	11924.4	—





Luminance Table

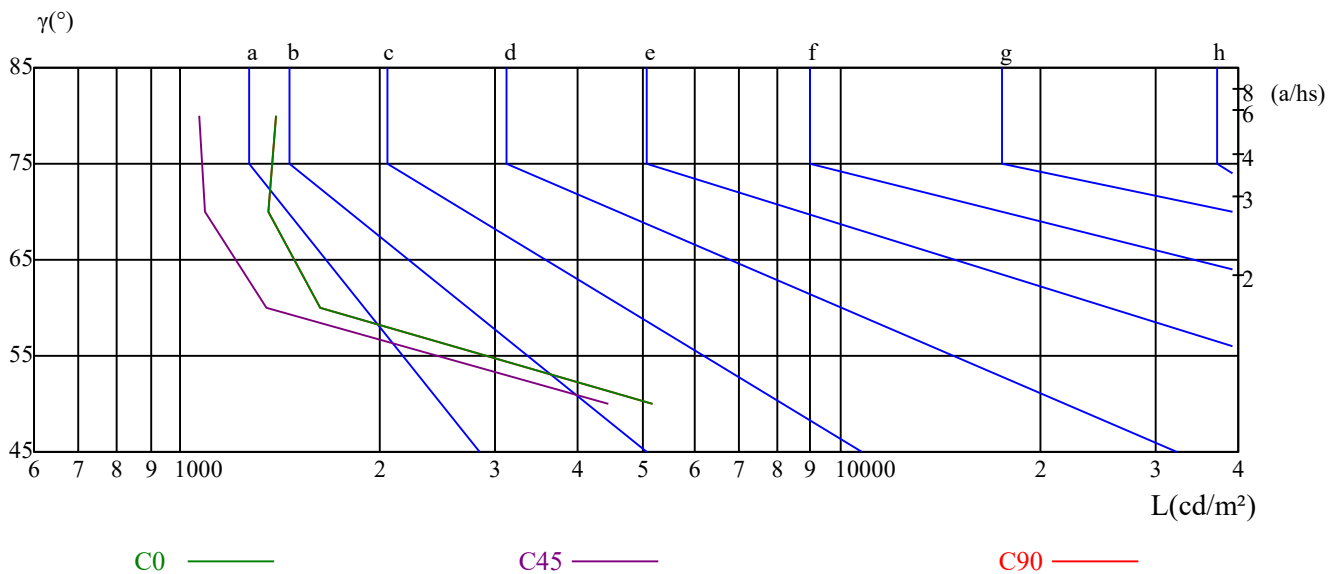
γ	45	50	55	60	65	70	75	80	85
C0	0	5179	0	1623	0	1355	0	1400	0
C45	0	4453	0	1352	0	1086	0	1066	0
C90	0	5179	0	1623	0	1355	0	1400	0

