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NATA

LumCAT: 3-1549-A3
Luminaire: TE 2213407-1+92.76.365.00
Report No: NATA0100
Test No: GC2019022211
LampCAT: OSRAM OPTO SOLERIQ S19
Lamp flux(lm): 3339.0
Number of Lamps: 1
Length(mm): 79
Phm Type: C

Voltage(V): 35.1000
Current(A): 0.7000
Power (W): 24.5700
PF: 1.0000
Ballast type: DC
Width(mm): 79
Height(mm): 0

Photometric Results

Lumens(lm): 2986.07
Efficiency(%): 89.43%
Lumens(lm)/Power(W): 123.90
Central intensity(cd): 10206.280
Maximum intensity(cd): 10206.280
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=24.8
 [C90/270]Total=24.8
Field angle(10%Imax): [C0/180]Total=61.8
 [C90/270]Total=61.8
Maximum s/h(1/2): C0_180=0.42 C90_270=0.42
Maximum s/h(1/4): C0_180=0.45 C90_270=0.45
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.17%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.122%

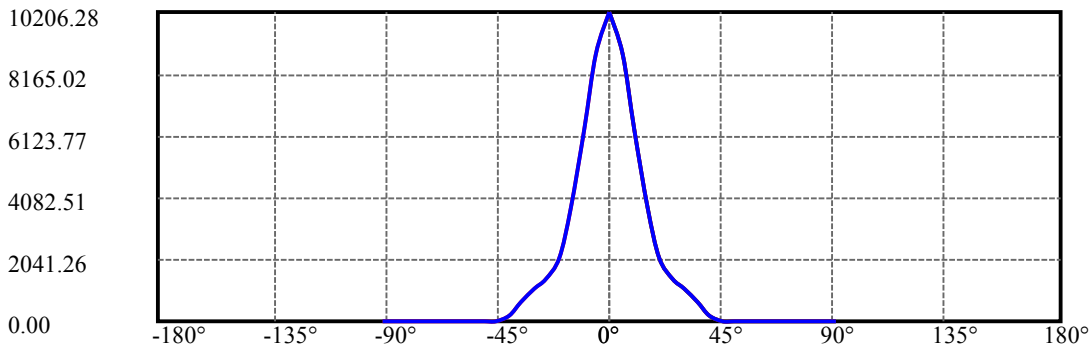
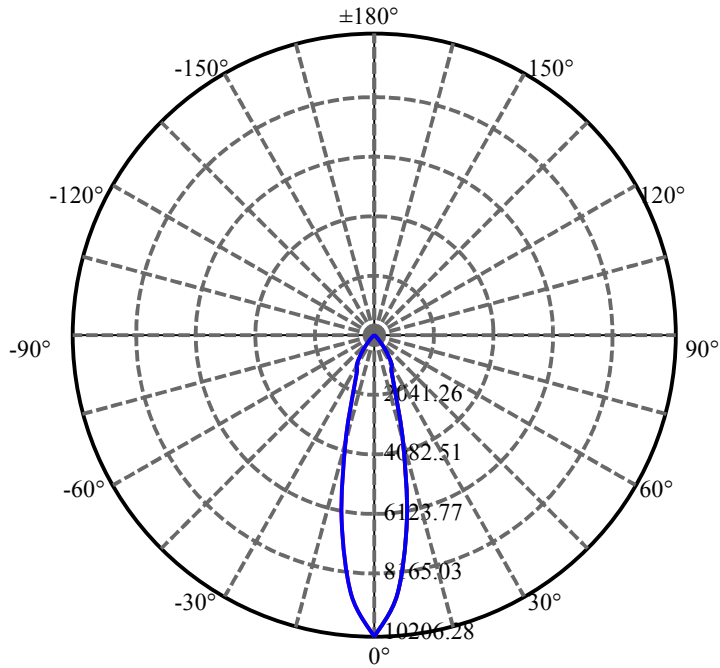
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	10206.281	61.036	61.036	1.828%	2.044%
5.0	8821.406	421.428	482.463	12.621%	16.157%
10.0	6354.141	604.807	1087.27	18.113%	36.411%
15.0	3762.703	533.809	1621.079	15.987%	54.288%
20.0	2109.234	395.427	2016.505	11.843%	67.530%
25.0	1384.594	320.745	2337.25	9.606%	78.272%
30.0	1108.673	303.853	2641.103	9.100%	88.447%
35.0	625.507	196.659	2837.762	5.890%	95.033%
40.0	169.587	59.751	2897.513	1.790%	97.034%
45.0	23.070	8.942	2906.455	.268%	97.334%
50.0	15.792	6.631	2913.086	.199%	97.556%
55.0	14.674	6.589	2919.675	.197%	97.776%
60.0	13.774	6.539	2926.213	.196%	97.995%
65.0	16.882	8.387	2934.6	.251%	98.276%
70.0	26.409	13.603	2948.203	.407%	98.732%
75.0	28.287	14.977	2963.18	.449%	99.233%
80.0	23.337	12.597	2975.777	.377%	99.655%
85.0	13.071	7.137	2982.915	.214%	99.894%
90.0	11.517	3.157	2986.071	.095%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	2641.10	79.10%	88.45%
0-40	2897.51	86.78%	97.03%
0-60	2926.21	87.64%	98.00%
0-90	2982.91	89.34%	99.89%
0-120	2982.91	89.34%	99.89%
0-180	2986.07	89.43%	100.00%
60-90	63.24	1.89%	2.12%
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%
0-25.85	2388.86	71.54%	80.00%

