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Nata

LumCAT: 4-2275-M	
Luminaire:92.70.131.00	
Report No: NATA0100	Voltage(V): 220.1000
Test No: 2017051813	Current(A): 0.1300
LampCAT: BMTC MA-1919 20W	Power (W): 26.9000
Lamp flux(lm): 2561.0	PF: 0.9410
Number of Lamps: 1	Ballast type:
Length(mm): 100	Width(mm): 100
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2370.71
Efficiency(%): 92.57%
Lumens(lm)/Power(W): 90.70
Central intensity(cd): 11922.460
Maximum intensity(cd): 11922.460
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=19.8
[C90/270]Total=19.8
Field angle(10%Imax): [C0/180]Total=39.5
[C90/270]Total=39.5
Maximum s/h(1/2): C0_180=0.34 C90_270=0.34
Maximum s/h(1/4): C0_180=0.35 C90_270=0.35
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 95.27%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.116%

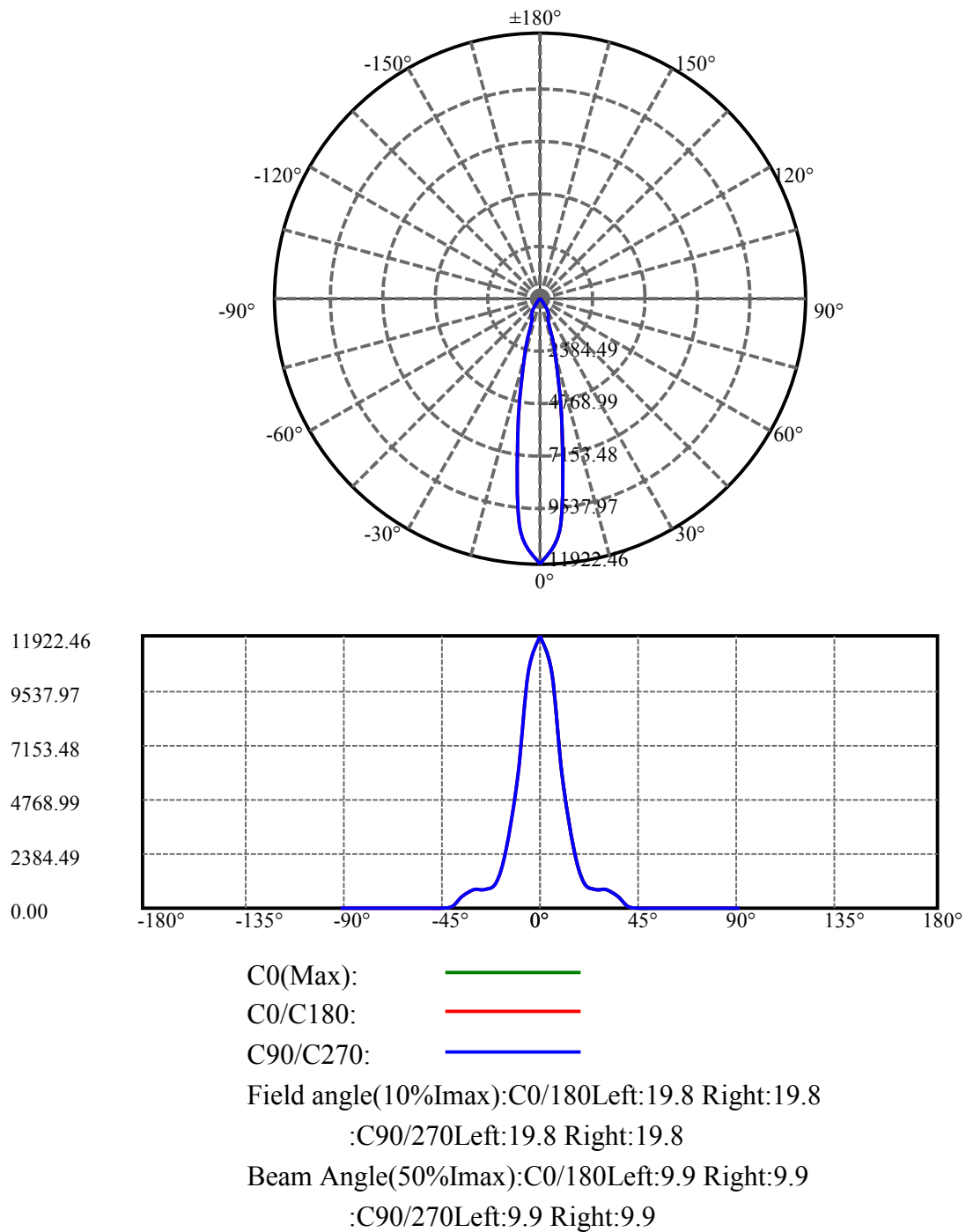
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11922.463	71.299	71.299	2.784%	3.007%
5.0	10314.472	492.757	564.055	19.241%	23.793%
10.0	5876.032	559.299	1123.354	21.839%	47.385%
15.0	2614.216	370.875	1494.229	14.482%	63.029%
20.0	1119.173	209.816	1704.044	8.193%	71.879%
25.0	851.344	197.216	1901.261	7.701%	80.198%
30.0	789.550	216.391	2117.652	8.449%	89.326%
35.0	552.209	173.614	2291.265	6.779%	96.649%
40.0	105.674	37.233	2328.498	1.454%	98.219%
45.0	10.708	4.151	2332.649	.162%	98.395%
50.0	9.442	3.965	2336.613	.155%	98.562%
55.0	9.153	4.110	2340.723	.160%	98.735%
60.0	9.002	4.273	2344.996	.167%	98.915%
65.0	8.878	4.410	2349.407	.172%	99.101%
70.0	8.816	4.541	2353.948	.177%	99.293%
75.0	8.788	4.653	2358.601	.182%	99.489%
80.0	8.974	4.844	2363.445	.189%	99.694%
85.0	8.919	4.870	2368.315	.190%	99.899%
90.0	8.733	2.394	2370.709	.093%	100.000%

