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Nata

LumCAT: 1-1060-N	
Luminaire: 92.70.361.000	
Report No: 220517-B007	Voltage(V): 35.4800
Test No: 220517-C007	Current(A): 0.3610
LampCAT: CREE CMA1516	Power (W): 12.8080
Lamp flux(lm): 1756.1	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 43	Width(mm): 43
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1502.87
Efficiency(%): 85.58%
Lumens(lm)/Power(W): 117.34
Central intensity(cd): 9175.805
Maximum intensity(cd): 9175.805
Angle of maximum intensity: $C=0.0$ $\gamma=0.0$
Beam Angle(50%Imax): [C0/180]Total=16.7
[C90/270]Total=16.7
Field angle(10%Imax): [C0/180]Total=43.8
[C90/270]Total=43.8
Maximum s/h(1/2): C0_180=0.29 C90_270=0.29
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(%): 85.58%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.247%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	9175.805	0.000	0	.000%	.000%
1.0	9101.935	8.746	8.746	.498%	.582%
2.0	8851.496	25.768	34.514	1.467%	2.297%
3.0	8459.143	41.401	75.915	2.358%	5.051%
4.0	7946.015	54.913	130.829	3.127%	8.705%
5.0	7200.971	65.162	195.99	3.711%	13.041%
6.0	6466.758	71.828	267.818	4.090%	17.820%
7.0	5658.749	75.263	343.081	4.286%	22.828%
8.0	4840.732	75.143	418.223	4.279%	27.828%
9.0	4125.340	72.665	490.889	4.138%	32.663%
10.0	3521.089	69.197	560.086	3.940%	37.268%
11.0	3021.181	65.371	625.457	3.723%	41.618%
12.0	2657.884	62.080	687.537	3.535%	45.748%
13.0	2337.832	59.287	746.824	3.376%	49.693%
14.0	2065.508	56.362	803.186	3.210%	53.444%
15.0	1869.892	54.027	857.213	3.077%	57.038%
16.0	1684.285	52.079	909.291	2.966%	60.504%
17.0	1521.682	49.926	959.217	2.843%	63.826%
18.0	1365.660	47.606	1006.823	2.711%	66.993%
19.0	1256.828	45.626	1052.449	2.598%	70.029%
20.0	1126.282	43.618	1096.066	2.484%	72.932%
21.0	1013.140	41.081	1137.148	2.339%	75.665%
22.0	907.998	38.606	1175.754	2.198%	78.234%
23.0	808.524	36.017	1211.771	2.051%	80.631%
24.0	723.428	33.494	1245.265	1.907%	82.859%
25.0	638.632	30.970	1276.235	1.764%	84.920%
26.0	558.100	28.249	1304.484	1.609%	86.800%
27.0	475.379	25.284	1329.769	1.440%	88.482%
28.0	402.279	22.220	1351.989	1.265%	89.961%
29.0	333.414	19.248	1371.237	1.096%	91.241%
30.0	268.806	16.260	1387.497	.926%	92.323%
31.0	210.353	13.334	1400.831	.759%	93.210%
32.0	147.799	10.261	1411.091	.584%	93.893%
33.0	109.176	7.571	1418.662	.431%	94.397%
34.0	85.544	5.893	1424.555	.336%	94.789%
35.0	72.196	4.899	1429.454	.279%	95.115%
36.0	62.868	4.300	1433.754	.245%	95.401%
37.0	55.578	3.863	1437.617	.220%	95.658%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	48.855	3.486	1441.103	.199%	95.890%
39.0	42.484	3.118	1444.221	.178%	96.098%
40.0	37.435	2.787	1447.008	.159%	96.283%
41.0	33.432	2.524	1449.532	.144%	96.451%
42.0	29.578	2.289	1451.821	.130%	96.603%
43.0	26.523	2.078	1453.899	.118%	96.742%
44.0	24.163	1.913	1455.812	.109%	96.869%
45.0	22.041	1.776	1457.588	.101%	96.987%
46.0	20.338	1.657	1459.245	.094%	97.097%
47.0	18.897	1.560	1460.805	.089%	97.201%
48.0	17.702	1.480	1462.285	.084%	97.300%
49.0	16.649	1.411	1463.696	.080%	97.393%
50.0	15.685	1.348	1465.044	.077%	97.483%
51.0	14.923	1.295	1466.339	.074%	97.569%
52.0	14.236	1.251	1467.59	.071%	97.653%
53.0	13.594	1.211	1468.801	.069%	97.733%
54.0	13.056	1.175	1469.975	.067%	97.811%
55.0	12.563	1.144	1471.119	.065%	97.887%
56.0	12.160	1.117	1472.236	.064%	97.962%
57.0	11.794	1.095	1473.331	.062%	98.035%
58.0	11.473	1.076	1474.407	.061%	98.106%
59.0	11.241	1.062	1475.469	.060%	98.177%
60.0	10.995	1.050	1476.519	.060%	98.247%
61.0	10.778	1.039	1477.558	.059%	98.316%
62.0	10.606	1.030	1478.589	.059%	98.384%
63.0	10.464	1.025	1479.614	.058%	98.453%
64.0	10.292	1.019	1480.632	.058%	98.520%
65.0	10.165	1.012	1481.645	.058%	98.588%
66.0	10.031	1.008	1482.652	.057%	98.655%
67.0	9.897	1.002	1483.654	.057%	98.721%
68.0	9.710	0.993	1484.647	.057%	98.788%
69.0	9.538	0.982	1485.629	.056%	98.853%
70.0	9.314	0.968	1486.598	.055%	98.917%
71.0	9.097	0.952	1487.549	.054%	98.981%
72.0	8.843	0.933	1488.482	.053%	99.043%
73.0	8.619	0.913	1489.395	.052%	99.103%
74.0	8.433	0.896	1490.292	.051%	99.163%
75.0	8.246	0.881	1491.173	.050%	99.222%