ZONAL LUMEN SUMMARY

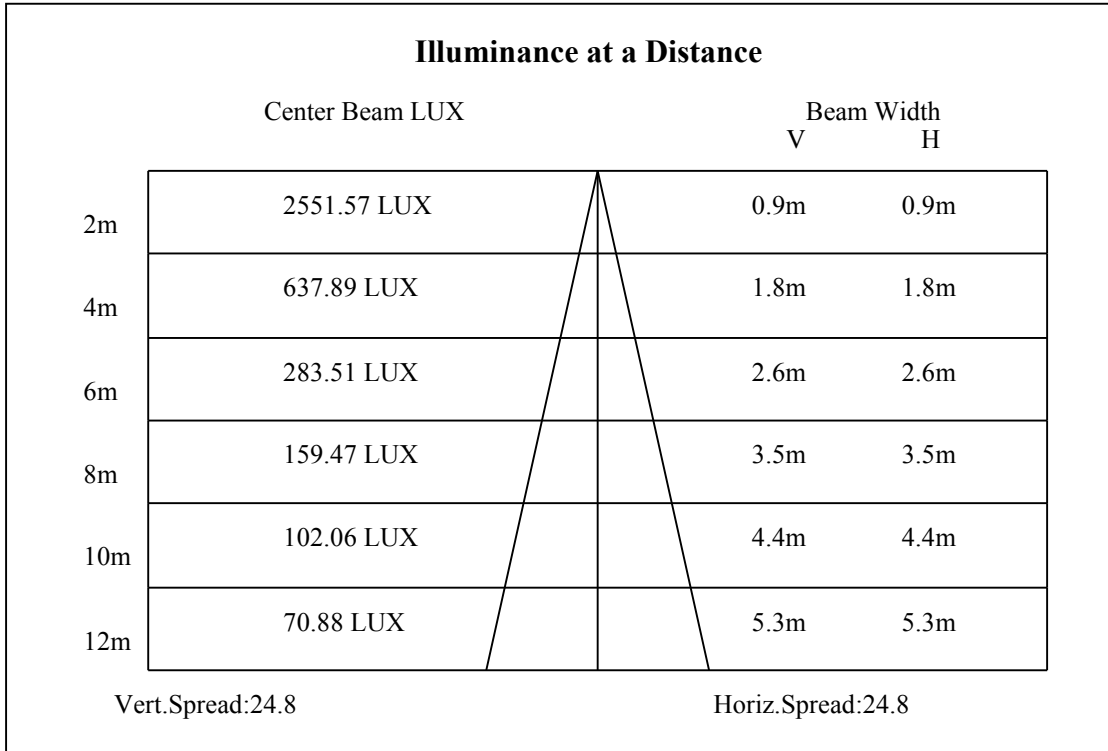
0-10	1087.27
10-20	929.24
20-30	624.60
30-40	256.41
40-50	15.57
50-60	13.13
60-70	21.99
70-80	27.57
80-90	7.14
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

