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NATA

LumCAT: 3-1550-A3
Luminaire: TE 2213407-1+92.76.365.00
Report No: NATA0100
Test No: GC2019022212
LampCAT: OSRAM OPTO SOLERIQ S19
Lamp flux(lm): 3339.0
Number of Lamps: 1
Length(mm): 78
Phm Type: C

Voltage(V): 35.1000
Current(A): 0.7000
Power (W): 24.5700
PF: 0.0000
Ballast type: DC
Width(mm): 78
Height(mm): 0

Photometric Results

Lumens(lm): 2970.58
Efficiency(%): 88.97%
Lumens(lm)/Power(W): 121.97
Central intensity(cd): 4856.062
Maximum intensity(cd): 4856.062
Angle of maximum intensity: $C=0.0$ $\gamma=0.0$
Beam Angle(50%Imax): [C0/180]Total=45.3
[C90/270]Total=45.3
Field angle(10%Imax): [C0/180]Total=74.7
[C90/270]Total=74.7
Maximum s/h(1/2): C0_180=0.71 C90_270=0.71
Maximum s/h(1/4): C0_180=0.75 C90_270=0.75
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 89.75%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.094%

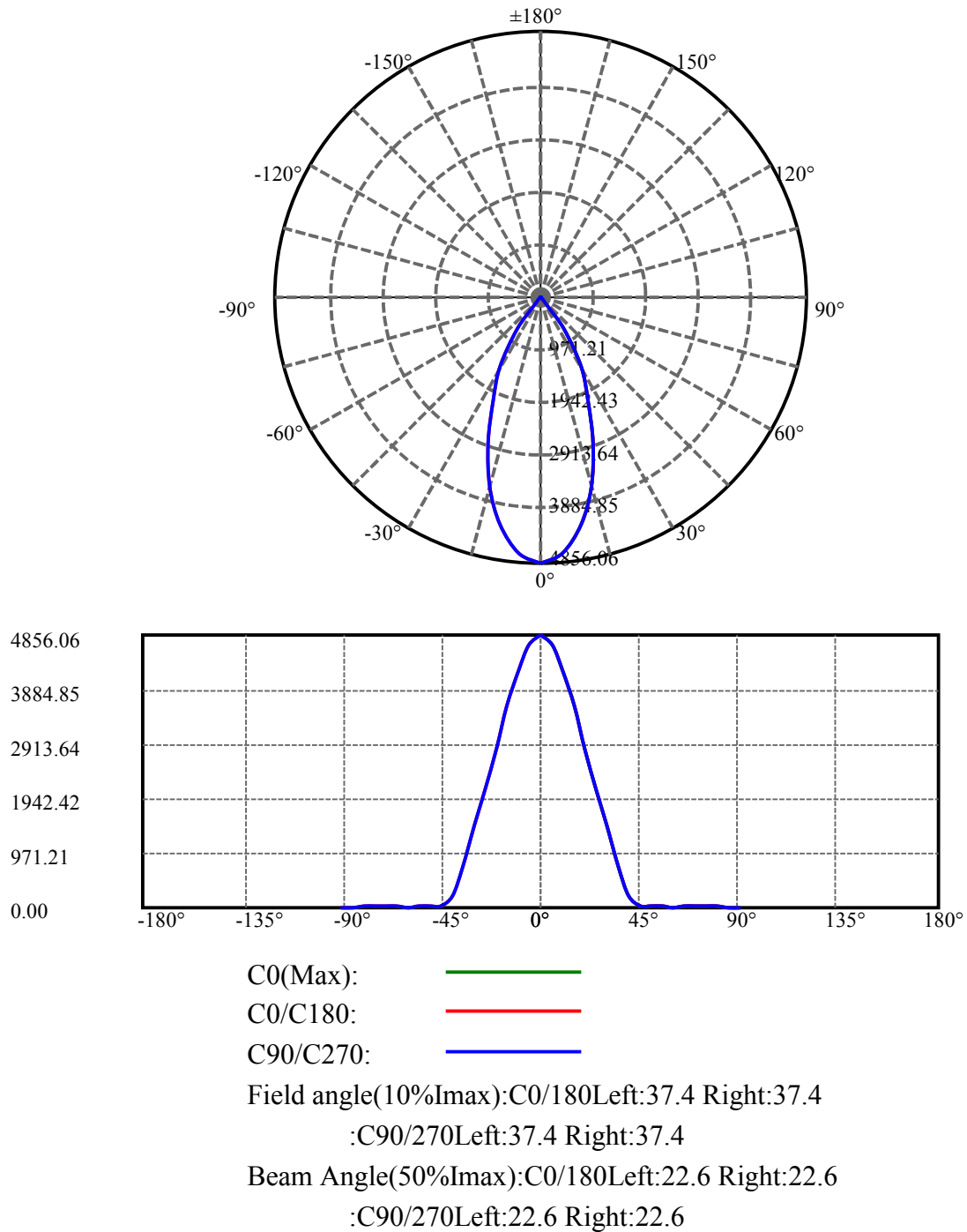
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4856.063	29.040	29.04	.870%	.978%
5.0	4676.977	223.435	252.475	6.692%	8.499%
10.0	4223.742	402.029	654.504	12.040%	22.033%
15.0	3596.977	510.297	1164.801	15.283%	39.211%
20.0	2820.516	528.773	1693.574	15.836%	57.011%
25.0	2076.539	481.036	2174.611	14.407%	73.205%
30.0	1463.372	401.064	2575.675	12.012%	86.706%
35.0	730.737	229.743	2805.418	6.881%	94.440%
40.0	212.407	74.839	2880.256	2.241%	96.959%
45.0	22.261	8.628	2888.884	.258%	97.250%
50.0	16.622	6.979	2895.864	.209%	97.485%
55.0	15.490	6.955	2902.819	.208%	97.719%
60.0	14.527	6.896	2909.715	.207%	97.951%
65.0	16.896	8.394	2918.108	.251%	98.233%
70.0	27.232	14.027	2932.135	.420%	98.706%
75.0	28.723	15.207	2947.343	.455%	99.218%
80.0	23.484	12.677	2960.02	.380%	99.644%
85.0	13.388	7.310	2967.33	.219%	99.890%
90.0	11.876	3.255	2970.585	.097%	100.000%

