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SOLERGIE(QINGDAO) RENEWABLE ENERGY CO.,LTD

LumCAT: LED24W/SL240-G13(860)

Luminaire: LED Tube

Report No: BSR13123104-10

Voltage(V): 230.020

Test No: BSR13123104-10

Current(A): 0.113

LampCAT:

Power (W): 24.788

Lamp flux(lm)

PF: 0.955

Number of Lamps: 1

Ballast type:

Length(mm): 1460

Width(mm): 26

Phm Type: C

Height(mm): 13

Photometric Results

Lumens(lm): 2040.45

Lumens(lm)/Power(W): 82.32

Central intensity(cd): 570.119

Maximum intensity(cd): 576.011

Angle of maximum intensity: C=150.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Left=57.5 Right=56.8

[C90/270]Left=67.4 Right=65.9

Field angle(10%Imax): [C0/180]Left=83.2 Right=81.2

[C90/270]Left=98.2 Right=98.0

Maximum s/h: C0_180=1.30 C90_270=1.30

Up flux rate of LUM(%): 6.28%

Down flux rate of LUM(%): 93.72%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 65.457%

Equipment:

Temperature(°C): 25.0

C Testing Range: 0~360

Step: 30

Date: 2014-1-6

Humidity(%): 65.0%

γ Testing Range: 0~180

Operator: king

Distance(m): 12.20

Step: 10

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	570.119	.000	.000	.000%	.000%
10.0	560.593	53.967	53.967	2.645%	2.645%
20.0	531.619	154.803	208.770	7.587%	10.232%
30.0	487.910	235.952	444.722	11.564%	21.795%
40.0	431.289	288.720	733.441	14.150%	35.945%
50.0	364.236	308.045	1041.487	15.097%	51.042%
60.0	291.463	294.134	1335.621	14.415%	65.457%
70.0	216.963	252.336	1587.957	12.367%	77.824%
80.0	147.672	192.876	1780.833	9.453%	87.277%
90.0	93.174	131.389	1912.221	6.439%	93.716%
100.0	26.067	65.050	1977.271	3.188%	96.904%
110.0	14.987	21.716	1998.987	1.064%	97.968%
120.0	12.016	13.402	2012.389	.657%	98.625%
130.0	11.552	10.573	2022.961	.518%	99.143%
140.0	9.294	8.072	2031.033	.396%	99.539%
150.0	6.484	4.956	2035.989	.243%	99.782%
160.0	5.082	2.677	2038.666	.131%	99.913%
170.0	4.490	1.357	2040.023	.066%	99.979%
180.0	4.391	.424	2040.446	.021%	100.000%

