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Nata

LumCAT: 2-2262-M
Luminaire: 92.70.131.00
Report No: 200921-B036
Test No: 200921-C036
LampCAT: SEOUL SAWx15 LES14.5
Lamp flux(lm): 2329.0
Number of Lamps: 1
Length(feet)(ft.):0.000
Phm Type: C

Voltage(V): 230.7000
Current(A): 0.0900
Power (W): 20.0500
PF: 0.9560
Ballast type: AC
Width(feet)(ft.):0.000
Height(feet)(ft.):0.000

Photometric Results

Lumens(lm): 2224.07
Efficiency(%): 95.50%
Lumens(lm)/Power(W): 111.05
Central intensity(cd): 11029.380
Maximum intensity(cd): 11029.380
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=20.6
[C90/270]Total=20.6
Field angle(10%Imax): [C0/180]Total=44.2
[C90/270]Total=44.2
Maximum s/h(1/2): C0_180=0.35 C90_270=0.35
Maximum s/h(1/4): C0_180=0.34 C90_270=0.34
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 95.61%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 99.690%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11029.379	2.639	2.639	.113%	.119%
1.0	11012.558	21.076	23.715	.905%	1.066%
2.0	10922.651	41.802	65.517	1.795%	2.946%
3.0	10745.158	61.669	127.186	2.648%	5.719%
4.0	10228.399	78.243	205.429	3.360%	9.237%
5.0	9847.457	94.118	299.546	4.041%	13.468%
6.0	9322.548	106.861	406.408	4.588%	18.273%
7.0	8645.639	115.543	521.951	4.961%	23.468%
8.0	7699.243	117.505	639.455	5.045%	28.752%
9.0	6742.986	115.674	755.13	4.967%	33.953%
10.0	5770.024	109.875	865.005	4.718%	38.893%
11.0	4846.481	101.409	966.414	4.354%	43.453%
12.0	4051.534	92.374	1058.788	3.966%	47.606%
13.0	3327.642	82.087	1140.875	3.525%	51.297%
14.0	2793.307	74.105	1214.98	3.182%	54.629%
15.0	2407.521	68.331	1283.311	2.934%	57.701%
16.0	2169.820	65.586	1348.897	2.816%	60.650%
17.0	1926.551	61.769	1410.666	2.652%	63.427%
18.0	1670.404	56.605	1467.271	2.430%	65.972%
19.0	1472.262	52.563	1519.834	2.257%	68.336%
20.0	1327.368	49.785	1569.619	2.138%	70.574%
21.0	1209.909	47.548	1617.167	2.042%	72.712%
22.0	1114.260	45.773	1662.94	1.965%	74.770%
23.0	1007.411	43.165	1706.106	1.853%	76.711%
24.0	954.314	42.565	1748.671	1.828%	78.625%
25.0	911.686	42.252	1790.923	1.814%	80.525%
26.0	868.218	41.737	1832.66	1.792%	82.401%
27.0	828.967	41.270	1873.93	1.772%	84.257%
28.0	794.628	40.910	1914.84	1.757%	86.096%
29.0	760.023	40.406	1955.246	1.735%	87.913%
30.0	712.454	39.064	1994.31	1.677%	89.670%
31.0	649.339	36.674	2030.984	1.575%	91.319%
32.0	587.954	34.167	2065.151	1.467%	92.855%
33.0	515.211	30.771	2095.923	1.321%	94.238%
34.0	441.162	27.053	2122.975	1.162%	95.455%
35.0	370.194	23.285	2146.26	1.000%	96.502%
36.0	304.307	19.615	2165.875	.842%	97.384%
37.0	235.636	15.551	2181.426	.668%	98.083%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	187.278	12.644	2194.07	.543%	98.651%
39.0	132.789	9.164	2203.234	.393%	99.063%
40.0	59.315	4.181	2207.415	.180%	99.251%
41.0	28.961	2.084	2209.498	.089%	99.345%
42.0	14.733	1.081	2210.579	.046%	99.394%
43.0	11.549	0.864	2211.443	.037%	99.432%
44.0	9.803	0.747	2212.19	.032%	99.466%
45.0	8.382	0.650	2212.84	.028%	99.495%
46.0	7.494	0.591	2213.431	.025%	99.522%
47.0	7.036	0.564	2213.995	.024%	99.547%
48.0	6.601	0.538	2214.533	.023%	99.571%
49.0	6.264	0.518	2215.052	.022%	99.595%
50.0	5.928	0.498	2215.55	.021%	99.617%
51.0	5.580	0.476	2216.025	.020%	99.638%
52.0	5.348	0.462	2216.487	.020%	99.659%
53.0	5.110	0.448	2216.935	.019%	99.679%
54.0	4.907	0.435	2217.37	.019%	99.699%
55.0	4.710	0.423	2217.793	.018%	99.718%
56.0	4.519	0.411	2218.204	.018%	99.736%
57.0	4.345	0.400	2218.604	.017%	99.754%
58.0	4.147	0.386	2218.989	.017%	99.772%
59.0	3.956	0.372	2219.361	.016%	99.788%
60.0	3.747	0.356	2219.717	.015%	99.804%
61.0	3.474	0.333	2220.05	.014%	99.819%
62.0	3.242	0.314	2220.364	.013%	99.834%
63.0	2.987	0.292	2220.656	.013%	99.847%
64.0	2.784	0.274	2220.931	.012%	99.859%
65.0	2.581	0.257	2221.187	.011%	99.871%
66.0	2.372	0.238	2221.425	.010%	99.881%
67.0	2.204	0.222	2221.647	.010%	99.891%
68.0	2.071	0.211	2221.858	.009%	99.901%
69.0	1.903	0.195	2222.053	.008%	99.909%
70.0	1.746	0.180	2222.232	.008%	99.918%
71.0	1.572	0.163	2222.395	.007%	99.925%
72.0	1.433	0.149	2222.545	.006%	99.932%
73.0	1.230	0.129	2222.674	.006%	99.937%
74.0	1.073	0.113	2222.787	.005%	99.943%
75.0	0.998	0.106	2222.893	.005%	99.947%