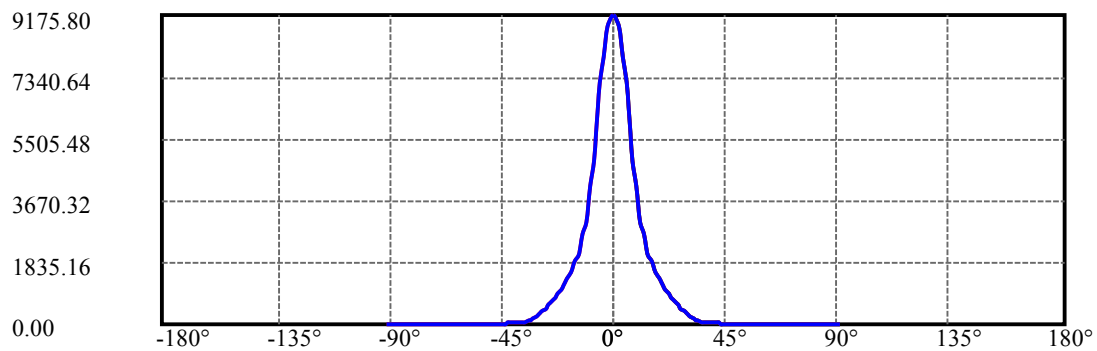
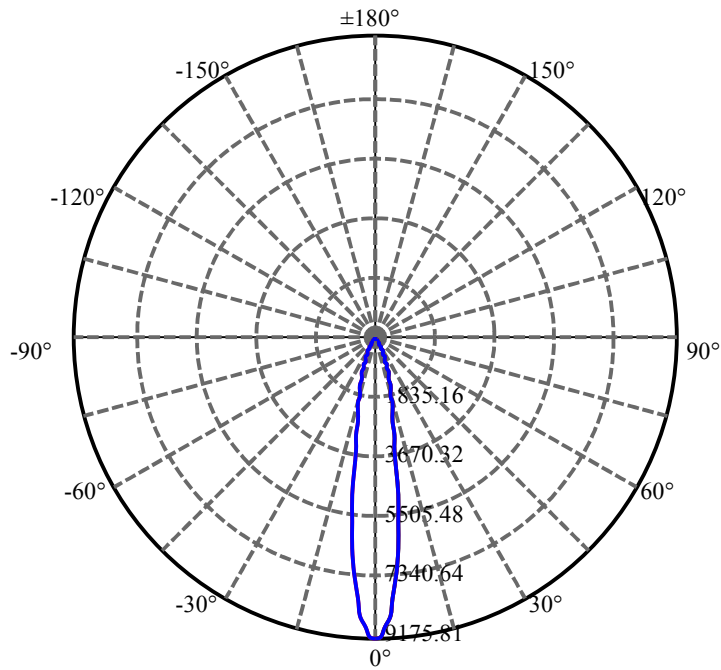
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.089	0.867	1492.04	.049%	99.279%
77.0	7.947	0.855	1492.895	.049%	99.336%
78.0	7.805	0.843	1493.738	.048%	99.392%
79.0	7.648	0.830	1494.569	.047%	99.448%
80.0	7.514	0.817	1495.386	.047%	99.502%
81.0	7.365	0.805	1496.191	.046%	99.556%
82.0	7.230	0.791	1496.982	.045%	99.608%
83.0	7.103	0.779	1497.761	.044%	99.660%
84.0	6.999	0.768	1498.529	.044%	99.711%
85.0	6.872	0.757	1499.286	.043%	99.762%
86.0	6.730	0.743	1500.03	.042%	99.811%
87.0	6.595	0.729	1500.759	.042%	99.860%
88.0	6.461	0.715	1501.474	.041%	99.907%
89.0	6.341	0.702	1502.176	.040%	99.954%
90.0	6.296	0.693	1502.869	.039%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1387.50	79.01%	92.32%
0-40	1447.01	82.40%	96.28%
0-60	1476.52	84.08%	98.25%
0-90	1502.18	85.54%	99.95%
0-120	1502.18	85.54%	99.95%
0-180	1502.87	85.58%	100.00%
60-90	26.71	1.52%	1.78%
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%
0-22.74	1202.30	68.47%	80.00%

ZONAL LUMEN SUMMARY

0-10	560.09
10-20	535.98
20-30	291.43
30-40	59.51
40-50	18.04
50-60	11.48
60-70	10.08
70-80	8.79
80-90	6.79
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:

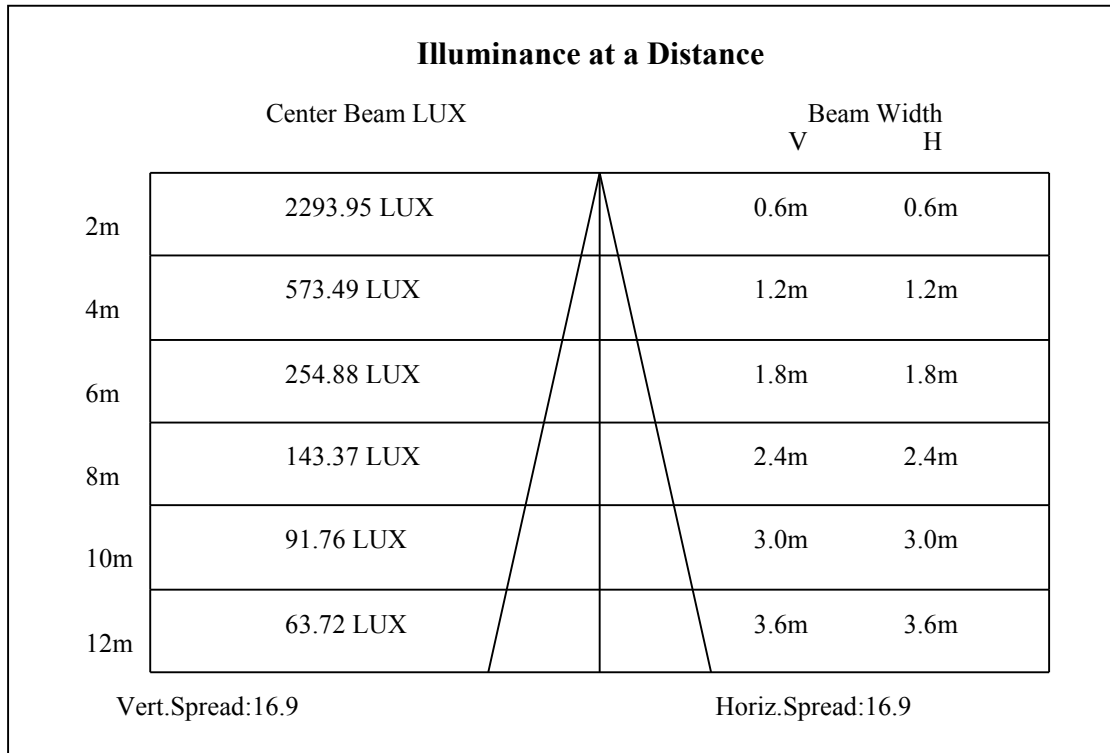
C90/C270:

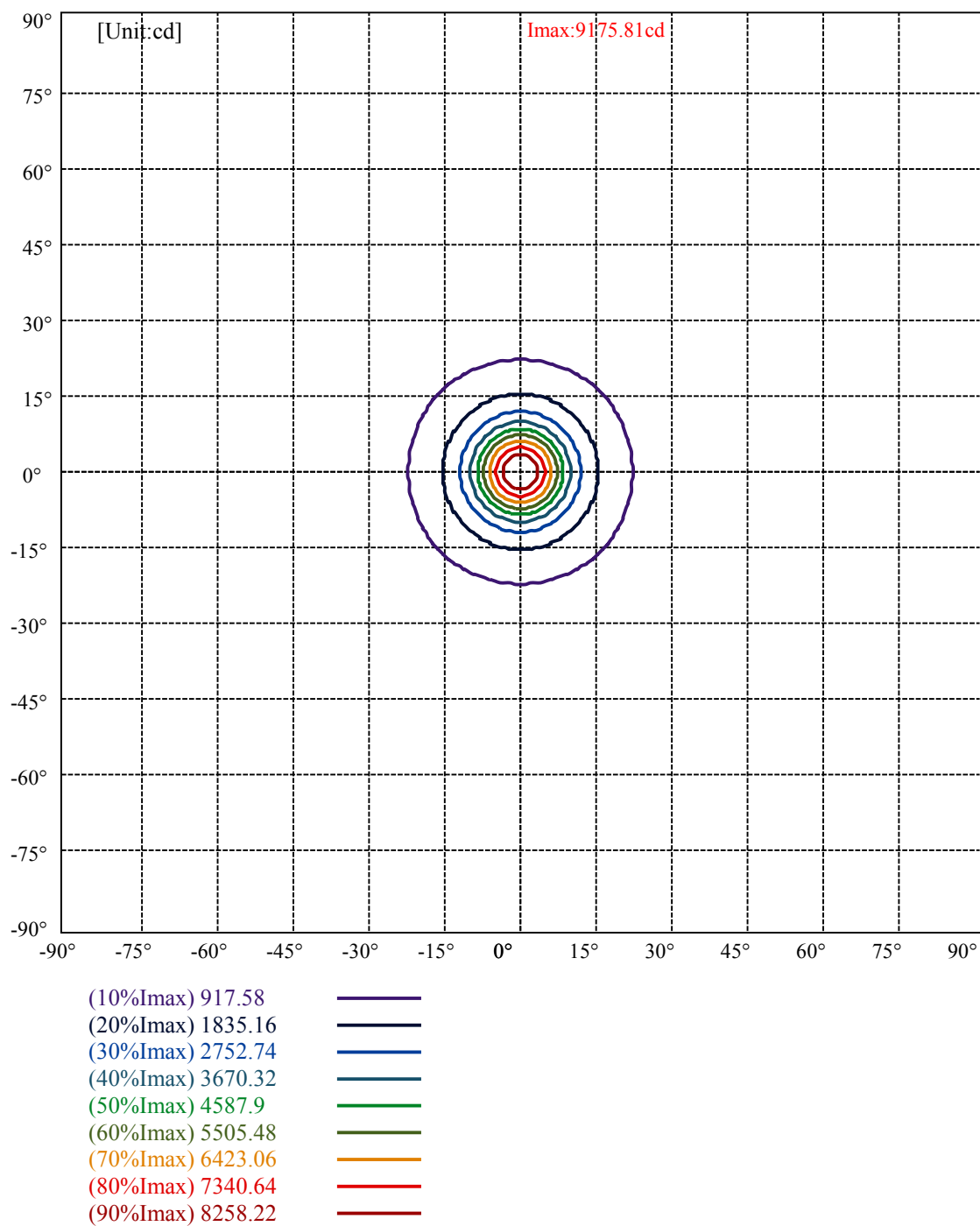
Field angle(10%Imax):C0/180Left:21.9 Right:21.9

