
Report No	:		Voltage	:	V
Test No	:	A2017192B001	Current	:	A
LumCAT	:	0019590014	Power	:	24.033 W
Luminaire	:	T8 LED Tube 1500mm UNIVERSAL 24W 3700lm G13 4000K			
LampCAT	:	N/A	Ballast type	:	
Lamp flux	:	lm	Width	:	26 mm
Number of Lamps	:	1	Length	:	1380 mm
Phm Type	:	C	Height	:	24 mm

Photometric Results

Lumens(lm)	:	3559.94	Central intensity(cd)	:	569.700
Efficiency(%)	:	100.00%	Maximum intensity(cd)	:	569.800
Luminous Efficacy(lm/W)	:	148.13	Angle of maximum intensity	:	C=180.0 γ =5.0
Beam Angle(50%Imax)	:	[C0/180]Total=241.8 [C90/270]Total=111.6			
Field angle(10%Imax)	:	[C0/180]Total=N.A. [C90/270]Total=N.A.			
Maximum s/h(1/2)	:	C0_180=1.47 C90_270=1.27			
Maximum s/h(1/4)	:	C0_180=1.66 C90_270=1.39			
CIE Type	:	Semidirect lighting			
Output flux ratio in π solid angle	:	41.664%			

Equipment:
Temperature(°C): 24.9

Date:
Humidity(%): 50%

Operator: LSC

Zonal flux distribution table

Appendix Page: 2 Total:13

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	569.700	0.000	0	0.00%	0.00%
5.0	568.100	13.602	13.602	0.38%	0.38%
10.0	563.500	40.481	54.083	1.14%	1.52%
15.0	555.583	66.383	120.466	1.86%	3.38%
20.0	544.875	90.693	211.159	2.55%	5.93%
25.0	531.442	112.886	324.045	3.17%	9.10%
30.0	515.500	132.491	456.537	3.72%	12.82%
35.0	497.117	149.115	605.651	4.19%	17.01%
40.0	476.850	162.499	768.15	4.56%	21.58%
45.0	454.592	172.464	940.614	4.84%	26.42%
50.0	430.850	178.916	1119.531	5.03%	31.45%
55.0	406.000	181.959	1301.49	5.11%	36.56%
60.0	380.192	181.726	1483.216	5.10%	41.66%
65.0	353.925	178.465	1661.681	5.01%	46.68%
70.0	328.100	172.693	1834.374	4.85%	51.53%
75.0	302.675	164.874	1999.249	4.63%	56.16%
80.0	278.650	155.546	2154.795	4.37%	60.53%
85.0	257.250	145.617	2300.412	4.09%	64.62%
90.0	240.300	136.233	2436.645	3.83%	68.45%
95.0	227.367	128.051	2564.696	3.60%	72.04%
100.0	215.842	120.430	2685.126	3.38%	75.43%
105.0	205.658	112.782	2797.908	3.17%	78.59%
110.0	195.942	104.972	2902.88	2.95%	81.54%
115.0	186.975	96.957	2999.836	2.72%	84.27%
120.0	179.092	88.991	3088.828	2.50%	86.77%
125.0	171.742	81.094	3169.922	2.28%	89.04%
130.0	165.175	73.257	3243.179	2.06%	91.10%
135.0	158.508	65.405	3308.584	1.84%	92.94%
140.0	151.408	57.384	3365.968	1.61%	94.55%
145.0	144.650	49.395	3415.363	1.39%	95.94%
150.0	137.000	41.475	3456.838	1.17%	97.10%
155.0	130.033	33.793	3490.631	0.95%	98.05%
160.0	125.783	26.830	3517.461	0.75%	98.81%
165.0	123.167	20.517	3537.978	0.58%	99.38%
170.0	110.833	13.881	3551.859	0.39%	99.77%
175.0	71.142	6.510	3558.369	0.18%	99.96%
180.0	60.200	1.570	3559.939	0.04%	100.00%

