



Shenzhen BST Technology Co., Ltd.

<http://www.bst-lab.com>

Email:christina@bst-lab.com

Tel:400-880-2056 Fax:+86 571 87977635

Address:Building No.23-24, Zhiheng Industrial Park, Guankouer Road, Nantou,Nanshan District,Shenzhen,Guangdong,China

ZHONGSHAN CITY CHANGLONG ELECTRICAL CO., LTD MQG-LED-220A

LumCAT: MQG-LED-220A

Luminaire: MQG-LED-220A

Report No:

Voltage(V): 230.100

Test No:

Current(A): 0.194

LampCAT: LED

Power (W): 43.500

Lamp flux(lm)

PF: 0.973

Number of Lamps: 1

Ballast type:

Length(mm): 1100

Width(mm): 155

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 3768.90

Lumens(lm)/Power(W): 86.64

Central intensity(cd): 1384.685

Maximum intensity(cd): 1391.687

Angle of maximum intensity: C=30.0 γ =0.0

Beam Angle(50%Imax): [H]Left=54.8 Right=52.3

[V]Left=53.1 Right=55.1

Field angle(10%Imax): [H]Left=80.0 Right=77.5

[V]Left=78.9 Right=80.8

Beam angle of C30plane: 107.97

Maximum s/h: C0_180=1.23 C90_270=1.20

Up flux rate of LUM(%): 0.71%

Down flux rate of LUM(%): 99.29%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 79.548%

Equipment: GMS1800B
Temperature(°C): 25.0

Date: 2013-12-17
Humidity(%): 70.0%

Operator: Iris.Zhu
Distance(m): 13.23

ZHONGSHAN CITY CHANGLONG ELECTRICAL CO., LTD MQG-LED-220A

Zonal flux distribution table

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1387.923	.000	.000	.000%	.000%
5.0	1380.528	33.096	33.096	.878%	.878%
10.0	1358.284	97.976	131.072	2.600%	3.478%
15.0	1322.184	159.004	290.076	4.219%	7.697%
20.0	1272.868	213.869	503.944	5.675%	13.371%
25.0	1211.257	260.539	764.483	6.913%	20.284%
30.0	1139.960	297.549	1062.032	7.895%	28.179%
35.0	1058.993	323.811	1385.843	8.592%	36.770%
40.0	970.718	338.642	1724.485	8.985%	45.756%
45.0	875.515	341.845	2066.330	9.070%	54.826%
50.0	774.958	333.502	2399.832	8.849%	63.675%
55.0	669.603	314.096	2713.927	8.334%	72.008%
60.0	559.711	284.153	2998.080	7.539%	79.548%
65.0	447.647	244.891	3242.971	6.498%	86.046%
70.0	334.590	198.067	3441.038	5.255%	91.301%
75.0	225.340	146.357	3587.395	3.883%	95.184%
80.0	125.426	93.855	3681.250	2.490%	97.674%
85.0	46.632	46.752	3728.002	1.240%	98.915%
90.0	4.522	14.006	3742.008	.372%	99.286%
95.0	1.036	1.522	3743.530	.040%	99.327%
100.0	1.575	.709	3744.240	.019%	99.346%
105.0	2.232	1.019	3745.258	.027%	99.373%
110.0	2.844	1.327	3746.585	.035%	99.408%
115.0	3.442	1.592	3748.177	.042%	99.450%
120.0	3.924	1.791	3749.967	.048%	99.498%
125.0	4.536	1.955	3751.923	.052%	99.550%
130.0	5.120	2.100	3754.022	.056%	99.605%
135.0	5.616	2.169	3756.192	.058%	99.663%
140.0	6.082	2.166	3758.358	.057%	99.720%
145.0	6.520	2.103	3760.460	.056%	99.776%
150.0	6.972	1.987	3762.447	.053%	99.829%
155.0	7.337	1.811	3764.258	.048%	99.877%
160.0	7.701	1.577	3765.835	.042%	99.919%
165.0	8.037	1.297	3767.132	.034%	99.953%
170.0	8.270	.967	3768.099	.026%	99.979%
175.0	8.416	.597	3768.696	.016%	99.995%
180.0	8.606	.203	3768.900	.005%	100.000%

