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NATA

LumCAT: 1656-S	
Luminaire: 92.70.124.00	
Report No: NATA0100	Voltage(V): 33.9400
Test No: GC2019032306	Current(A): 0.3000
LampCAT: BRIDGELUX V10	Power (W): 10.1820
Lamp flux(lm): 1503.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 47	Width(mm): 47
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1339.94
Efficiency(%): 89.15%
Lumens(lm)/Power(W): 131.60
Central intensity(cd): 8335.406
Maximum intensity(cd): 8335.406
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=16.2
[C90/270]Total=16.2
Field angle(10%Imax): [C0/180]Total=37.1
[C90/270]Total=37.1
Maximum s/h(1/2): C0_180=0.28 C90_270=0.28
Maximum s/h(1/4): C0_180=0.30 C90_270=0.30
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.15%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.615%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	8335.406	0.000	0	.000%	.000%
1.0	8247.586	7.935	7.935	.528%	.592%
2.0	8008.734	23.333	31.267	1.552%	2.333%
3.0	7578.844	37.280	68.548	2.480%	5.116%
4.0	7018.945	48.863	117.411	3.251%	8.762%
5.0	6393.867	57.701	175.112	3.839%	13.069%
6.0	5647.852	63.282	238.395	4.210%	17.791%
7.0	4875.398	65.318	303.712	4.346%	22.666%
8.0	4233.445	65.190	368.903	4.337%	27.531%
9.0	3567.516	63.223	432.125	4.206%	32.250%
10.0	2986.242	59.309	491.434	3.946%	36.676%
11.0	2550.586	55.324	546.759	3.681%	40.805%
12.0	2145.234	51.332	598.091	3.415%	44.636%
13.0	1796.414	46.777	644.868	3.112%	48.127%
14.0	1513.737	42.370	687.238	2.819%	51.289%
15.0	1297.048	38.588	725.825	2.567%	54.168%
16.0	1122.068	35.447	761.272	2.358%	56.814%
17.0	982.723	32.777	794.049	2.181%	59.260%
18.0	878.266	30.684	824.733	2.041%	61.550%
19.0	796.936	29.145	853.878	1.939%	63.725%
20.0	729.120	27.931	881.809	1.858%	65.809%
21.0	674.339	26.949	908.759	1.793%	67.821%
22.0	635.513	26.322	935.081	1.751%	69.785%
23.0	602.044	25.967	961.048	1.728%	71.723%
24.0	574.812	25.730	986.778	1.712%	73.643%
25.0	553.669	25.659	1012.437	1.707%	75.558%
26.0	536.463	25.733	1038.17	1.712%	77.479%
27.0	520.952	25.870	1064.04	1.721%	79.409%
28.0	507.038	26.027	1090.066	1.732%	81.352%
29.0	489.776	26.079	1116.146	1.735%	83.298%
30.0	468.457	25.872	1142.018	1.721%	85.229%
31.0	438.244	25.232	1167.25	1.679%	87.112%
32.0	401.688	24.063	1191.313	1.601%	88.908%
33.0	361.589	22.486	1213.8	1.496%	90.586%
34.0	309.122	20.298	1234.097	1.350%	92.101%
35.0	260.873	17.702	1251.799	1.178%	93.422%
36.0	208.920	14.958	1266.758	.995%	94.538%
37.0	164.180	12.168	1278.926	.810%	95.446%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	114.349	9.297	1288.223	.619%	96.140%
39.0	77.871	6.561	1294.784	.437%	96.630%
40.0	52.207	4.537	1299.321	.302%	96.968%
41.0	34.889	3.101	1302.422	.206%	97.200%
42.0	23.105	2.107	1304.529	.140%	97.357%
43.0	17.508	1.504	1306.033	.100%	97.469%
44.0	15.005	1.227	1307.261	.082%	97.561%
45.0	12.902	1.072	1308.333	.071%	97.641%
46.0	11.623	0.959	1309.292	.064%	97.713%
47.0	11.095	0.904	1310.196	.060%	97.780%
48.0	10.821	0.886	1311.082	.059%	97.846%
49.0	10.533	0.877	1311.959	.058%	97.912%
50.0	10.329	0.870	1312.828	.058%	97.976%
51.0	10.167	0.867	1313.696	.058%	98.041%
52.0	10.027	0.867	1314.562	.058%	98.106%
53.0	9.844	0.864	1315.426	.058%	98.170%
54.0	9.738	0.863	1316.29	.057%	98.235%
55.0	9.605	0.863	1317.153	.057%	98.299%
56.0	9.478	0.862	1318.015	.057%	98.364%
57.0	9.338	0.860	1318.876	.057%	98.428%
58.0	9.113	0.853	1319.729	.057%	98.491%
59.0	8.845	0.840	1320.568	.056%	98.554%
60.0	8.543	0.821	1321.39	.055%	98.615%
61.0	8.170	0.798	1322.187	.053%	98.675%
62.0	7.784	0.769	1322.956	.051%	98.732%
63.0	7.383	0.738	1323.694	.049%	98.787%
64.0	6.961	0.704	1324.398	.047%	98.840%
65.0	6.638	0.673	1325.071	.045%	98.890%
66.0	6.391	0.650	1325.721	.043%	98.939%
67.0	6.173	0.632	1326.352	.042%	98.986%
68.0	6.040	0.619	1326.971	.041%	99.032%
69.0	5.941	0.611	1327.582	.041%	99.078%
70.0	5.864	0.606	1328.189	.040%	99.123%
71.0	5.787	0.602	1328.791	.040%	99.168%
72.0	5.752	0.600	1329.391	.040%	99.212%
73.0	5.709	0.599	1329.99	.040%	99.257%
74.0	5.681	0.599	1330.589	.040%	99.302%
75.0	5.639	0.598	1331.187	.040%	99.347%