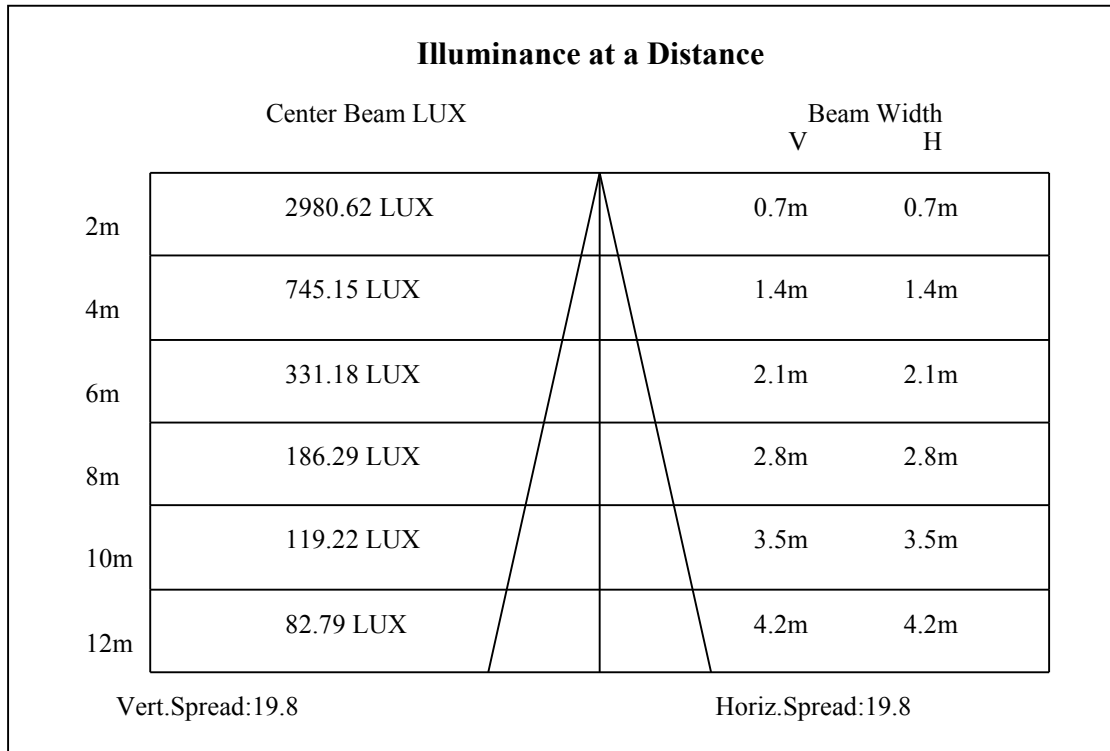
ZONAL LUMEN SUMMARY

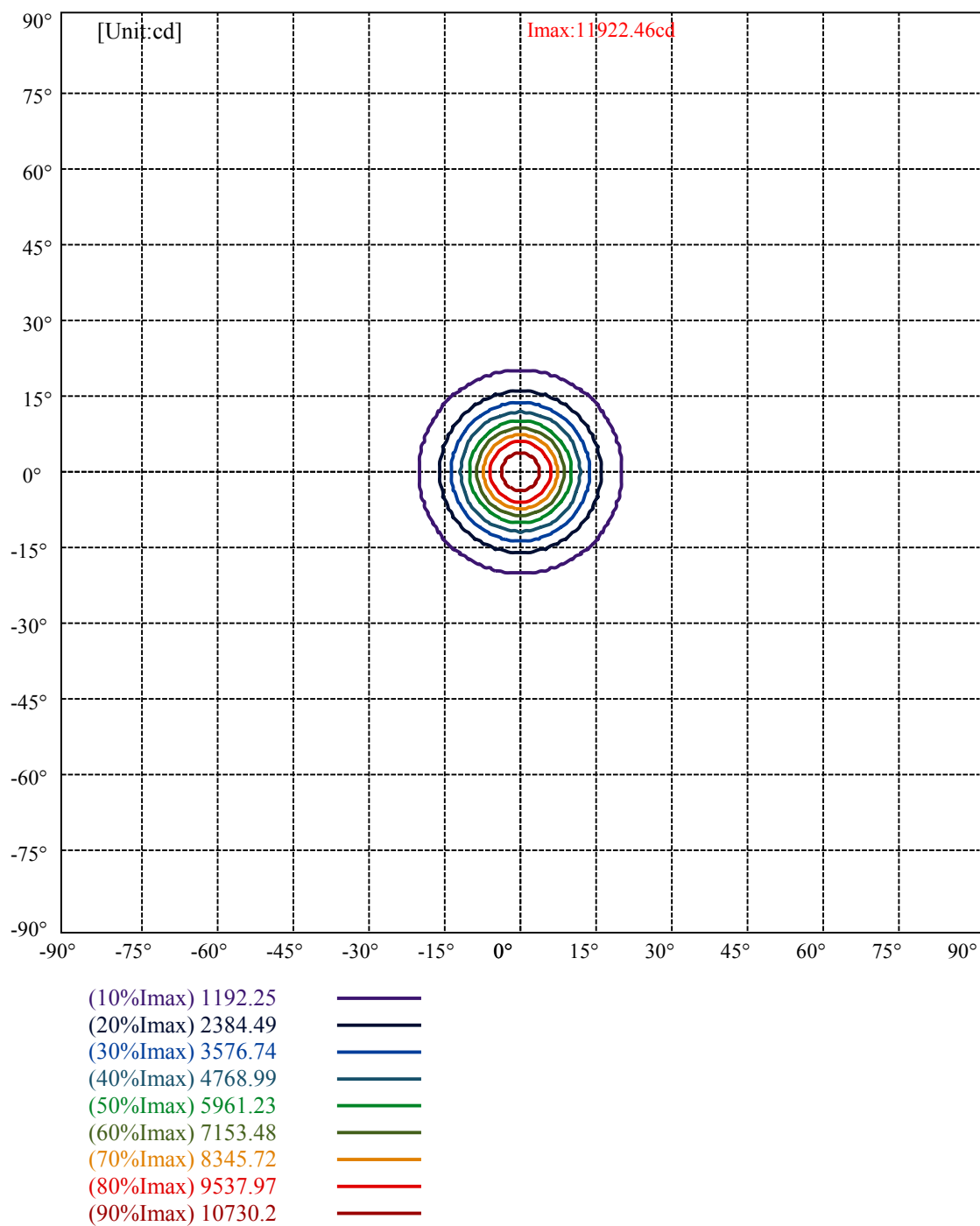
Zone	Lumens	%Lamp	%Fixt
0-30	2117.65	82.69%	89.33%
0-40	2328.50	90.92%	98.22%
0-60	2345.00	91.57%	98.92%
0-90	2368.32	92.48%	99.90%
0-120	2368.32	92.48%	99.90%
0-180	2370.71	92.57%	100.00%
60-90	27.59	1.08%	1.16%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-24.88	1896.57	74.06%	80.00%