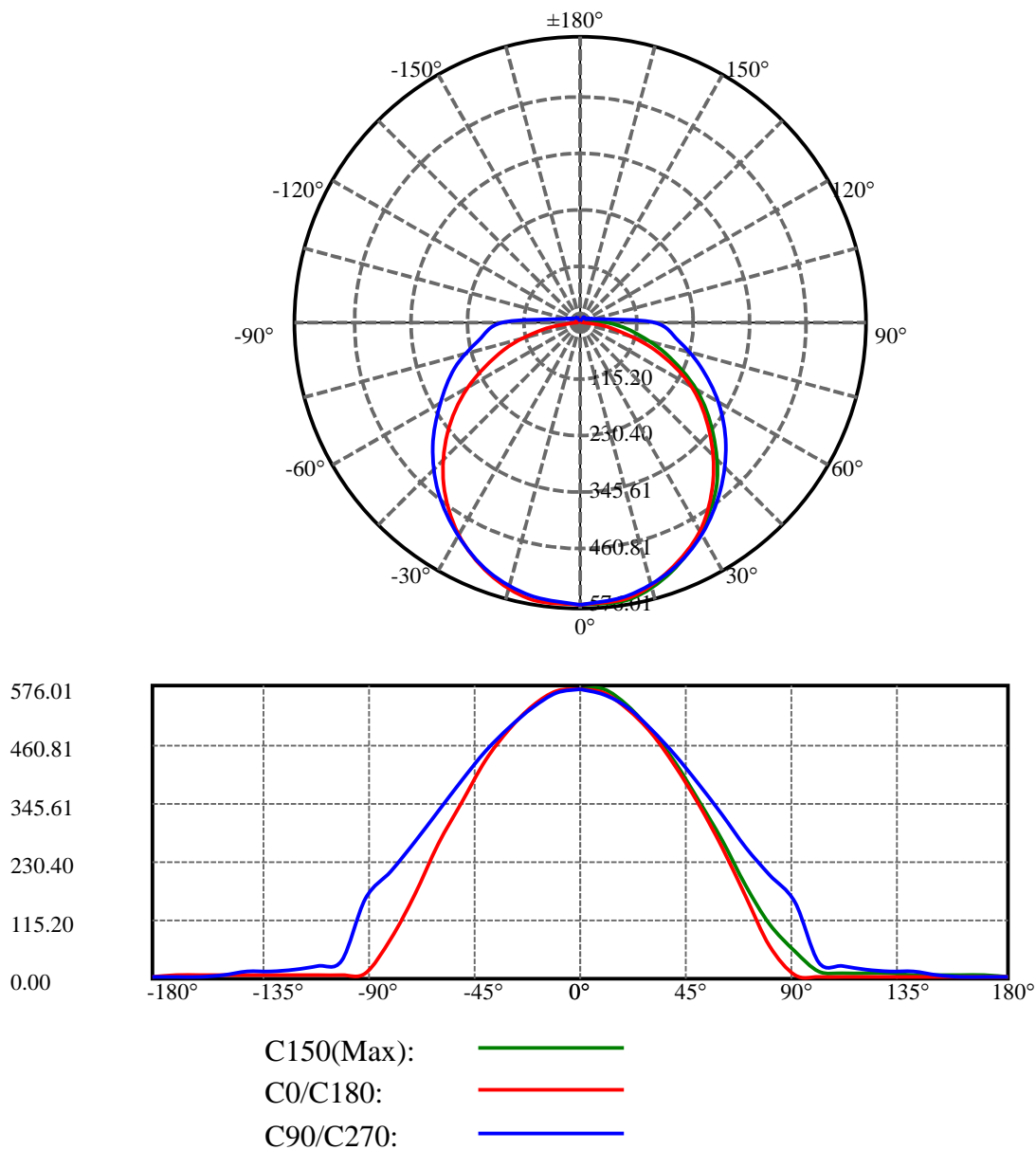


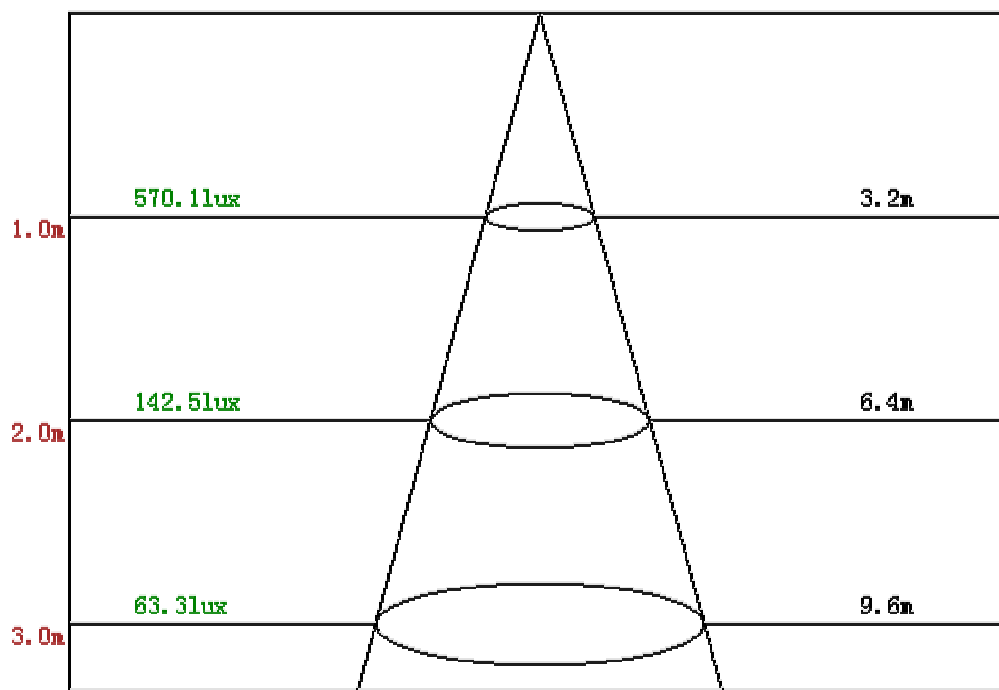
ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	444.72	21.80%
0-40	733.44	35.95%
0-60	1335.62	65.46%
0-90	1912.22	93.72%
0-120	2012.39	98.62%
0-180	2040.45	100.00%
60-90	870.73	42.67%
90-120	231.56	11.35%
90-130	242.13	11.87%
90-150	255.16	12.50%
90-180	259.19	12.70%
0-72.30	1632.36	80.00%