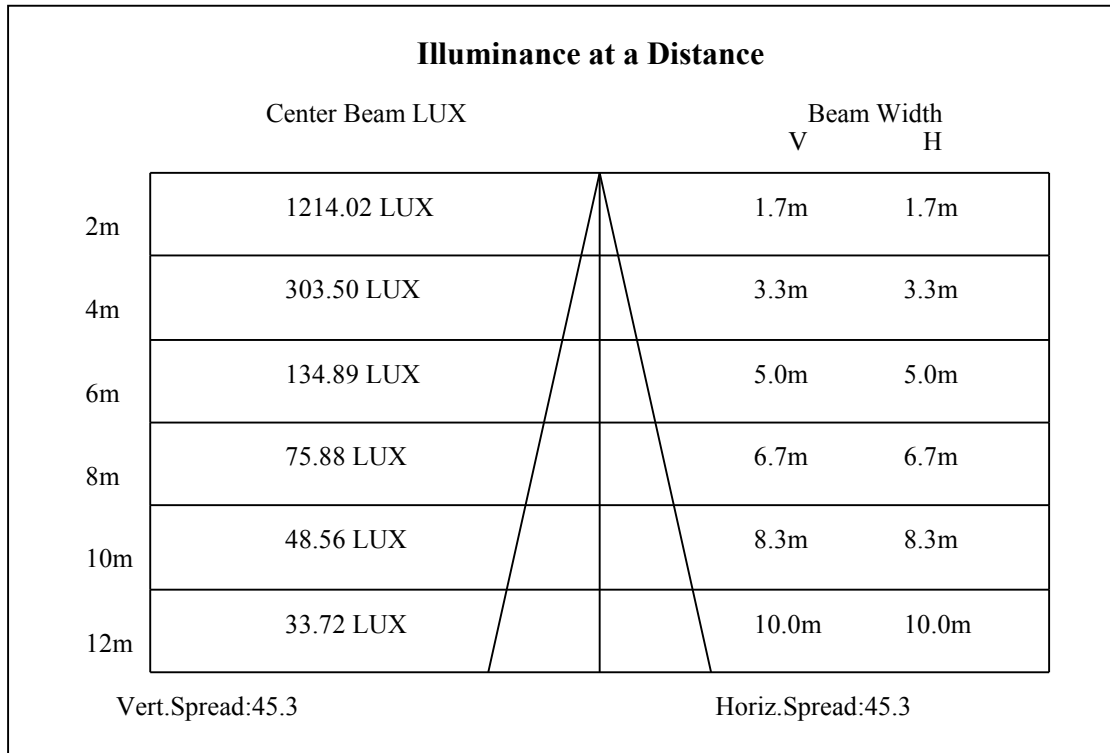
ZONAL LUMEN SUMMARY

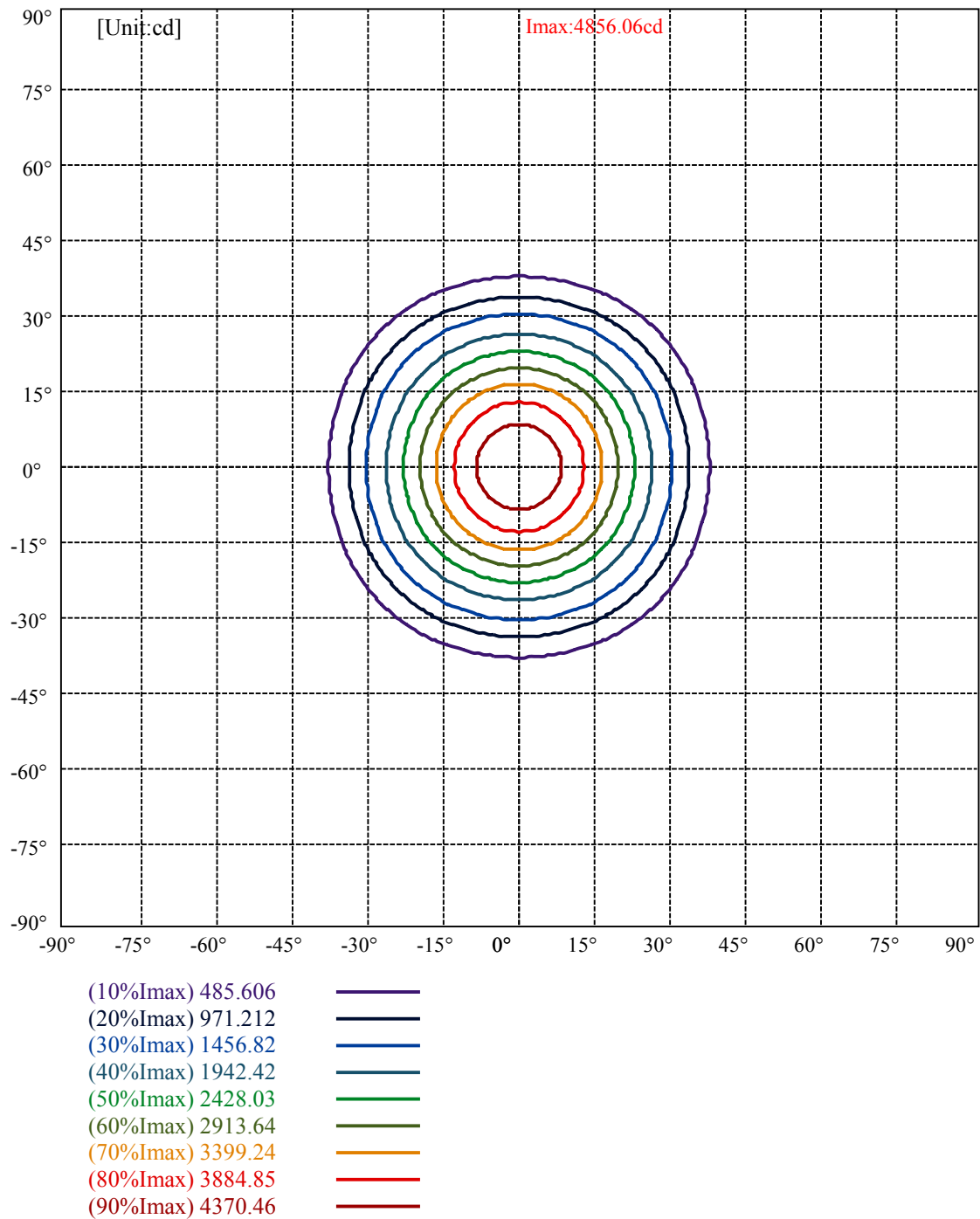
Zone	Lumens	%Lamp	%Fixt
0-30	2575.67	77.14%	86.71%
0-40	2880.26	86.26%	96.96%
0-60	2909.71	87.14%	97.95%
0-90	2967.33	88.87%	99.89%
0-120	2967.33	88.87%	99.89%
0-180	2970.58	88.97%	100.00%
60-90	64.51	1.93%	2.17%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-27.52	2376.47	71.17%	80.00%