Equipment:
Temperature($^{\circ}\text{C}$): 24.9

Date:
Humidity(%): 50%

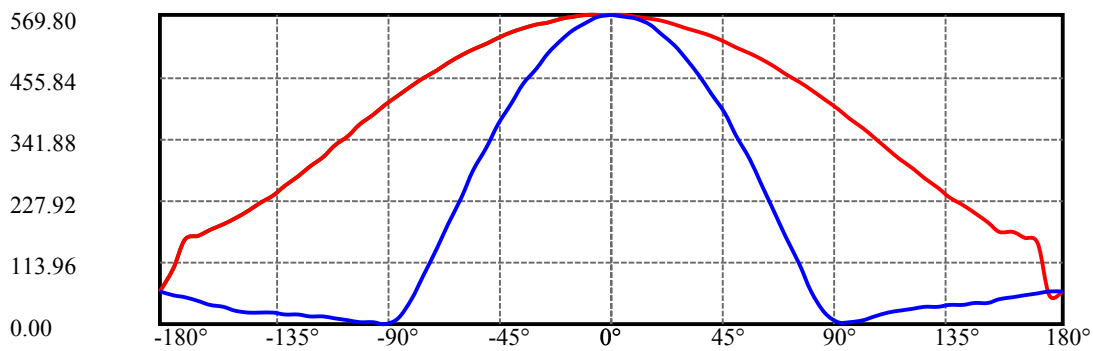
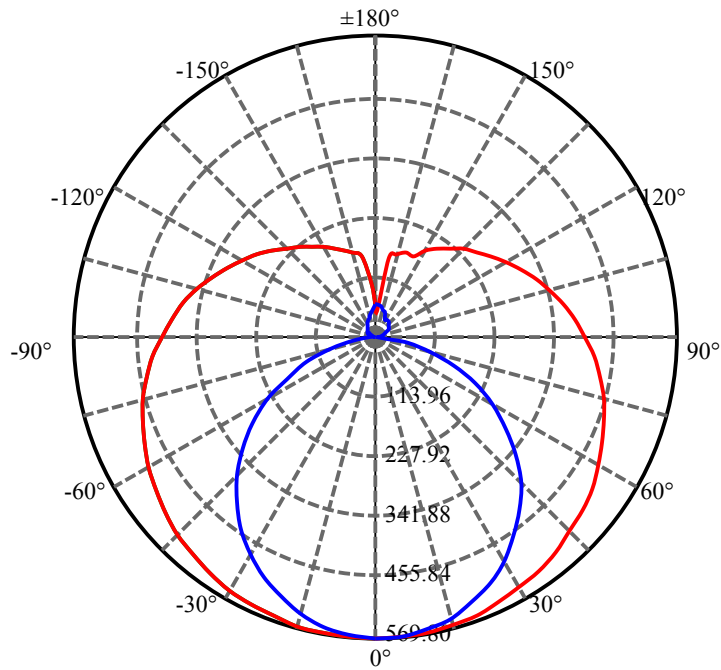
Operator: LSC

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	456.54	12.82%
0-40	768.15	21.58%
0-60	1483.22	41.66%
0-90	2436.64	68.45%
0-120	3088.83	86.77%
0-180	3559.94	100.00%
60-90	953.43	26.78%
90-120	652.18	18.32%
90-130	806.53	22.66%
90-150	1020.19	28.66%
90-180	1121.72	31.51%
0-107.38	2847.95	80.00%

ZONAL LUMEN SUMMARY

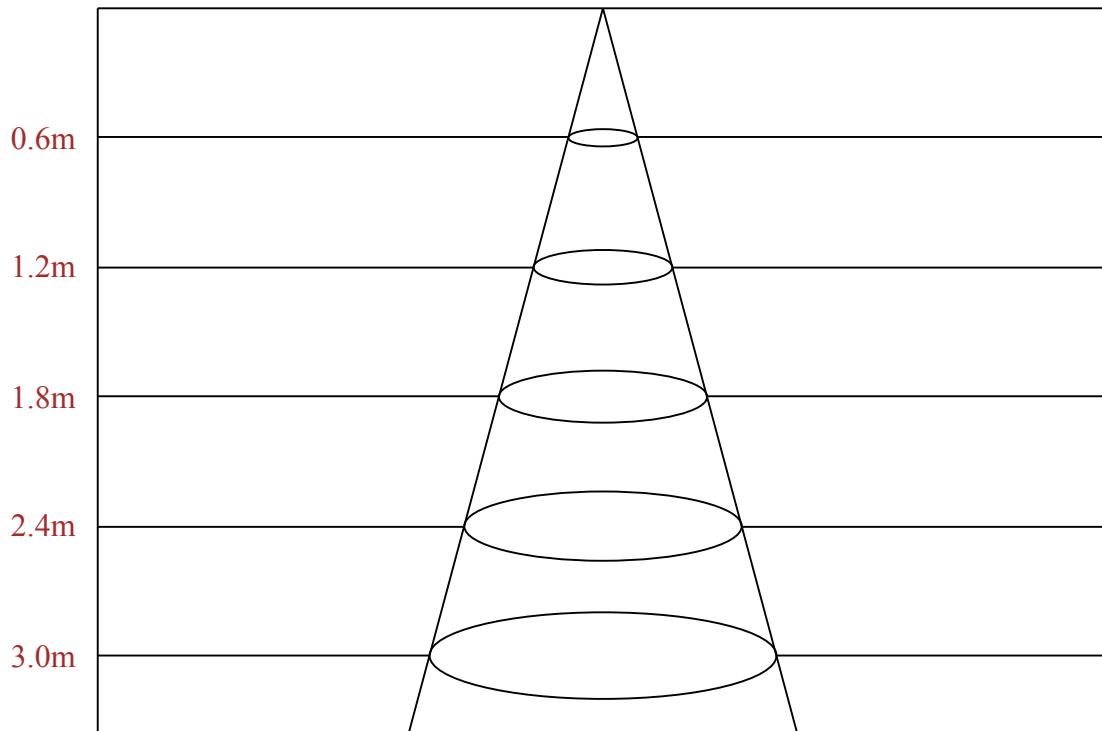
0-10	54.08
10-20	157.08
20-30	245.38
30-40	311.61
40-50	351.38
50-60	363.69
60-70	351.16
70-80	320.42
80-90	281.85
90-100	248.48
100-110	217.75
110-120	185.95
120-130	154.35
130-140	122.79
140-150	90.87
150-160	60.62
160-170	34.40
170-180	6.51