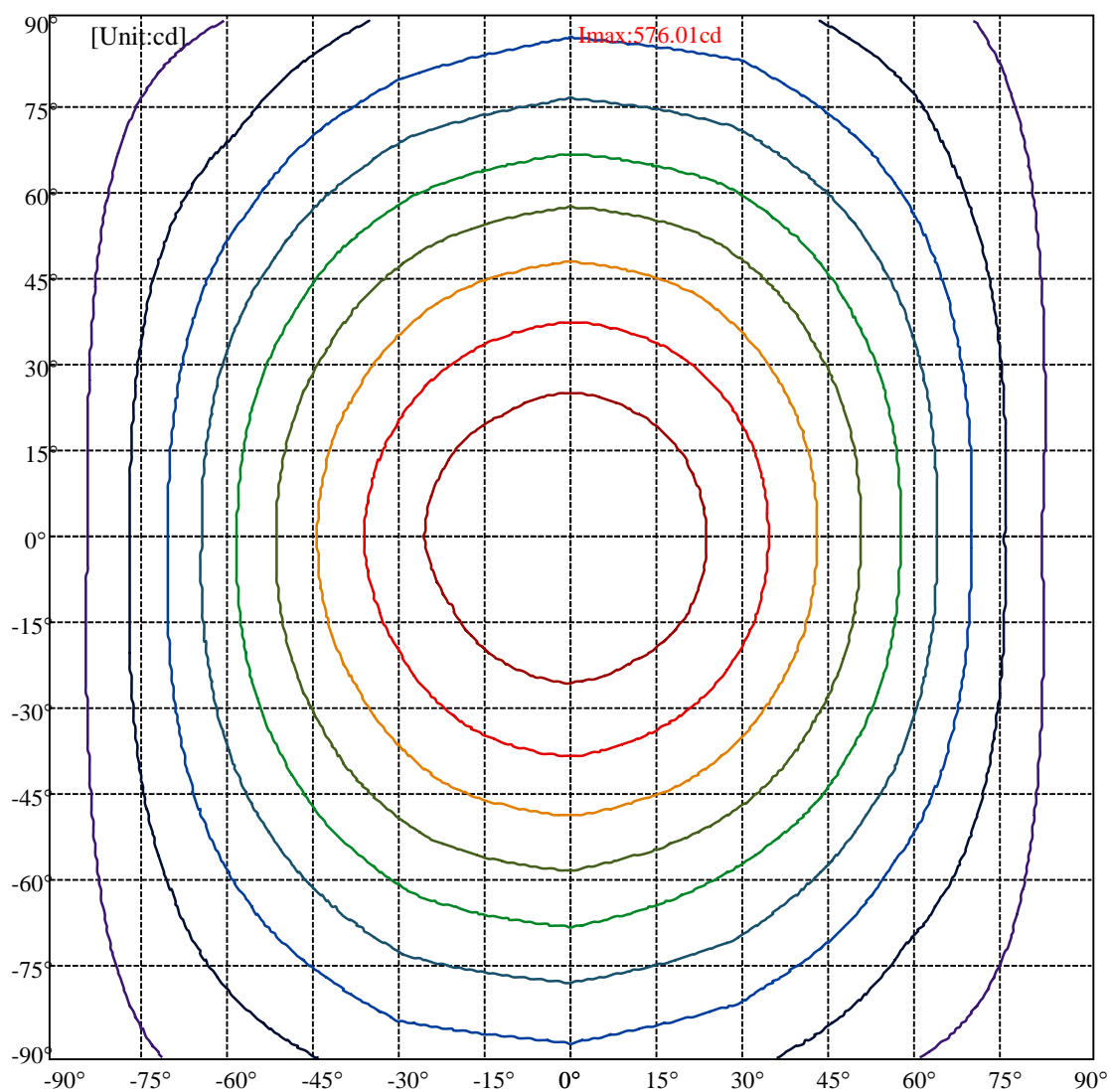
ZONAL LUMEN SUMMARY

0-10	53.97
10-20	154.80
20-30	235.95
30-40	288.72
40-50	308.05
50-60	294.13
60-70	252.34
70-80	192.88
80-90	131.39
90-100	65.05
100-110	21.72
110-120	13.40
120-130	10.57
130-140	8.07
140-150	4.96
150-160	2.68
160-170	1.36
170-180	0.00