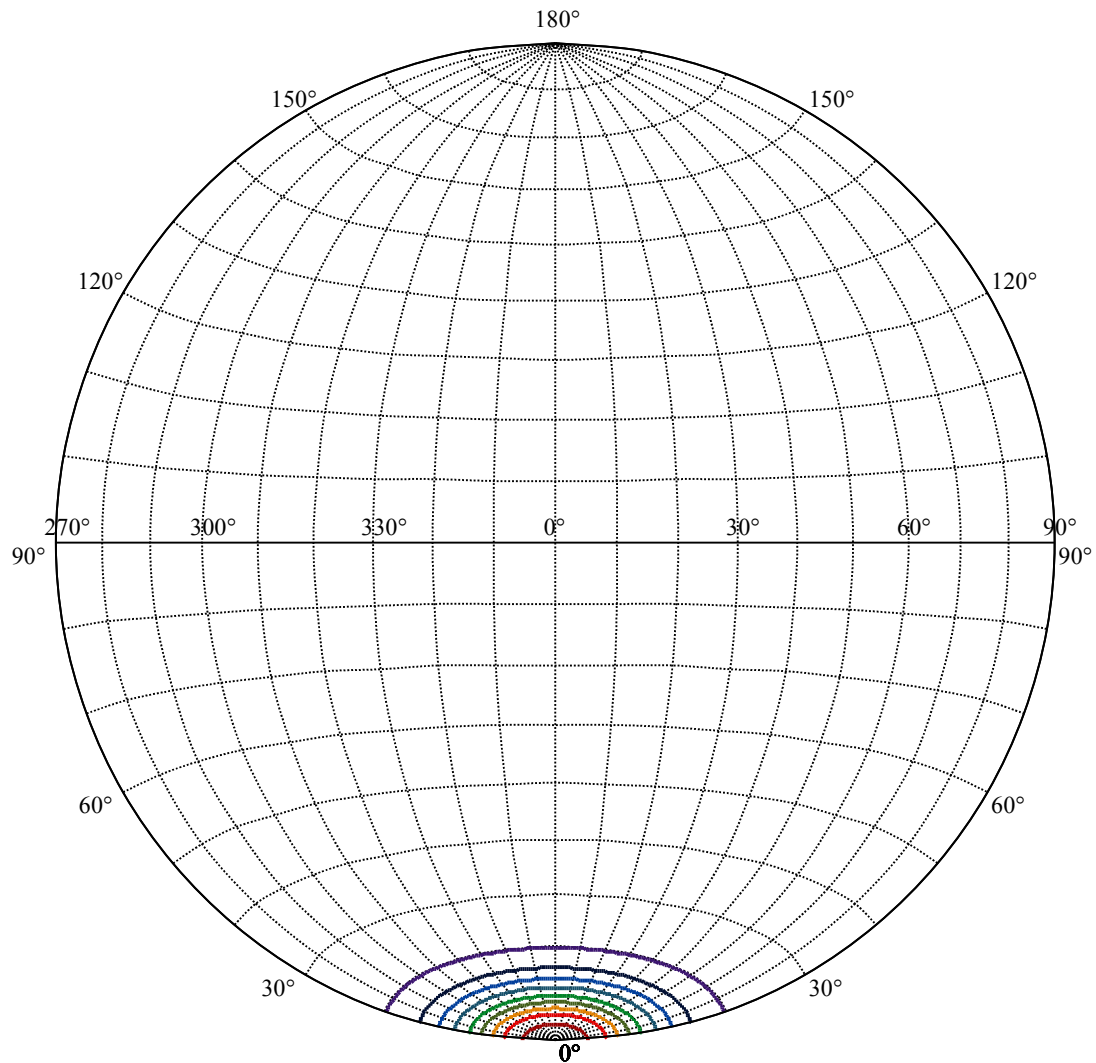
ZONAL LUMEN SUMMARY

0-10	1123.35
10-20	580.69
20-30	413.61
30-40	210.85
40-50	8.12
50-60	8.38
60-70	8.95
70-80	9.50
80-90	4.87
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









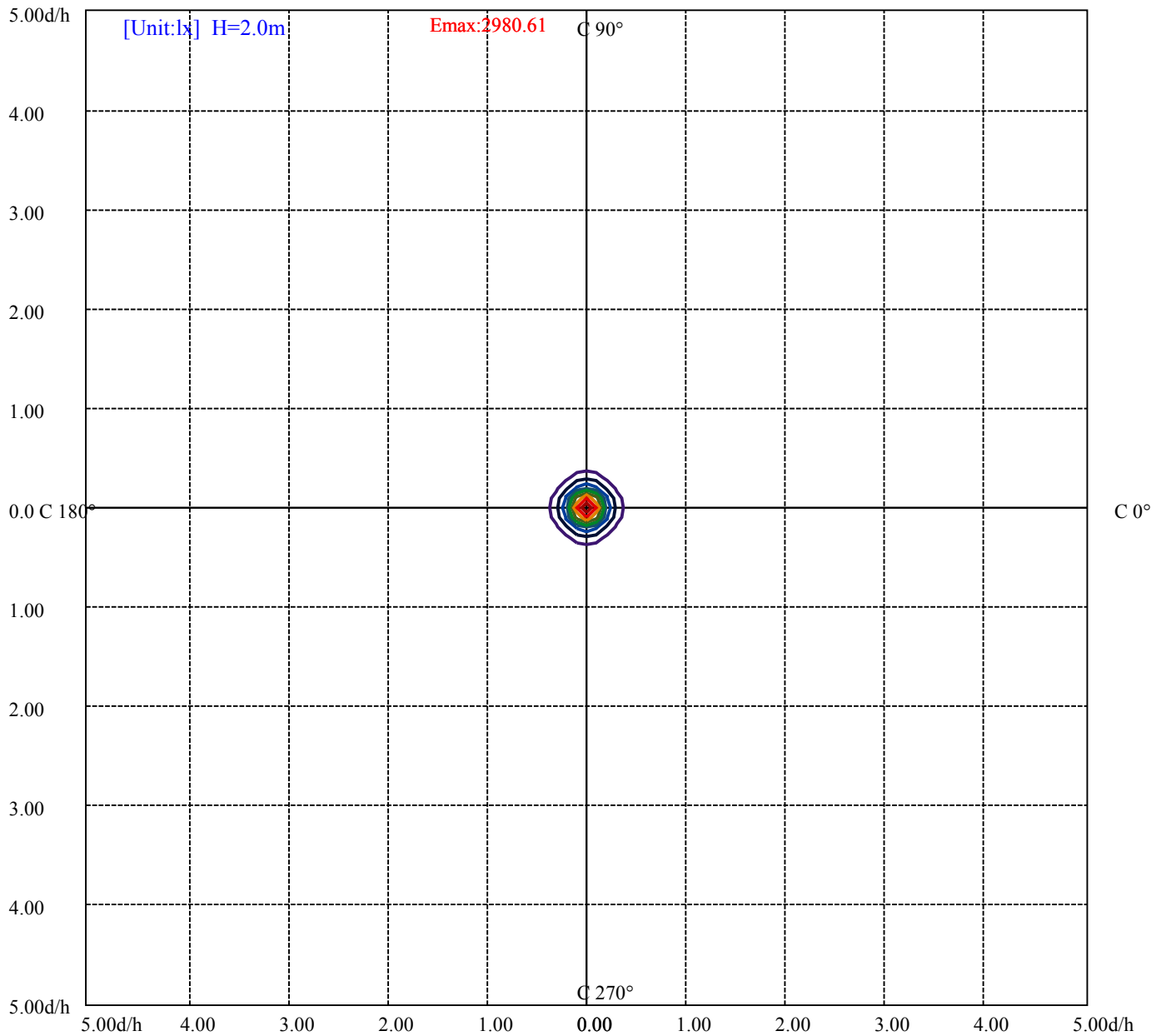
House

[Unit:cd]