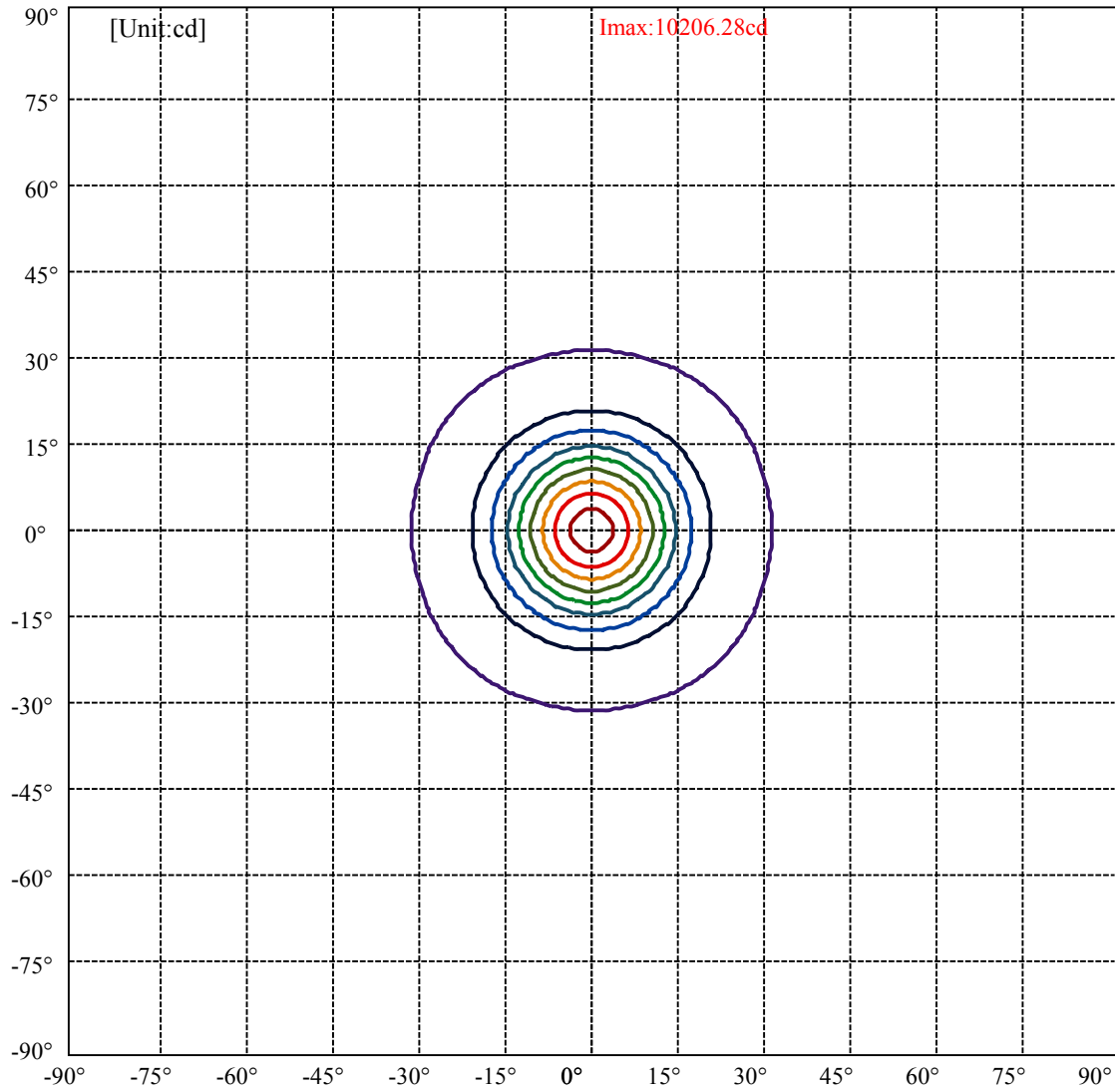


C0(Max): —————
C0/C180: —————
C90/C270: —————

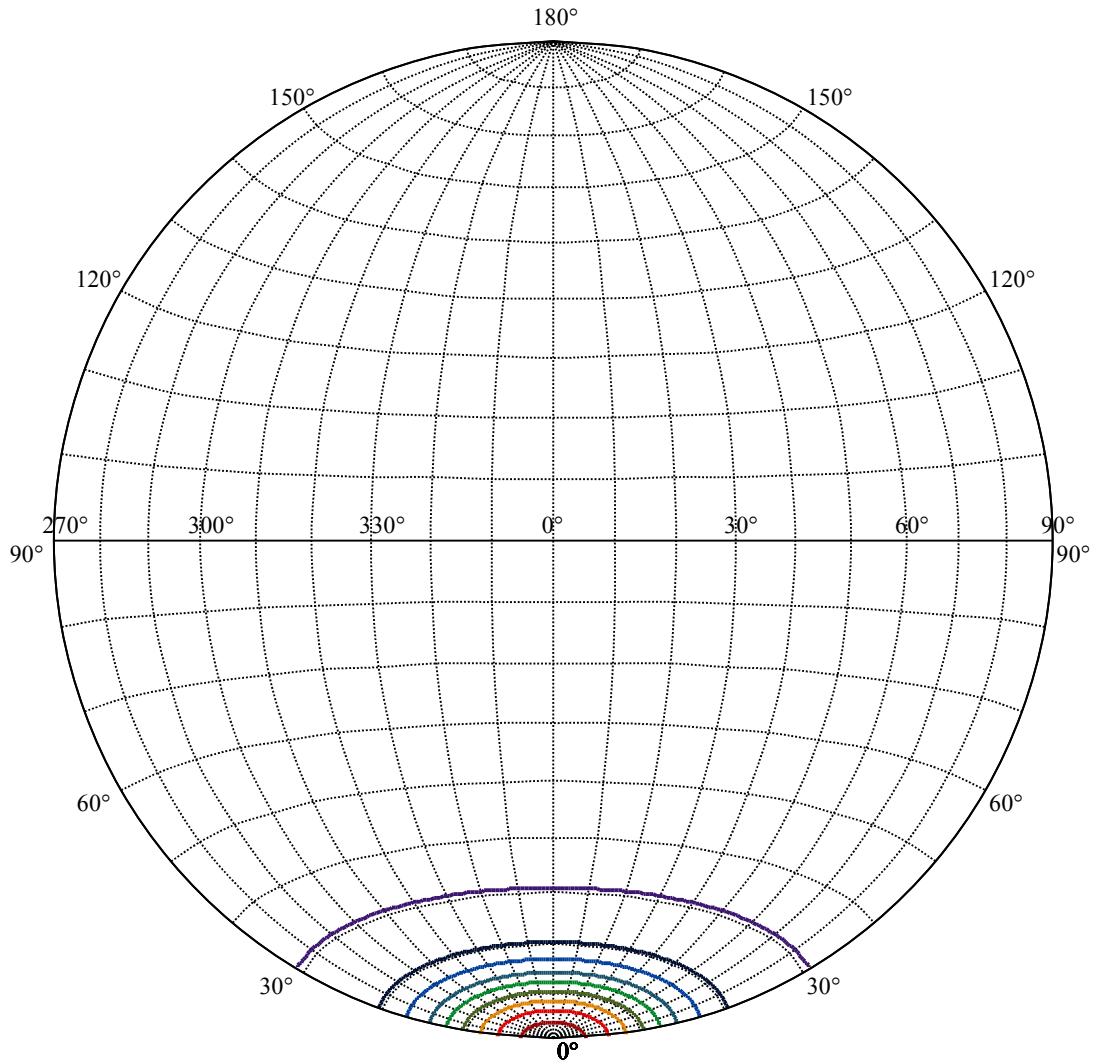
Field angle(10%Imax):C0/180Left:30.9 Right:30.9
:C90/270Left:30.9 Right:30.9