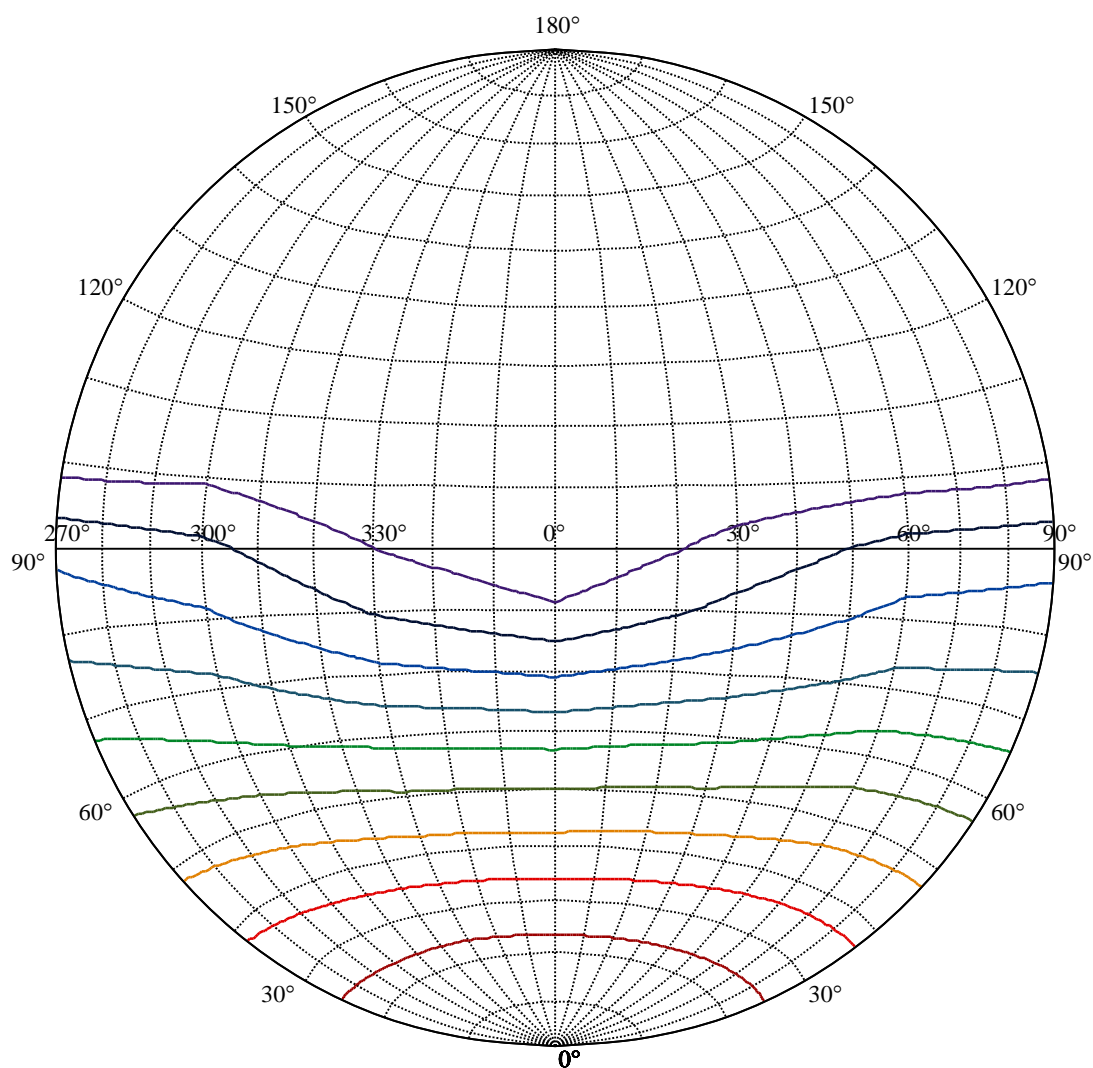




Beam angle of C150plane116.25



(10%Imax) 57.0119	—
(20%Imax) 114.024	—
(30%Imax) 171.036	—
(40%Imax) 228.048	—
(50%Imax) 285.06	—
(60%Imax) 342.072	—
(70%Imax) 399.083	—
(80%Imax) 456.095	—
(90%Imax) 513.107	—