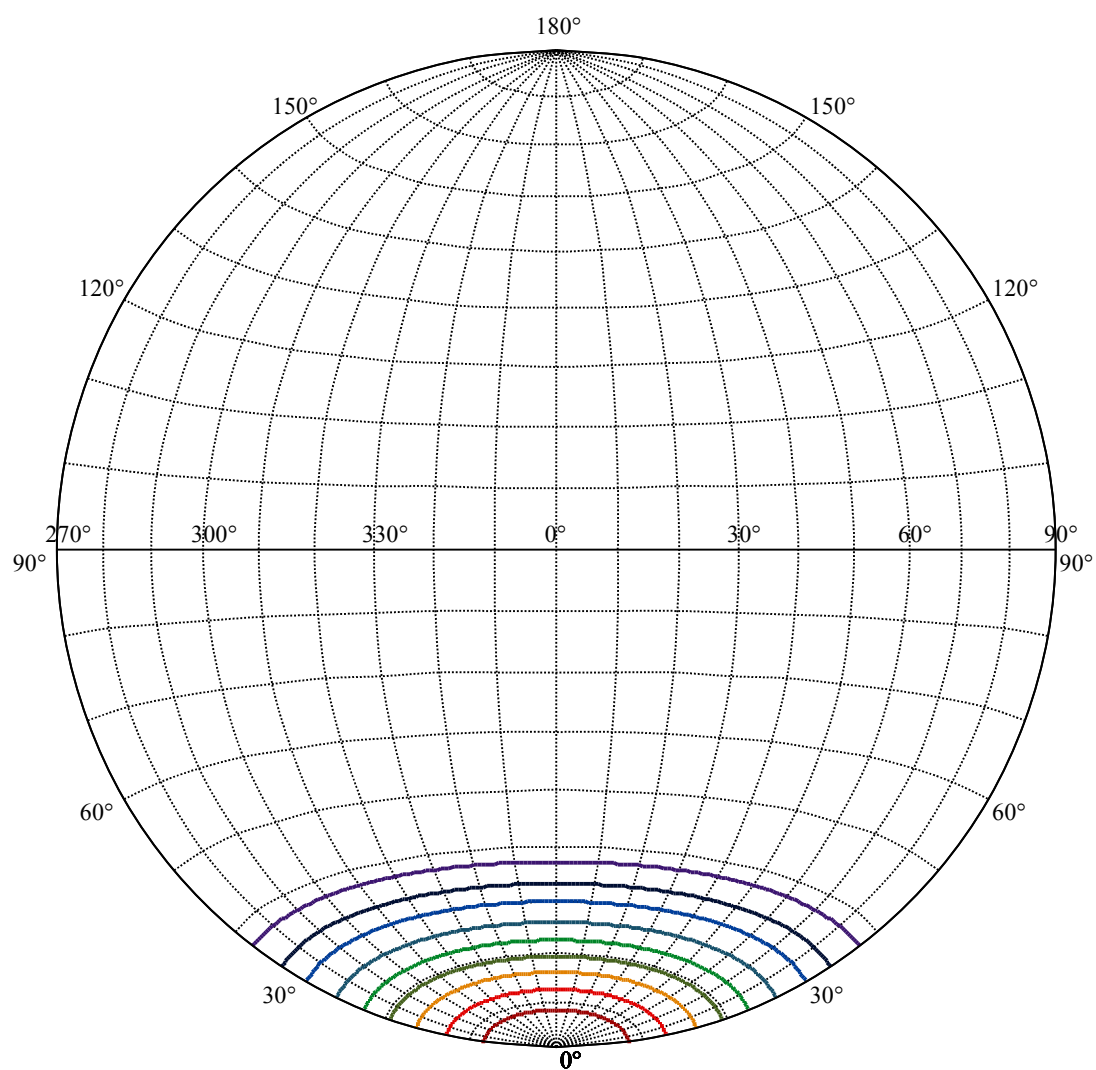
ZONAL LUMEN SUMMARY

0-10	654.50
10-20	1039.07
20-30	882.10
30-40	304.58
40-50	15.61
50-60	13.85
60-70	22.42
70-80	27.88
80-90	7.31
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









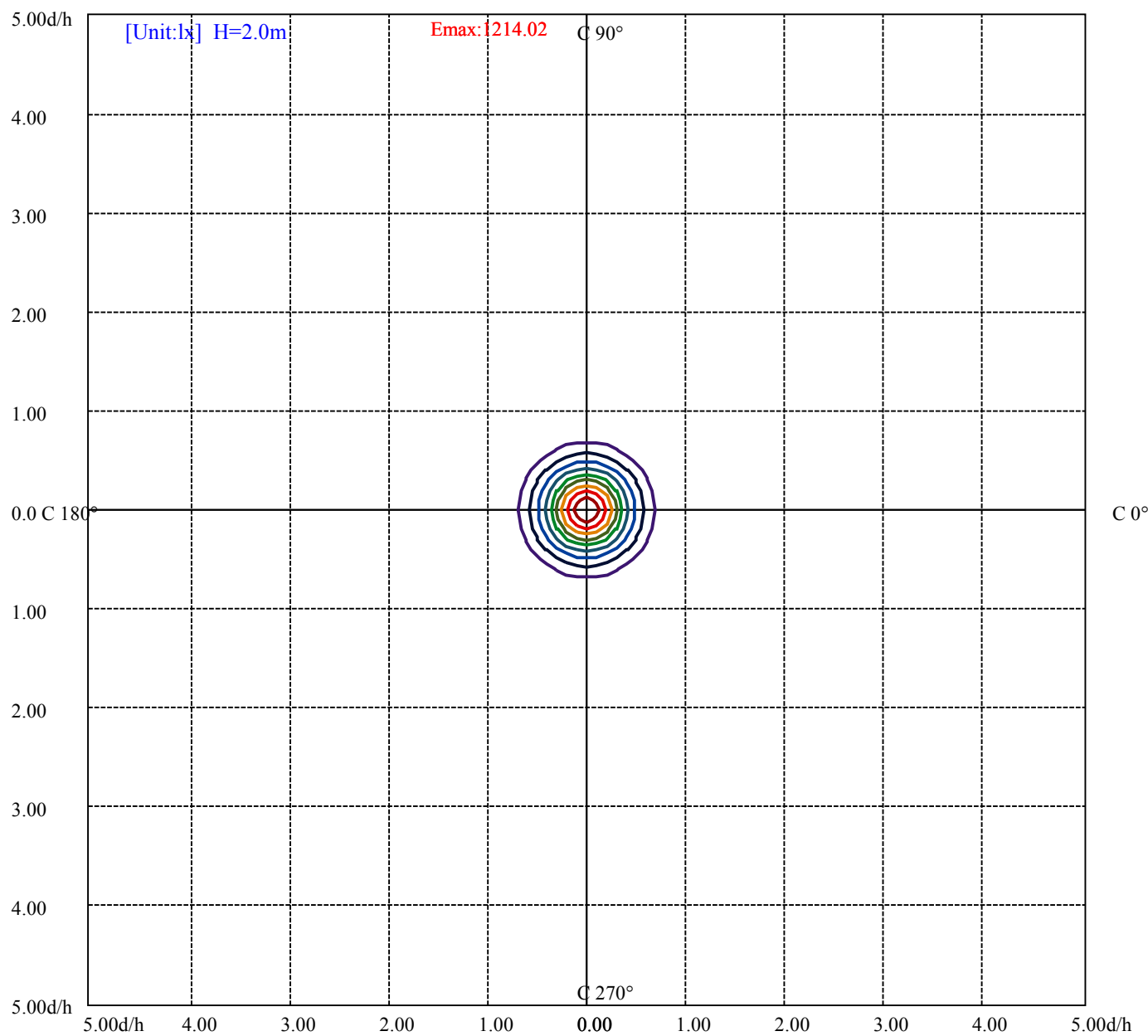
House

[Unit:cd]