Beam Angle(50%Imax):C0/180Left:12.4 Right:12.4
:C90/270Left:12.4 Right:12.4





(10%Imax) 1020.63	—
(20%Imax) 2041.26	—
(30%Imax) 3061.88	—
(40%Imax) 4082.51	—
(50%Imax) 5103.14	—
(60%Imax) 6123.77	—
(70%Imax) 7144.4	—
(80%Imax) 8165.02	—
(90%Imax) 9185.65	—



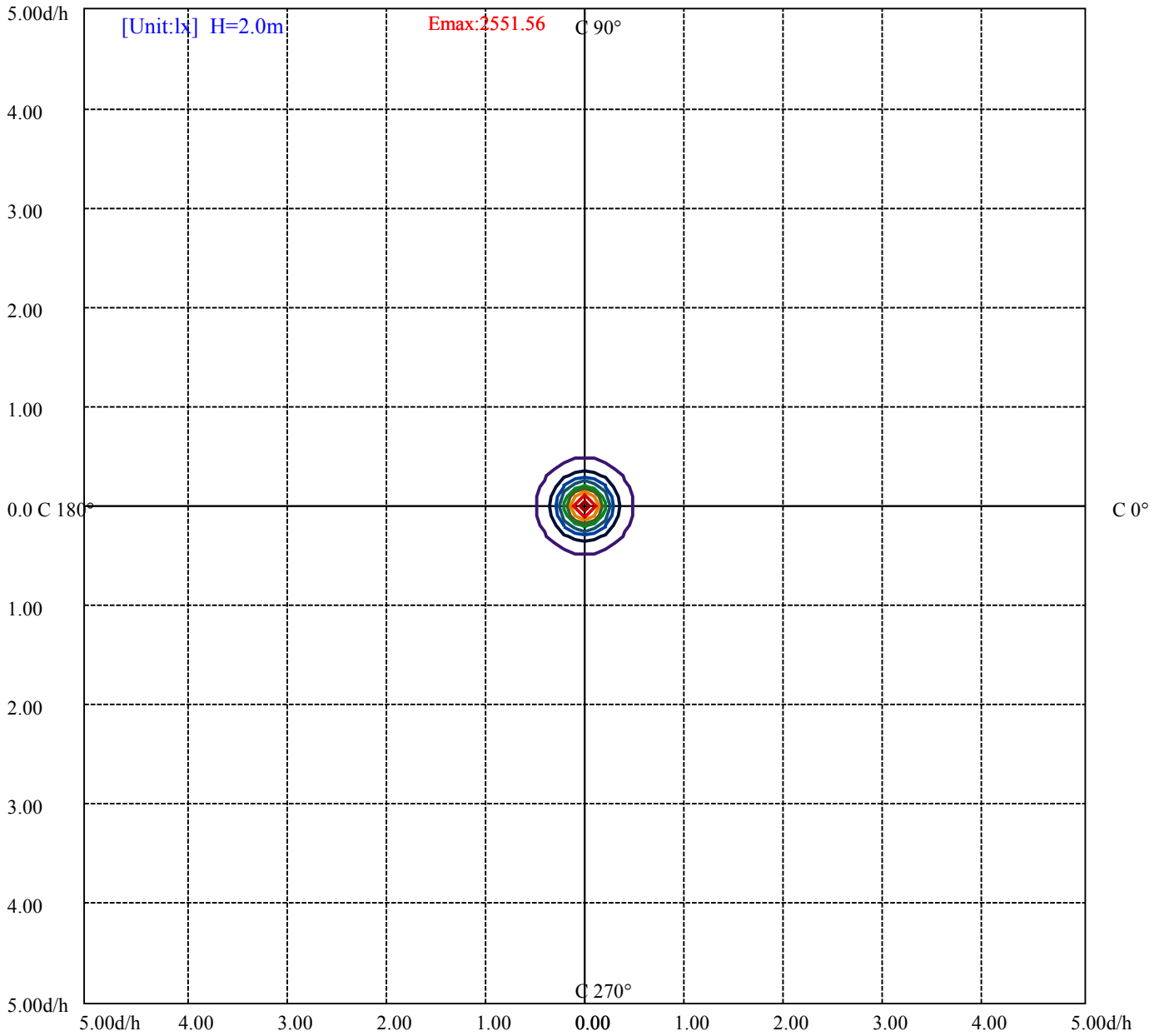
House

[Unit:cd]