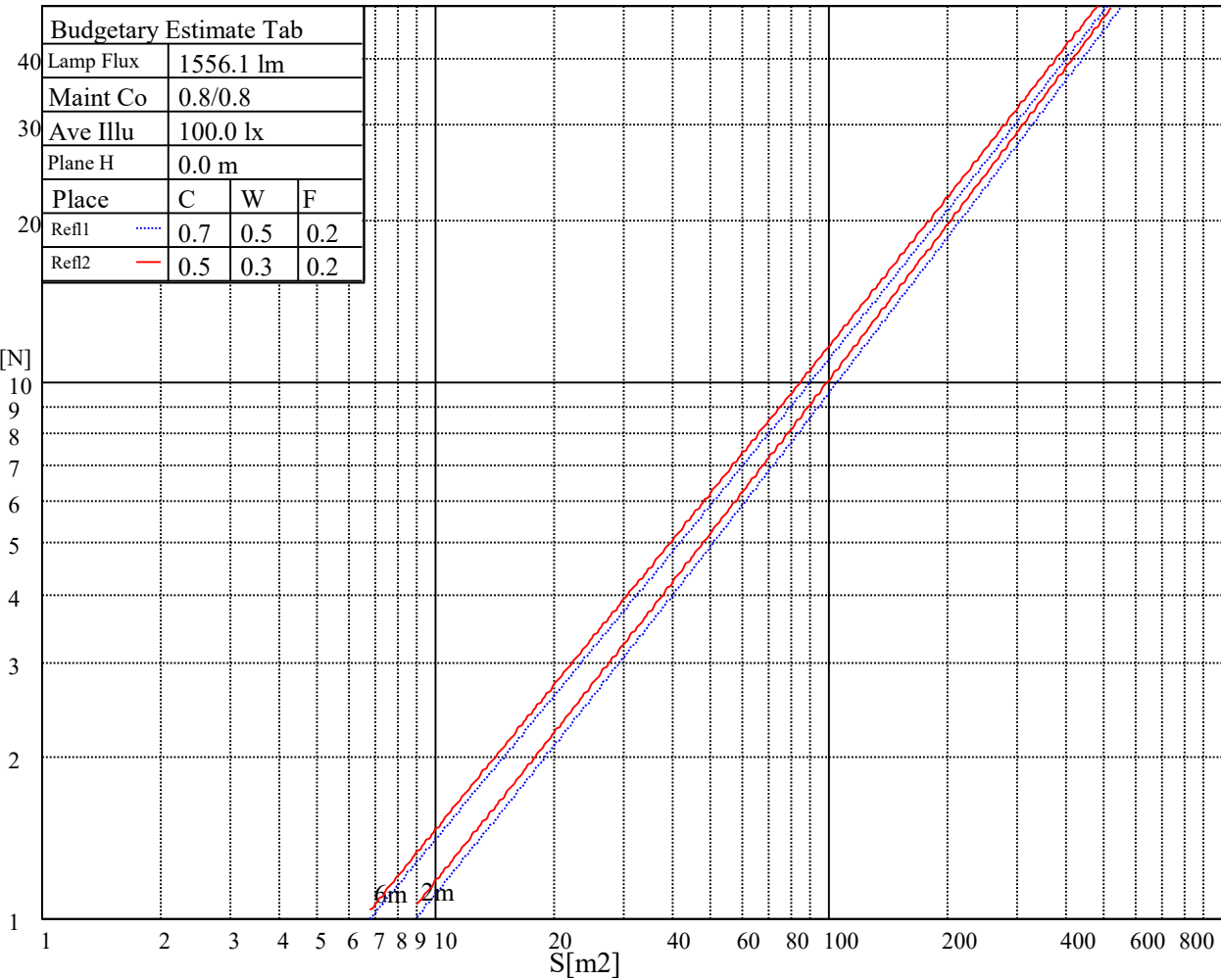
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4050	4039	4055	5010	4993	4993	10425	10476	10501