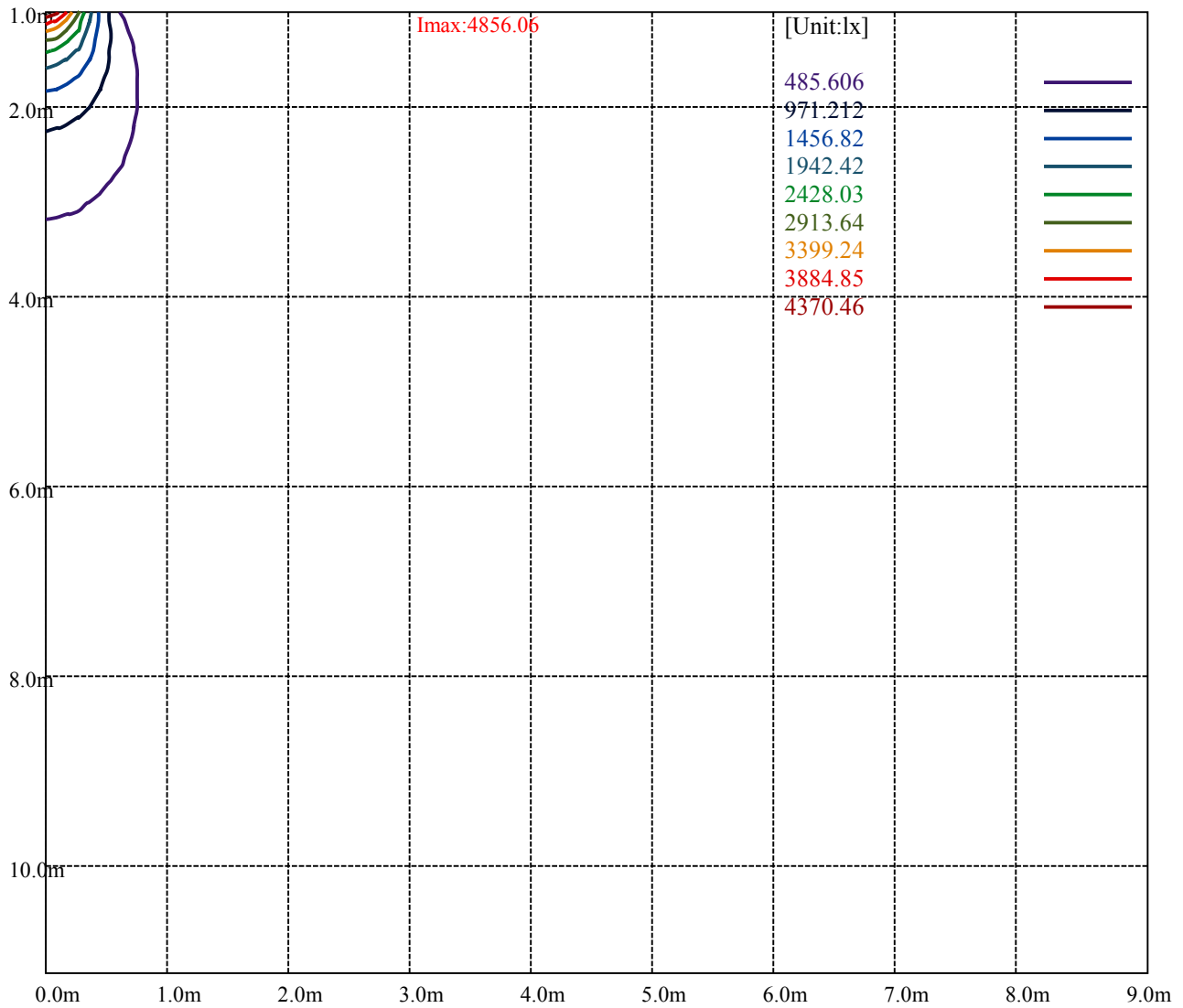
Road

I_{max}:4856.06

(10%I _{max})	485.606	
(20%I _{max})	971.212	
(30%I _{max})	1456.82	
(40%I _{max})	1942.42	
(50%I _{max})	2428.03	
(60%I _{max})	2913.64	
(70%I _{max})	3399.24	
(80%I _{max})	3884.85	
(90%I _{max})	4370.46	



(10%E _{max}) 121.4015	—
(20%E _{max}) 242.8027	—
(30%E _{max}) 364.205	—
(40%E _{max}) 485.605	—
(50%E _{max}) 607.0075	—
(60%E _{max}) 728.4075	—
(70%E _{max}) 849.81	—
(80%E _{max}) 971.2125	—
(90%E _{max}) 1092.613	—