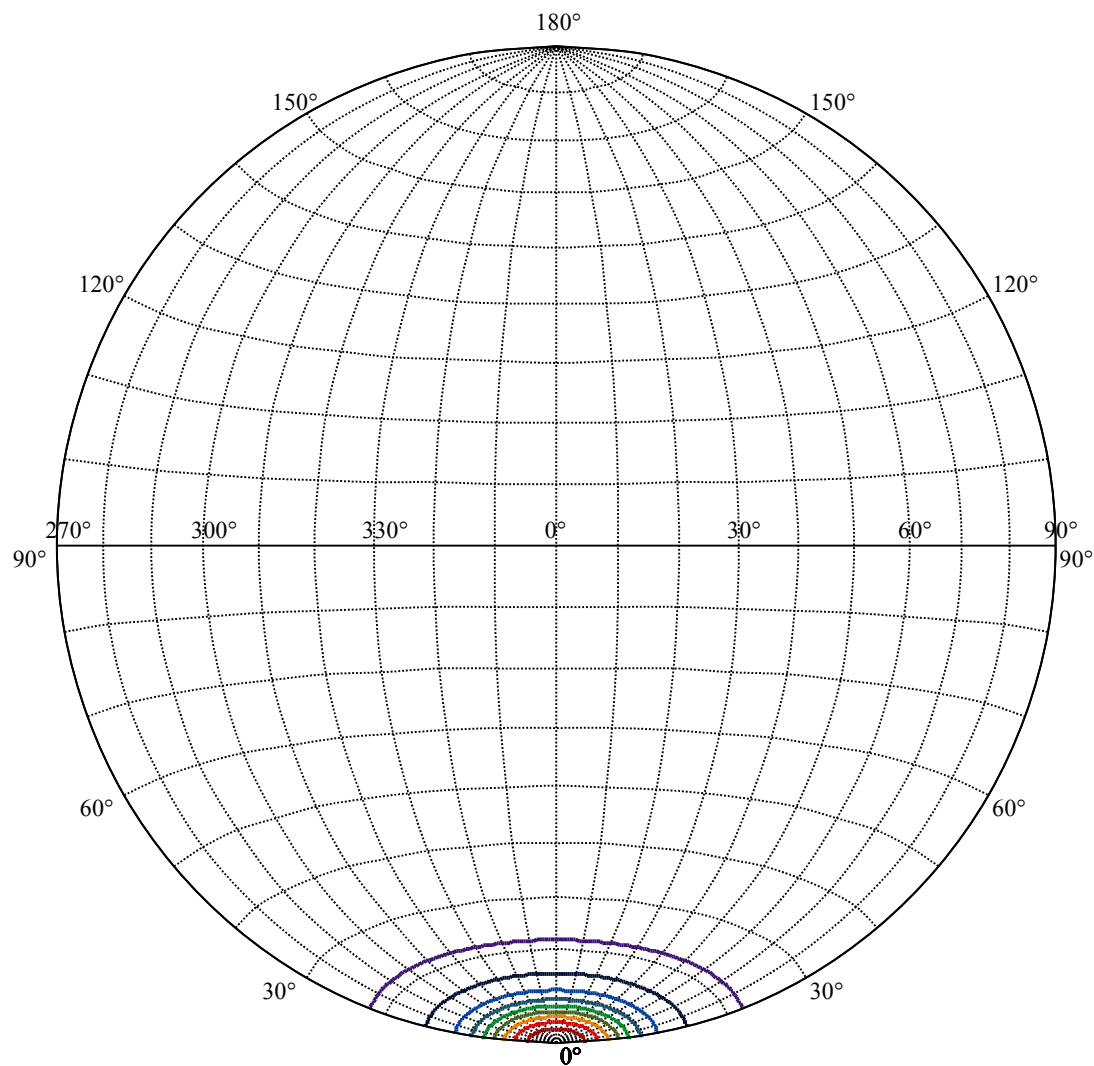
:C90/270Left:21.9 Right:21.9

Beam Angle(50%Imax):C0/180Left:8.4 Right:8.4

:C90/270Left:8.4 Right:8.4





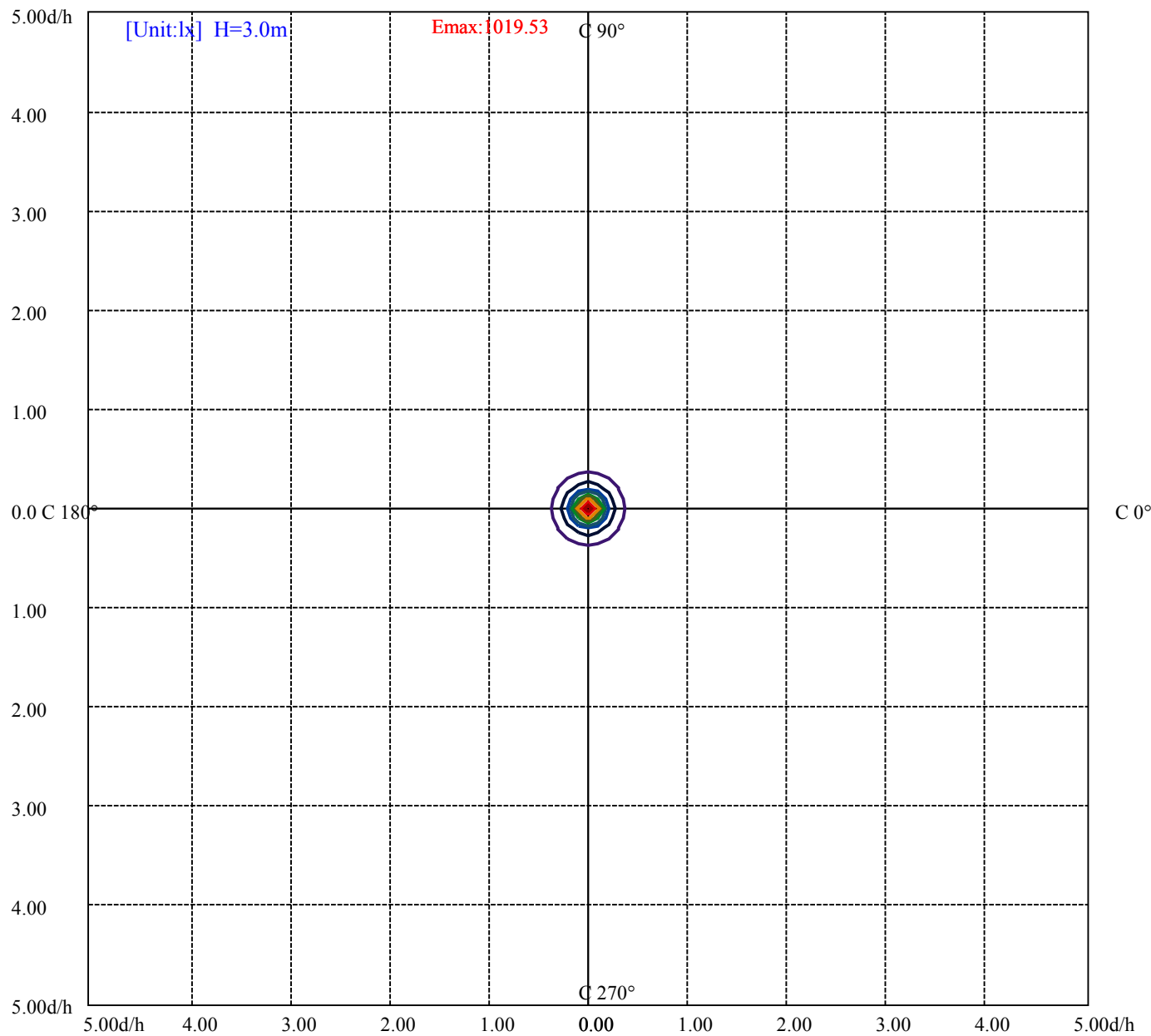


House

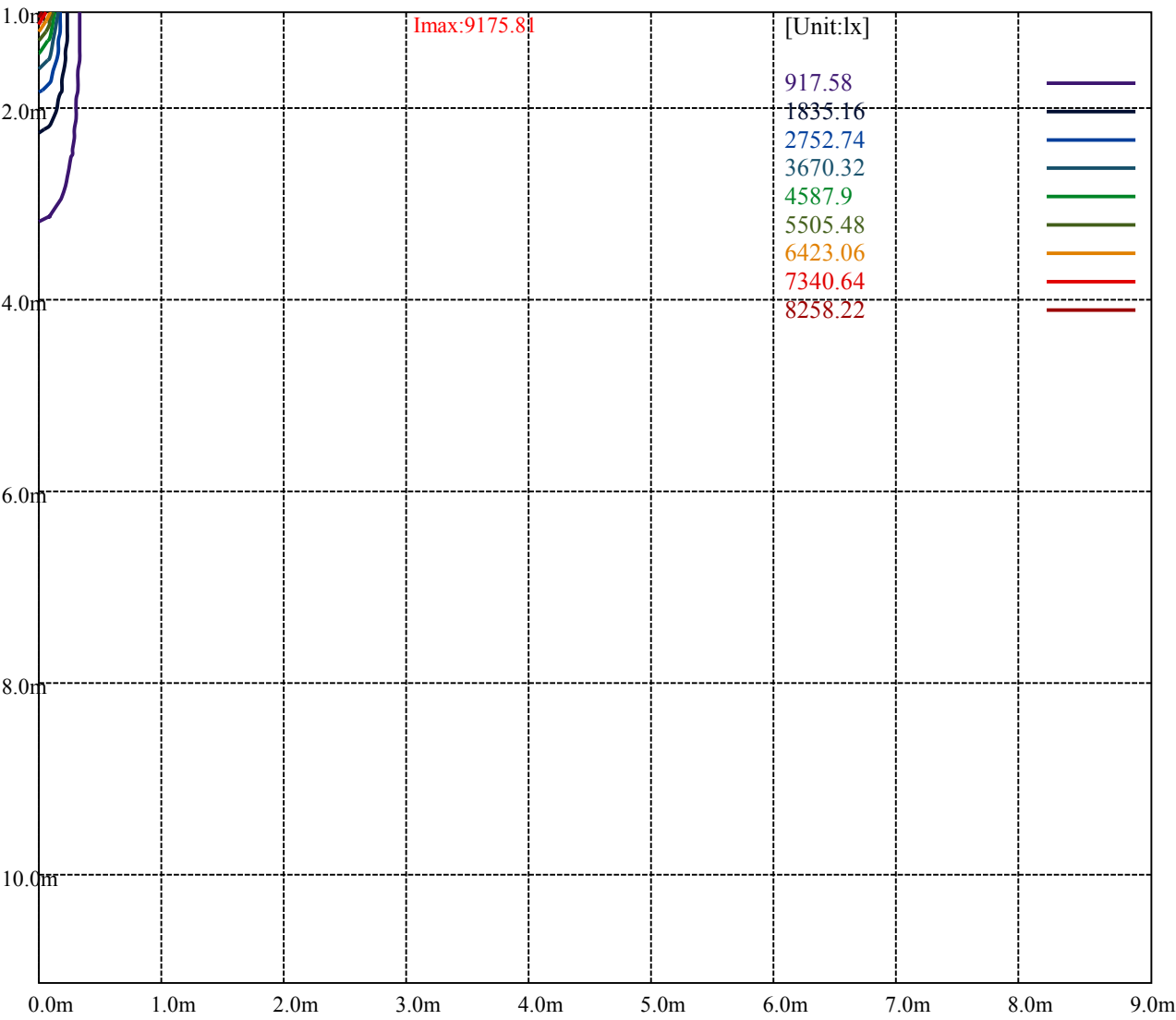
[Unit:cd]

Road

Imax:9175.81	
(10%Imax) 917.58	—
(20%Imax) 1835.16	—
(30%Imax) 2752.74	—
(40%Imax) 3670.32	—
(50%Imax) 4587.9	—
(60%Imax) 5505.48	—
(70%Imax) 6423.06	—
(80%Imax) 7340.64	—
(90%Imax) 8258.22	—