Glare Table

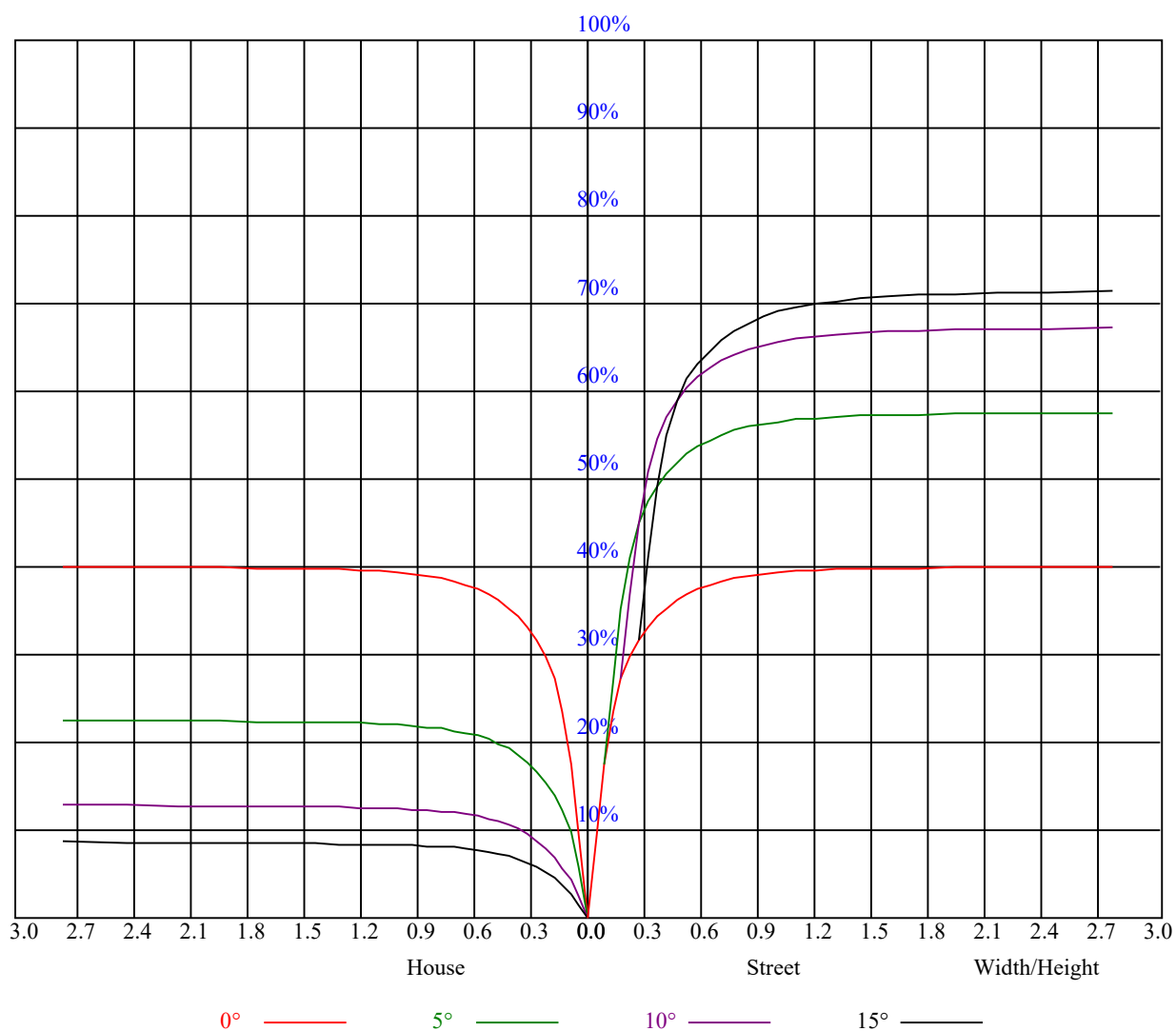
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