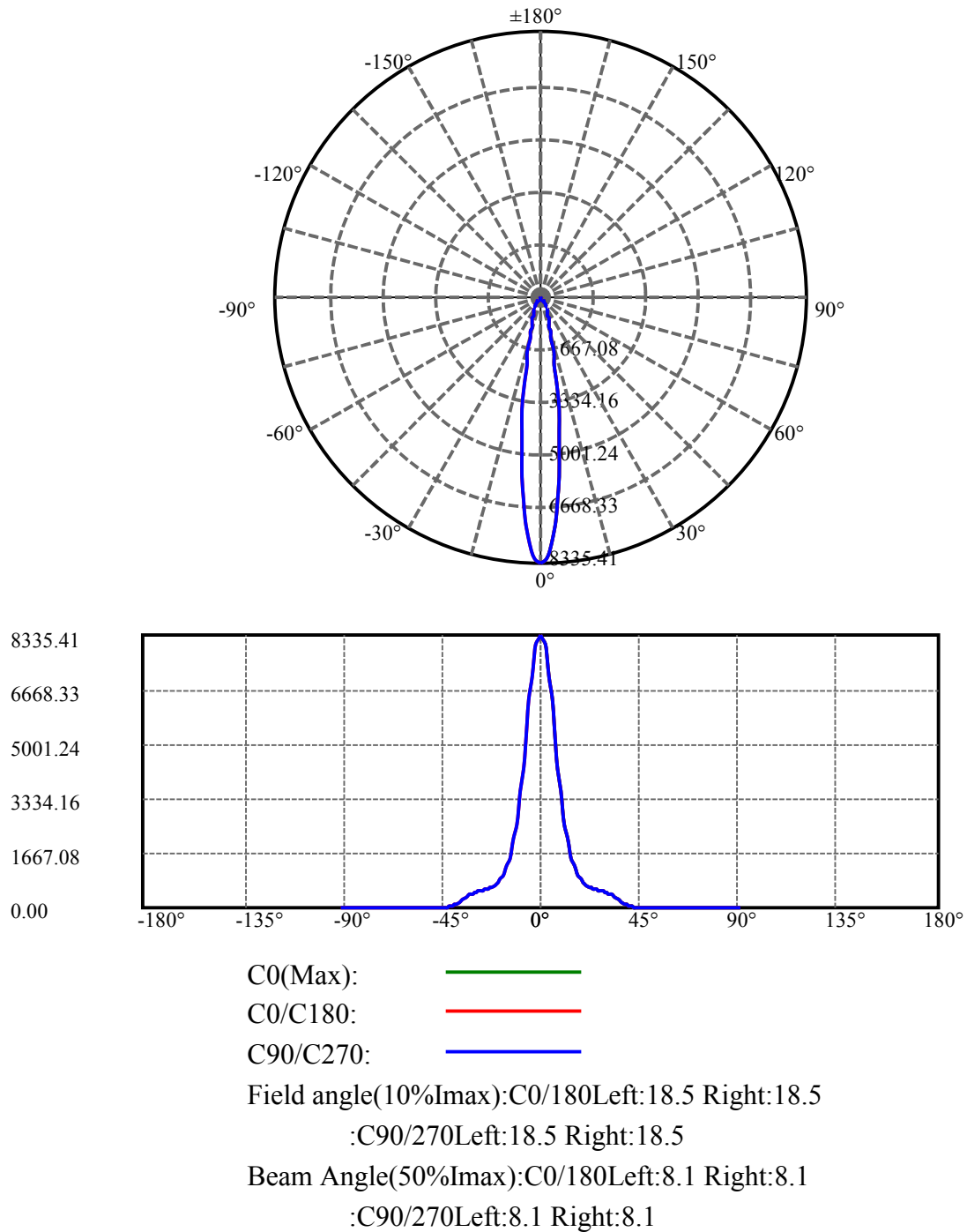
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	5.618	0.598	1331.785	.040%	99.391%
77.0	5.583	0.597	1332.382	.040%	99.436%
78.0	5.548	0.596	1332.978	.040%	99.480%
79.0	5.513	0.594	1333.572	.040%	99.525%
80.0	5.463	0.592	1334.164	.039%	99.569%
81.0	5.428	0.589	1334.753	.039%	99.613%
82.0	5.407	0.588	1335.34	.039%	99.657%
83.0	5.393	0.587	1335.927	.039%	99.700%
84.0	5.358	0.586	1336.513	.039%	99.744%
85.0	5.316	0.583	1337.095	.039%	99.788%
86.0	5.280	0.579	1337.675	.039%	99.831%
87.0	5.217	0.575	1338.249	.038%	99.874%
88.0	5.182	0.570	1338.819	.038%	99.916%
89.0	5.126	0.565	1339.384	.038%	99.958%
90.0	5.070	0.559	1339.943	.037%	100.000%