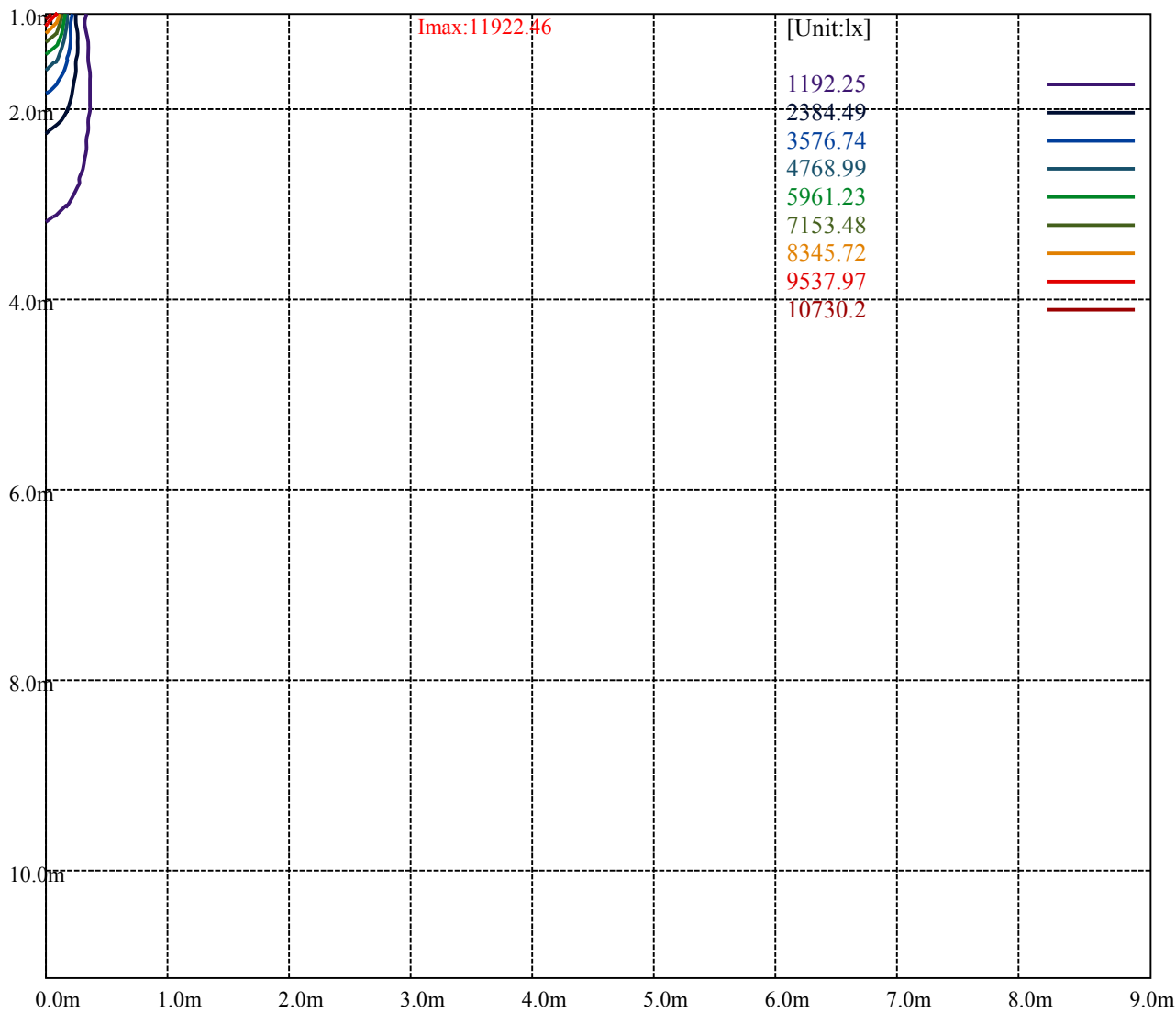
Road

Imax:11922.46

(10%Imax)	1192.25	—
(20%Imax)	2384.49	—
(30%Imax)	3576.74	—
(40%Imax)	4768.99	—
(50%Imax)	5961.23	—
(60%Imax)	7153.48	—
(70%Imax)	8345.72	—
(80%Imax)	9537.97	—
(90%Imax)	10730.2	—



(10%Emax)	298.06	
(20%Emax)	596.12	
(30%Emax)	894.18	
(40%Emax)	1192.243	
(50%Emax)	1490.302	
(60%Emax)	1788.363	
(70%Emax)	2086.423	
(80%Emax)	2384.482	
(90%Emax)	2682.55	