Equipment: GMS1800B
Temperature($^{\circ}$ C): 25.0

Date: 2013-12-17
Humidity(%): 70.0%

Operator: Iris.Zhu
Distance(m): 13.23

Zonal flux distribution table

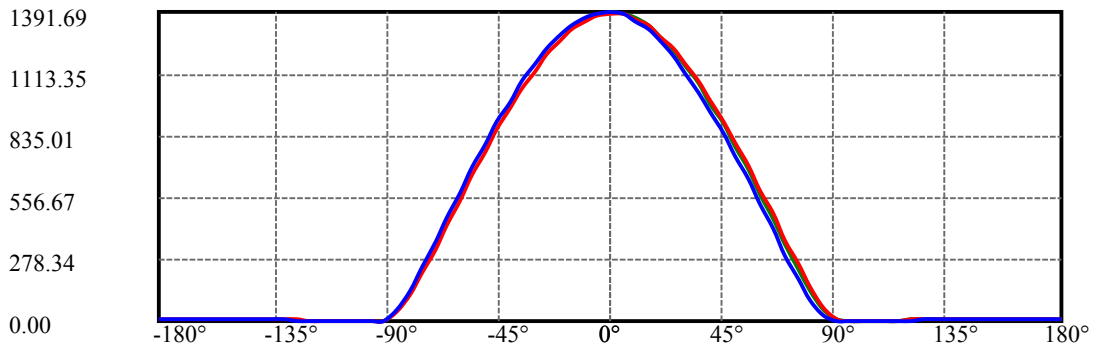
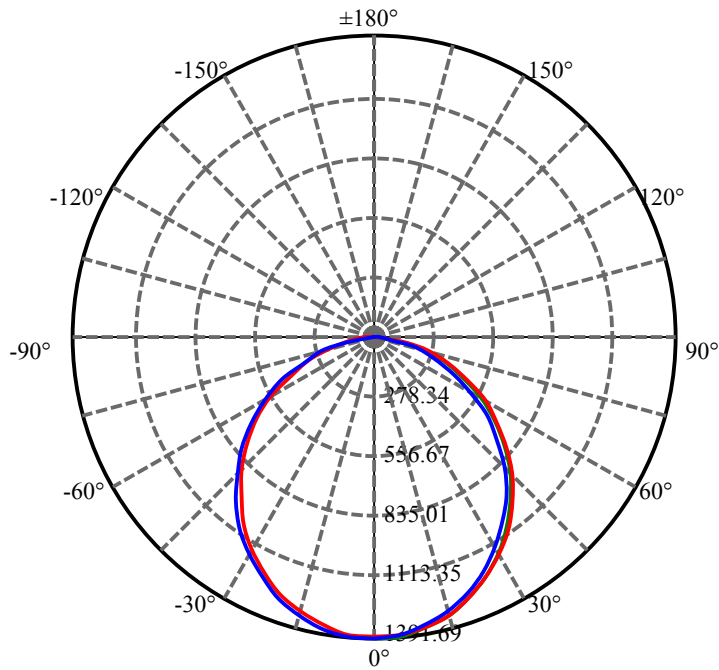
ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	1062.03	28.18%
0-40	1724.49	45.76%
0-60	2998.08	79.55%
0-90	3742.01	99.29%
90-120	7.96	0.21%
90-130	12.01	0.32%
90-150	20.44	0.54%
90-180	26.69	0.71%
0-180	3768.90	100.00%

ZONAL LUMEN SUMMARY

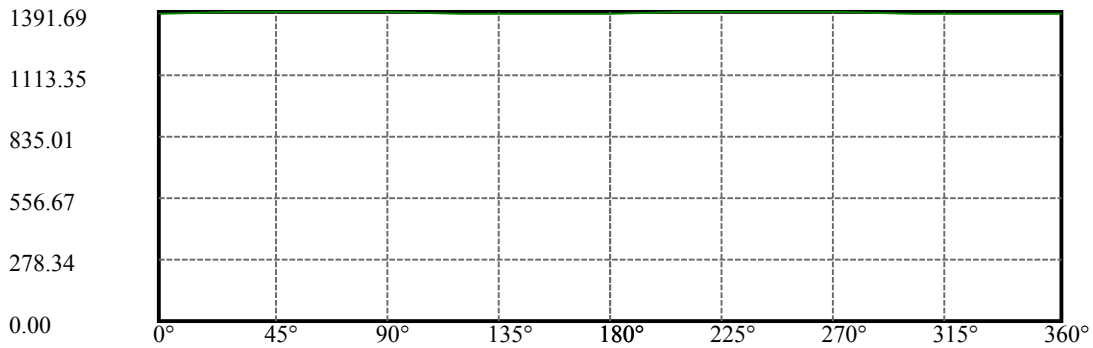
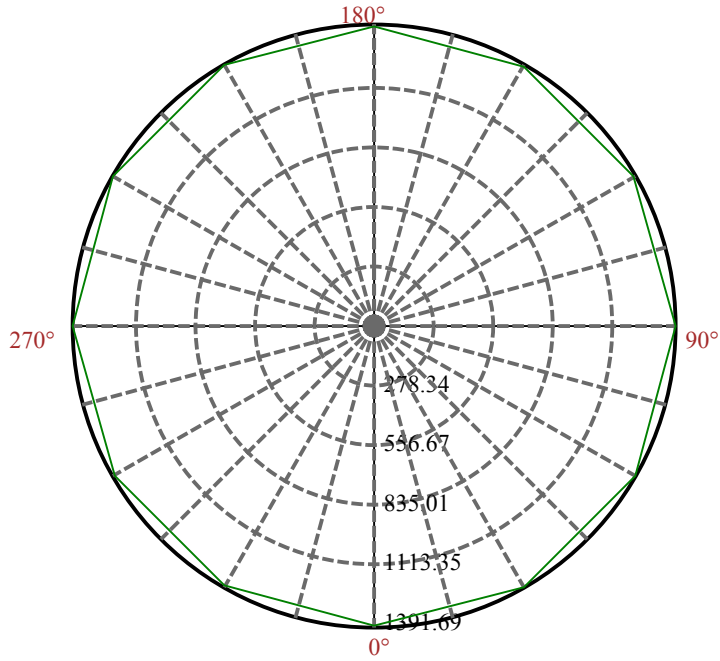
0-10	131.07
10-20	372.87
20-30	558.09
30-40	662.45
40-50	675.35
50-60	598.25
60-70	442.96
70-80	240.21
80-90	60.76
90-100	2.23
100-110	2.35
110-120	3.38
120-130	4.06
130-140	4.34
140-150	4.09
150-160	3.39
160-170	2.26
170-180	0.60