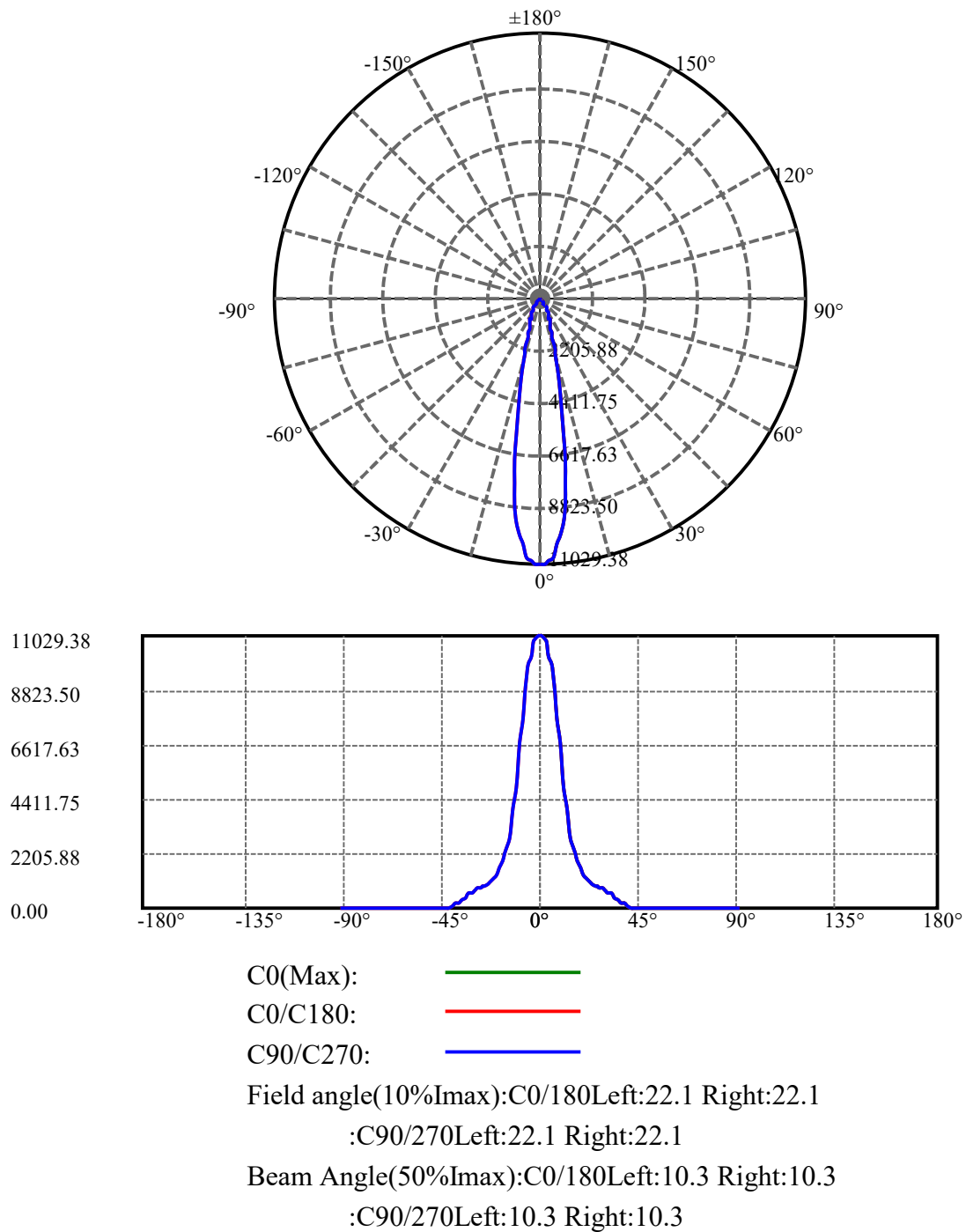
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	0.945	0.101	2222.993	.004%	99.952%
77.0	0.893	0.095	2223.089	.004%	99.956%
78.0	0.847	0.091	2223.18	.004%	99.960%
79.0	0.835	0.090	2223.269	.004%	99.964%
80.0	0.789	0.085	2223.355	.004%	99.968%
81.0	0.766	0.083	2223.438	.004%	99.972%
82.0	0.731	0.079	2223.517	.003%	99.975%
83.0	0.725	0.079	2223.596	.003%	99.979%
84.0	0.713	0.078	2223.674	.003%	99.982%
85.0	0.679	0.074	2223.748	.003%	99.986%
86.0	0.673	0.074	2223.821	.003%	99.989%
87.0	0.650	0.071	2223.893	.003%	99.992%
88.0	0.632	0.069	2223.962	.003%	99.995%
89.0	0.638	0.070	2224.032	.003%	99.998%
90.0	0.615	0.034	2224.065	.001%	100.000%

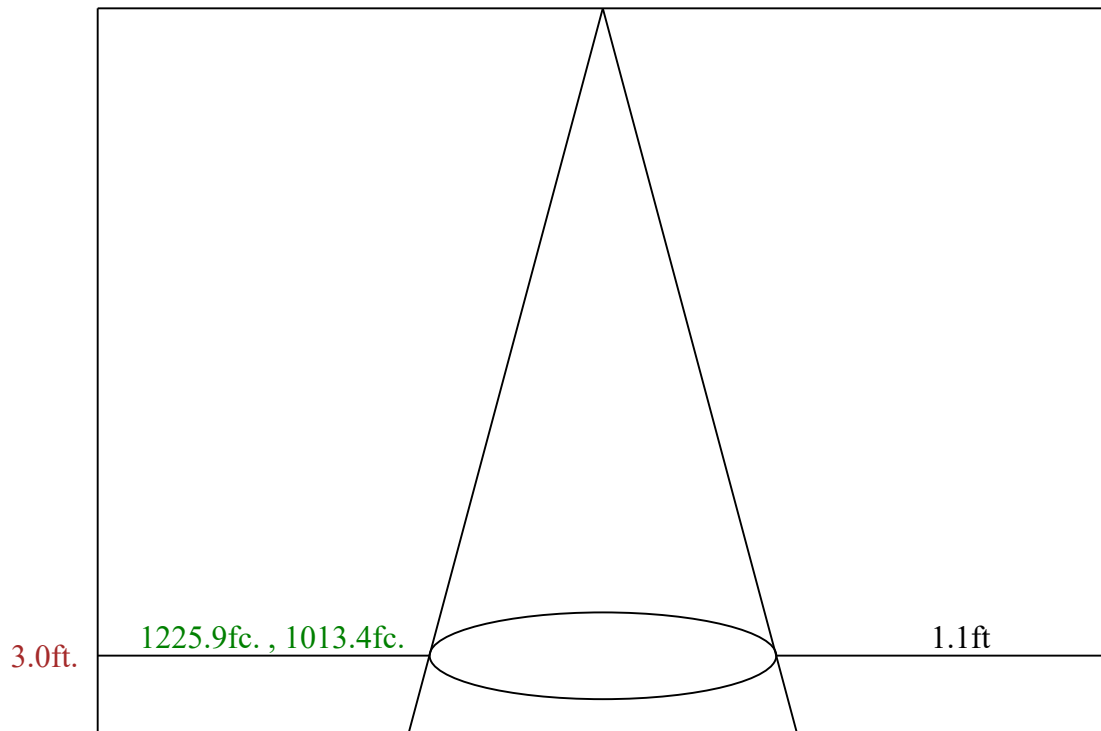
ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1994.31	85.63%	89.67%
0-40	2207.41	94.78%	99.25%
0-60	2219.72	95.31%	99.80%
0-90	2224.03	95.50%	100.00%
0-120	2224.03	95.50%	100.00%
0-180	2224.07	95.50%	100.00%
60-90	4.67	0.20%	0.21%
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%
0-24.72	1779.25	76.40%	80.00%