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

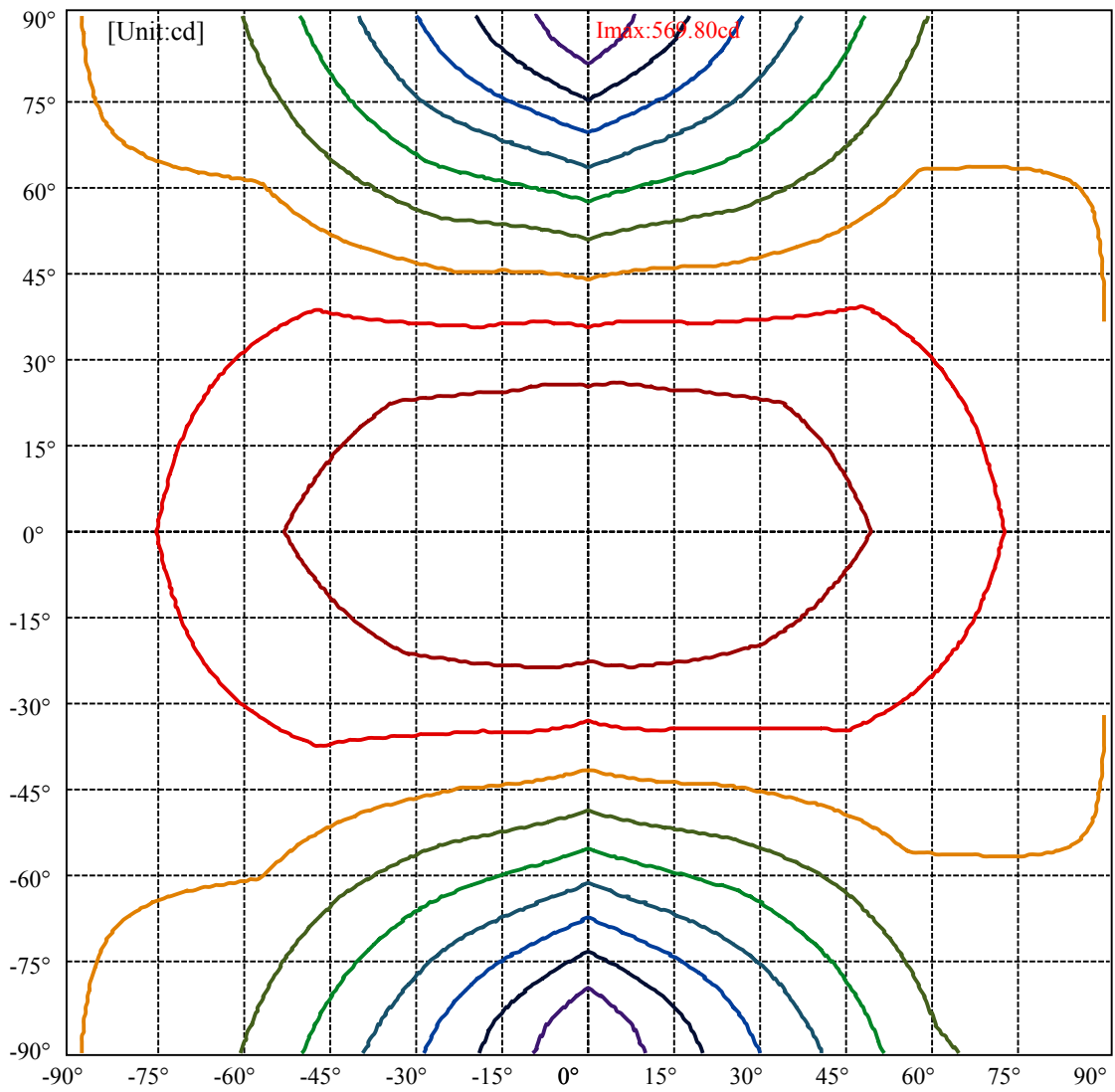
Field angle(10%Imax):C0/180Left:0.0 Right:0.0
 :C90/270Left:0.0 Right:0.0