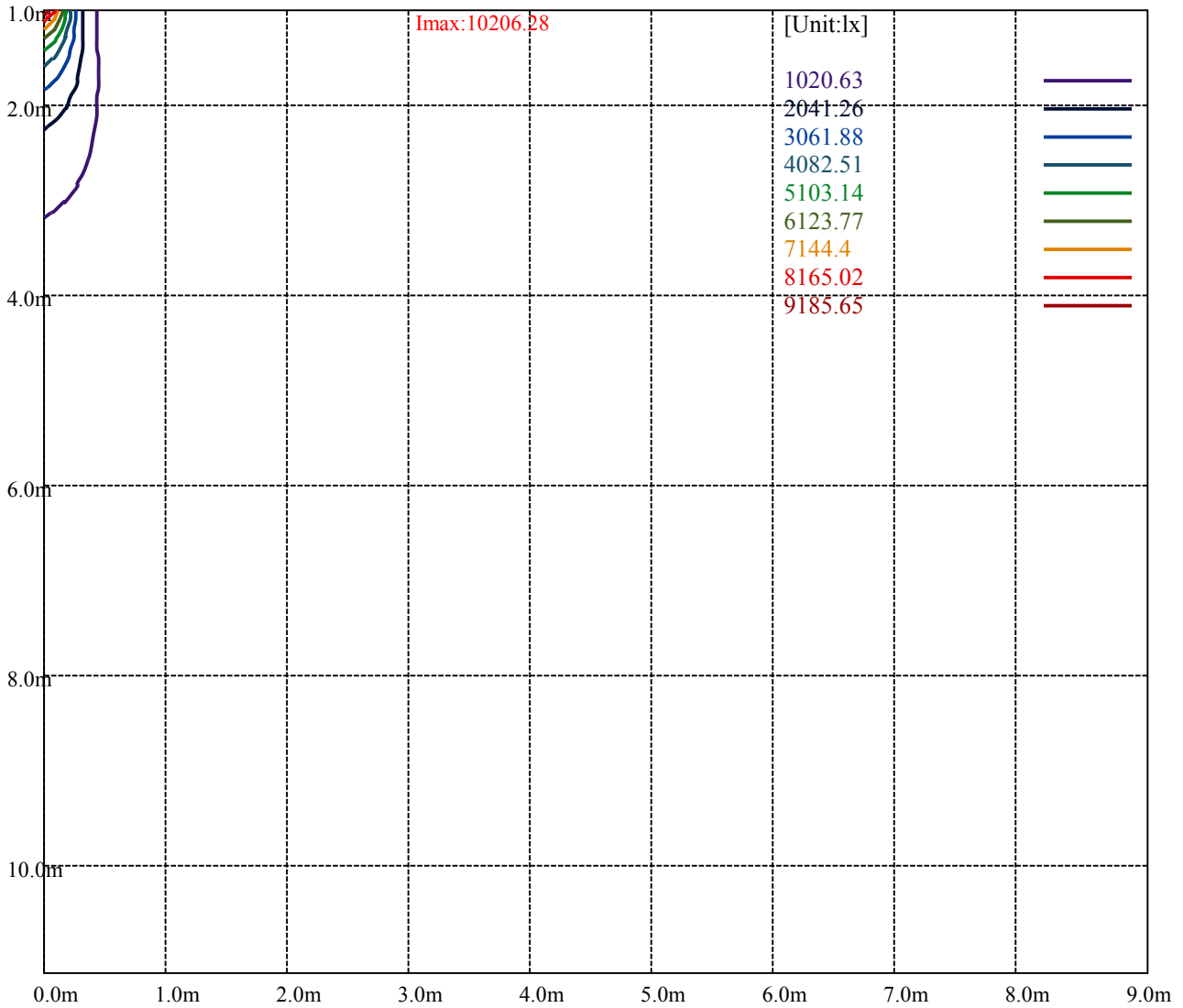
Road

Imax:10206.28

(10%Imax) 1020.63	—
(20%Imax) 2041.26	—
(30%Imax) 3061.88	—
(40%Imax) 4082.51	—
(50%Imax) 5103.14	—
(60%Imax) 6123.77	—
(70%Imax) 7144.4	—
(80%Imax) 8165.02	—
(90%Imax) 9185.65	—



- (10%E_{max}) 255.155
- (20%E_{max}) 510.3125
- (30%E_{max}) 765.4675
- (40%E_{max}) 1020.625
- (50%E_{max}) 1275.78
- (60%E_{max}) 1530.935
- (70%E_{max}) 1786.093
- (80%E_{max}) 2041.248
- (90%E_{max}) 2296.405