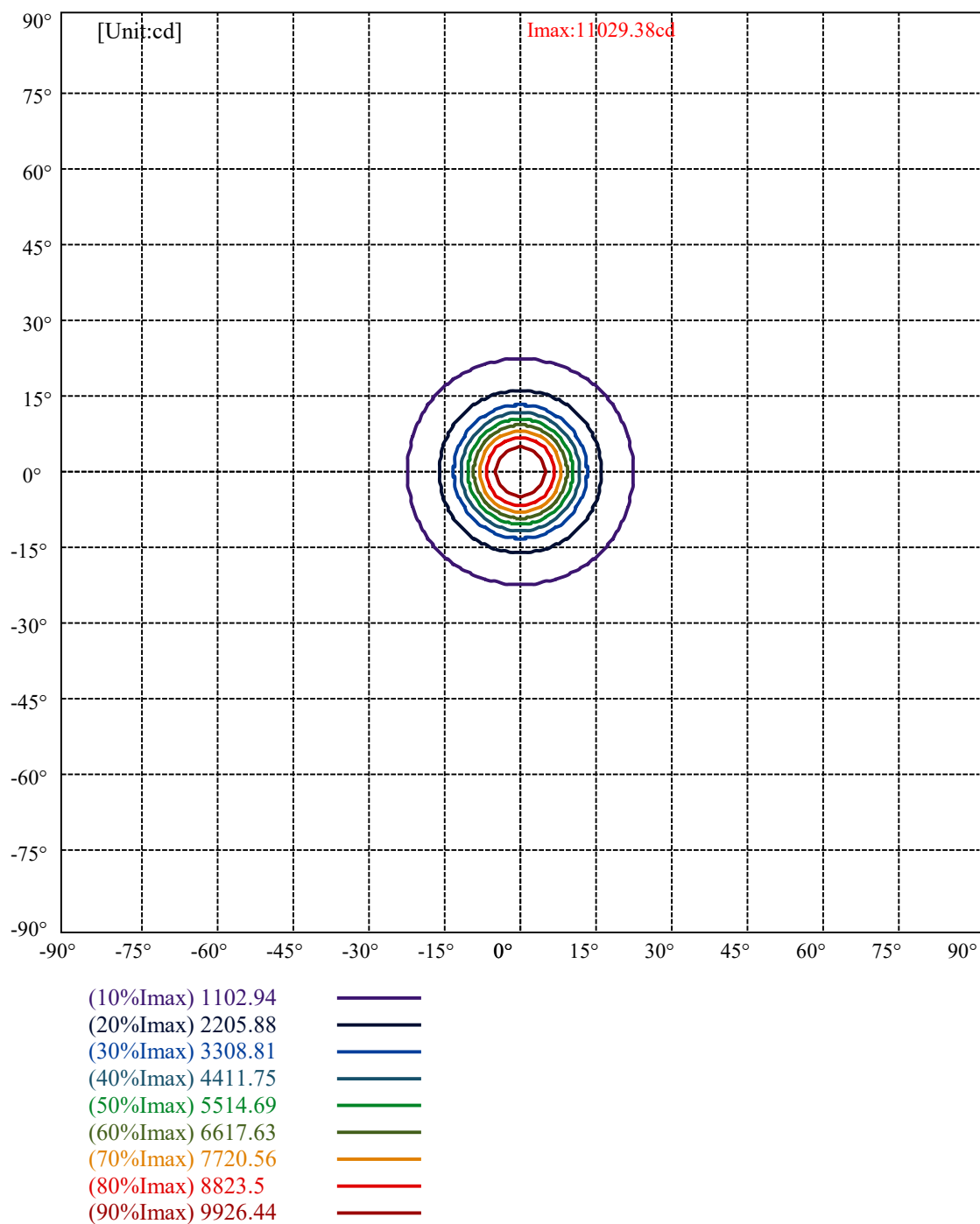
ZONAL LUMEN SUMMARY

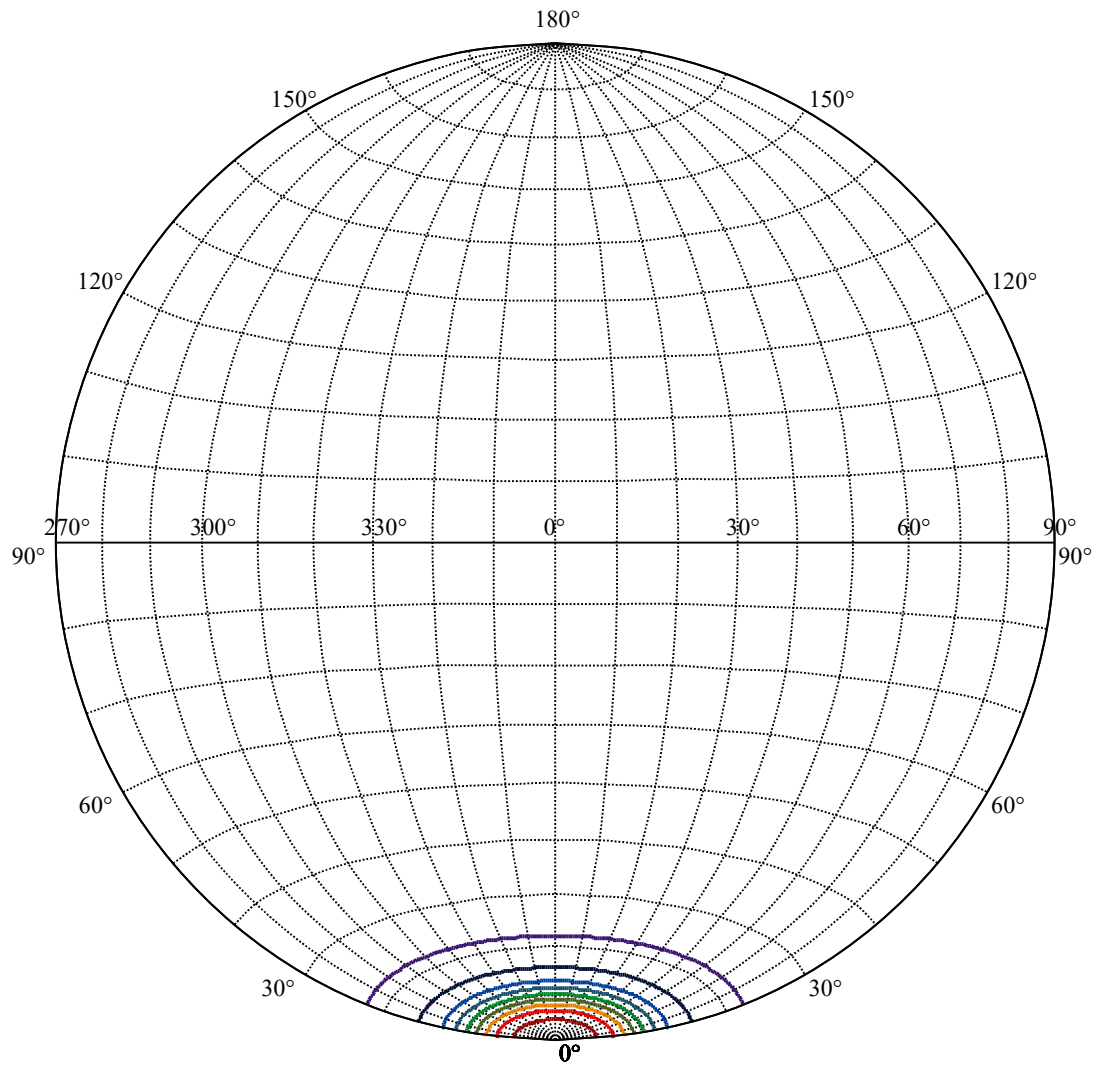
0-10	865.00
10-20	704.61
20-30	424.69
30-40	213.10
40-50	8.13
50-60	4.17
60-70	2.52
70-80	1.12
80-90	0.68
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00