(10%Emax)	101.9532	
(20%Emax)	203.9067	
(30%Emax)	305.86	
(40%Emax)	407.8134	
(50%Emax)	509.7667	
(60%Emax)	611.72	
(70%Emax)	713.6733	
(80%Emax)	815.6267	
(90%Emax)	917.5789	



Luminance Table

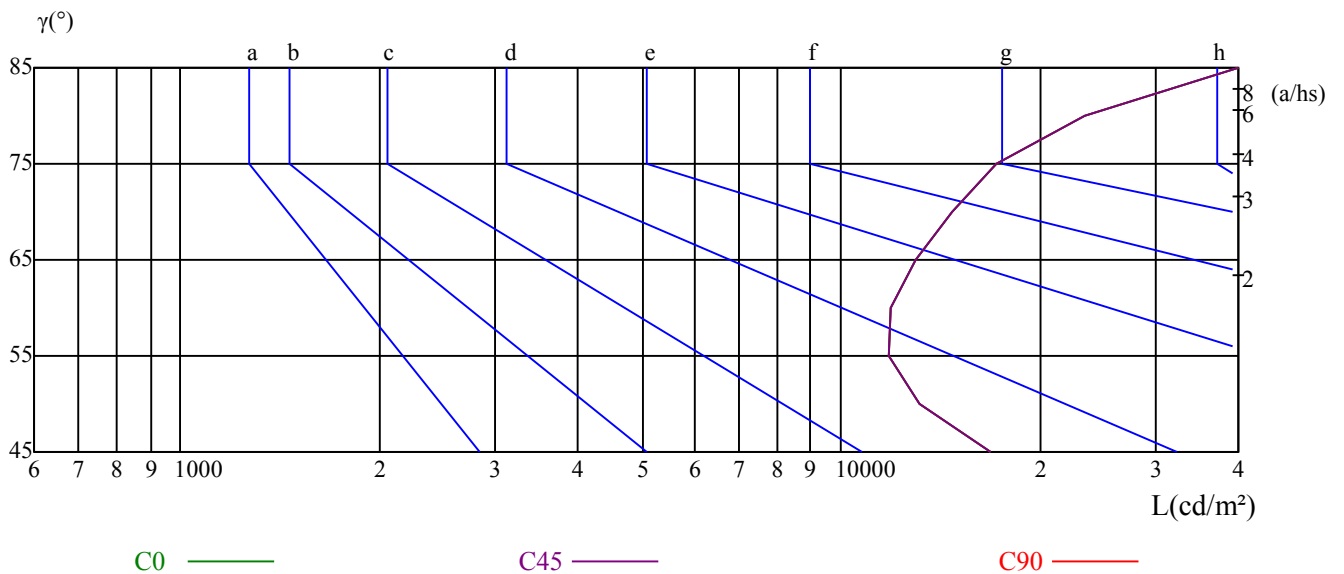
γ	45	50	55	60	65	70	75	80	85
C0	16858	13197	11846	11892	13009	14728	17231	23402	42641
C45	16858	13197	11846	11892	13009	14728	17231	23402	42641
C90	16858	13197	11846	11892	13009	14728	17231	23402	42641