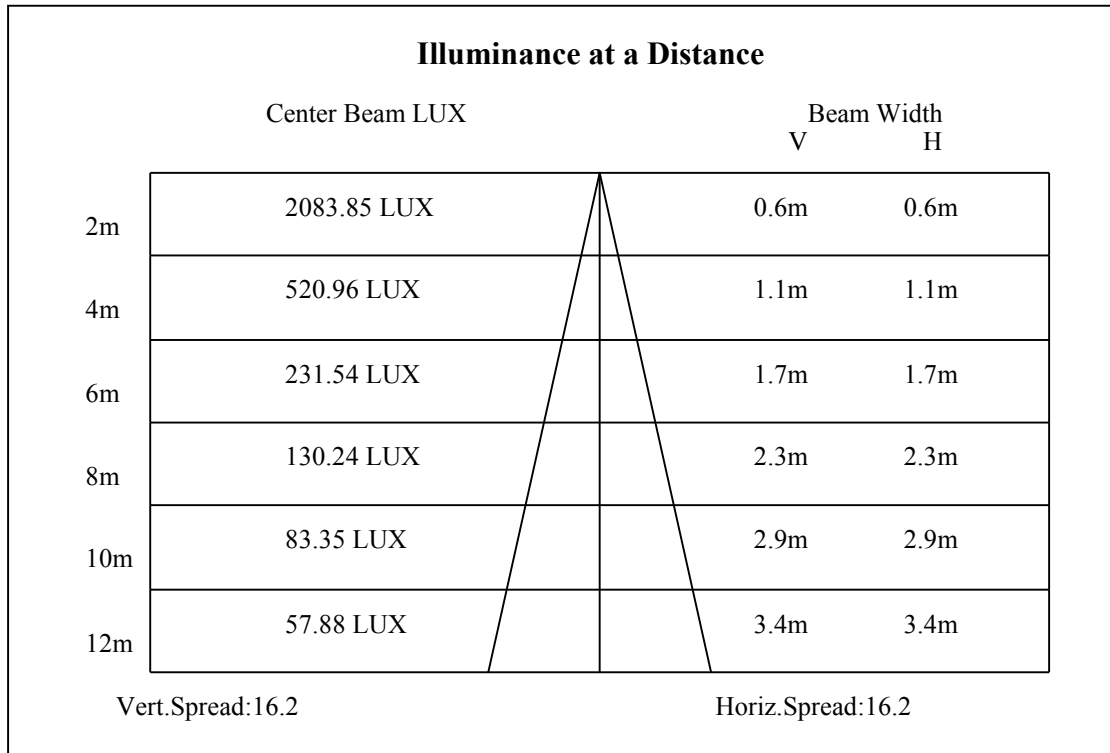
ZONAL LUMEN SUMMARY

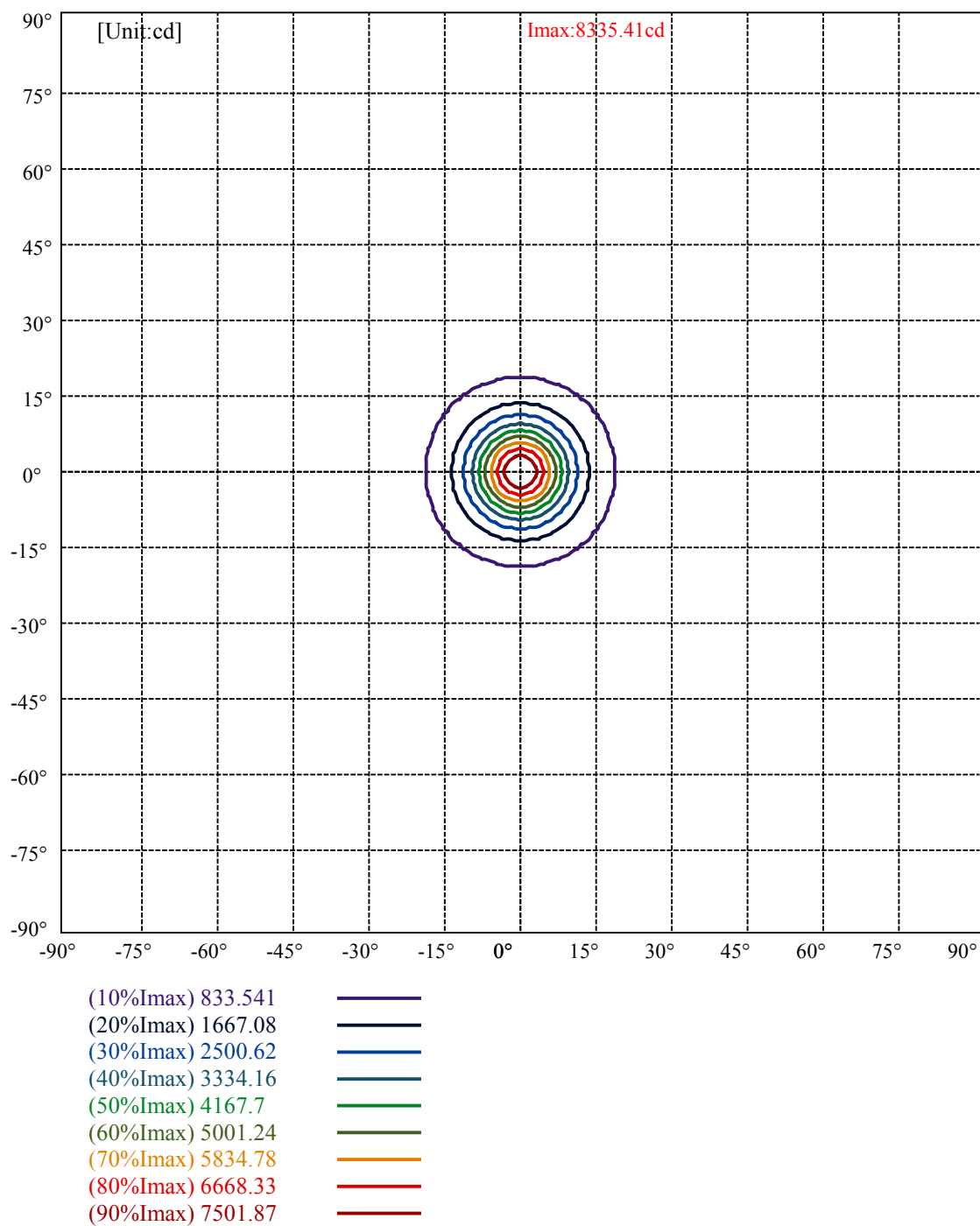
Zone	Lumens	%Lamp	%Fixt
0-30	1142.02	75.98%	85.23%
0-40	1299.32	86.45%	96.97%
0-60	1321.39	87.92%	98.62%
0-90	1339.38	89.11%	99.96%
0-120	1339.38	89.11%	99.96%
0-180	1339.94	89.15%	100.00%
60-90	18.82	1.25%	1.40%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.30	1071.95	71.32%	80.00%