Max , Ave Beam angle of C0 plane 20.57





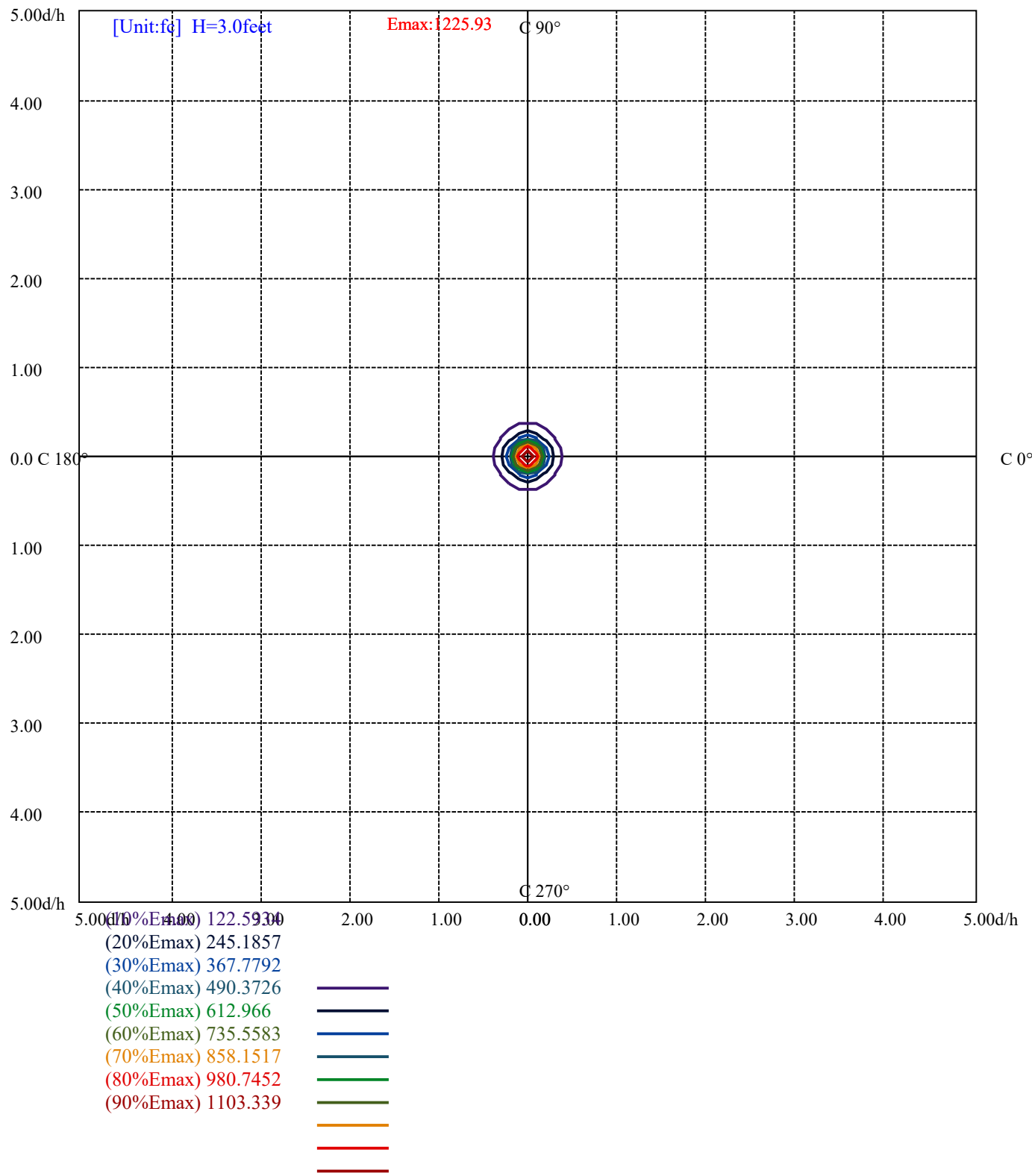
House

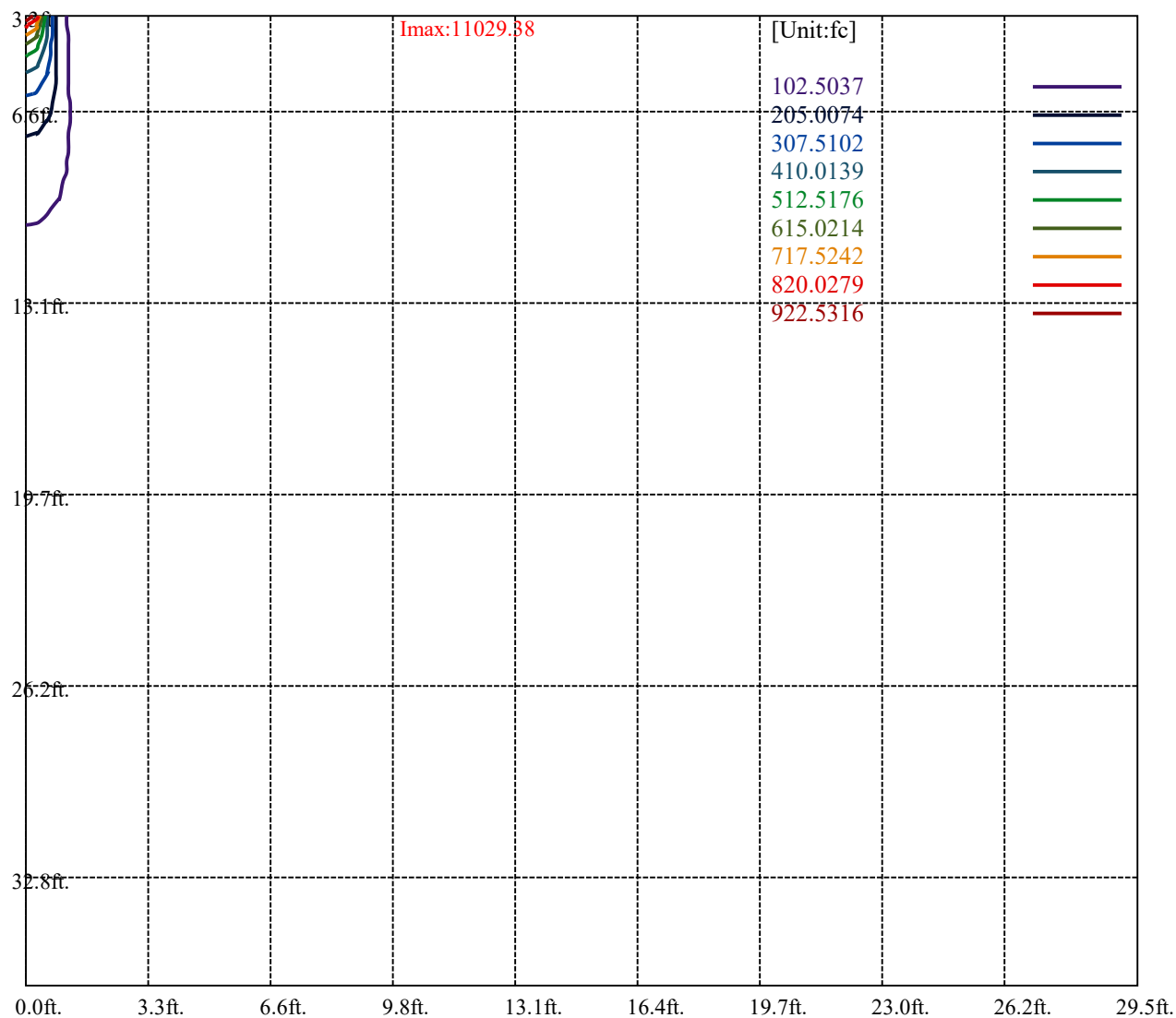
[Unit:cd]

Road

Imax:11029.38

(10%Imax)	1102.94	—
(20%Imax)	2205.88	—
(30%Imax)	3308.81	—
(40%Imax)	4411.75	—