Luminance Table

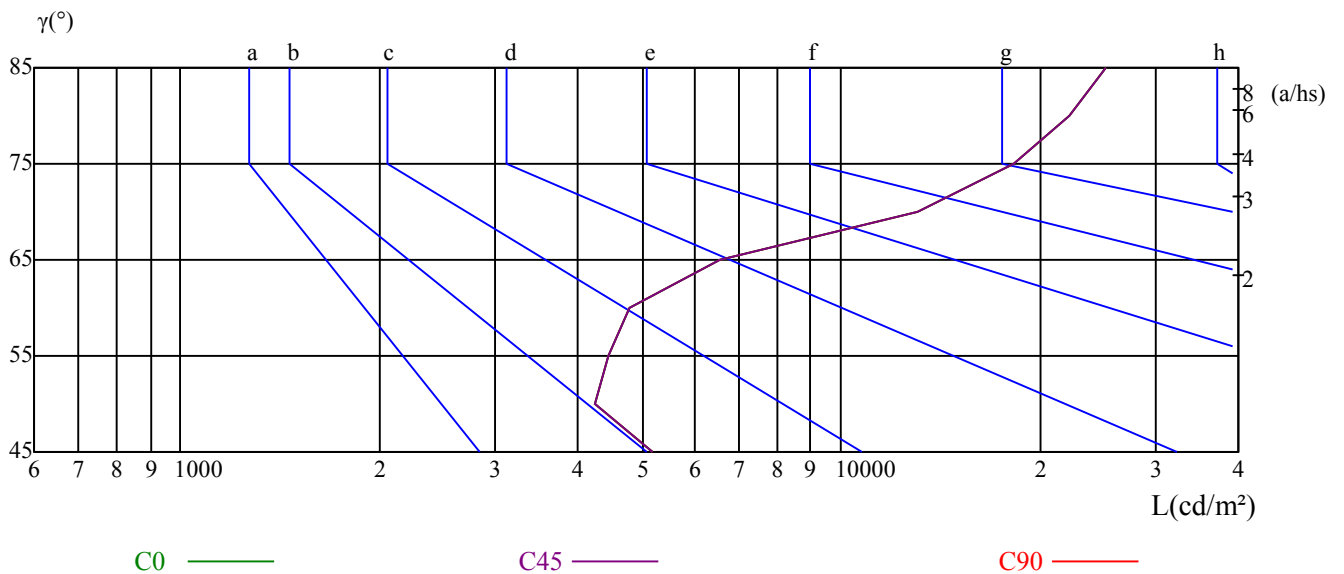
γ	45	50	55	60	65	70	75	80	85
C0	5175	4250	4439	4775	6571	13087	18241	22229	25247
C45	5175	4250	4439	4775	6571	13087	18241	22229	25247
C90	5175	4250	4439	4775	6571	13087	18241	22229	25247

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6571	6571	6571	18241	18241	18241	25247	25247	25247