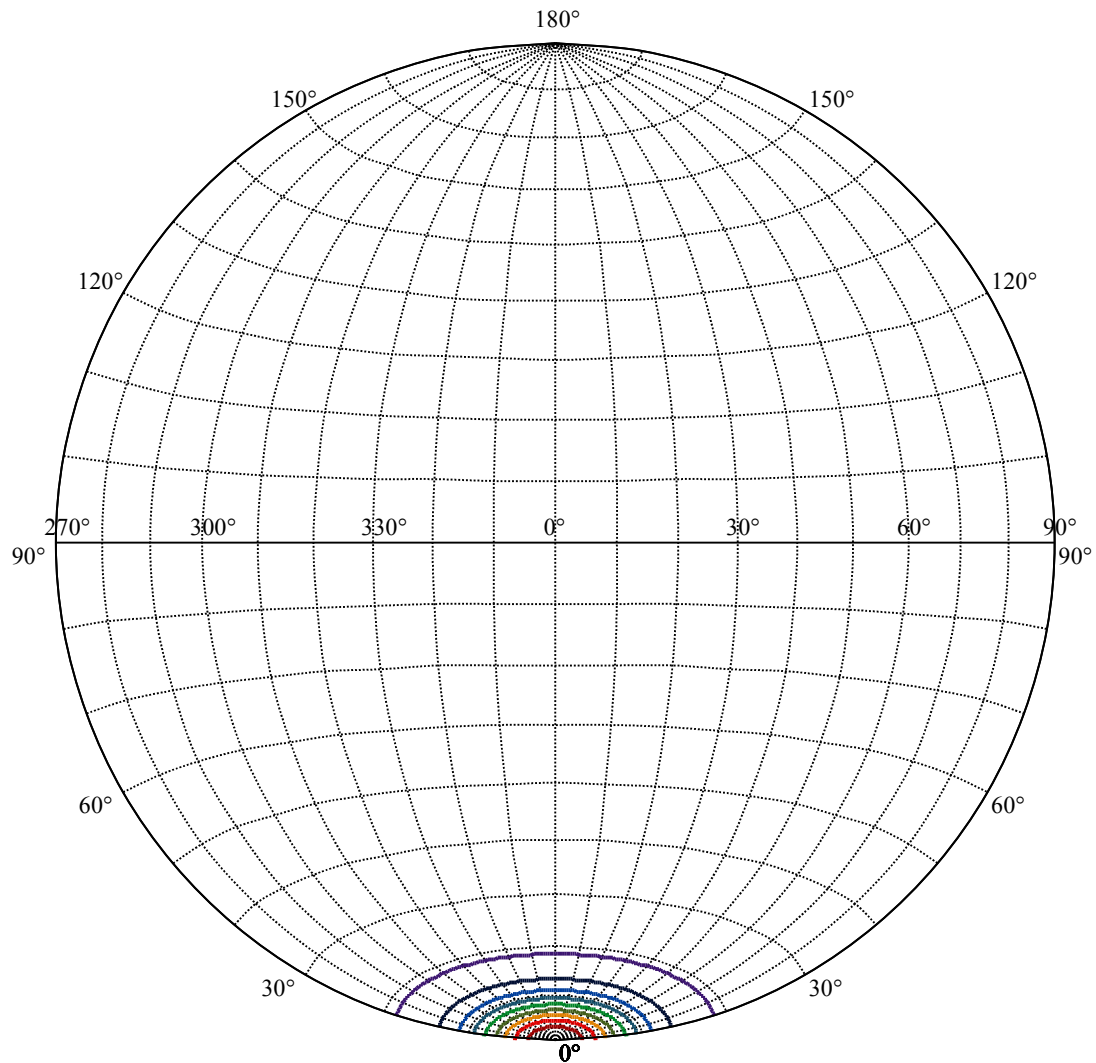
ZONAL LUMEN SUMMARY

0-10	491.43
10-20	390.37
20-30	260.21
30-40	157.30
40-50	13.51
50-60	8.56
60-70	6.80
70-80	5.97
80-90	5.22
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









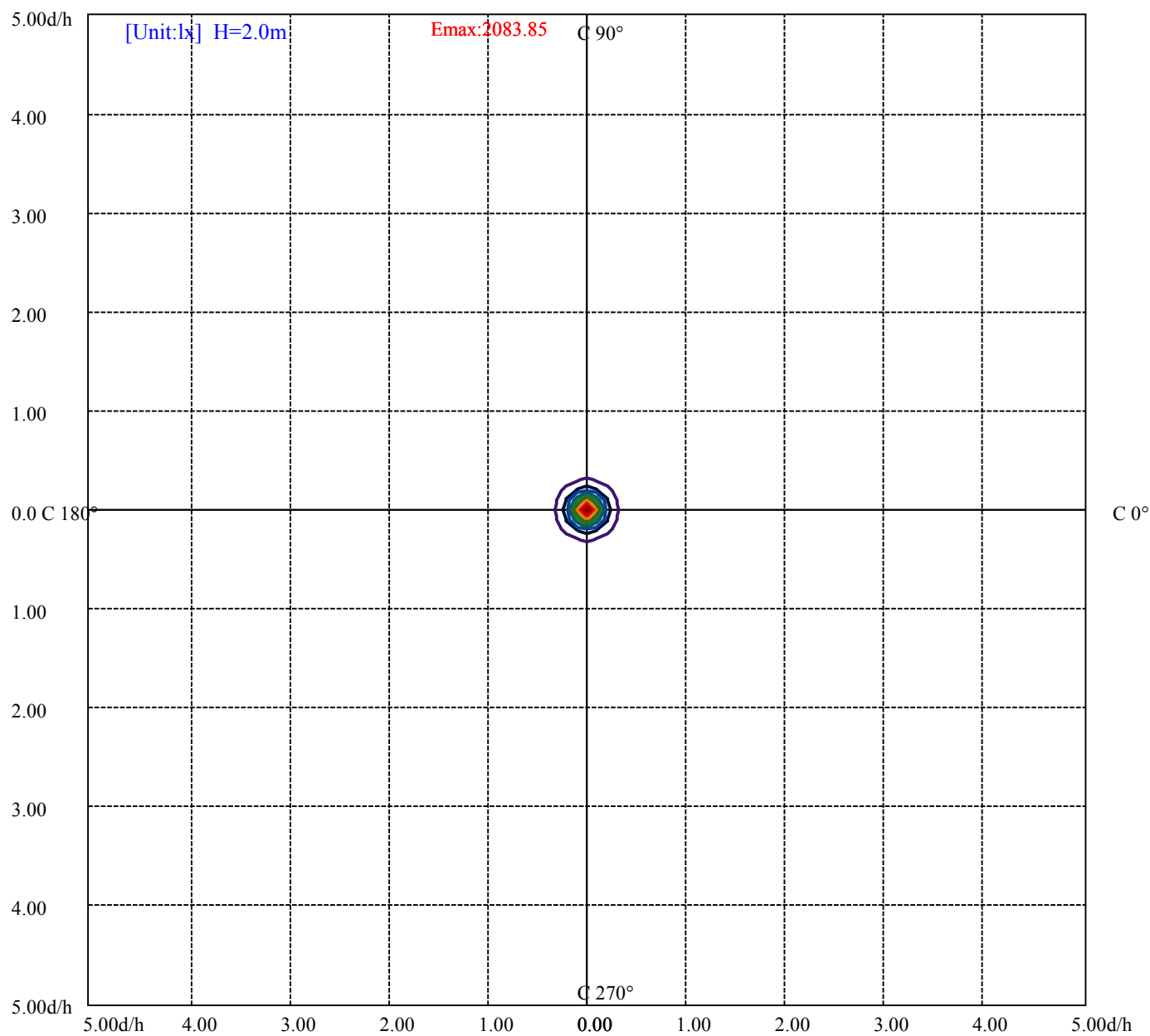
House

[Unit:cd]