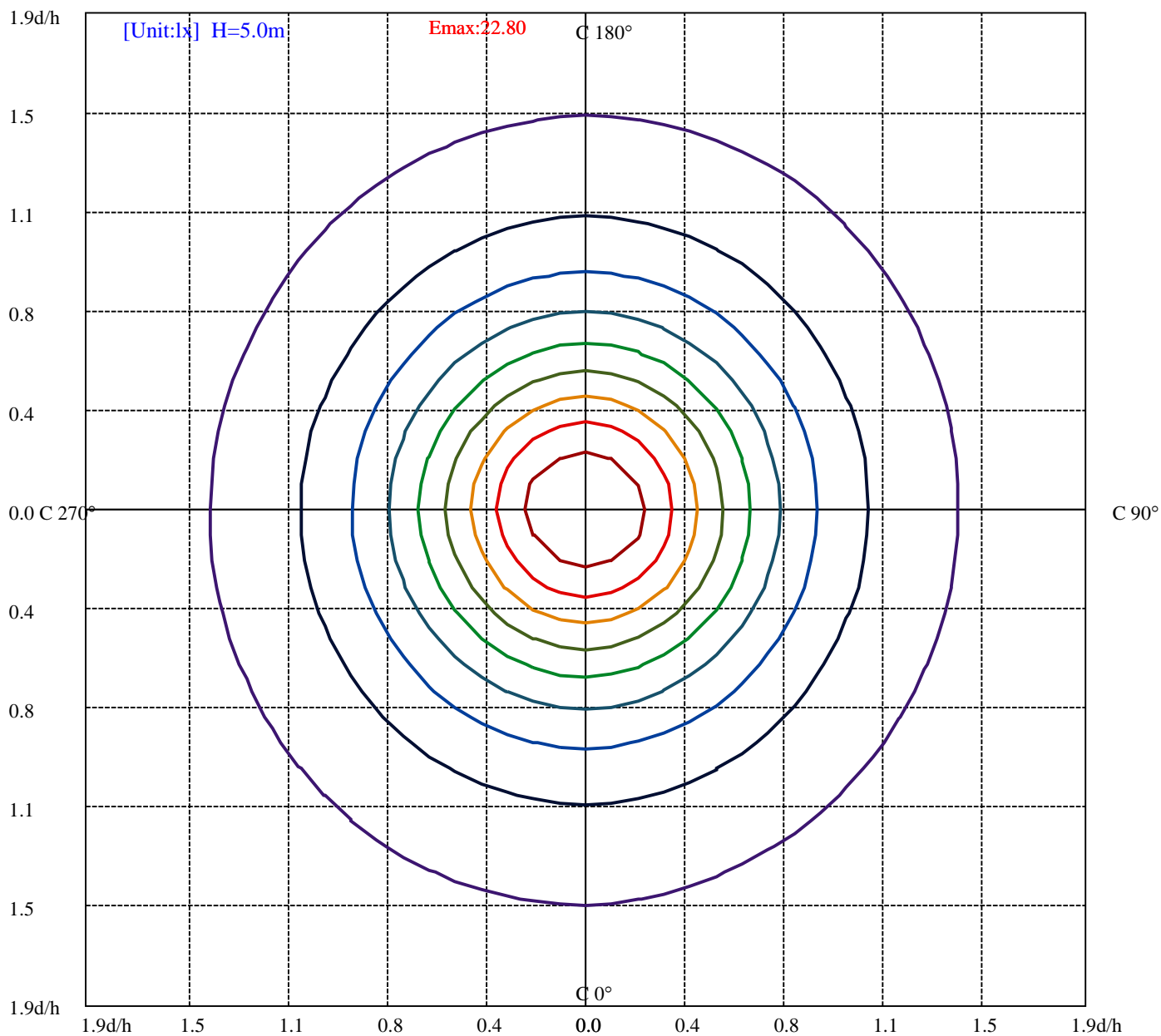
House

[Unit:cd]

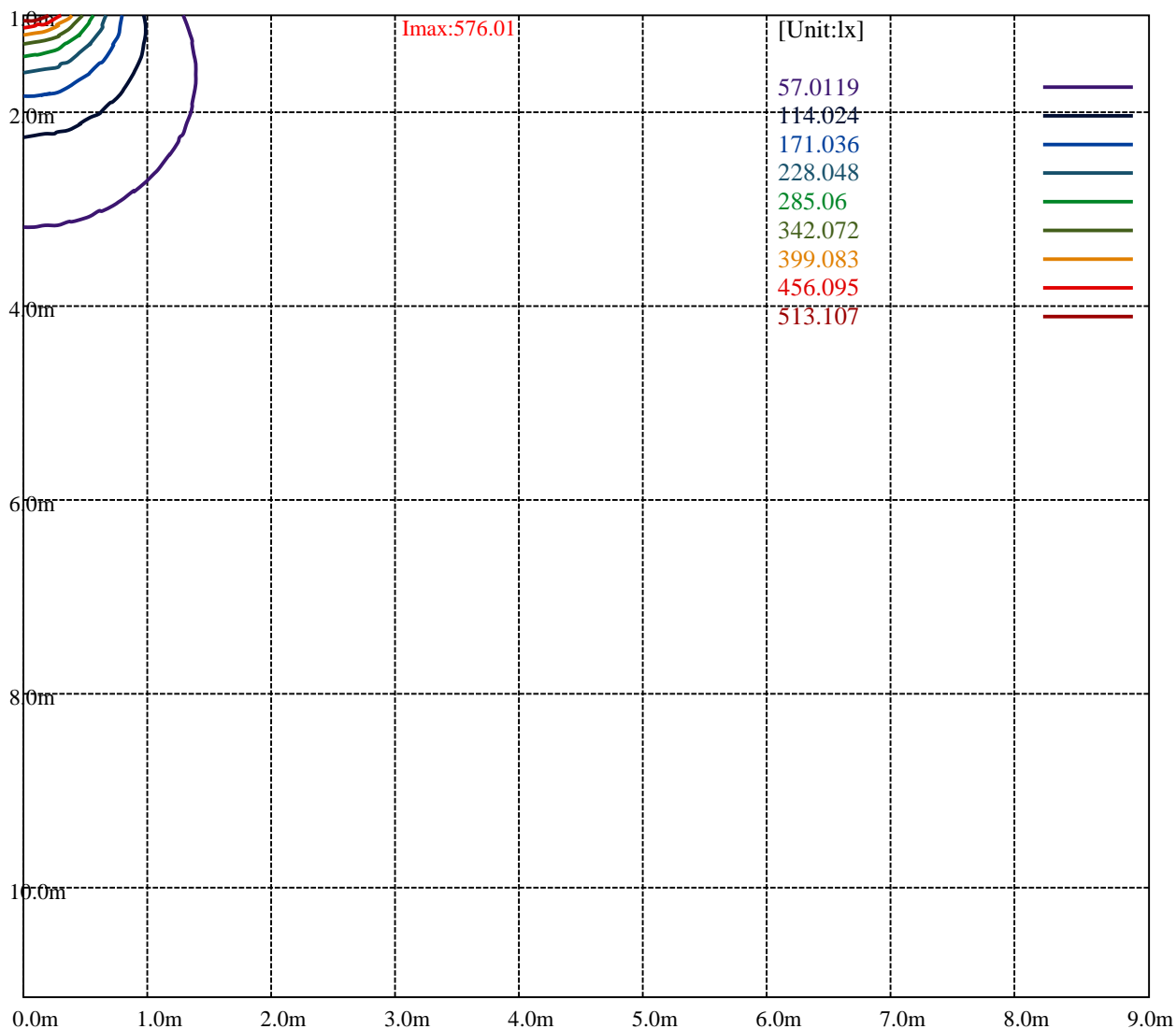
Road

Imax:576.01
 (10%Imax) 57.0119
 (20%Imax) 114.024
 (30%Imax) 171.036
 (40%Imax) 228.048
 (50%Imax) 285.06
 (60%Imax) 342.072
 (70%Imax) 399.083
 (80%Imax) 456.095
 (90%Imax) 513.107