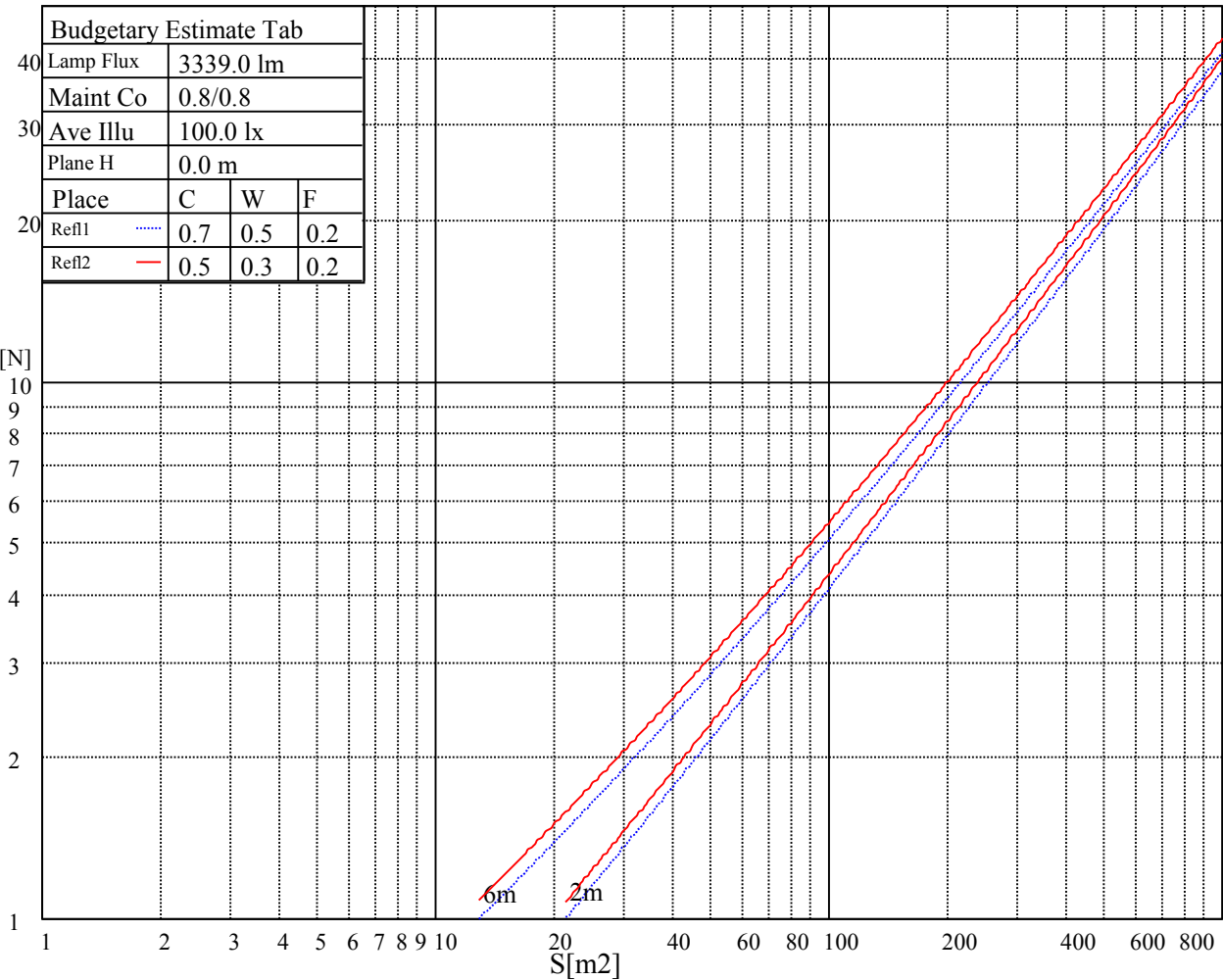
Glare Table

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

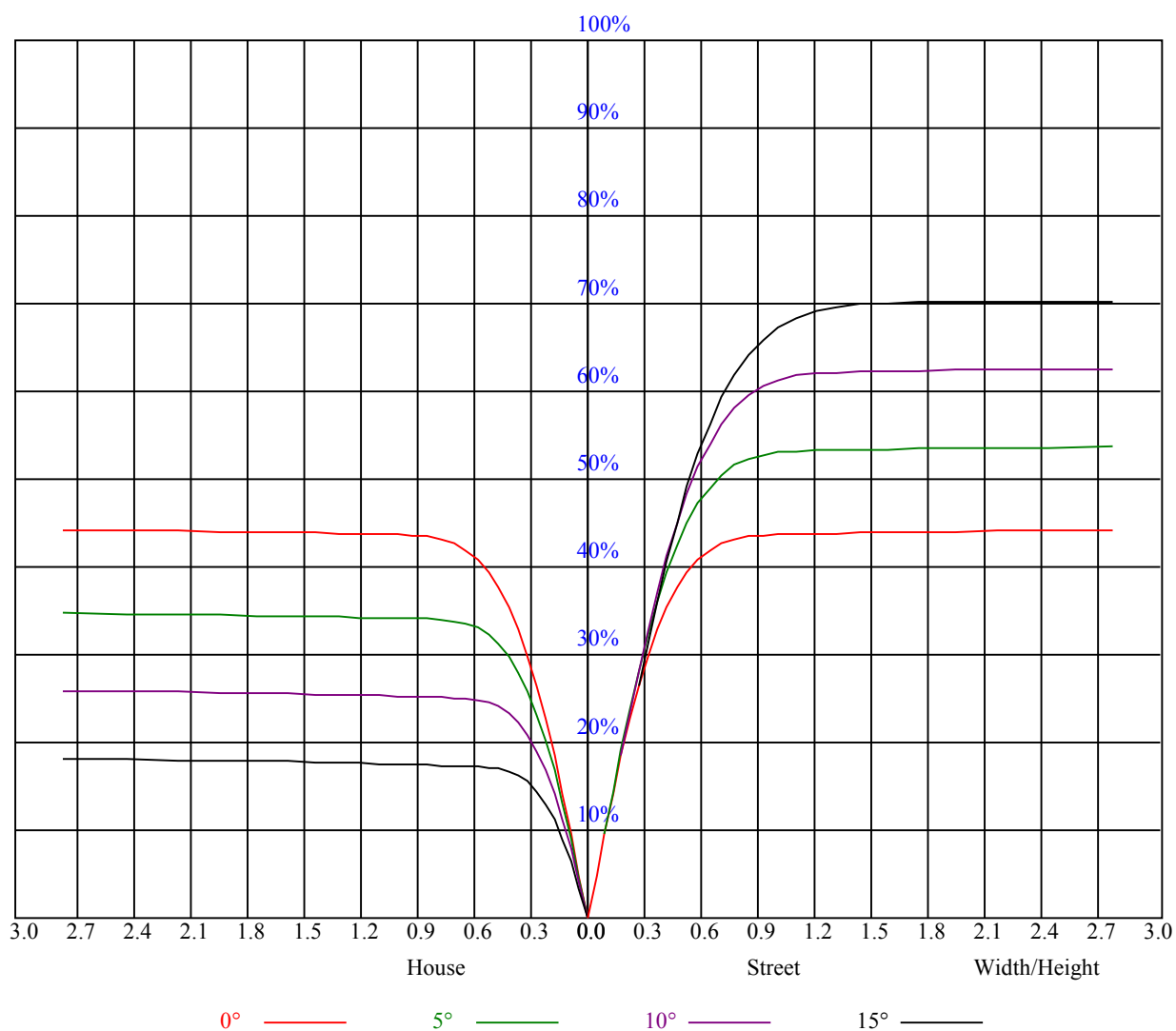
Luminance Limiting Curve



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	2.51	3.44	2.88	3.75	4.07	2.47	3.40	2.83	3.71	4.02
	3H	8.57	9.39	8.95	9.72	10.09	8.22	9.04	8.60	9.37	9.74
	4H	11.50	12.26	11.91	12.62	13.01	10.99	11.75	11.40	12.10	12.50
	6H	13.50	14.19	13.92	14.57	14.97	13.16	13.86	13.58	14.24	14.63
	8H	14.20	14.85	14.64	15.24	15.65	13.96	14.61	14.40	15.00	15.41
	12H	15.08	15.71	15.52	16.09	16.52	14.92	15.54	15.36	15.93	16.36
4H	2H	3.89	4.65	4.29	5.00	5.39	3.86	4.62	4.27	4.97	5.37
	3H	10.27	10.89	10.68	11.30	11.71	9.99	10.62	10.41	11.03	11.43
	4H	13.12	13.68	13.56	14.11	14.56	12.71	13.27	13.15	13.69	14.14
	6H	14.90	15.38	15.37	15.83	16.30	14.61	15.09	15.08	15.54	16.02
	8H	15.68	16.12	16.15	16.57	17.05	15.48	15.92	15.95	16.38	16.85
	12H	16.50	16.88	16.99	17.37	17.85	16.36	16.75	16.85	17.23	17.71
8H	4H	13.97	14.42	14.45	14.87	15.35	13.68	14.12	14.15	14.57	15.05
	6H	15.96	16.31	16.47	16.81	17.30	15.76	16.11	16.27	16.62	17.11
	8H	16.83	17.14	17.37	17.67	18.17	16.71	17.02	17.24	17.54	18.04
	12H	17.72	17.99	18.25	18.49	19.07	17.64	17.91	18.17	18.41	18.99
12H	4H	14.14	14.52	14.63	15.01	15.49	13.86	14.24	14.35	14.73	15.21
	6H	16.41	16.50	16.73	16.97	17.52	16.23	16.33	16.55	16.80	17.35
	8H	17.15	17.42	17.68	17.92	18.50	17.04	17.31	17.56	17.81	18.39