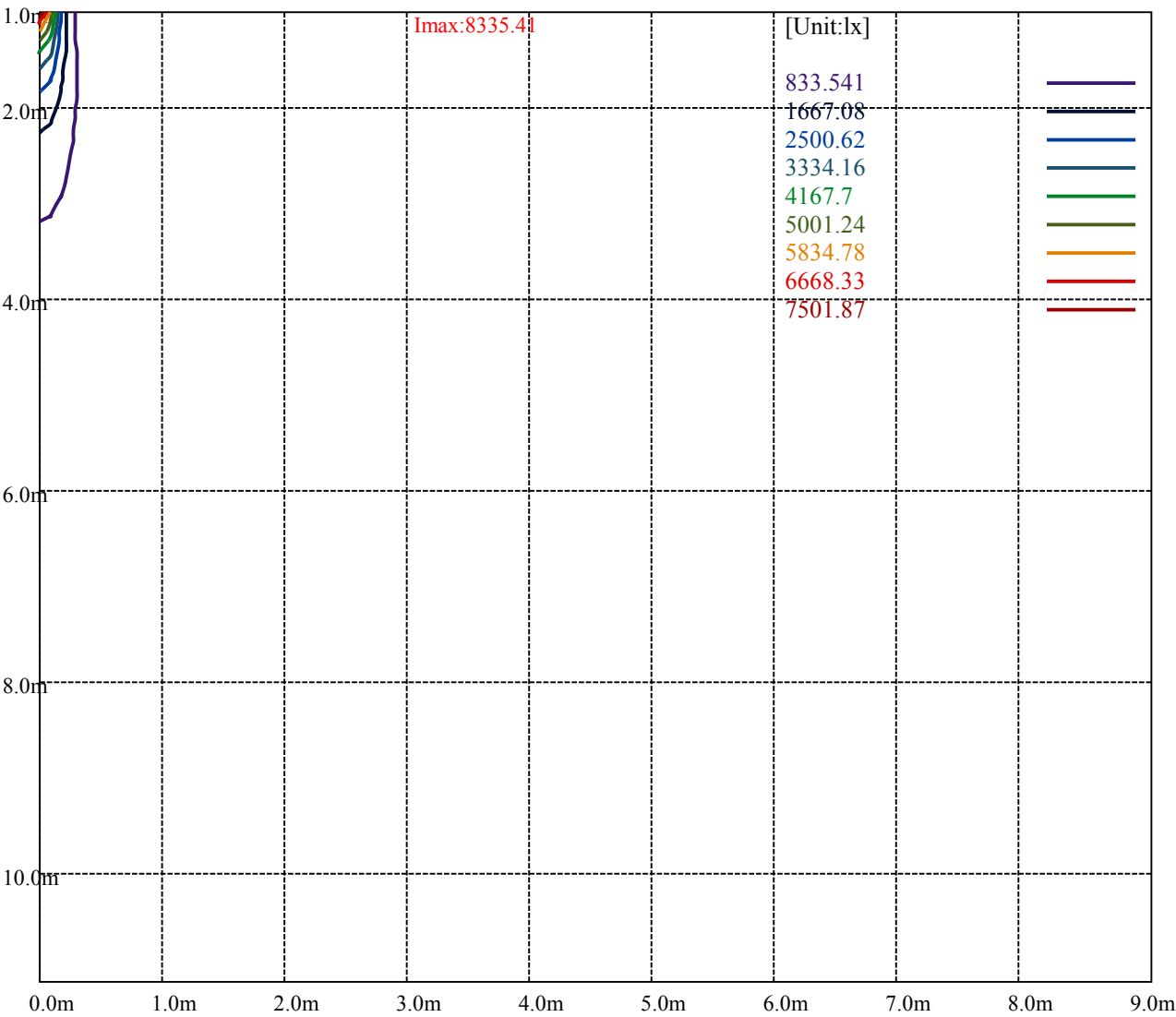
Road

Imax:8335.41

(10%Imax)	833.541	—
(20%Imax)	1667.08	—
(30%Imax)	2500.62	—
(40%Imax)	3334.16	—
(50%Imax)	4167.7	—
(60%Imax)	5001.24	—
(70%Imax)	5834.78	—
(80%Imax)	6668.33	—
(90%Imax)	7501.87	—



(10%E _{max}) 208.3848	—
(20%E _{max}) 416.77	—
(30%E _{max}) 625.155	—
(40%E _{max}) 833.54	—
(50%E _{max}) 1041.925	—
(60%E _{max}) 1250.31	—
(70%E _{max}) 1458.693	—
(80%E _{max}) 1667.078	—
(90%E _{max}) 1875.463	—



Luminance Table

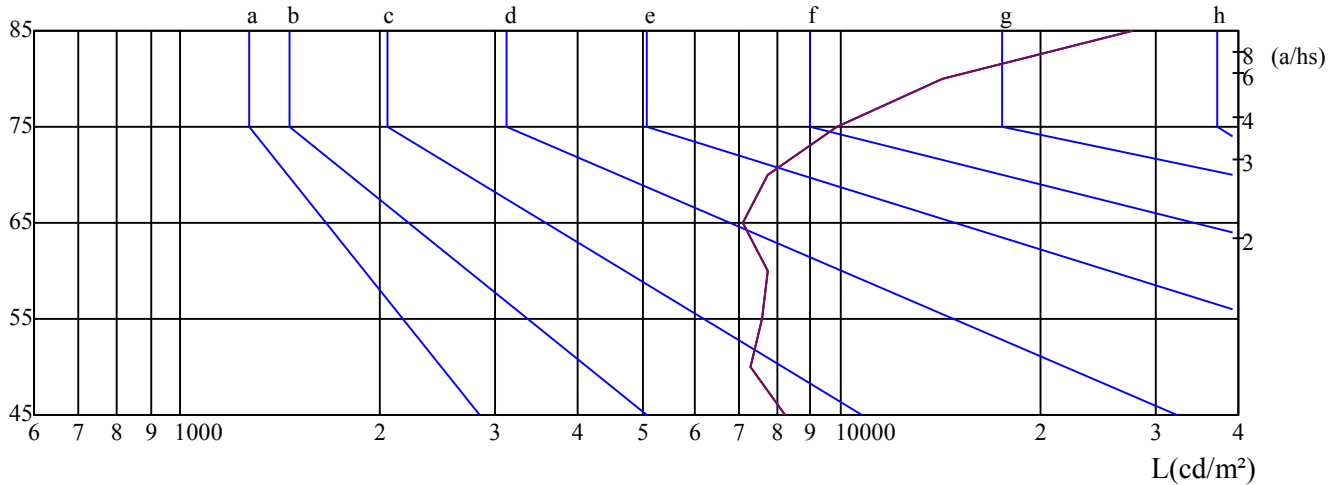
γ	45	50	55	60	65	70	75	80	85
C0	8260	7274	7580	7735	7110	7762	9863	14243	27610
C45	8260	7274	7580	7735	7110	7762	9863	14243	27610
C90	8260	7274	7580	7735	7110	7762	9863	14243	27610