Beam Angle(50%Imax):C0/180Left:116.6 Right:125.2
 :C90/270Left:54.7 Right:56.9



Max , Ave

Beam angle of C180 plane 242.09

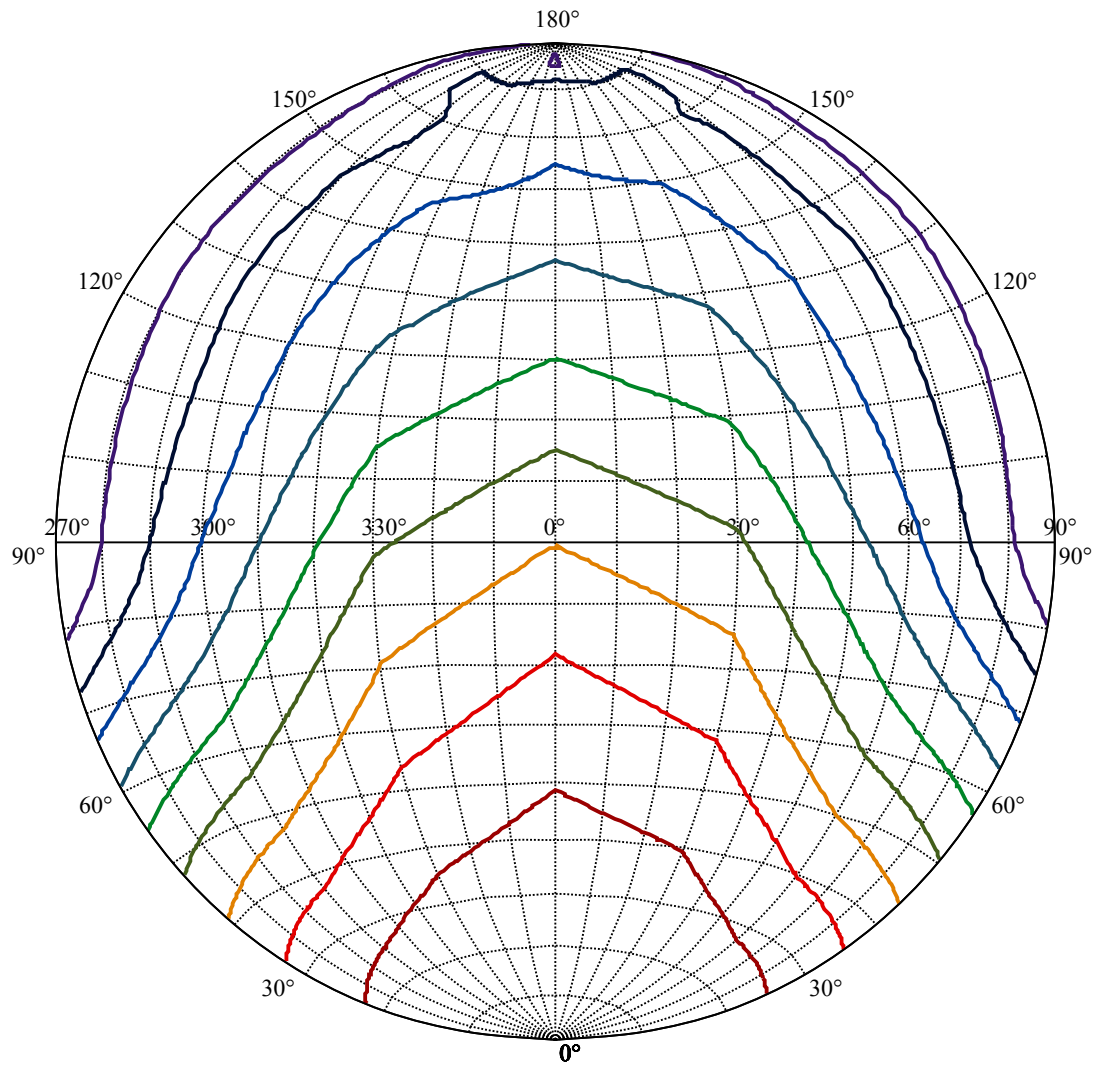


(10%Imax) 56.98	—
(20%Imax) 113.96	—
(30%Imax) 170.94	—
(40%Imax) 227.92	—
(50%Imax) 284.9	—
(60%Imax) 341.88	—
(70%Imax) 398.86	—
(80%Imax) 455.84	—
(90%Imax) 512.82	—