Variation with the observer position at spacings:											
S = 1.0H		4.9/-5.0					4.9/-5.0				
S = 1.5H		6.4/-3.3					6.4/-3.3				
S = 2.0H		7.6/-2.3					7.6/-2.3				
Standard tables:		BK3					BK3				
Uncorrected UGR		3.8					3.8				



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	1.07	1.07	1.07	1.04	1.04	1.04	1.00	1.00	1.00	0.95	0.95	0.95	0.92	0.92	0.92	0.90
1	0.99	0.97	0.94	0.97	0.95	0.93	0.93	0.92	0.90	0.90	0.89	0.87	0.87	0.86	0.85	0.83
2	0.93	0.89	0.87	0.91	0.88	0.86	0.89	0.86	0.84	0.86	0.84	0.82	0.83	0.82	0.80	0.79
3	0.88	0.84	0.80	0.87	0.83	0.80	0.84	0.81	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
4	0.83	0.79	0.75	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.73	0.77	0.74	0.72	0.71
5	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.70	0.75	0.72	0.69	0.74	0.71	0.69	0.68
6	0.75	0.71	0.67	0.75	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.66	0.71	0.68	0.66	0.65
7	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.62
8	0.69	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.67	0.63	0.60	0.66	0.63	0.60	0.59
9	0.66	0.61	0.58	0.66	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.58	0.57
10	0.63	0.59	0.56	0.63	0.59	0.56	0.62	0.58	0.56	0.62	0.58	0.55	0.61	0.58	0.55	0.54



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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	4856.63	4654.69	4206.94	3581.44	2774.81	2036.81	1494.56	711.56	335.25		