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
7110	7110	7110	9863	9863	9863	27610	27610	27610

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

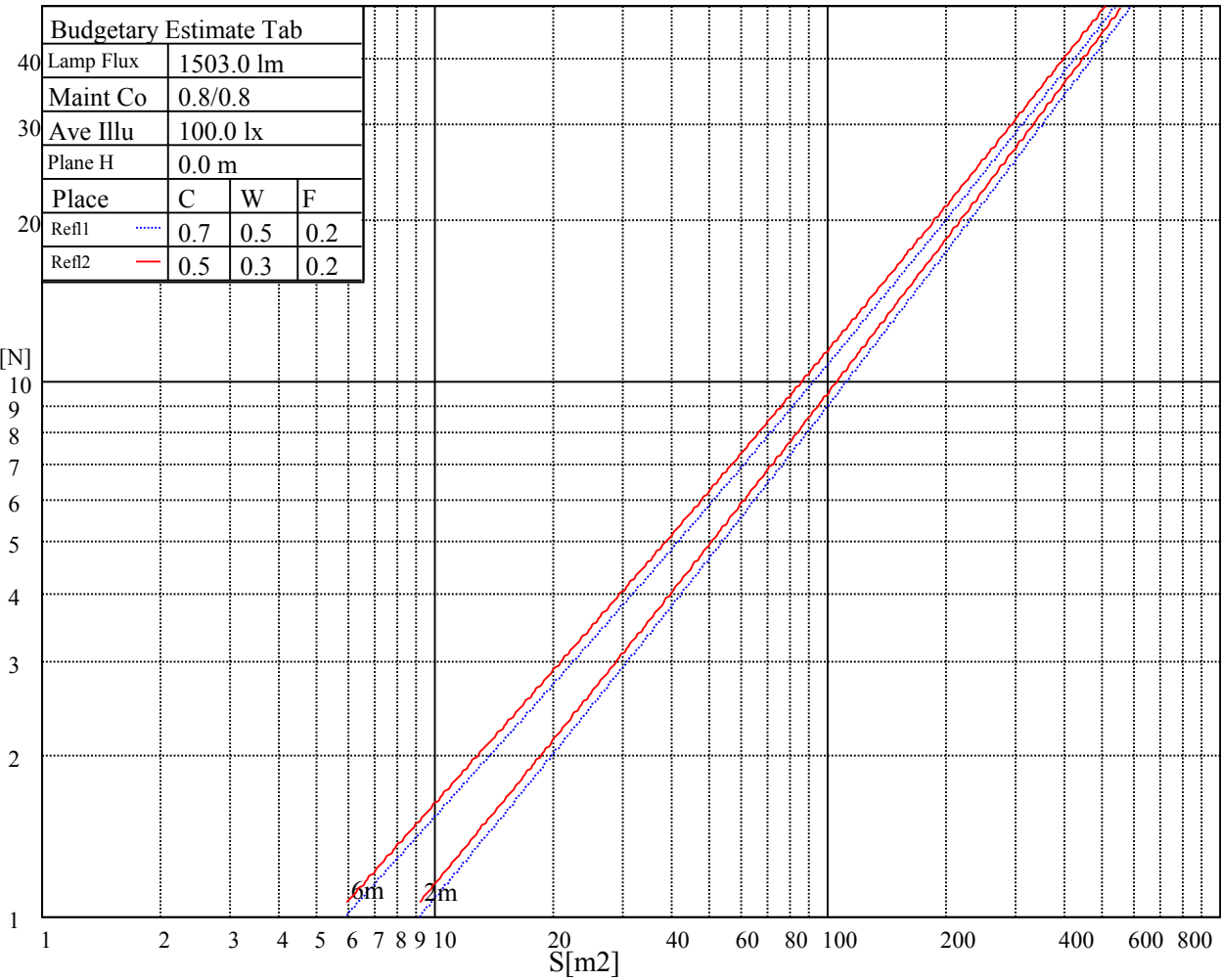
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