Luminance Table

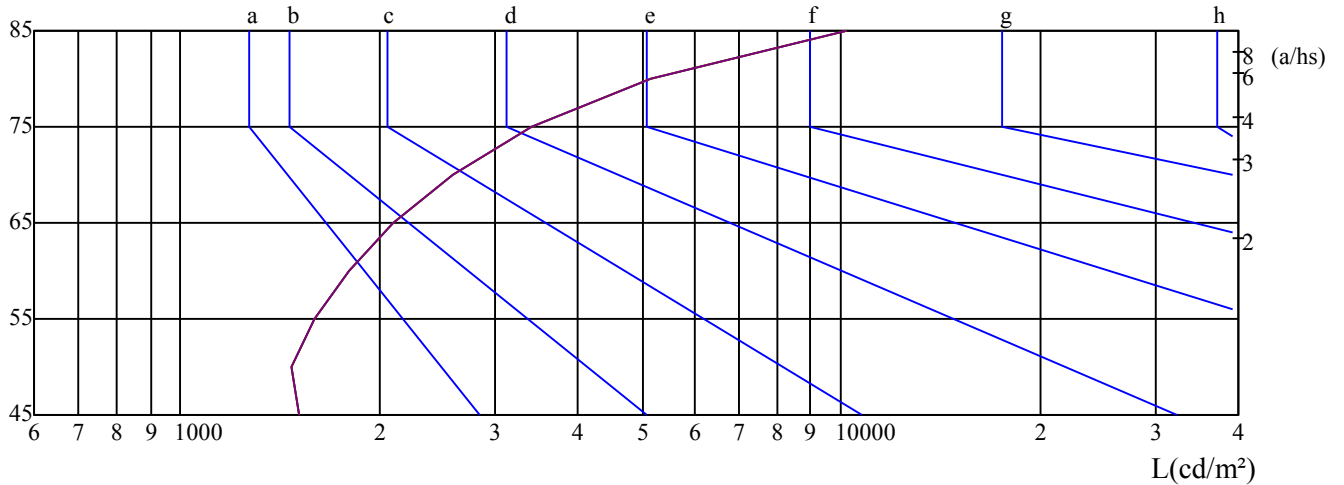
γ	45	50	55	60	65	70	75	80	85
C0	1514	1469	1596	1800	2101	2578	3396	5168	10234
C45	1514	1469	1596	1800	2101	2578	3396	5168	10234
C90	1514	1469	1596	1800	2101	2578	3396	5168	10234

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
2101	2101	2101	3396	3396	3396	10234	10234	10234