45.0	4861.69	4679.44	4246.31	3607.31	2797.31	2112.19	1506.38	710.44	311.06		
90.0	4856.63	4681.69	4188.94	3591.56	2774.25	2030.06	1335.38	692.94	111.99		
135.0	4849.31	4754.25	4359.94	3782.81	3044.25	2232.56	1640.25	943.88	289.13		
180.0	4856.63	4674.94	4253.06	3616.88	2826.00	2108.81	1532.81	753.30	173.59		
225.0	4861.69	4685.06	4239.00	3585.94	2801.81	2039.06	1535.06	741.83	111.94		
270.0	4856.63	4689.00	4235.63	3604.50	2917.69	2122.88	1546.88	763.31	305.44		
315.0	4849.31	4596.75	4060.13	3405.38	2628.00	1929.94	1115.66	528.64	60.86		
360.0	4856.63	4654.69	4206.94	3581.44	2774.81	2036.81	1494.56	711.56	335.25		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	20.53	16.48	15.41	14.57	18.34	28.52	31.05	25.93	13.56		
45.0	21.15	16.93	15.64	14.68	18.11	34.65	34.59	24.36	13.61		
90.0	18.39	16.59	15.41	14.51	15.75	26.89	30.32	24.86	13.56		
135.0	28.13	16.71	15.47	14.57	14.12	23.12	26.78	25.48	13.11		
180.0	24.02	16.43	15.30	14.40	15.13	20.25	21.77	19.86	13.16		
225.0	23.68	16.43	15.36	14.34	13.89	21.49	21.60	19.01	13.22		
270.0	23.85	16.99	15.75	14.51	15.86	27.84	28.69	19.91	12.99		
315.0	18.34	16.43	15.58	14.63	23.96	35.10	34.99	28.46	13.89		
360.0	20.53	16.48	15.41	14.57	18.34	28.52	31.05	25.93	13.56		
C/ γ (°)	90.0										
0.0	11.81										
45.0	11.93										
90.0	11.93										
135.0	11.87										
180.0	11.81										
225.0	11.93										
270.0	11.87										
315.0	11.87										
360.0	11.81										