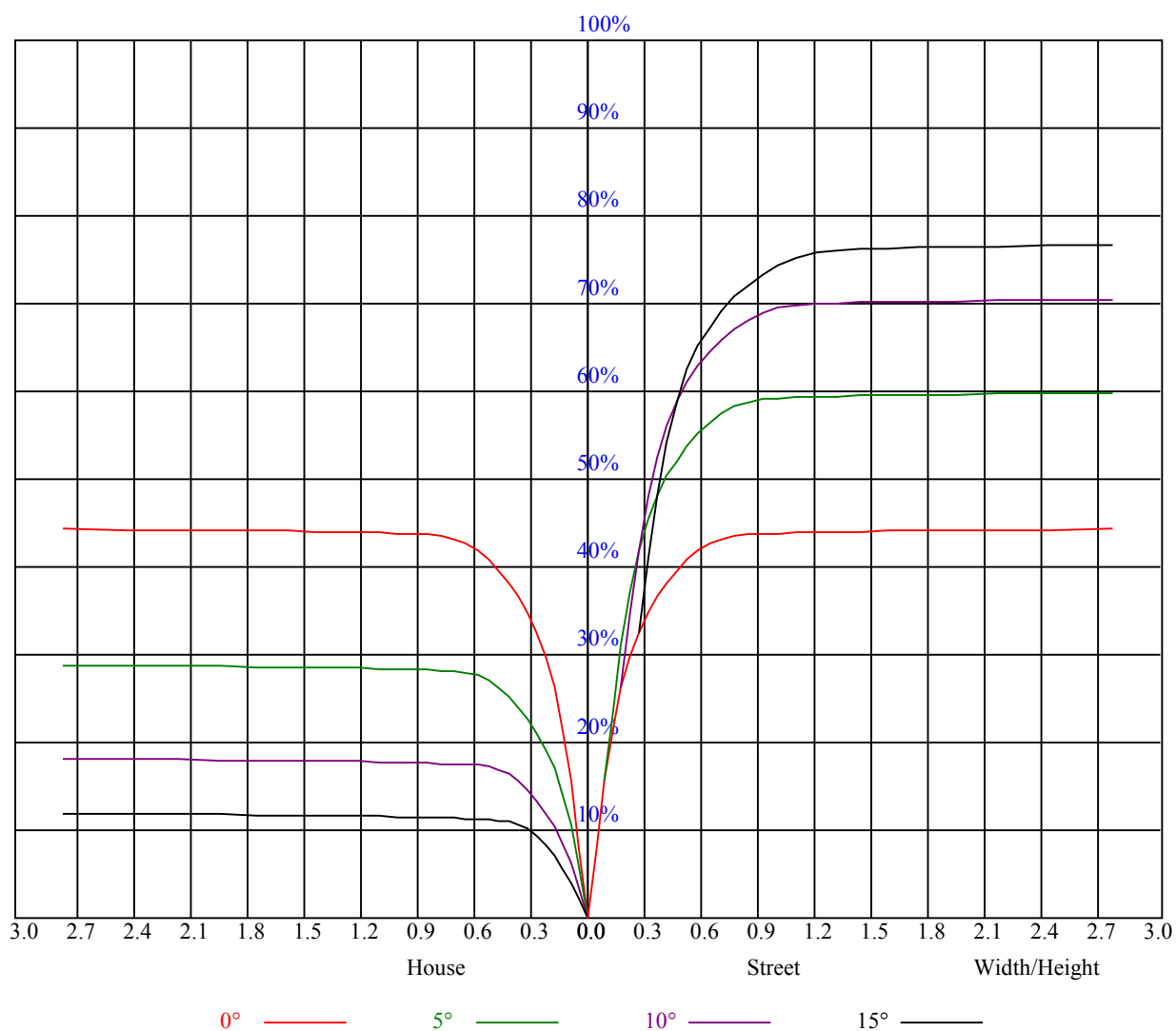
C0 ———

C45 ———

C90 ———



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	1.06	1.06	1.06	1.04	1.04	1.04	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.89
1	1.00	0.98	0.96	0.98	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.88	0.87	0.87	0.85
2	0.95	0.92	0.89	0.93	0.90	0.88	0.90	0.88	0.86	0.88	0.86	0.84	0.85	0.84	0.83	0.81
3	0.90	0.86	0.84	0.89	0.86	0.83	0.87	0.84	0.82	0.85	0.82	0.80	0.83	0.81	0.79	0.78
4	0.86	0.82	0.79	0.85	0.81	0.79	0.83	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
5	0.82	0.78	0.75	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.74	0.78	0.75	0.73	0.72
6	0.79	0.75	0.72	0.79	0.75	0.72	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.71	0.70
7	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.71	0.69	0.74	0.71	0.68	0.73	0.70	0.68	0.67
8	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.66	0.65
9	0.71	0.67	0.65	0.71	0.67	0.64	0.70	0.67	0.64	0.69	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	0.65	0.62	0.67	0.64	0.62	0.67	0.64	0.62	0.61



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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	8303.06	8480.25	8542.13	8446.50	8205.75	7786.13	7017.75	6279.75	5517.00
45.0	8300.25	8330.63	8206.31	7900.88	7464.38	6773.06	5968.69	5245.31	4557.94
90.0	8314.31	8022.38	7588.13	6918.75	6113.25	5380.31	4680.56	3863.81	3277.69
135.0	8424.00	8129.25	7582.50	6851.25	6096.94	5346.00	4467.38	3822.19	3249.00
180.0	8303.06	7913.25	7394.06	6647.06	5806.69	5091.75	4411.13	3641.63	3102.75
225.0	8300.25	8096.06	7763.63	7202.81	6478.88	5752.69	5065.31	4272.75	3682.69
270.0	8314.31	8424.00	8390.25	8190.00	7857.56	7291.13	6544.13	5808.94	5097.38
315.0	8424.00	8584.88	8602.88	8473.50	8128.13	7729.88	7027.88	6068.81	5383.13
360.0	8303.06	8480.25	8542.13	8446.50	8205.75	7786.13	7017.75	6279.75	5517.00
C/ γ (°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0
0.0	4633.31	3990.94	3409.88	2836.13	2363.63	2008.69	1675.13	1408.50	1226.25
45.0	3765.94	3197.81	2706.75	2244.38	1860.75	1584.56	1358.44	1136.25	996.75
90.0	2772.56	2251.69	1912.50	1627.88	1362.94	1110.49	1003.22	873.84	781.71
135.0	2645.44	2244.38	1906.88	1591.88	1338.75	1162.13	1009.13	900.56	806.63
180.0	2638.13	2161.69	1851.19	1593.56	1380.38	1118.53	1040.91	934.20	837.39
225.0	3153.38	2586.94	2205.00	1889.44	1595.25	1362.38	1106.94	1046.25	942.19
270.0	4271.63	3680.44	3141.56	2616.75	2184.19	1861.88	1562.06	1317.38	1149.75
315.0	4659.75	3776.06	3270.94	2761.88	2285.44	1901.25	1620.56	1359.56	1121.12
360.0	4633.31	3990.94	3409.88	2836.13	2363.63	2008.69	1675.13	1408.50	1226.25
C/ γ (°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
0.0	1067.06	956.81	857.25	779.06	724.50	673.88	633.94	605.25	582.19
45.0	886.50	791.44	720.56	665.44	628.88	599.63	574.31	555.19	540.00
90.0	701.89	642.83	600.58	564.24	536.68	517.33	501.81	485.33	473.74
135.0	734.06	684.56	642.94	609.75	586.13	567.00	546.75	534.38	523.13
180.0	762.13	709.37	661.50	623.25	595.86	570.43	551.98	534.99	520.71
225.0	850.05	777.09	723.66	676.41	637.20	607.56	583.14	559.41	543.77
270.0	1003.50	898.88	804.94	729.00	677.25	628.88	590.63	563.06	538.88
315.0	1020.94	914.51	821.53	747.56	697.61	651.66	615.94	591.75	569.31
360.0	1067.06	956.81	857.25	779.06	724.50	673.88	633.94	605.25	582.19
C/ γ (°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0
0.0	558.56	543.38	530.44	518.06	505.13	487.69	452.25	407.25	361.13
45.0	528.19	515.81	506.25	496.13	464.63	427.50	393.75	325.13	286.88
90.0	463.95	452.42	424.29	390.83	353.25	300.38	256.39	212.12	164.03
135.0	510.75	496.69	471.94	429.75	378.00	330.19	285.19	218.98	169.14
180.0	509.06	497.59	471.94	439.48	395.66	336.09	285.36	232.82	175.67
225.0	530.16	514.74	503.33	487.80	447.24	405.28	358.20	295.99	250.48
270.0	514.69	498.38	485.44	471.94	459.56	442.69	408.38	367.88	325.69
315.0	552.26	537.30	524.59	513.68	502.48	483.69	453.21	412.82	353.98
360.0	558.56	543.38	530.44	518.06	505.13	487.69	452.25	407.25	361.13
C/ γ (°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
0.0	303.19	290.25	184.84	131.06	88.43	55.86	28.86	21.21	17.78
45.0	226.07	171.06	121.67	82.97	46.74	28.46	22.50	18.79	15.13
90.0	118.41	83.53	50.74	30.21	24.30	20.76	17.49	15.08	14.18
135.0	118.41	74.19	44.10	24.69	21.21	17.55	13.44	11.53	11.08
180.0	122.85	81.23	48.04	27.06	20.31	16.09	12.38	9.56	8.78
225.0	193.67	134.33	96.53	55.69	30.43	23.79	19.74	14.12	11.87
270.0	285.19	225.73	172.91	129.88	88.03	58.16	35.27	26.04	21.77
315.0	303.58	253.13	195.98	141.41	98.21	58.44	35.16	23.74	19.46
360.0	303.19	290.25	184.84	131.06	88.43	55.86	28.86	21.21	17.78