(10%Emax) 2.280476
(20%Emax) 4.56096
(30%Emax) 6.84144
(40%Emax) 9.121921
(50%Emax) 11.4024
(60%Emax) 13.68284
(70%Emax) 15.96332
(80%Emax) 18.2438
(90%Emax) 20.52428

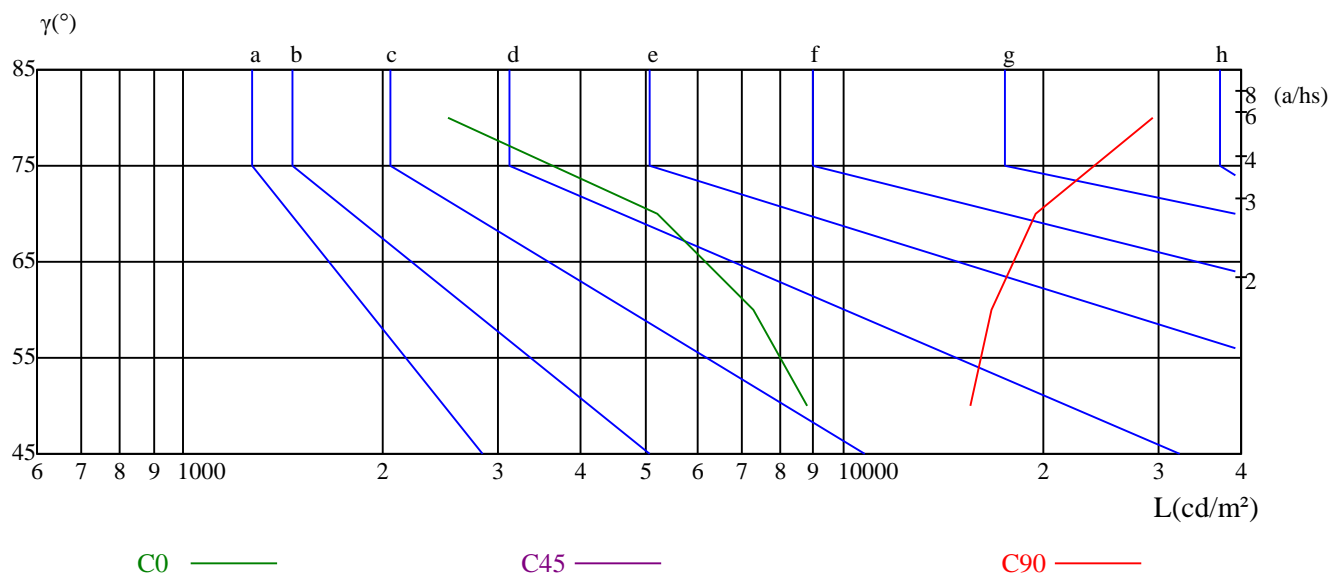


Luminance Table

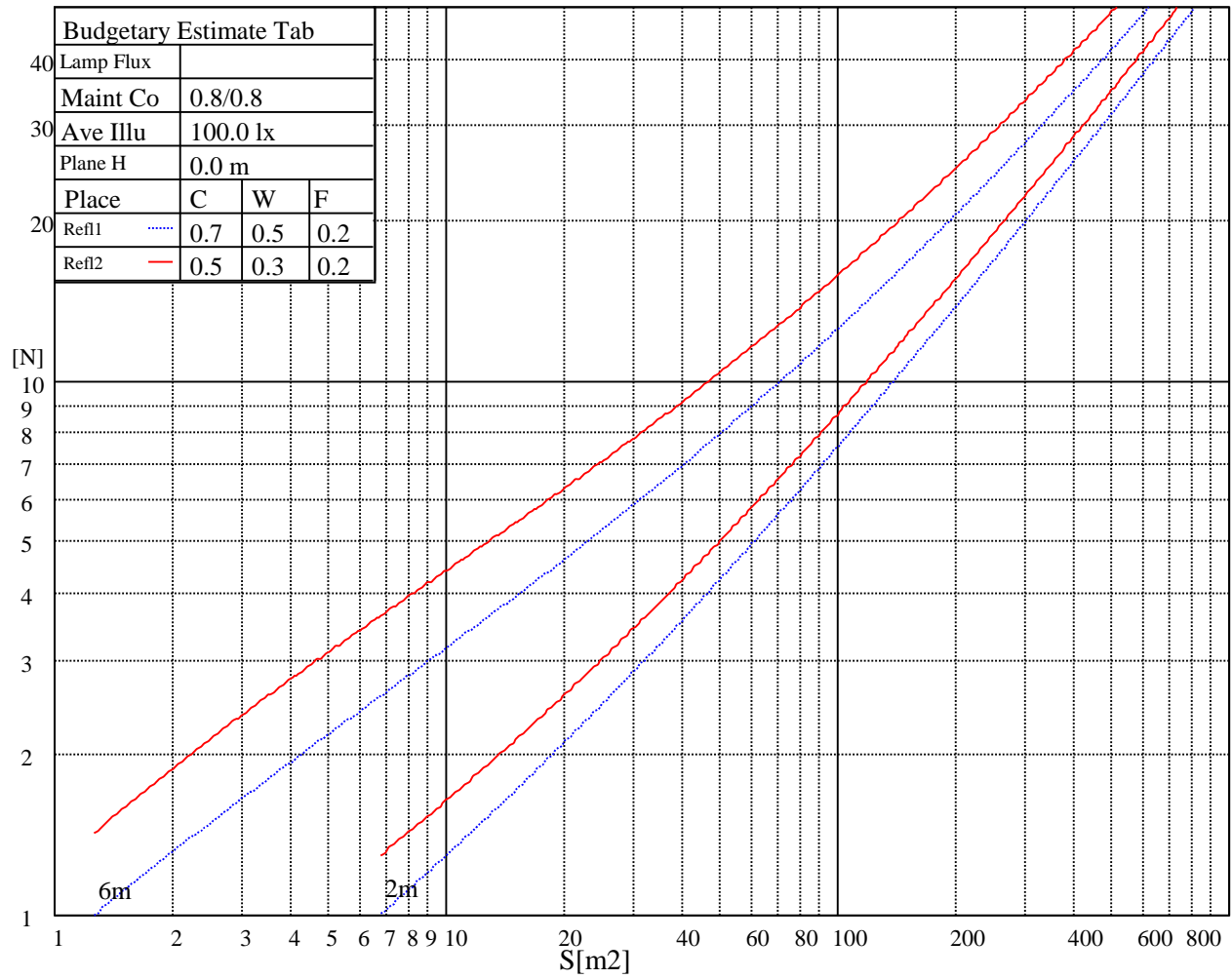
γ	45	50	55	60	65	70	75	80	85
C0	0	8780	0	7290	0	5220	0	2524	0
C45	0	0	0	0	0	0	0	0	0
C90	0	15573	0	16735	0	19494	0	29297	0

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


Illuminatin 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	16.9	18.3	17.3	18.6	19.0	18.3	19.7	18.7	20.0	20.4
	3H	18.3	19.6	18.8	20.0	20.4	20.7	21.9	21.1	22.3	22.7
	4H	18.7	19.8	19.2	20.2	20.7	21.8	22.8	22.2	23.3	23.8
	6H	19.1	20.2	19.6	20.6	21.1	23.2	24.3	23.7	24.8	25.2
	8H	19.2	20.3	19.7	20.7	21.2	24.1	25.1	24.5	25.6	26.0
	12H	19.1	19.9	19.6	20.4	21.0	24.7	25.6	25.3	26.1	26.6
4H	2H	17.6	18.7	18.1	19.1	19.6	18.7	19.8	19.2	20.2	20.7