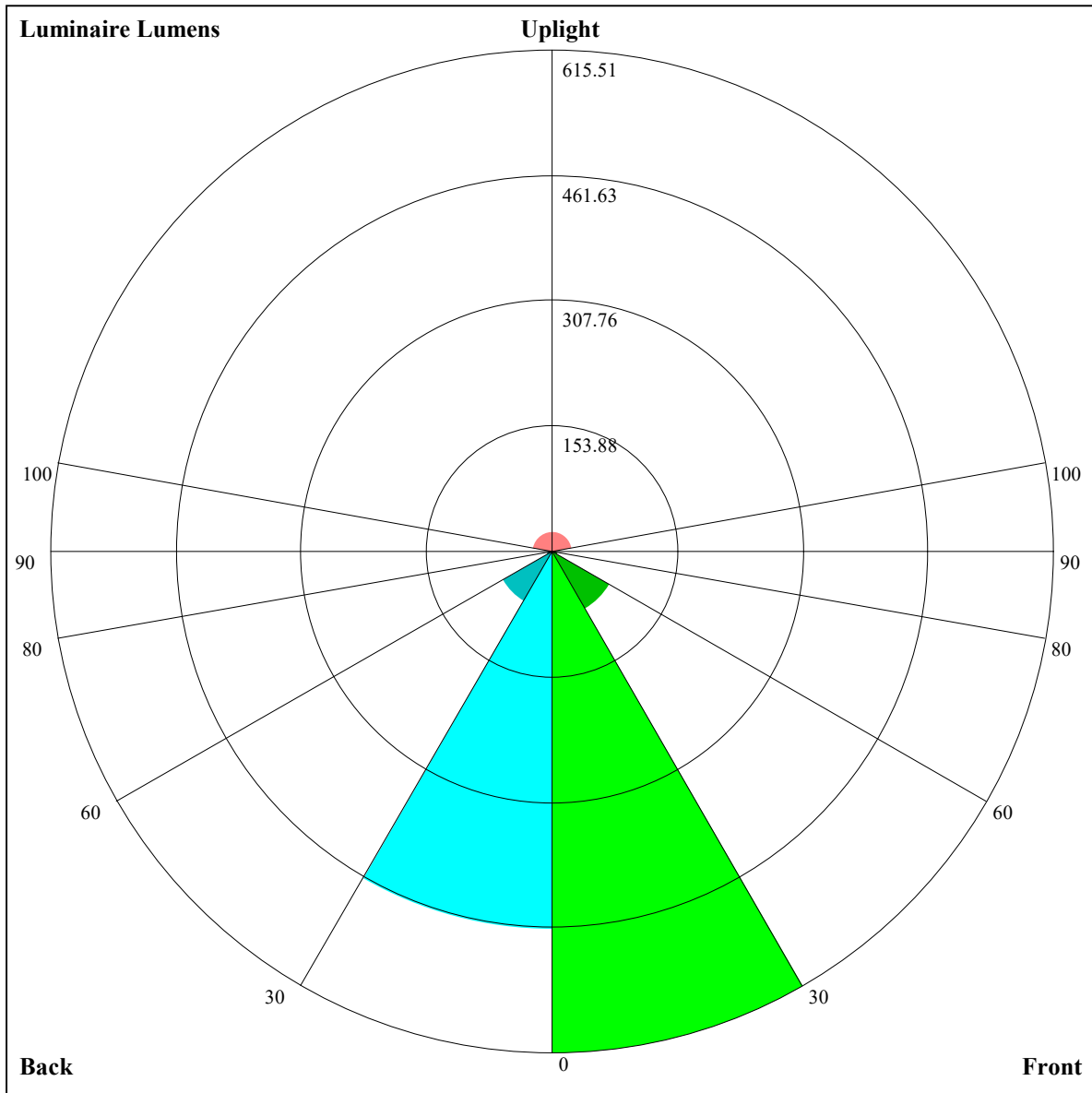
Luminance Limiting Curve





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	0.97	0.97	0.97	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.83	0.83	0.83	0.81
1	0.90	0.89	0.87	0.89	0.87	0.85	0.85	0.84	0.83	0.82	0.81	0.80	0.80	0.79	0.78	0.77
2	0.86	0.83	0.81	0.85	0.82	0.80	0.82	0.80	0.78	0.80	0.78	0.77	0.78	0.76	0.75	0.74
3	0.82	0.79	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.77	0.75	0.74	0.76	0.74	0.73	0.72
4	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.75	0.73	0.71	0.74	0.72	0.70	0.69
5	0.77	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.73	0.71	0.69	0.72	0.70	0.69	0.68
6	0.74	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.71	0.68	0.67	0.66
7	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.70	0.67	0.65	0.69	0.67	0.65	0.64
8	0.70	0.67	0.65	0.70	0.67	0.64	0.69	0.66	0.64	0.68	0.66	0.64	0.68	0.65	0.64	0.63
9	0.69	0.65	0.63	0.68	0.65	0.63	0.68	0.65	0.63	0.67	0.64	0.63	0.66	0.64	0.62	0.62
10	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.63	0.62	0.66	0.63	0.61	0.65	0.63	0.61	0.61





Luminaire Lumens:

FL=615.51,FM=82.16,FH=7.73,FVH=3.08

BL=463.51,BM=70.53,BH=7.37,BVH=2.91

UL=5.29,UH=25.16

BUG Rating:B1-U2-G0

Intensity data(cd)