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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	13.28	10.63	9.68	9.23	8.89	8.55	8.27	7.99	7.71	
45.0	12.60	11.81	11.53	11.19	10.69	10.41	10.13	9.84	9.45	
90.0	14.06	14.01	13.73	13.67	13.73	13.95	14.01	13.84	13.28	
135.0	10.69	10.29	10.01	9.73	9.51	9.34	9.34	9.39	9.45	
180.0	8.44	8.10	7.82	7.59	7.43	7.26	7.09	6.98	6.92	
225.0	11.03	10.63	10.18	9.79	9.45	9.17	8.94	8.72	8.72	
270.0	17.49	14.91	14.06	13.89	13.33	13.11	12.94	12.99	13.05	
315.0	15.64	12.60	11.76	11.48	11.25	10.86	10.63	10.46	10.18	
360.0	13.28	10.63	9.68	9.23	8.89	8.55	8.27	7.99	7.71	
C/ γ (°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0	
0.0	7.48	7.31	7.14	6.98	6.86	6.75	6.64	6.58	6.47	
45.0	9.11	8.61	8.27	7.99	7.76	7.48	7.31	7.09	6.86	
90.0	12.94	12.38	12.04	11.53	10.80	9.90	9.11	8.27	7.48	
135.0	9.68	9.90	10.01	9.90	9.56	9.34	9.00	8.66	8.27	
180.0	6.81	6.69	6.64	6.58	6.58	6.53	6.47	6.41	6.36	
225.0	8.66	8.78	8.89	9.17	9.51	9.73	9.90	9.79	9.39	
270.0	13.33	13.50	13.50	13.61	13.28	12.83	12.09	11.03	10.18	
315.0	9.90	9.68	9.34	8.94	8.55	8.21	7.82	7.54	7.26	
360.0	7.48	7.31	7.14	6.98	6.86	6.75	6.64	6.58	6.47	
C/ γ (°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0	
0.0	6.36	6.24	6.19	6.13	6.02	5.96	5.91	5.85	5.79	
45.0	6.75	6.53	6.30	6.13	5.96	5.91	5.85	5.79	5.68	
90.0	7.03	6.64	6.41	6.19	6.08	6.02	5.96	5.96	5.96	
135.0	7.65	6.98	6.53	6.19	6.02	5.85	5.79	5.68	5.68	
180.0	6.30	6.30	6.30	6.24	6.19	6.02	5.91	5.79	5.63	
225.0	8.72	7.99	7.26	6.81	6.36	6.08	5.91	5.79	5.68	
270.0	9.28	8.27	7.59	7.09	6.58	6.41	6.24	6.19	6.08	
315.0	6.98	6.75	6.53	6.36	6.19	6.08	5.96	5.85	5.79	
360.0	6.36	6.24	6.19	6.13	6.02	5.96	5.91	5.85	5.79	
C/ γ (°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0	
0.0	5.74	5.68	5.68	5.63	5.57	5.57	5.46	5.46	5.46	
45.0	5.68	5.63	5.57	5.51	5.51	5.46	5.46	5.40	5.34	
90.0	5.91	5.91	5.91	5.85	5.85	5.79	5.74	5.68	5.63	
135.0	5.63	5.57	5.57	5.57	5.51	5.46	5.46	5.40	5.34	
180.0	5.63	5.63	5.57	5.51	5.51	5.46	5.46	5.40	5.34	
225.0	5.63	5.57	5.57	5.51	5.46	5.46	5.46	5.40	5.34	
270.0	6.08	5.96	5.96	5.91	5.96	5.96	5.91	5.91	5.85	
315.0	5.74	5.74	5.63	5.63	5.57	5.51	5.46	5.46	5.40	
360.0	5.74	5.68	5.68	5.63	5.57	5.57	5.46	5.46	5.46	
C/ γ (°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0	
0.0	5.40	5.34	5.34	5.34	5.29	5.29	5.23	5.23	5.23	
45.0	5.34	5.29	5.29	5.29	5.23	5.23	5.18	5.18	5.12	
90.0	5.57	5.51	5.51	5.40	5.23	5.18	5.06	5.06	5.01	
135.0	5.29	5.34	5.29	5.23	5.23	5.18	5.12	5.06	5.06	
180.0	5.34	5.34	5.34	5.29	5.34	5.29	5.23	5.12	5.06	
225.0	5.29	5.29	5.29	5.29	5.23	5.23	5.18	5.12	5.06	
270.0	5.79	5.79	5.74	5.74	5.68	5.57	5.51	5.51	5.29	
315.0	5.40	5.34	5.34	5.29	5.29	5.29	5.23	5.18	5.18	
360.0	5.40	5.34	5.34	5.34	5.29	5.29	5.23	5.23	5.23	

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Intensity data(cd)

Appendix Page: 18 Total:18

C/γ(°)	90.0
0.0	5.18
45.0	5.06
90.0	5.06
135.0	5.01
180.0	5.06
225.0	5.01
270.0	5.06
315.0	5.12
360.0	5.18