Equipment:
Temperature(°C): 24.9

Date:
Humidity(%): 50%

Operator: LSC












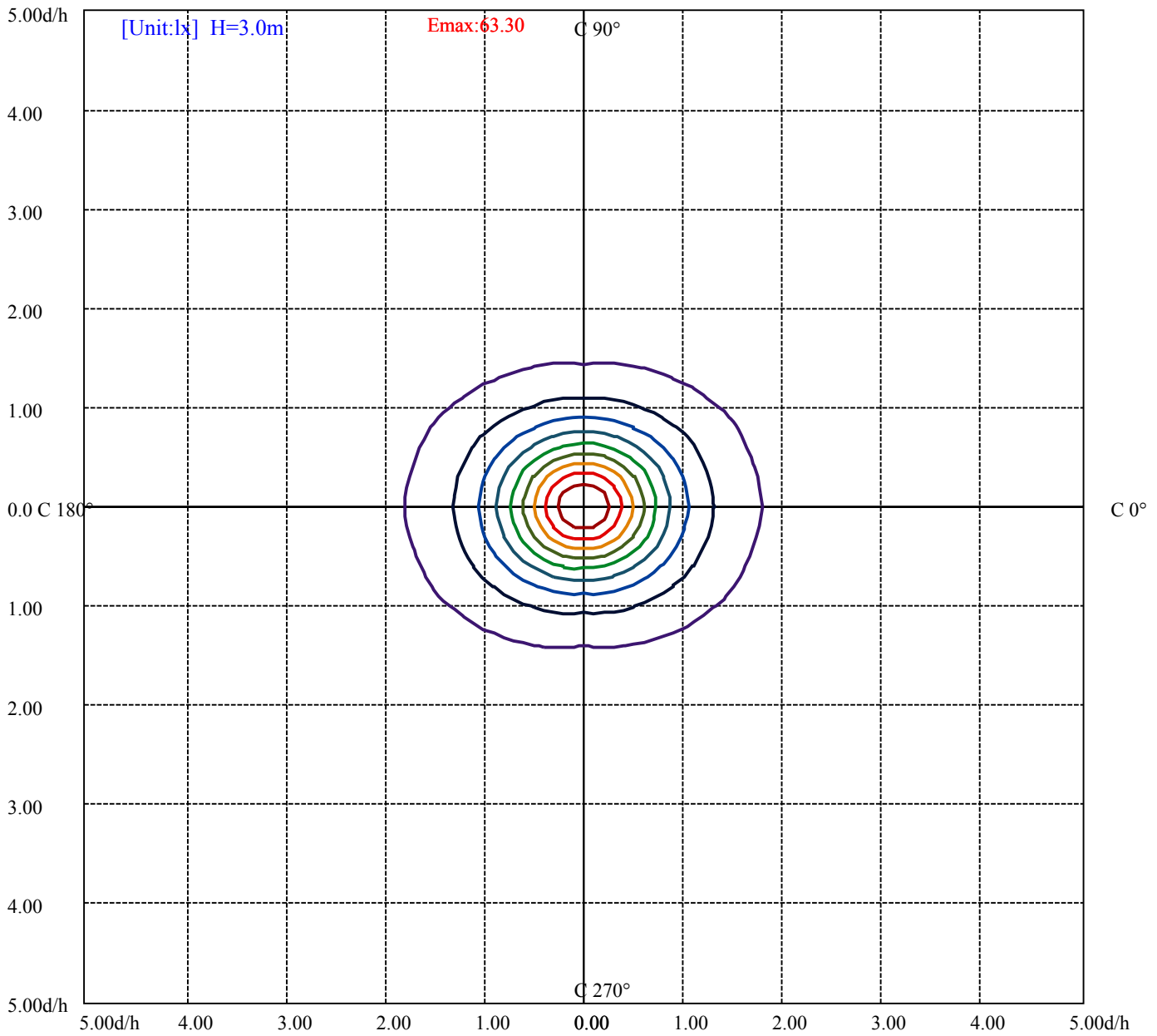
House










[Unit:cd]