(50%Imax)	5514.69	—
(60%Imax)	6617.63	—
(70%Imax)	7720.56	—
(80%Imax)	8823.5	—
(90%Imax)	9926.44	—





Luminance Table

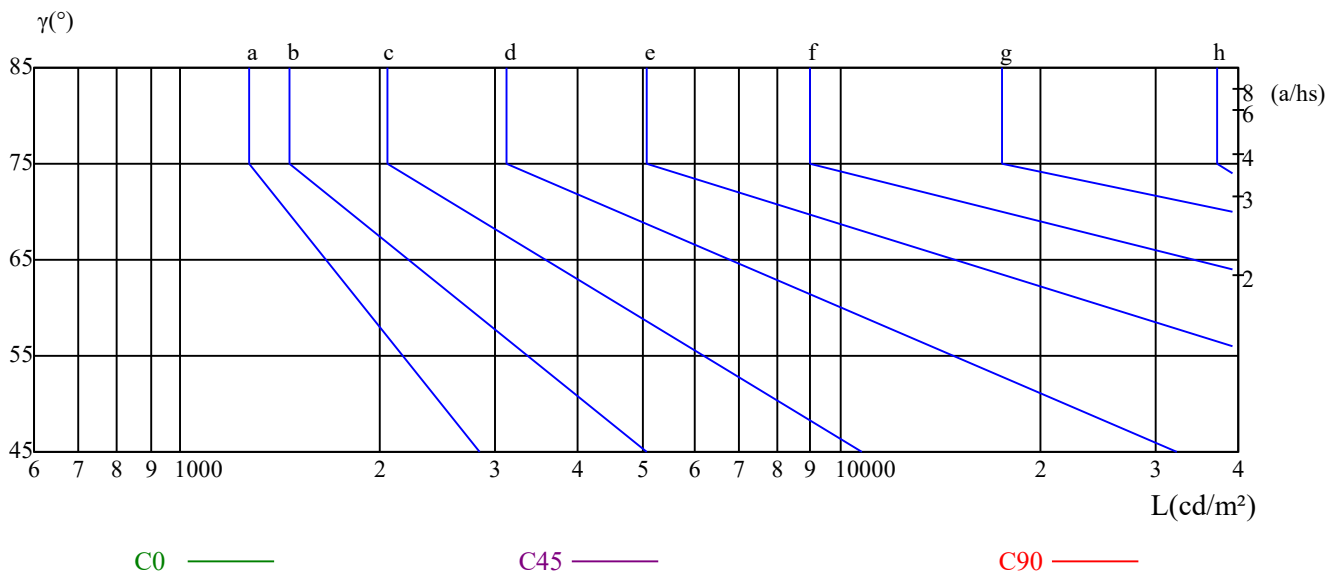
γ	45	50	55	60	65	70	75	80	85
C0	0	0	0	0	0	0	0	0	0
C45	0	0	0	0	0	0	0	0	0
C90	0	0	0	0	0	0	0	0	0