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

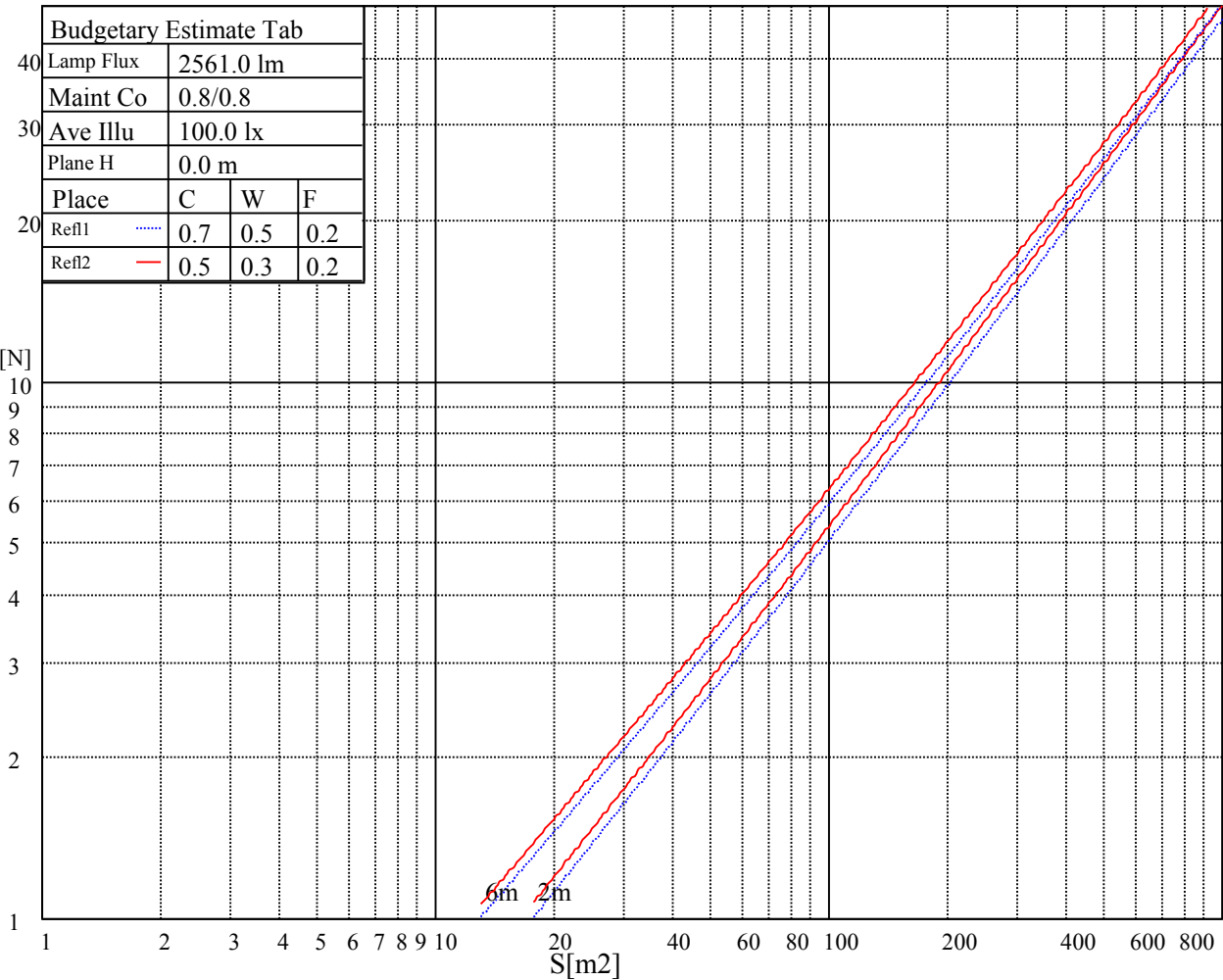
 $\gamma(^{\circ})$ 

C0 ———

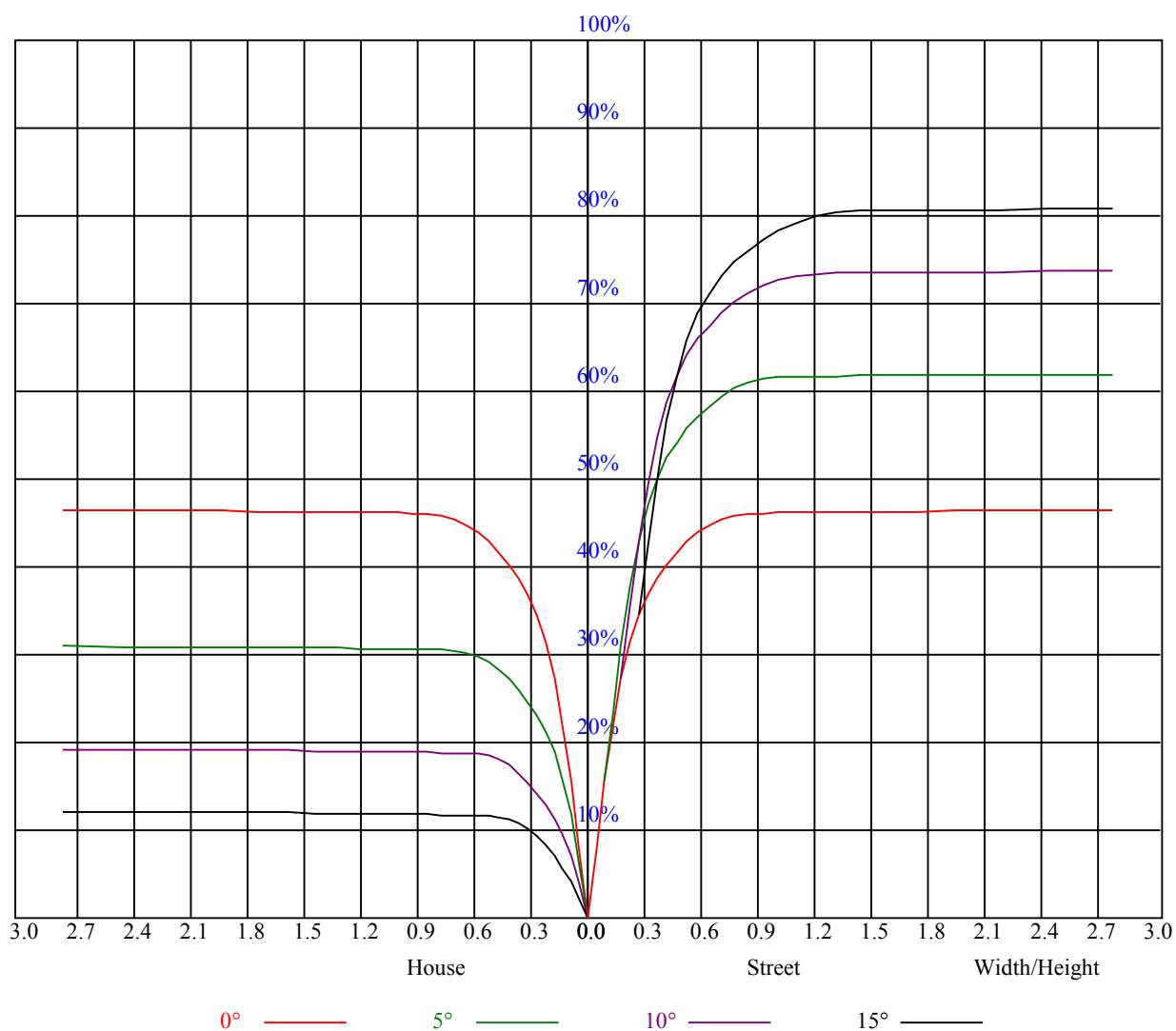
C45 ———

C90 ———

Illumination assessment according UGR											
Rf of Ceiling		70	70	50	50	30	70	70	50	50	30
Rf of Wall		50	30	50	30	30	50	30	50	30	30
Rf of Floor		20	20	20	20	20	20	20	20	20	20
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	-1.16	-0.25	-0.79	0.06	0.37	-1.11	-0.21	-0.75	0.10	0.42
	3H	2.24	3.04	2.62	3.37	3.74	2.26	3.06	2.65	3.40	3.77
	4H	4.08	4.82	4.49	5.17	5.56	4.11	4.85	4.52	5.20	5.59
	6H	6.18	6.85	6.60	7.23	7.63	6.23	6.91	6.65	7.28	7.68
	8H	7.32	7.95	7.76	8.35	8.76	7.40	8.03	7.84	8.42	8.83
	12H	9.14	9.75	9.58	10.13	10.56	9.24	9.85	9.68	10.23	10.66
4H	2H	-0.18	0.56	0.23	0.91	1.30	-0.15	0.59	0.26	0.94	1.33
	3H	3.43	4.03	3.84	4.44	4.85	3.46	4.07	3.88	4.48	4.88
	4H	5.43	5.97	5.87	6.40	6.85	5.46	6.00	5.90	6.43	6.88
	6H	7.68	8.14	8.15	8.59	9.07	7.72	8.18	8.20	8.64	9.11
	8H	8.92	9.35	9.40	9.80	10.28	8.98	9.41	9.46	9.87	10.34
	12H	10.62	10.99	11.12	11.48	11.96	10.72	11.08	11.21	11.57	12.05
8H	4H	6.20	6.63	6.67	7.08	7.55	6.22	6.65	6.70	7.10	7.58
	6H	8.72	9.05	9.23	9.56	10.04	8.75	9.09	9.26	9.59	10.08
	8H	10.14	10.44	10.67	10.96	11.46	10.19	10.49	10.73	11.02	11.52
	12H	11.96	12.22	12.49	12.72	13.30	12.04	12.30	12.57	12.80	13.38
12H	4H	6.43	6.79	6.92	7.28	7.76	6.44	6.81	6.94	7.30	7.78
	6H	9.24	9.35	9.59	9.82	10.37	9.27	9.38	9.62	9.86	10.41