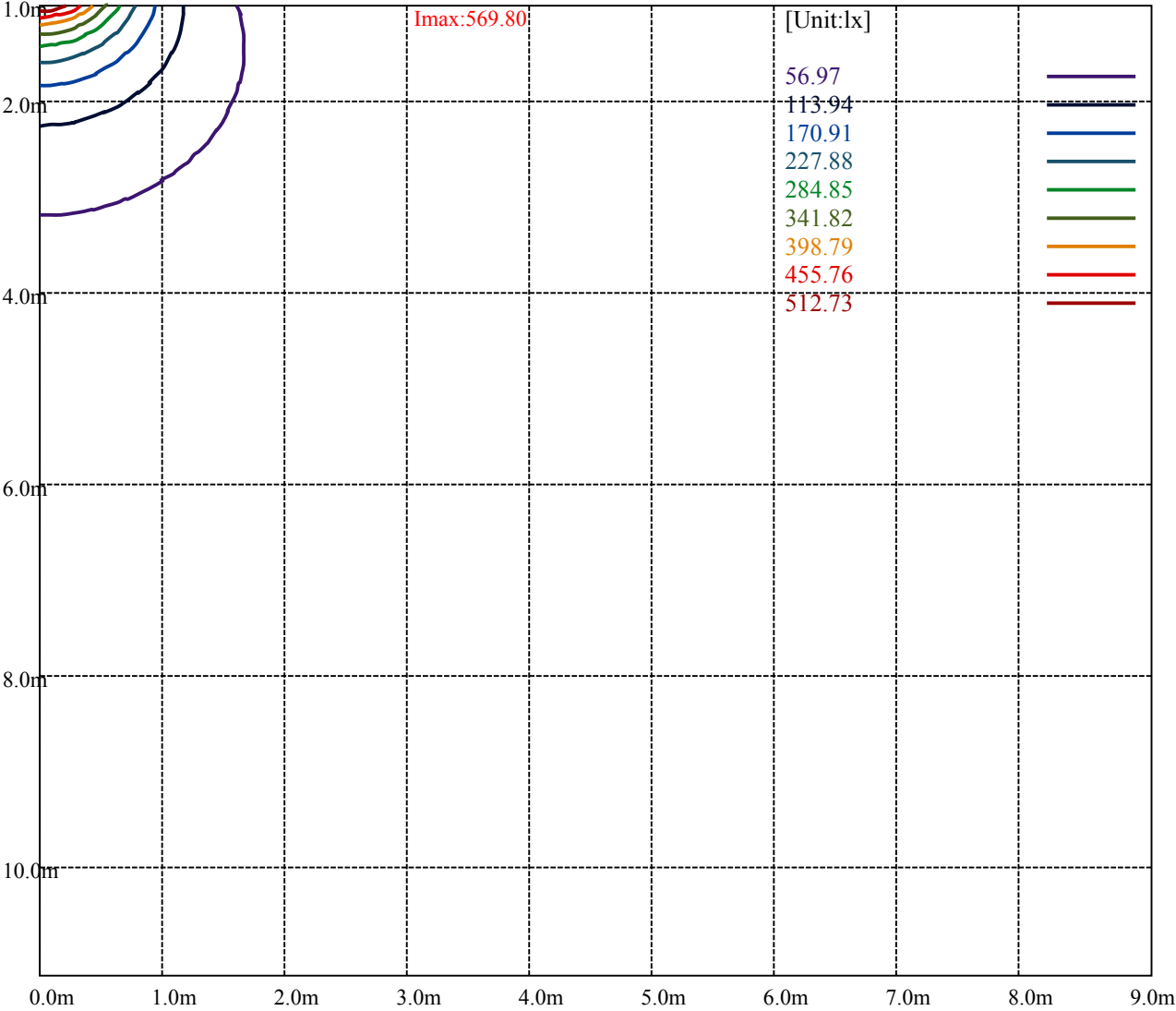
Road

I_{max}:569.80

(10%I _{max}) 56.98	
(20%I _{max}) 113.96	
(30%I _{max}) 170.94	
(40%I _{max}) 227.92	
(50%I _{max}) 284.9	
(60%I _{max}) 341.88	
(70%I _{max}) 398.86	
(80%I _{max}) 455.84	
(90%I _{max}) 512.82	



(10%Emax) 6.33	
(20%Emax) 12.66	
(30%Emax) 18.99	
(40%Emax) 25.32	
(50%Emax) 31.65	
(60%Emax) 37.98	
(70%Emax) 44.31	
(80%Emax) 50.64	
(90%Emax) 56.97	



Luminance Limiting Curve(no luminous side)

Luminance Table

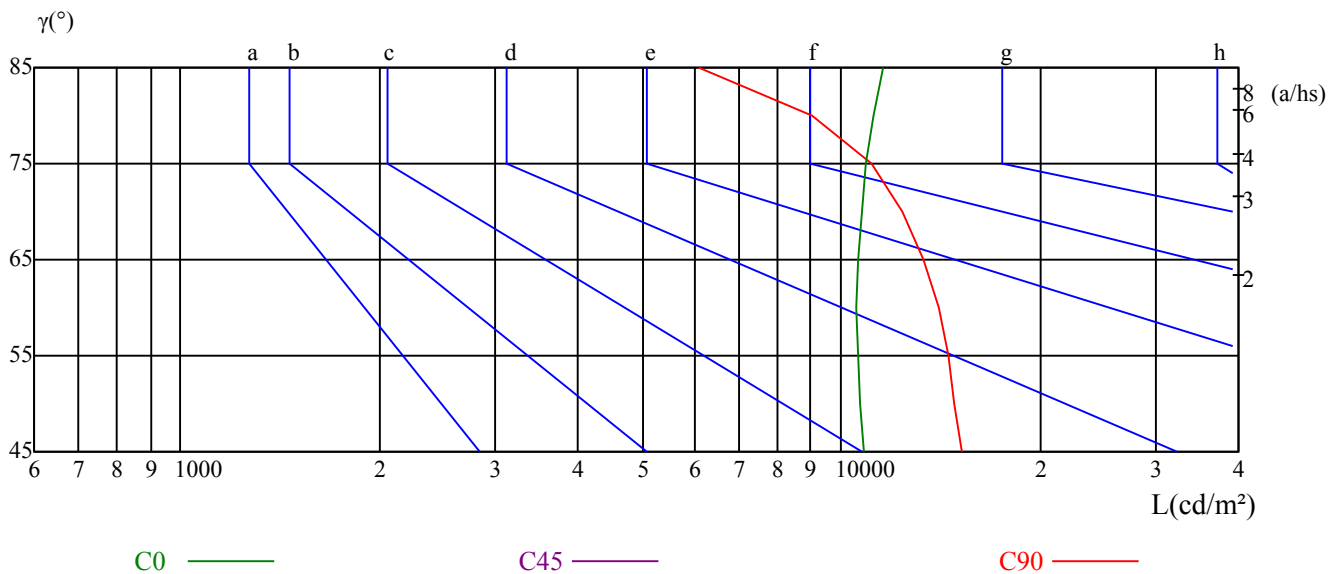
γ	45	50	55	60	65	70	75	80	85
C0	10802	10662	10585	10576	10630	10746	10942	11231	11603
C45	0	0	0	0	0	0	0	0	0
C90	15206	14873	14524	14063	13320	12423	11139	9026	6085