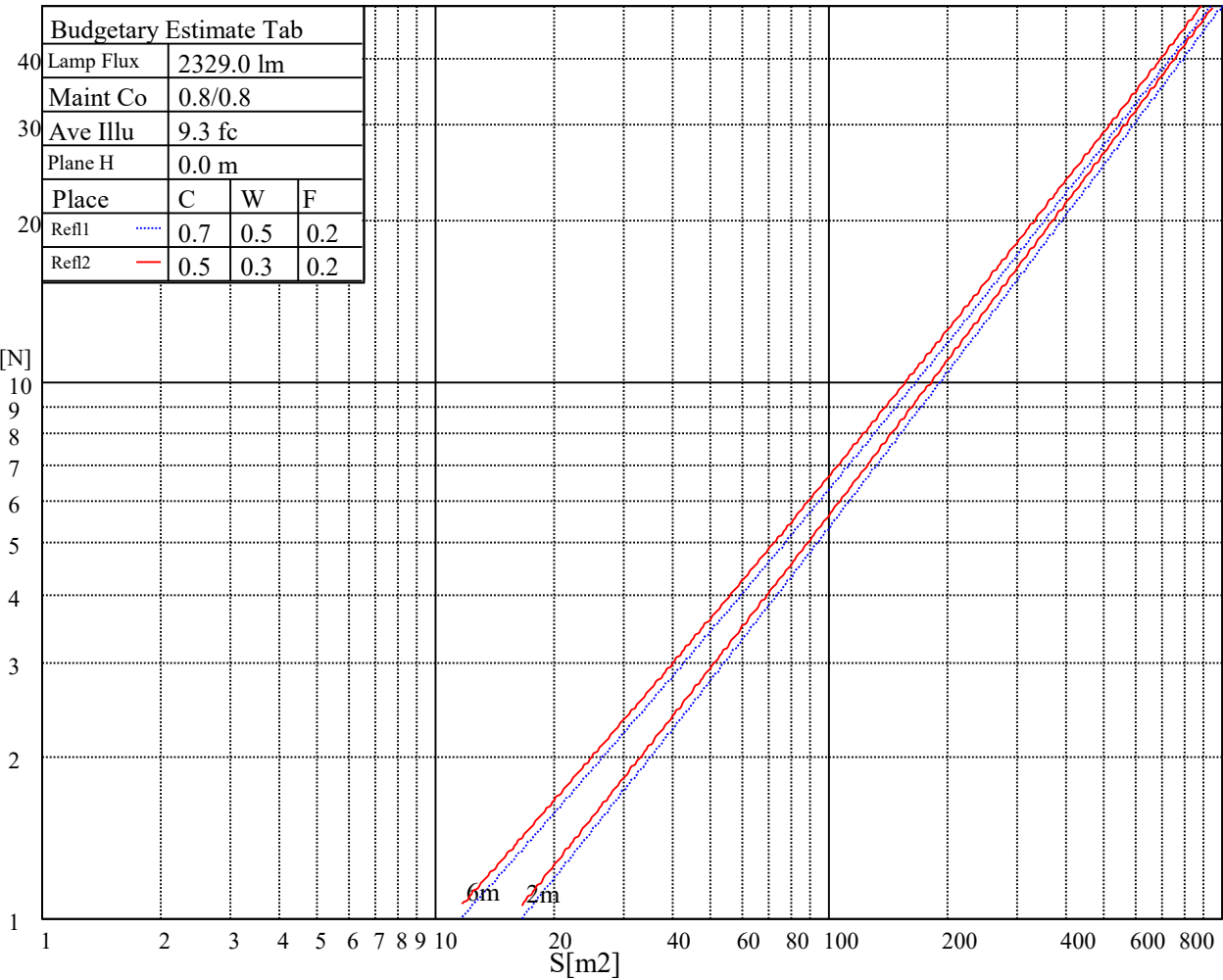
L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
0	0	0	0	0	0	0	0	0