C/ γ (°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0
0.0	12987.80	13786.12	13031.85	10466.22	7504.19	4432.04	2846.42	1252.53	886.96
45.0	13274.10	14000.84	13191.51	10675.44	7449.13	4481.59	2868.44	1293.83	896.32
90.0	13444.77	13208.03	10981.55	8493.55	5437.37	3075.45	1608.75	1003.02	801.62
135.0	13290.61	12415.22	9937.68	6760.93	4233.84	2873.94	1228.86	885.86	723.99
180.0	12987.80	10571.93	7276.25	4522.88	2403.76	1078.28	899.57	724.93	625.00
225.0	13274.10	10878.59	7893.44	4832.85	2486.35	1087.80	907.77	728.34	636.12
270.0	13444.77	12106.90	9640.38	6320.47	3826.42	1898.90	1063.69	801.62	677.74
315.0	13290.61	12866.68	10947.41	7764.05	4874.69	2640.50	1091.71	878.53	720.96
360.0	12987.80	13786.12	13031.85	10466.22	7504.19	4432.04	2846.42	1252.53	886.96
C/ γ (°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0
0.0	724.54	622.14	534.60	448.71	376.59	306.66	278.03	212.13	175.13
45.0	752.62	657.92	562.13	471.28	395.30	322.08	279.14	221.82	181.96
90.0	673.23	576.22	496.00	412.87	338.98	284.81	237.46	191.60	163.46
135.0	611.68	526.89	446.51	370.53	313.27	278.03	219.84	181.36	152.73
180.0	530.08	448.05	372.18	305.45	255.57	214.55	177.67	146.73	124.32
225.0	543.57	464.62	386.22	318.01	261.90	221.88	181.58	149.04	125.42
270.0	581.40	503.77	424.48	347.96	289.05	235.64	195.34	161.43	134.28
315.0	609.53	527.72	451.74	371.58	307.82	256.51	215.77	176.13	147.99
360.0	724.54	622.14	534.60	448.71	376.59	306.66	278.03	212.13	175.13
C/ γ (°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0
0.0	147.00	121.95	102.79	90.13	76.53	65.02	54.84	43.11	33.53
45.0	150.30	126.57	107.03	90.90	78.73	66.18	54.78	43.11	33.42
90.0	135.33	114.52	98.94	85.56	72.73	61.39	49.61	37.93	29.51
135.0	125.47	106.20	90.35	76.25	65.52	53.35	42.83	32.76	25.44
180.0	104.77	90.90	77.35	65.41	53.85	43.11	33.80	26.15	20.54
225.0	104.00	90.68	76.31	64.80	54.01	43.33	33.31	26.04	20.15
270.0	111.16	95.85	82.36	69.92	60.78	49.83	39.70	31.00	24.00
315.0	122.23	103.45	88.37	75.92	64.42	54.45	43.99	33.91	27.09
360.0	147.00	121.95	102.79	90.13	76.53	65.02	54.84	43.11	33.53
C/ γ (°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0
0.0	26.32	20.32	15.31	12.00	9.69	8.75	8.37	7.93	7.65
45.0	25.16	19.16	14.70	11.40	9.52	8.70	8.26	7.87	7.54
90.0	22.41	17.18	13.10	10.19	8.86	8.31	7.93	7.60	7.27
135.0	19.16	14.65	11.12	9.14	8.48	8.04	7.71	7.38	7.10
180.0	15.31	11.89	9.63	8.70	8.26	7.87	7.60	7.27	6.99
225.0	15.09	11.84	9.47	8.59	8.15	7.76	7.49	7.21	6.94
270.0	18.06	14.04	10.96	8.97	8.42	7.93	7.65	7.32	7.10
315.0	20.70	15.36	12.11	9.74	8.59	8.15	7.76	7.38	7.16
360.0	26.32	20.32	15.31	12.00	9.69	8.75	8.37	7.93	7.65
C/ γ (°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0
0.0	7.32	7.10	6.83	6.66	6.55	6.44	6.22	5.89	5.40
45.0	7.21	6.99	6.77	6.61	6.50	6.33	6.11	5.73	5.29
90.0	6.99	6.72	6.44	6.33	6.28	6.11	5.78	5.40	4.96
135.0	6.83	6.61	6.44	6.28	6.11	5.84	5.45	5.18	4.84
180.0	6.72	6.50	6.28	6.11	5.84	5.56	5.23	4.96	4.84
225.0	6.66	6.50	6.33	6.17	5.89	5.62	5.34	5.01	4.84
270.0	6.83	6.55	6.44	6.28	6.11	5.89	5.51	5.12	4.84
315.0	6.83	6.61	6.44	6.33	6.33	6.11	5.78	5.40	4.96
360.0	7.32	7.10	6.83	6.66	6.55	6.44	6.22	5.89	5.40

Intensity data(cd)

Appendix Page: 17 Total:17

C/ $\gamma(^{\circ})$	90.0
0.0	5.01
45.0	4.96
90.0	4.79
135.0	4.79
180.0	4.79
225.0	4.84
270.0	4.79
315.0	4.79
360.0	5.01