	3H	19.3	20.1	19.8	20.6	21.1	21.3	22.1	21.8	22.6	23.2
	4H	20.0	20.9	20.6	21.4	21.9	22.8	23.6	23.3	24.1	24.7
	6H	20.6	21.4	21.1	21.9	22.5	24.4	25.3	25.0	25.8	26.3
	8H	20.6	21.1	21.2	21.7	22.3	25.2	25.7	25.8	26.3	26.9
	12H	20.7	21.2	21.3	21.8	22.4	26.2	26.7	26.8	27.3	27.9
8H	4H	20.7	21.2	21.3	21.7	22.4	23.0	23.5	23.6	24.1	24.8
	6H	21.5	22.0	22.0	22.5	23.2	24.9	25.4	25.5	26.0	26.6
	8H	21.8	22.3	22.4	22.9	23.5	25.9	26.4	26.5	27.0	27.7
	12H	22.0	22.5	22.6	23.1	23.7	27.1	27.6	27.7	28.2	28.9
12H	4H	20.9	21.4	21.5	22.0	22.6	23.1	23.6	23.7	24.2	24.8
	6H	21.8	22.3	22.4	22.9	23.5	25.0	25.5	25.6	26.1	26.7
	8H	22.2	22.7	22.8	23.3	24.0	26.1	26.6	26.7	27.2	27.8
Variation with the observer position at spacings:											
S = 1.0H		0.2/-0.6					0.2/-1.1				
S = 1.5H		0.5/-0.6					0.4/-1.0				
S = 2.0H		0.6/-0.8					0.2/-0.7				
Standard tables:		BKBF					BKBF				
Uncorrected UGR		6.2					9.5				
According 1000lm											