Glare Table

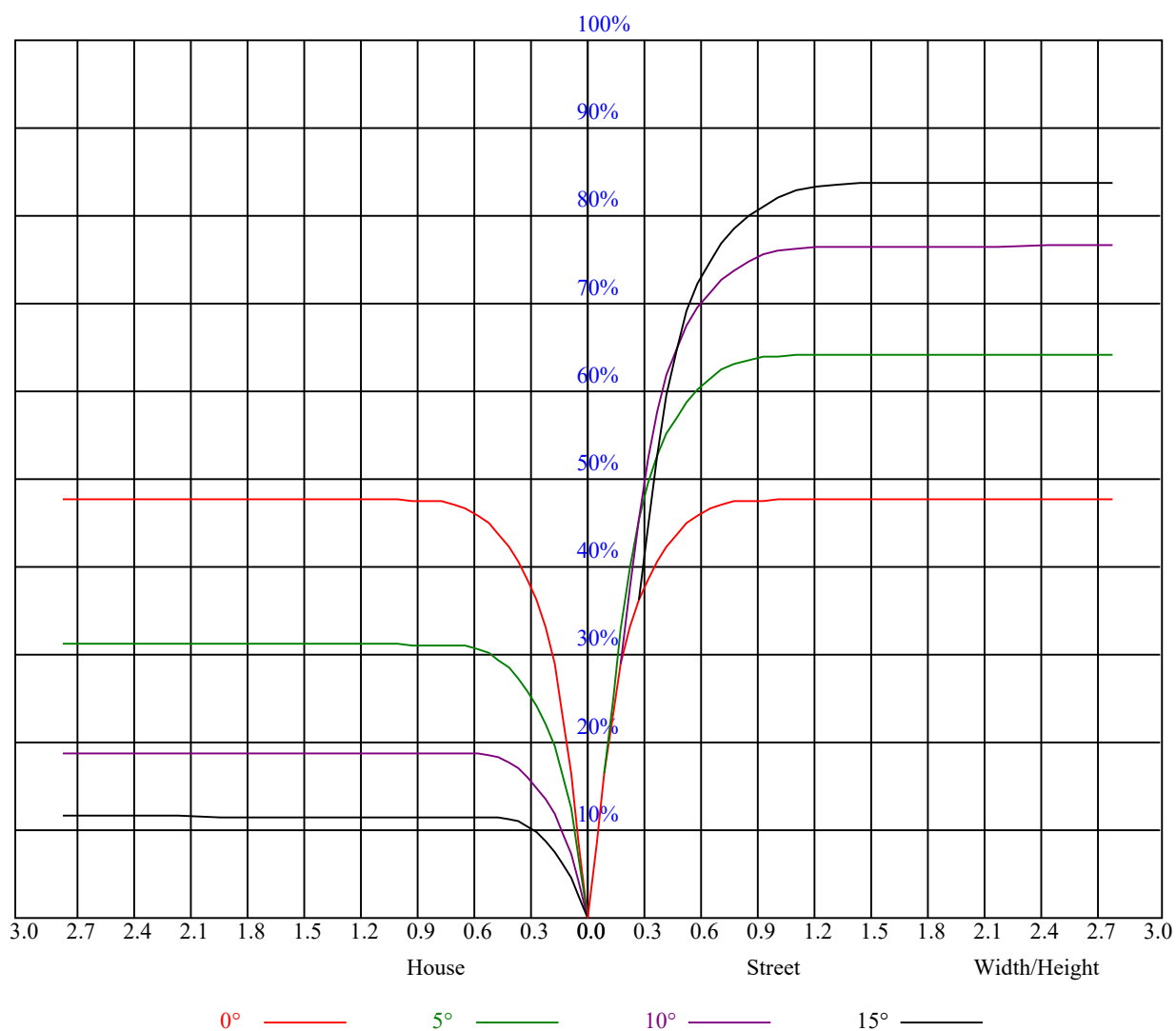
Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	1.14	1.14	1.14	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	0.98	0.98	0.98	0.96
1	1.08	1.06	1.04	1.06	1.04	1.02	1.02	1.00	0.99	0.98	0.97	0.96	0.95	0.94	0.94	0.92
2	1.02	0.99	0.97	1.01	0.98	0.96	0.98	0.96	0.94	0.95	0.93	0.92	0.92	0.91	0.90	0.89
3	0.98	0.94	0.91	0.97	0.93	0.91	0.94	0.91	0.89	0.92	0.90	0.88	0.90	0.88	0.87	0.85
4	0.94	0.90	0.87	0.93	0.89	0.86	0.91	0.88	0.85	0.89	0.86	0.84	0.87	0.85	0.83	0.82
5	0.90	0.86	0.83	0.89	0.85	0.83	0.88	0.84	0.82	0.86	0.83	0.81	0.85	0.83	0.81	0.80
6	0.87	0.83	0.80	0.86	0.82	0.79	0.85	0.81	0.79	0.84	0.81	0.78	0.83	0.80	0.78	0.77
7	0.84	0.80	0.77	0.83	0.79	0.77	0.82	0.79	0.76	0.81	0.78	0.76	0.80	0.78	0.76	0.75
8	0.81	0.77	0.74	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
9	0.79	0.75	0.72	0.78	0.74	0.72	0.77	0.74	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.70
10	0.76	0.72	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.68



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	11014.30	10898.29	10694.11	10438.90	10211.52	9034.04	9034.04	8193.21	7242.40
45.0	11018.94	11079.26	11051.42	10958.61	10800.84	10503.86	10044.47	9436.58	8661.65
90.0	11093.18	11125.67	11083.90	10907.57	10573.47	10211.52	9067.91	8727.31	7815.95
135.0	10991.10	11065.34	11060.70	11079.26	10963.25	10624.51	10127.99	9445.86	8638.45
180.0	11014.30	11046.78	11060.70	11018.94	10819.40	10411.05	9886.70	9186.01	8355.39
225.0	11018.94	10981.82	10786.92	10448.18	9083.22	9083.22	8592.28	7664.21	6651.22
270.0	11093.18	11018.94	10912.21	10749.80	10434.26	9970.22	9362.34	8582.76	7668.62
315.0	10991.10	10884.37	10731.24	10360.01	8941.23	8941.23	8464.67	7929.17	6560.27
360.0	11014.30	10898.29	10694.11	10438.90	10211.52	9034.04	9034.04	8193.21	7242.40
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	6215.03	5221.07	4324.56	3597.42	3032.23	2602.07	2263.79	1986.76	1751.49
45.0	7789.27	6810.15	5780.00	4791.61	3919.23	3232.46	2708.10	2318.31	2318.31
90.0	6823.84	5781.62	4797.41	3918.53	3215.98	2696.27	2320.86	2023.88	1788.15
135.0	7891.35	6666.30	5840.32	4847.29	3979.55	3278.86	2759.14	2364.71	2364.71
180.0	7385.56	6383.24	5367.01	4438.94	3617.60	2977.24	2503.92	2503.92	1848.01
225.0	5628.96	4683.26	3874.91	3237.79	2753.81	2366.80	2060.54	1909.73	1617.85
270.0	6661.66	5654.71	4689.52	4183.73	3246.38	2749.86	2517.85	2383.28	2076.78
315.0	5548.22	4959.82	4098.11	3396.96	2856.36	2442.90	2125.97	1867.97	1647.09
360.0	6215.03	5221.07	4324.56	3597.42	3032.23	2602.07	2263.79	1986.76	1751.49
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1602.08	1411.82	1282.36	1193.73	1085.61	1009.04	925.24	901.25	855.68
45.0	2056.83	1641.05	1464.72	1321.34	1203.01	1101.85	1024.82	962.64	909.27
90.0	1583.98	1417.39	1280.96	1166.35	1109.27	922.59	912.01	912.01	866.72
135.0	1822.49	1620.64	1458.23	1319.02	1202.08	1139.90	1019.71	948.72	912.06
180.0	1714.37	1519.48	1357.53	1222.96	1115.77	1028.53	963.10	909.27	867.05
225.0	1448.94	1360.78	1236.88	1134.33	1048.02	908.95	908.95	859.53	818.32
270.0	1665.18	1486.07	1338.04	1217.39	1118.09	1035.49	967.74	913.45	868.44
315.0	1469.36	1320.87	1200.22	1104.17	1032.24	912.94	912.94	886.63	848.21
360.0	1602.08	1411.82	1282.36	1193.73	1085.61	1009.04	925.24	901.25	855.68
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	816.23	782.04	743.71	688.16	618.32	547.65	471.88	399.21	327.38
45.0	863.33	829.46	794.66	765.89	725.98	666.58	598.84	523.66	451.27
90.0	829.00	793.91	762.08	711.50	650.16	583.71	508.16	435.63	364.31
135.0	860.09	818.79	785.38	751.50	697.67	637.81	570.53	495.82	426.21
180.0	832.24	802.08	777.49	742.22	686.54	644.31	540.83	464.73	393.27
225.0	785.10	754.33	703.34	634.52	566.21	491.60	449.18	373.22	303.94
270.0	829.92	793.73	777.02	733.87	642.92	602.08	526.45	454.98	381.67
315.0	815.82	782.69	736.51	671.97	606.91	529.88	455.82	382.04	313.50
360.0	816.23	782.04	743.71	688.16	618.32	547.65	471.88	399.21	327.38
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	256.47	187.47	149.00	89.42	40.93	18.61	14.25	11.69	9.61
45.0	390.95	306.96	248.49	248.49	112.95	59.86	24.36	13.36	11.55
90.0	294.52	238.23	158.28	97.82	47.33	17.35	10.63	8.82	6.91
135.0	354.29	286.54	231.32	231.32	81.76	52.30	15.68	12.76	11.28
180.0	350.11	280.04	251.74	169.70	73.64	31.18	14.48	12.06	10.07
225.0	232.62	166.36	103.48	51.00	21.53	13.60	12.39	10.49	9.14
270.0	312.53	242.46	242.46	111.28	58.79	23.06	12.30	10.81	9.33
315.0	242.97	177.03	113.46	63.29	37.59	15.73	13.78	12.39	10.53
360.0	256.47	187.47	149.00	89.42	40.93	18.61	14.25	11.69	9.61