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
31921	13097	0	49029	10725	0	135131	5597	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



Equipment:
Temperature(°C): 24.9

Date:
Humidity(%): 50%

Operator: LSC

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	18.75	19.94	19.51	20.73	21.71	17.00	18.18	17.76	18.98	19.96
	3H	21.45	22.54	22.22	23.35	24.34	18.82	19.91	19.60	20.73	21.71
	4H	22.77	23.81	23.56	24.63	25.63	19.54	20.58	20.33	21.40	22.40
	6H	24.14	25.11	24.93	25.93	26.96	20.10	21.07	20.90	21.90	22.92
	8H	24.78	25.72	25.58	26.55	27.58	20.26	21.20	21.06	22.03	23.06
	12H	25.41	26.32	26.21	27.15	28.19	20.35	21.26	21.15	22.09	23.13
4H	2H	19.50	20.53	20.28	21.35	22.35	18.22	19.26	19.01	20.08	21.08
	3H	22.40	23.31	23.21	24.15	25.18	20.27	21.18	21.07	22.02	23.05
	4H	23.96	24.79	24.78	25.64	26.69	21.26	22.09	22.08	22.93	23.98
	6H	25.47	26.22	26.30	27.08	28.13	22.01	22.76	22.85	23.62	24.67
	8H	26.23	26.94	27.08	27.81	28.87	22.31	23.01	23.15	23.88	24.94
	12H	26.99	27.65	27.83	28.51	29.60	22.52	23.18	23.37	24.04	25.13
8H	4H	24.37	25.07	25.21	25.94	27.00	22.19	22.89	23.03	23.76	24.82
	6H	26.13	26.73	26.99	27.61	28.70	23.27	23.87	24.13	24.75	25.84
	8H	27.12	27.65	27.99	28.55	29.64	23.82	24.36	24.69	25.26	26.34
	12H	28.04	28.51	28.91	29.42	30.50	24.21	24.68	25.09	25.59	26.68
12H	4H	24.43	25.08	25.27	25.94	27.03	22.44	23.10	23.29	23.96	25.05
	6H	26.31	26.85	27.18	27.75	28.83	23.73	24.26	24.60	25.16	26.25
	8H	27.33	27.80	28.20	28.71	29.79	24.36	24.83	25.23	25.73	26.82
Variation with the observer position at spacings:											
S = 1.0H	0.2/-0.7					0.2/-1.1					
S = 1.5H	0.4/-0.6					0.4/-1.0					
S = 2.0H	0.3/-0.7					0.2/-0.7					
Standard tables:	BKBF					BKBF					
Uncorrected UGR	8.2					11.2					