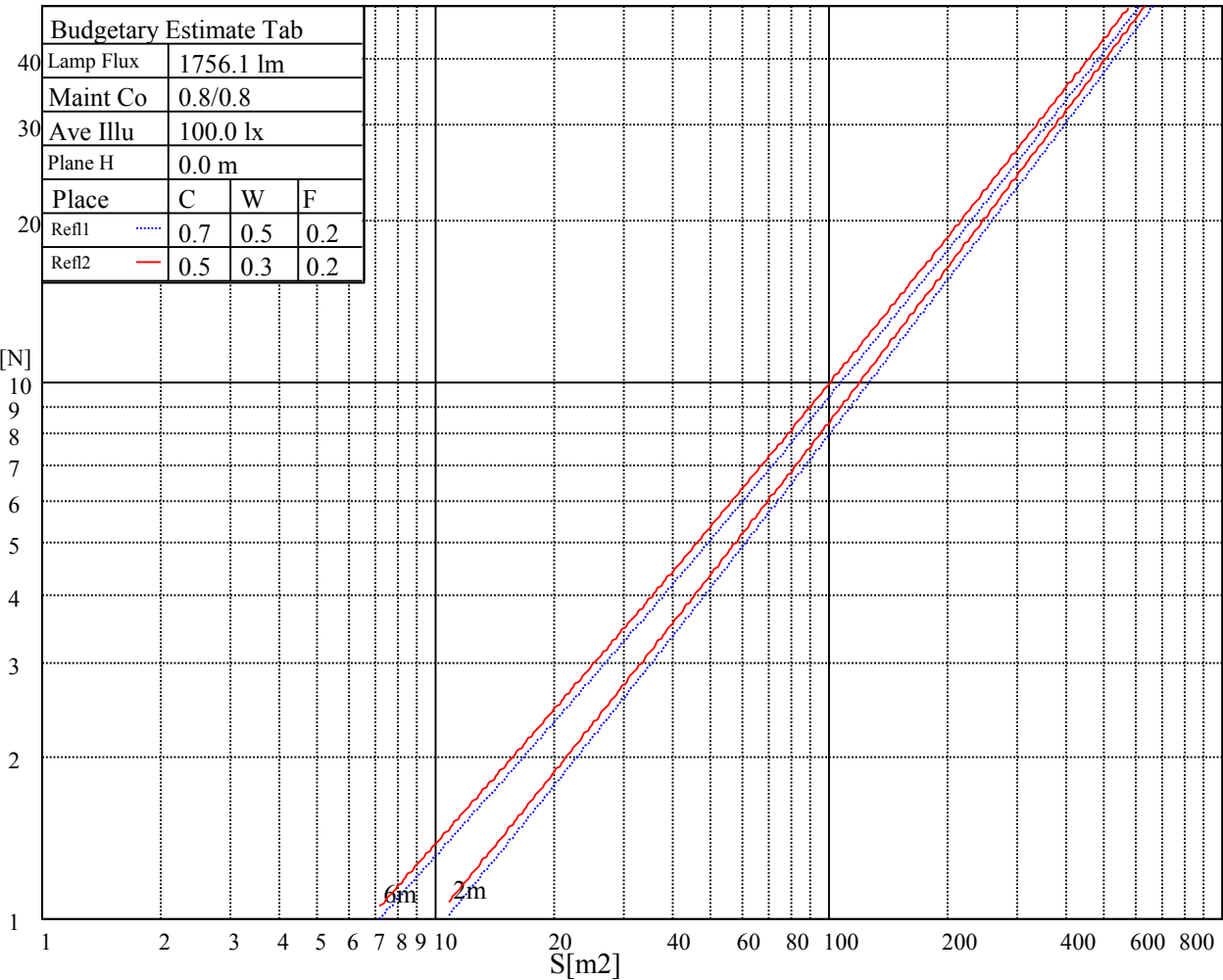
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
13009	13009	13009	17231	17231	17231	42641	42641	42641