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	1.18	1.18	1.18	1.14	1.14	1.14	1.08	1.08	1.08	1.02	1.02	1.02	0.96	0.96	0.96	0.94
1	0.99	0.94	0.89	0.96	0.91	0.87	0.91	0.87	0.83	0.86	0.82	0.80	0.81	0.78	0.76	0.73
2	0.85	0.77	0.71	0.83	0.76	0.70	0.78	0.72	0.67	0.74	0.69	0.64	0.70	0.66	0.62	0.59
3	0.74	0.65	0.58	0.72	0.64	0.57	0.68	0.61	0.55	0.64	0.58	0.53	0.61	0.56	0.52	0.49
4	0.65	0.56	0.49	0.63	0.55	0.48	0.60	0.53	0.47	0.57	0.50	0.45	0.54	0.49	0.44	0.41
5	0.58	0.49	0.42	0.57	0.48	0.41	0.54	0.46	0.40	0.51	0.44	0.39	0.48	0.43	0.38	0.35
6	0.52	0.43	0.36	0.51	0.42	0.36	0.48	0.41	0.35	0.46	0.39	0.34	0.44	0.38	0.33	0.31
7	0.47	0.38	0.32	0.46	0.37	0.31	0.44	0.36	0.31	0.42	0.35	0.30	0.40	0.34	0.29	0.27
8	0.43	0.34	0.28	0.42	0.34	0.28	0.40	0.33	0.27	0.38	0.32	0.27	0.37	0.31	0.26	0.24
9	0.39	0.31	0.25	0.38	0.30	0.25	0.37	0.30	0.24	0.35	0.29	0.24	0.34	0.28	0.24	0.22
10	0.36	0.28	0.23	0.35	0.28	0.23	0.34	0.27	0.22	0.33	0.26	0.22	0.31	0.26	0.21	0.19

Intensity data(cd)									
Page: 14 Total:14									
C/γ(°)	0.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0
0.0	570.12	562.32	529.13	482.54	417.65	341.89	258.18	160.87	63.81
30.0	570.12	558.15	529.42	484.33	425.09	353.05	276.69	199.59	129.79
60.0	570.12	557.26	528.98	489.24	434.17	376.12	311.08	244.99	187.54
90.0	570.12	559.19	532.85	491.92	440.57	384.01	322.54	259.28	202.87
120.0	570.12	558.45	529.87	486.56	433.72	370.31	302.44	236.21	172.80
150.0	570.12	567.38	536.12	486.71	426.43	349.92	270.74	183.52	107.02
180.0	570.12	566.78	536.87	491.47	428.06	348.58	263.60	164.62	78.74
210.0	570.12	557.70	528.98	485.07	427.02	357.22	282.01	204.97	134.97
240.0	570.12	558.30	531.51	490.43	439.67	379.99	316.29	254.13	194.77
270.0	570.12	559.94	534.48	494.15	446.52	388.32	327.75	269.83	209.95
300.0	570.12	557.70	530.02	487.45	434.17	372.99	296.53	240.33	179.38
330.0	570.12	563.95	531.21	485.07	422.41	348.43	269.73	185.22	110.42
360.0	570.12	562.32	529.13	482.54	417.65	341.89	258.18	160.87	63.81
C/γ(°)	90.0	100.0	110.0	120.0	130.0	140.0	150.0	160.0	170.0
0.0	7.56	3.93	4.11	4.32	4.51	4.54	4.49	4.58	4.82
30.0	77.40	19.45	11.59	13.66	10.08	7.89	6.42	5.40	4.88
60.0	134.25	34.40	19.74	13.47	14.53	10.67	6.40	4.42	3.75
90.0	150.48	33.12	23.74	16.12	13.35	13.11	7.41	4.76	3.75
120.0	119.82	50.99	17.73	12.38	15.55	9.93	6.67	5.12	4.35
150.0	54.10	12.84	11.55	10.49	8.96	7.93	6.92	6.09	5.46
180.0	11.43	8.20	8.28	8.38	8.32	7.93	7.26	6.46	5.77
210.0	80.92	21.63	10.20	12.15	8.45	6.25	5.05	4.51	4.33
240.0	140.71	32.91	21.72	14.76	16.06	12.19	7.28	4.90	3.93
270.0	157.52	35.65	25.56	17.55	15.26	14.85	8.50	5.28	4.00
300.0	126.41	50.14	17.67	12.61	17.00	10.67	6.58	4.85	4.17
330.0	57.48	9.54	7.98	8.31	6.56	5.55	4.84	4.60	4.66
360.0	7.56	3.93	4.11	4.32	4.51	4.54	4.49	4.58	4.82
C/γ(°)	180.0								
0.0	4.39								
30.0	4.39								
60.0	4.39								
90.0	4.39								
120.0	4.39								
150.0	4.39								
180.0	4.39								
210.0	4.39								
240.0	4.39								
270.0	4.39								
300.0	4.39								
330.0	4.39								
360.0	4.39								