Luminance Table

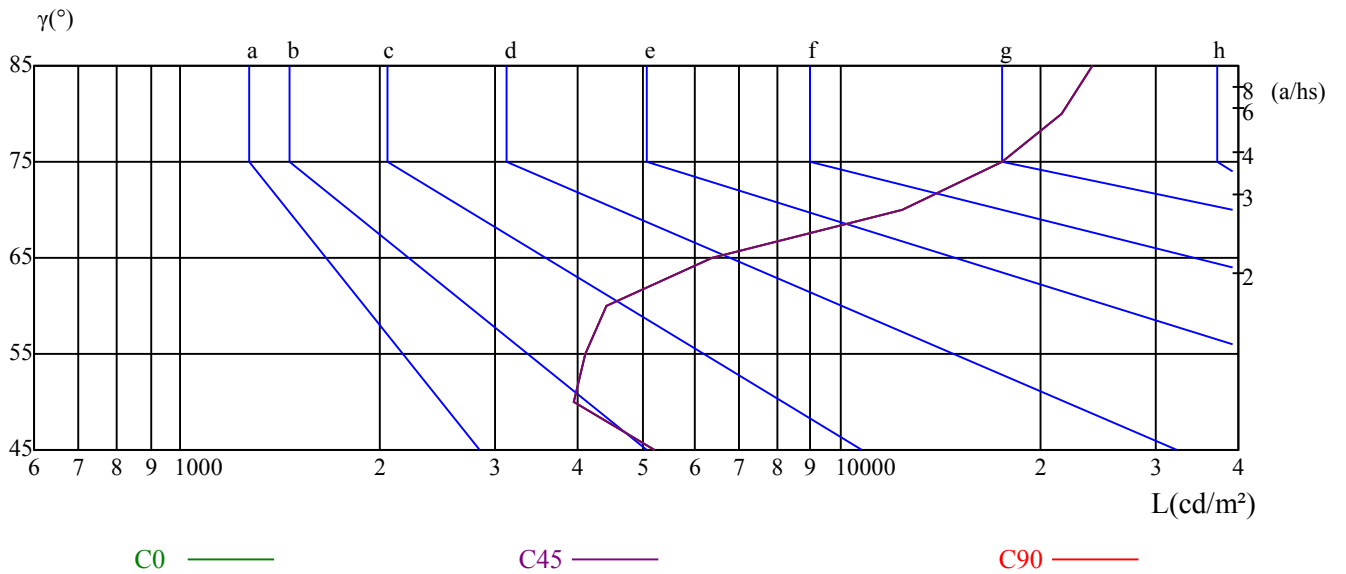
γ	45	50	55	60	65	70	75	80	85
C0	5228	3937	4099	4414	6401	12372	17512	21534	24030
C45	5228	3937	4099	4414	6401	12372	17512	21534	24030
C90	5228	3937	4099	4414	6401	12372	17512	21534	24030

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
6401	6401	6401	17512	17512	17512	24030	24030	24030