Glare Table

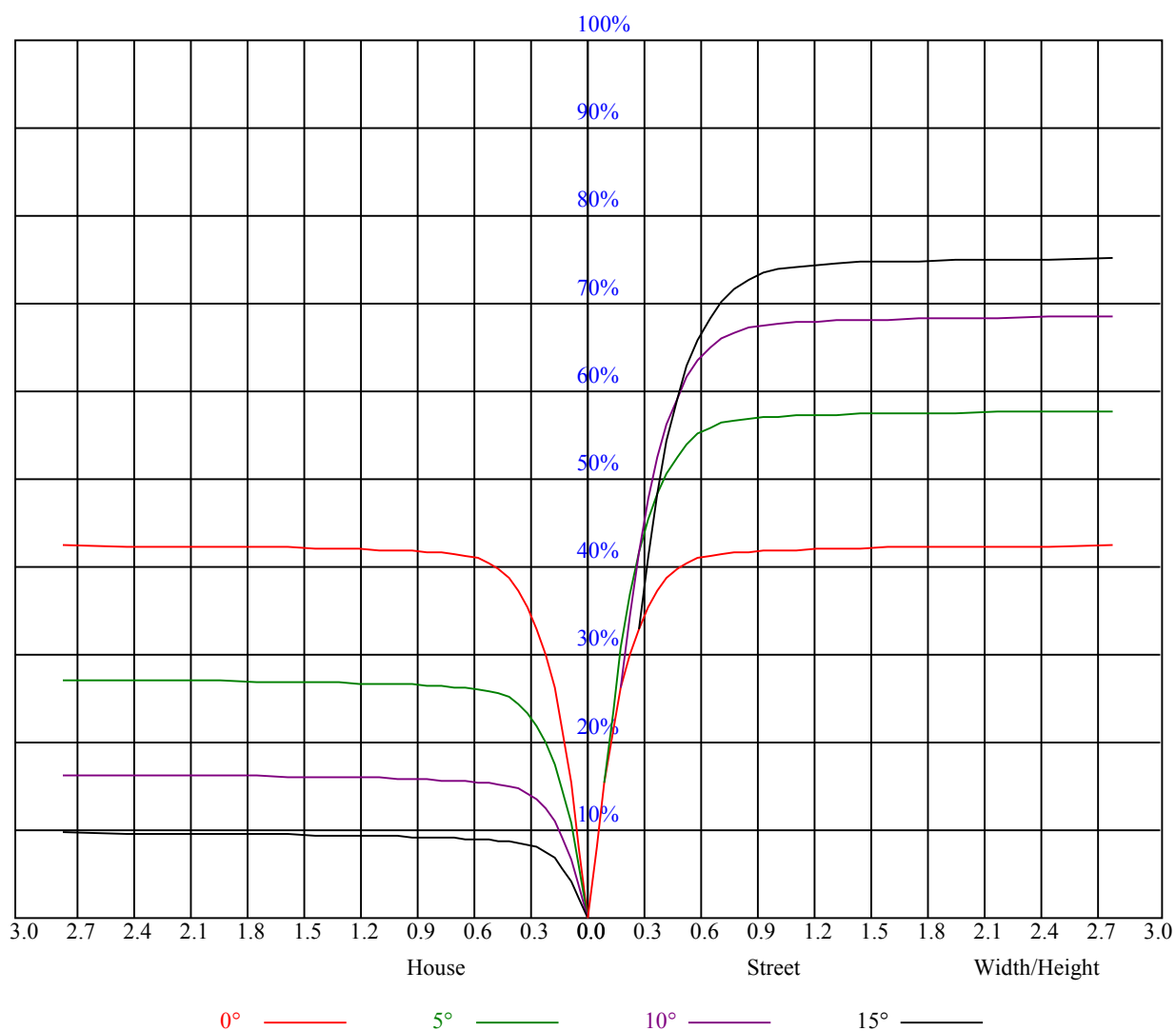
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

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



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	9149.36	9203.14	9097.38	8815.35	8416.79	7788.19	7012.00	6258.52	5490.69
45.0	9180.44	9013.72	8606.21	8126.39	7509.15	6595.53	5799.62	5018.65	4311.77
90.0	9157.13	8955.17	8566.18	8005.10	7354.39	6499.32	5703.41	4833.41	4057.82
135.0	9216.29	9120.68	8817.14	8429.34	7905.31	7064.59	6286.60	5592.27	4657.74
180.0	9149.36	8934.25	8609.20	8100.10	7430.87	6707.86	5930.48	4960.09	4263.97
225.0	9180.44	9203.74	9060.33	8755.59	8362.42	7773.85	7105.81	6284.21	5417.20
270.0	9157.13	9216.29	9097.98	8861.36	8483.72	7840.18	7187.68	6462.28	5602.43
315.0	9216.29	9168.48	8957.56	8579.92	8105.48	7338.25	6708.46	5860.56	4924.24
360.0	9149.36	9203.14	9097.38	8815.35	8416.79	7788.19	7012.00	6258.52	5490.69
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4577.07	3933.53	3395.16	2967.33	2545.47	2275.39	2050.72	1814.10	1651.57
45.0	3563.07	3088.63	2715.17	2380.56	2111.07	1911.50	1720.29	1554.77	1422.12
90.0	3483.59	2977.49	2585.51	2307.06	2076.41	1831.43	1667.70	1521.31	1376.71
135.0	3923.38	3368.87	2878.89	2534.12	2229.98	1982.60	1798.56	1617.51	1459.17
180.0	3657.48	3052.18	2676.93	2376.97	2105.09	1880.42	1709.53	1541.62	1409.57
225.0	4692.99	3971.78	3361.10	2921.92	2571.76	2232.37	2012.48	1823.06	1618.11
270.0	4783.82	4130.72	3497.34	3044.41	2638.09	2318.41	2082.39	1858.32	1664.72
315.0	4321.33	3645.52	3059.35	2730.71	2424.77	2091.95	1917.47	1743.59	1571.50
360.0	4577.07	3933.53	3395.16	2967.33	2545.47	2275.39	2050.72	1814.10	1651.57
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1509.96	1370.73	1239.28	1123.95	998.47	881.95	795.91	711.66	629.20
45.0	1285.88	1171.16	1046.87	921.99	825.79	741.53	648.92	567.65	505.51
90.0	1183.88	1128.85	992.67	890.86	799.31	726.77	640.91	553.43	471.15
135.0	1336.67	1221.95	1083.92	972.78	872.39	766.03	690.15	610.08	525.83
180.0	1185.38	1143.55	1033.96	915.83	810.01	736.93	662.06	562.45	488.00
225.0	1479.48	1356.99	1181.02	1098.26	990.94	875.08	785.51	704.01	615.93
270.0	1518.92	1390.45	1244.06	1131.72	1022.97	894.50	803.68	727.79	638.76
315.0	1425.11	1270.94	1188.49	1049.74	944.10	845.38	760.30	671.98	590.42
360.0	1509.96	1370.73	1239.28	1123.95	998.47	881.95	795.91	711.66	629.20
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	535.98	451.73	384.21	328.04	266.56	184.28	135.94	94.29	77.02
45.0	408.11	343.58	302.95	208.24	149.02	107.50	80.55	71.76	64.06
90.0	405.24	339.58	259.93	201.07	148.84	100.03	78.99	71.11	62.98
135.0	444.56	378.24	304.14	263.39	173.22	120.40	89.09	73.74	65.67
180.0	421.08	339.64	276.36	216.48	155.60	108.87	83.30	72.60	65.13
225.0	537.42	463.92	381.40	318.72	258.43	188.88	141.32	104.69	79.41
270.0	547.93	470.85	403.33	329.84	306.53	207.40	145.98	105.05	85.09
315.0	502.70	430.70	354.99	284.66	224.61	165.04	118.25	91.12	78.22
360.0	535.98	451.73	384.21	328.04	266.56	184.28	135.94	94.29	77.02
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	69.31	60.53	53.60	46.31	40.51	36.21	31.67	27.96	25.51
45.0	56.11	49.77	43.56	38.48	33.94	30.41	27.07	24.68	22.65
90.0	55.15	48.82	42.96	37.76	33.46	30.00	26.89	24.26	22.17
135.0	58.50	51.87	44.93	39.91	35.31	31.61	27.73	25.39	22.89
180.0	57.00	50.07	44.64	39.02	33.94	30.89	27.96	24.86	22.83
225.0	69.01	61.31	53.36	46.43	40.99	36.21	32.27	28.68	25.75
270.0	71.05	63.04	55.51	47.44	41.89	37.23	32.33	29.04	26.65
315.0	66.80	59.22	52.28	44.52	39.44	34.90	30.71	27.31	24.86
360.0	69.31	60.53	53.60	46.31	40.51	36.21	31.67	27.96	25.51