	8H	10.60	10.86	11.13	11.36	11.94	10.65	10.91	11.18	11.41	11.99
Variation with the observer position at spacings:											
S = 1.0H		5.3/-8.1					5.3/-8.1				
S = 1.5H		7.5/-6.1					7.5/-6.1				
S = 2.0H		8.9/-4.4					8.9/-4.4				
Standard tables:		BK2					BK2				
Uncorrected UGR		-1.6					-1.6				



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	1.13	1.13	1.13	1.11	1.11	1.11	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.95
1	1.04	1.01	0.98	1.02	0.99	0.97	0.98	0.96	0.94	0.94	0.92	0.91	0.91	0.89	0.88	0.86
2	0.98	0.95	0.92	0.97	0.93	0.91	0.94	0.91	0.89	0.91	0.89	0.87	0.88	0.86	0.85	0.83
3	0.94	0.90	0.86	0.93	0.89	0.86	0.90	0.87	0.84	0.88	0.85	0.83	0.86	0.84	0.82	0.80
4	0.90	0.86	0.82	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.84	0.81	0.79	0.78
5	0.87	0.82	0.79	0.86	0.82	0.79	0.84	0.81	0.78	0.83	0.80	0.77	0.82	0.79	0.77	0.75
6	0.84	0.79	0.76	0.83	0.79	0.76	0.82	0.78	0.75	0.81	0.77	0.75	0.79	0.77	0.74	0.73
7	0.81	0.77	0.74	0.81	0.76	0.73	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.75	0.72	0.71
8	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.74	0.71	0.76	0.73	0.71	0.76	0.73	0.70	0.69
9	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.69	0.74	0.71	0.69	0.68
10	0.74	0.70	0.68	0.74	0.70	0.67	0.73	0.70	0.67	0.73	0.69	0.67	0.72	0.69	0.67	0.66



Intensity data(cd)										Appendix Page: 15 Total:15	