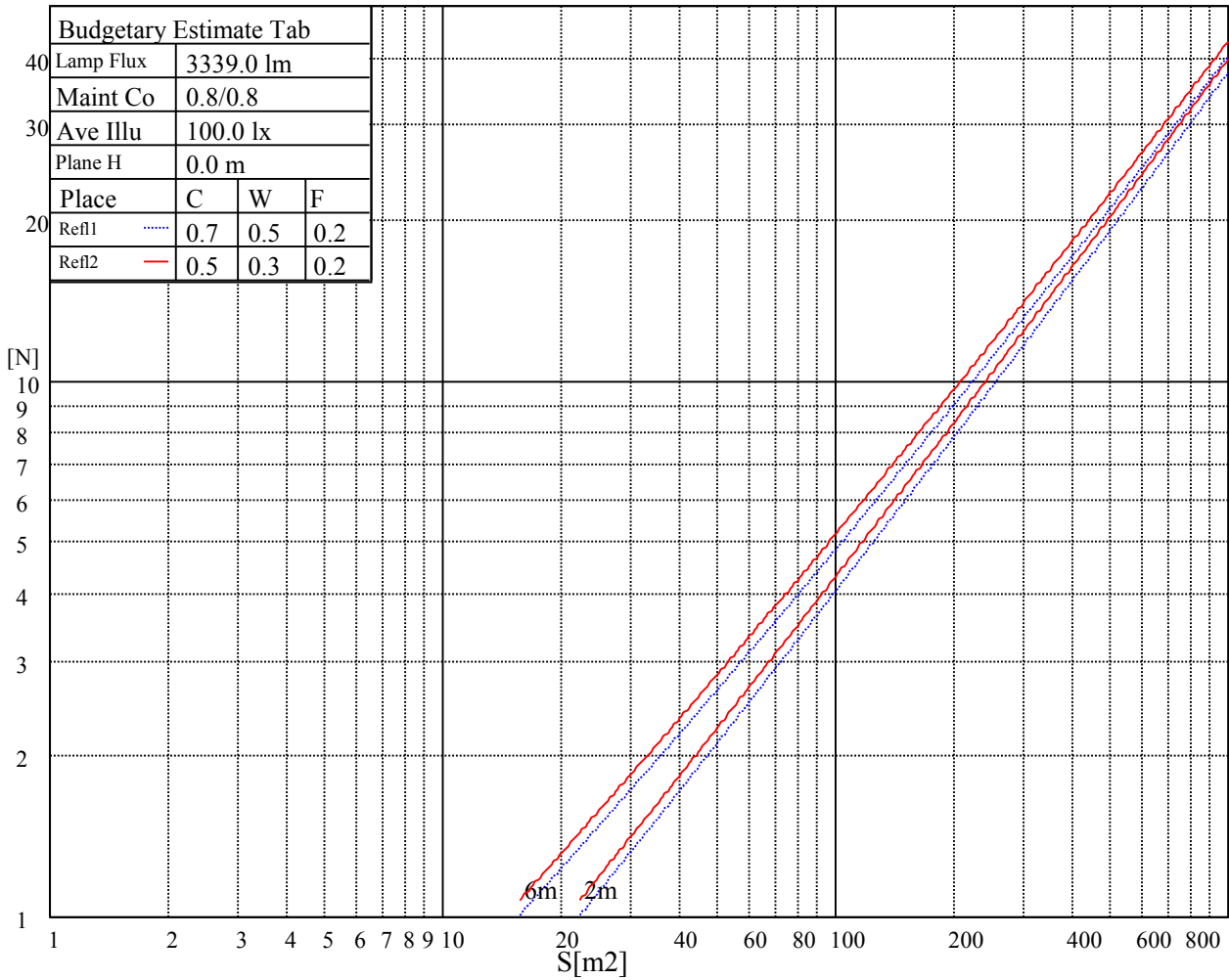
Glare Table

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

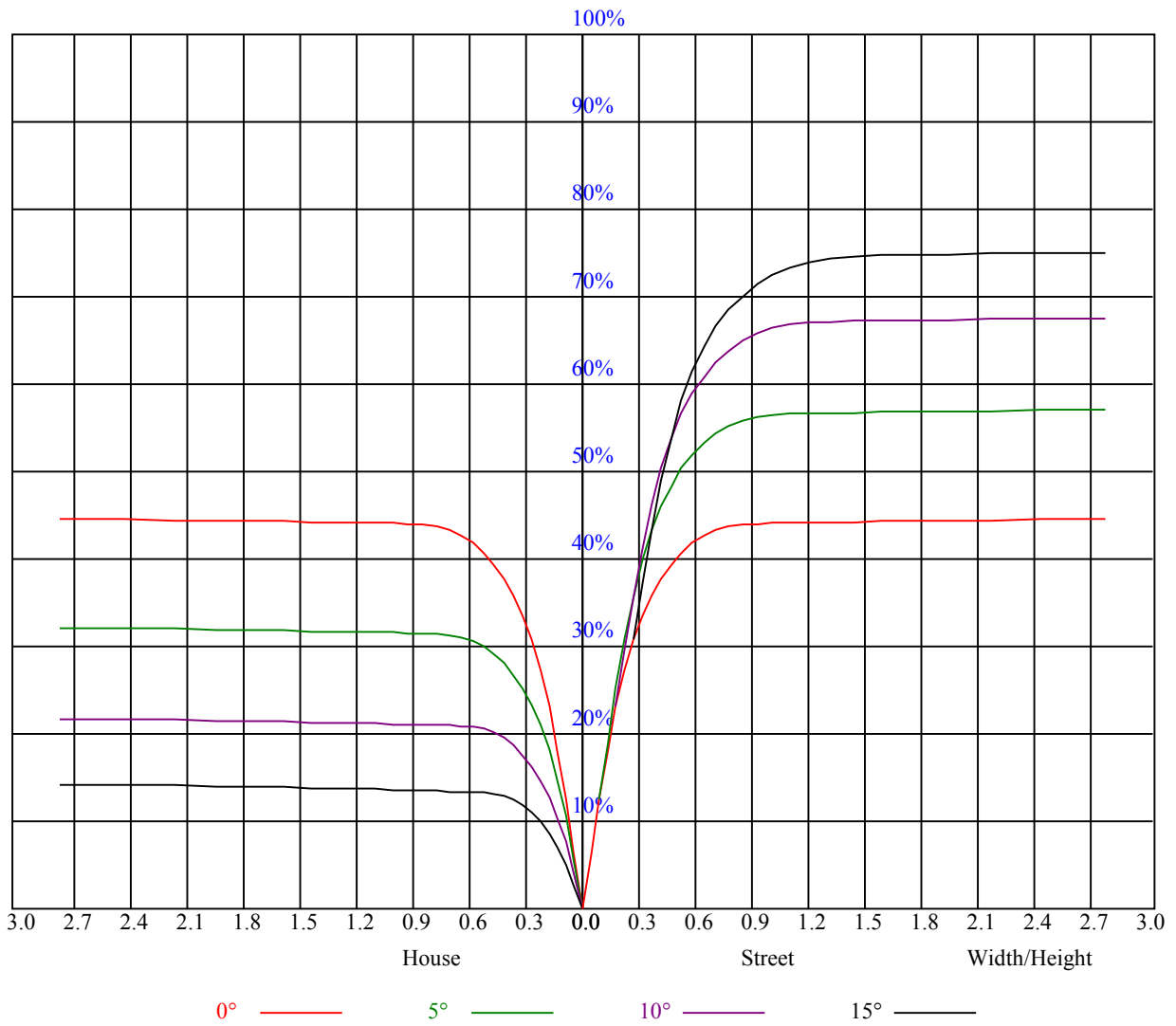
Luminance Limiting Curve



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	1.97	2.90	2.33	3.21	3.52	2.03	2.96	2.40	3.27	3.59
	3H	8.28	9.10	8.66	9.43	9.80	7.89	8.71	8.27	9.04	9.41
	4H	11.25	12.01	11.66	12.37	12.76	10.66	11.42	11.07	11.78	12.17
	6H	13.25	13.94	13.67	14.32	14.72	12.84	13.53	13.26	13.91	14.31
	8H	13.94	14.59	14.38	14.99	15.40	13.64	14.29	14.07	14.68	15.09
	12H	14.81	15.44	15.25	15.82	16.25	14.62	15.24	15.05	15.62	16.05
4H	2H	3.33	4.09	3.73	4.44	4.83	3.37	4.13	3.78	4.48	4.87
	3H	9.96	10.58	10.37	10.99	11.40	9.66	10.28	10.08	10.69	11.10
	4H	12.87	13.43	13.31	13.85	14.30	12.40	12.96	12.84	13.39	13.83
	6H	14.65	15.13	15.12	15.58	16.06	14.30	14.78	14.78	15.23	15.71
	8H	15.42	15.87	15.90	16.32	16.80	15.18	15.62	15.65	16.07	16.55
	12H	16.24	16.62	16.73	17.11	17.59	16.07	16.46	16.57	16.95	17.42
8H	4H	13.74	14.19	14.22	14.64	15.11	13.41	13.85	13.89	14.30	14.78
	6H	15.74	16.09	16.25	16.59	17.08	15.51	15.86	16.02	16.36	16.85
	8H	16.61	16.92	17.14	17.44	17.94	16.45	16.76	16.98	17.28	17.78
	12H	17.49	17.75	18.01	18.25	18.83	17.39	17.66	17.91	18.16	18.74
12H	4H	13.91	14.29	14.40	14.78	15.26	13.60	13.98	14.09	14.47	14.95
	6H	16.20	16.29	16.52	16.77	17.32	15.99	16.08	16.31	16.55	17.10
	8H	16.94	17.20	17.46	17.70	18.28	16.80	17.06	17.32	17.56	18.14
Variation with the observer position at spacings:											
S = 1.0H	4.5/-4.2					4.5/-4.2					
S = 1.5H	5.6/-2.7					5.6/-2.7					
S = 2.0H	6.7/-1.9					6.7/-1.9					
Standard tables:	BK4					BK4					
Uncorrected UGR	3.1					3.1					



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	1.09	1.09	1.09	1.06	1.06	1.06	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.91
1	1.00	0.97	0.95	0.98	0.95	0.93	0.94	0.92	0.90	0.91	0.89	0.88	0.87	0.86	0.85	0.84
2	0.94	0.91	0.88	0.93	0.90	0.87	0.90	0.87	0.85	0.87	0.85	0.83	0.85	0.83	0.81	0.80
3	0.90	0.86	0.82	0.88	0.85	0.82	0.86	0.83	0.80	0.84	0.81	0.79	0.82	0.80	0.78	0.77