Intensity data(cd)

C/ γ (°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	23.54	21.15	19.66	18.52	17.15	16.13	15.42	14.52	13.86
45.0	20.61	19.36	18.11	16.97	15.95	15.18	14.40	13.80	13.15
90.0	20.50	19.24	17.81	16.79	15.89	15.06	14.34	13.74	13.21
135.0	20.97	19.48	18.28	17.15	16.13	15.36	14.58	13.92	13.27
180.0	21.09	19.36	18.22	17.21	16.19	15.24	14.58	13.92	13.32
225.0	23.60	21.69	19.78	18.52	17.51	16.19	15.54	14.82	14.04
270.0	23.60	21.75	20.26	18.76	17.63	16.61	15.66	14.94	14.28
315.0	22.41	20.67	19.06	17.69	16.73	15.72	14.88	14.22	13.62
360.0	23.54	21.15	19.66	18.52	17.15	16.13	15.42	14.52	13.86
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	13.38	12.79	12.37	12.01	11.59	11.29	11.05	10.88	10.76
45.0	12.61	12.19	11.77	11.41	11.17	10.99	10.76	10.58	10.46
90.0	12.61	12.19	11.83	11.53	11.23	11.05	10.76	10.58	10.40
135.0	12.79	12.31	11.95	11.59	11.29	11.11	10.82	10.64	10.46
180.0	12.79	12.31	11.95	11.65	11.35	11.11	10.88	10.64	10.46
225.0	13.56	13.03	12.49	12.13	11.77	11.47	11.23	10.99	10.76
270.0	13.68	13.15	12.73	12.25	11.89	11.65	11.41	11.11	10.93
315.0	13.03	12.55	12.19	11.77	11.47	11.23	11.05	10.82	10.64
360.0	13.38	12.79	12.37	12.01	11.59	11.29	11.05	10.88	10.76
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	10.58	10.34	10.22	10.10	9.98	9.92	9.74	9.44	9.26
45.0	10.28	10.10	9.98	9.86	9.74	9.50	9.32	9.08	8.84
90.0	10.28	10.16	9.98	9.86	9.74	9.50	9.32	9.08	8.90
135.0	10.34	10.22	10.04	9.92	9.80	9.56	9.44	9.26	8.96
180.0	10.34	10.16	10.10	9.92	9.68	9.50	9.38	9.08	8.90
225.0	10.64	10.46	10.28	10.16	10.04	9.80	9.62	9.50	9.26
270.0	10.76	10.58	10.46	10.34	10.16	10.04	9.86	9.68	9.50
315.0	10.52	10.34	10.28	10.10	10.04	9.86	9.62	9.38	9.14
360.0	10.58	10.34	10.22	10.10	9.98	9.92	9.74	9.44	9.26
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	8.96	8.78	8.54	8.31	8.13	8.01	7.89	7.71	7.59
45.0	8.66	8.43	8.31	8.07	7.95	7.83	7.65	7.53	7.47
90.0	8.60	8.43	8.31	8.13	8.01	7.83	7.71	7.53	7.41
135.0	8.78	8.54	8.37	8.19	8.07	7.95	7.71	7.59	7.41
180.0	8.66	8.43	8.25	8.13	7.95	7.77	7.65	7.53	7.35
225.0	9.02	8.78	8.60	8.43	8.25	8.07	8.01	7.83	7.65
270.0	9.14	8.90	8.66	8.48	8.31	8.19	8.01	7.83	7.71
315.0	8.90	8.66	8.43	8.25	8.07	7.95	7.83	7.65	7.53
360.0	8.96	8.78	8.54	8.31	8.13	8.01	7.89	7.71	7.59
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	7.47	7.29	7.17	6.99	6.87	6.75	6.63	6.57	6.39
45.0	7.23	7.11	6.99	6.93	6.75	6.63	6.57	6.39	6.27
90.0	7.29	7.17	6.99	6.87	6.75	6.63	6.45	6.33	6.27
135.0	7.29	7.11	7.05	6.99	6.87	6.69	6.57	6.39	6.27
180.0	7.23	7.11	6.93	6.87	6.75	6.63	6.45	6.33	6.21
225.0	7.53	7.41	7.29	7.17	7.05	6.87	6.75	6.63	6.45
270.0	7.53	7.41	7.29	7.17	7.05	6.87	6.69	6.57	6.45
315.0	7.35	7.23	7.11	6.99	6.87	6.75	6.63	6.45	6.39
360.0	7.47	7.29	7.17	6.99	6.87	6.75	6.63	6.57	6.39

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	6.27
45.0	6.33
90.0	6.27
135.0	6.27
180.0	6.21
225.0	6.39
270.0	6.33
315.0	6.27
360.0	6.27