C/ γ (°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	12007.80	9486.22	5373.50	2895.97	1071.40	851.17	785.65	493.86	27.64		
45.0	11941.73	11385.66	7328.01	3435.52	1417.70	884.21	806.58	709.68	304.46		
90.0	12068.36	10673.78	6106.86	2576.64	1091.11	848.53	791.38	605.68	67.72		
135.0	11671.96	11308.58	7052.72	3028.10	1249.23	873.75	811.53	694.81	299.51		
180.0	12007.80	10835.10	6546.21	2599.76	1087.86	853.10	792.65	617.57	77.41		
225.0	11941.73	9037.51	4411.67	1689.13	953.91	826.12	771.51	350.43	18.28		
270.0	12068.36	10405.66	5505.64	2791.36	1084.61	845.12	785.65	516.43	30.50		
315.0	11671.96	9383.26	4683.65	1897.24	997.57	828.76	771.45	429.22	19.88		
360.0	12007.80	9486.22	5373.50	2895.97	1071.40	851.17	785.65	493.86	27.64		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	10.08	9.47	9.14	9.03	8.86	8.86	8.81	8.81	8.81		
45.0	14.15	9.63	9.30	9.14	8.97	8.92	8.81	8.92	8.81		
90.0	9.97	9.41	9.19	9.03	8.92	8.81	8.81	9.08	8.92		
135.0	11.95	9.63	9.30	9.14	9.03	8.92	8.86	9.36	9.30		
180.0	10.02	9.52	9.25	9.08	8.97	8.86	8.86	9.36	9.25		
225.0	9.69	9.19	8.92	8.81	8.70	8.70	8.70	8.75	8.70		
270.0	10.02	9.36	9.08	8.92	8.81	8.75	8.75	8.75	8.75		
315.0	9.80	9.30	9.03	8.86	8.75	8.70	8.70	8.75	8.81		
360.0	10.08	9.47	9.14	9.03	8.86	8.86	8.81	8.81	8.81		
C/ γ (°)	90.0										
0.0	8.81										
45.0	8.70										
90.0	8.70										
135.0	8.75										
180.0	8.75										
225.0	8.64										
270.0	8.75										
315.0	8.75										
360.0	8.81										