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	8.72	8.07	7.75	7.47	7.15	6.77	6.45	6.22	5.94
45.0	9.19	7.47	6.77	6.03	5.71	5.43	4.78	4.59	4.55
90.0	5.06	4.18	3.71	3.29	2.97	2.74	2.55	2.41	2.37
135.0	8.96	7.56	6.87	6.50	6.08	5.75	5.34	5.01	4.69
180.0	8.35	7.61	7.10	6.40	6.22	5.85	5.43	5.29	4.87
225.0	8.58	8.31	8.03	7.70	7.29	7.01	6.82	6.50	6.26
270.0	7.89	7.10	6.87	6.54	6.26	5.85	5.57	5.38	5.20
315.0	10.30	9.65	9.19	8.86	8.45	8.03	7.70	7.38	7.01
360.0	8.72	8.07	7.75	7.47	7.15	6.77	6.45	6.22	5.94
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	5.52	5.20	4.92	4.73	4.27	4.08	3.85	3.48	3.25
45.0	4.64	4.78	4.87	5.01	5.01	4.92	4.64	4.36	4.13
90.0	2.41	2.37	2.32	2.27	2.32	2.23	2.18	2.00	1.86
135.0	4.50	4.36	4.08	3.85	3.67	3.48	3.29	3.02	2.92
180.0	4.64	4.36	4.08	3.81	3.57	3.34	3.16	2.97	2.69
225.0	5.94	5.71	5.48	5.20	4.92	4.69	4.50	4.13	3.81
270.0	4.92	4.64	4.55	4.27	4.08	3.85	3.67	3.48	3.25
315.0	6.68	6.26	5.85	5.61	5.34	5.06	4.69	4.36	4.04
360.0	5.52	5.20	4.92	4.73	4.27	4.08	3.85	3.48	3.25
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	3.02	2.83	2.64	2.41	2.23	2.13	1.90	1.72	1.58
45.0	3.85	3.57	3.25	3.02	2.78	2.60	2.32	2.04	1.90
90.0	1.76	1.72	1.58	1.44	1.44	1.35	1.30	1.21	1.16
135.0	2.60	2.37	2.27	2.09	1.90	1.76	1.72	1.62	1.53
180.0	2.51	2.37	2.18	1.95	1.76	1.72	1.62	1.48	1.35
225.0	3.48	3.25	3.06	2.74	2.55	2.37	2.09	2.00	1.48
270.0	2.97	2.78	2.60	2.41	2.23	2.09	2.00	1.86	1.72
315.0	3.71	3.39	3.06	2.92	2.74	2.55	2.27	2.04	1.86
360.0	3.02	2.83	2.64	2.41	2.23	2.13	1.90	1.72	1.58
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	1.48	1.30	1.07	1.02	1.02	0.93	0.93	0.88	0.79
45.0	1.72	1.39	1.21	0.97	0.88	0.88	0.79	0.70	0.65
90.0	1.11	1.02	0.88	0.88	0.93	0.88	0.79	0.79	0.79
135.0	1.39	1.25	1.16	1.07	0.97	0.93	0.93	0.93	0.88
180.0	1.25	1.11	1.07	0.97	0.88	0.84	0.79	0.79	0.74
225.0	1.35	1.11	0.88	0.88	0.79	0.79	0.74	0.74	0.65
270.0	1.58	1.35	1.21	1.11	1.02	0.93	0.88	0.88	0.88
315.0	1.58	1.30	1.11	1.07	1.07	0.97	0.93	0.97	0.93
360.0	1.48	1.30	1.07	1.02	1.02	0.93	0.93	0.88	0.79
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	0.79	0.70	0.79	0.74	0.74	0.70	0.65	0.70	0.60
45.0	0.70	0.60	0.60	0.60	0.60	0.56	0.56	0.56	0.60
90.0	0.79	0.74	0.74	0.70	0.65	0.70	0.70	0.65	0.65
135.0	0.84	0.84	0.79	0.79	0.74	0.74	0.74	0.70	0.74
180.0	0.74	0.70	0.65	0.65	0.60	0.60	0.60	0.56	0.56
225.0	0.60	0.65	0.56	0.60	0.60	0.56	0.51	0.51	0.56
270.0	0.79	0.74	0.74	0.74	0.70	0.65	0.65	0.60	0.60
315.0	0.88	0.88	0.93	0.88	0.79	0.88	0.79	0.79	0.79
360.0	0.79	0.70	0.79	0.74	0.74	0.70	0.65	0.70	0.60

Intensity data(cd)

Appendix Page: 18 Total:18

C/γ(°)	90.0
0.0	0.60
45.0	0.51
90.0	0.60
135.0	0.74
180.0	0.51
225.0	0.51
270.0	0.65
315.0	0.79
360.0	0.60