4	0.86	0.81	0.78	0.85	0.81	0.77	0.83	0.79	0.77	0.81	0.78	0.76	0.79	0.77	0.75	0.74
5	0.82	0.78	0.74	0.81	0.77	0.74	0.80	0.76	0.73	0.78	0.75	0.73	0.77	0.74	0.72	0.71
6	0.79	0.74	0.71	0.78	0.74	0.71	0.77	0.73	0.70	0.76	0.72	0.70	0.75	0.72	0.70	0.68
7	0.76	0.71	0.68	0.75	0.71	0.68	0.74	0.71	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.66
8	0.73	0.69	0.66	0.73	0.69	0.66	0.72	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.64
9	0.71	0.67	0.64	0.70	0.66	0.64	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.62
10	0.69	0.64	0.62	0.68	0.64	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.66	0.63	0.61	0.60



Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	10119.94	9338.06	7037.44	4447.69	2451.94	1517.06	1217.25	790.88	292.50
45.0	10253.25	8890.31	6599.25	3900.94	2149.31	1393.31	1155.94	660.94	295.88
90.0	10145.25	8233.31	5382.56	3154.50	1815.19	1275.75	1026.45	463.05	46.13
135.0	10306.69	8528.63	6022.13	3414.94	1966.50	1321.88	1072.69	593.44	81.17
180.0	10119.94	8327.25	5641.88	3150.56	1791.56	1275.75	1007.44	449.94	53.16
225.0	10253.25	8683.31	6248.81	3590.44	2001.38	1348.31	1101.38	567.23	104.18
270.0	10145.25	9329.63	7172.44	4440.38	2421.56	1510.31	1176.75	770.63	306.00
315.0	10306.69	9240.75	6728.63	4002.19	2276.44	1434.38	1111.50	707.96	177.69
360.0	10119.94	9338.06	7037.44	4447.69	2451.94	1517.06	1217.25	790.88	292.50

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	31.50	16.20	14.85	14.01	13.56	20.81	23.40	22.56	13.44
45.0	25.03	15.69	14.79	13.95	13.95	24.02	24.41	22.28	12.99
90.0	17.04	15.64	14.51	13.56	21.99	28.46	28.91	16.31	12.43
135.0	17.33	15.92	14.85	13.89	21.49	31.22	33.13	28.69	13.39
180.0	16.54	15.47	14.68	13.84	20.76	26.10	27.84	21.66	12.94
225.0	21.38	15.53	14.23	13.39	16.76	31.33	31.22	22.95	13.11
270.0	29.70	16.03	14.79	13.78	13.22	24.08	29.42	27.28	13.39
315.0	26.04	15.86	14.68	13.78	13.33	25.26	27.96	24.98	12.88
360.0	31.50	16.20	14.85	14.01	13.56	20.81	23.40	22.56	13.44

C/γ(°)	90.0
0.0	11.59
45.0	11.48
90.0	11.48
135.0	11.53
180.0	11.53
225.0	11.53
270.0	11.48
315.0	11.53
360.0	11.59