UGR calculation is based on CIE Publ. 117 ,S/H = 0.25

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	569.70	568.90	566.40	562.90	558.40	552.50	546.00	538.50	529.80
30.0	569.70	568.90	566.10	561.00	554.50	545.90	535.80	524.10	511.40
60.0	569.70	568.50	563.00	553.70	540.60	523.40	503.80	480.70	454.70
90.0	569.70	568.00	561.90	550.70	534.20	513.50	488.60	458.10	424.80
120.0	569.70	568.70	563.60	553.60	540.10	523.00	501.50	477.80	451.40
150.0	569.70	569.50	567.30	562.40	555.80	547.20	536.60	524.70	511.70
180.0	569.70	569.80	568.40	565.50	561.80	557.10	551.20	544.70	536.60
210.0	569.70	567.90	564.40	558.60	551.00	541.90	531.30	519.00	505.80
240.0	569.70	567.10	560.80	550.20	535.90	517.50	496.80	473.20	446.50
270.0	569.70	565.10	556.10	541.80	523.30	500.40	472.40	441.30	406.60
300.0	569.70	567.10	560.70	549.70	534.50	516.40	495.20	469.90	443.30
330.0	569.70	567.70	563.30	556.90	548.40	538.50	526.80	513.40	499.60
360.0	569.70	568.90	566.40	562.90	558.40	552.50	546.00	538.50	529.80
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	520.70	510.20	498.90	487.10	474.40	460.60	446.10	430.90	413.90
30.0	497.10	482.30	466.70	449.90	433.70	417.20	399.90	383.10	365.80
60.0	427.20	398.30	367.30	336.90	305.90	277.50	250.70	226.30	206.10
90.0	387.90	346.00	302.70	256.80	207.00	157.80	108.80	61.00	22.50
120.0	421.80	391.50	359.90	326.80	295.20	264.80	235.50	210.50	188.20
150.0	496.60	481.10	465.10	447.80	430.60	413.40	395.50	377.90	360.40
180.0	527.50	518.00	506.80	494.90	482.50	468.50	454.00	438.20	421.50
210.0	491.70	476.20	460.40	444.40	427.60	411.00	394.40	376.90	359.90
240.0	418.40	389.10	357.90	327.40	297.60	268.10	241.70	218.40	197.60
270.0	367.10	325.80	282.10	234.10	185.60	137.20	88.10	45.00	12.10
300.0	414.50	383.40	352.20	320.90	289.00	259.70	232.70	208.30	188.40
330.0	484.60	468.30	452.00	435.30	418.00	401.40	384.70	367.30	350.60
360.0	520.70	510.20	498.90	487.10	474.40	460.60	446.10	430.90	413.90
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	397.10	379.50	360.60	342.20	323.60	304.30	285.70	267.80	250.20
30.0	348.30	331.30	314.50	297.30	281.10	265.30	249.70	235.70	222.80
60.0	188.50	174.70	163.60	155.80	149.80	146.00	143.70	143.00	143.30
90.0	2.30	3.10	8.70	15.70	20.30	23.80	27.40	30.60	33.20
120.0	170.40	157.00	146.40	138.90	134.40	132.00	131.80	132.80	134.90
150.0	342.10	324.90	307.60	290.50	274.30	258.60	243.60	230.10	217.80
180.0	404.30	386.50	367.40	348.40	329.40	309.50	290.80	272.60	254.50
210.0	342.80	325.20	308.50	292.20	275.40	260.10	245.40	231.40	219.00
240.0	180.90	167.50	156.90	149.10	143.70	140.50	139.30	139.30	140.40
270.0	0.50	2.20	4.80	8.80	10.70	13.00	15.20	17.20	18.80
300.0	172.40	159.50	150.10	143.60	139.10	135.90	135.70	136.40	132.50
330.0	334.00	317.00	301.00	285.40	269.50	254.70	240.80	224.00	214.70
360.0	397.10	379.50	360.60	342.20	323.60	304.30	285.70	267.80	250.20
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	234.00	219.00	204.70	187.80	170.00	168.60	159.90	150.40	52.20
30.0	210.40	199.70	185.80	169.60	146.20	126.90	120.60	115.90	78.50
60.0	137.30	127.40	122.40	117.90	113.50	110.90	116.90	119.20	75.90
90.0	35.20	36.80	37.80	39.10	44.60	49.60	53.90	57.80	60.50
120.0	137.80	139.80	139.70	142.90	143.70	140.60	132.00	76.90	61.60
150.0	206.20	196.40	187.60	179.90	172.80	164.00	159.50	147.70	82.70
180.0	238.10	222.90	208.30	195.10	184.40	173.60	163.80	155.70	102.60
210.0	207.70	196.50	187.30	179.70	171.90	162.80	158.10	146.80	79.90
240.0	142.10	144.10	144.50	144.70	146.00	145.30	136.90	83.20	66.00
270.0	20.20	21.50	22.90	25.80	30.60	37.10	42.30	49.00	54.40
300.0	128.70	120.20	116.30	109.00	106.00	107.40	114.10	114.00	71.70
330.0	204.40	192.60	178.50	152.50	130.70	122.60	120.00	113.40	67.70
360.0	234.00	219.00	204.70	187.80	170.00	168.60	159.90	150.40	52.20

Equipment:
Temperature(°C): 24.9

Date:
Humidity(%): 50%

Operator: LSC

Intensity data(cd)

C/ γ (°)	180.0
0.0	60.20
30.0	60.20
60.0	60.20
90.0	60.20
120.0	60.20
150.0	60.20
180.0	60.20
210.0	60.20
240.0	60.20
270.0	60.20
300.0	60.20
330.0	60.20
360.0	60.20