Light Distribution Curve [Unit: cd]



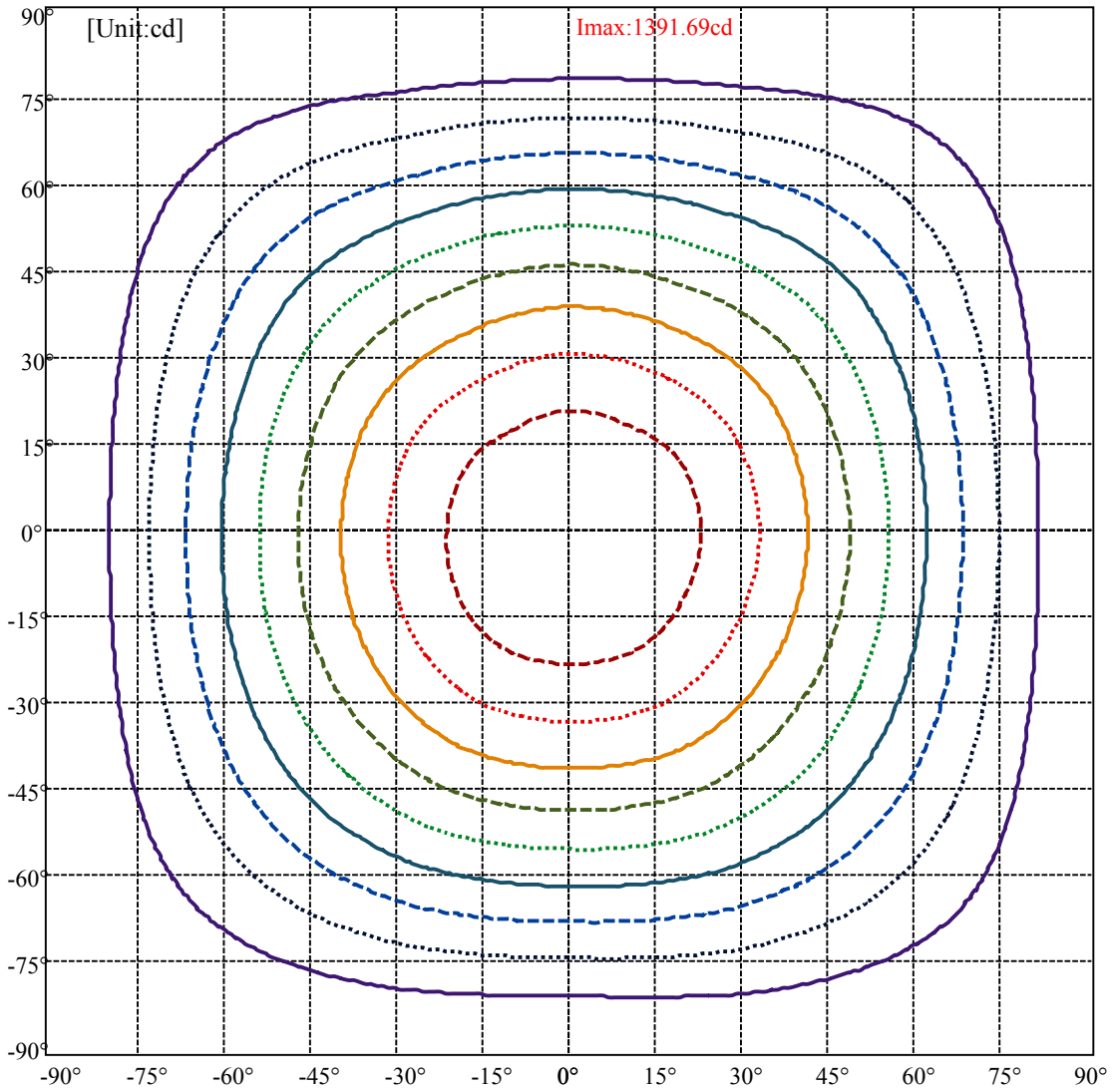
C30(Max): —
 C0/C180: —
 C90/C270: —

Light Distribution Curve [Unit: cd]



MaxG=0

ISO-Intensity(V-H)



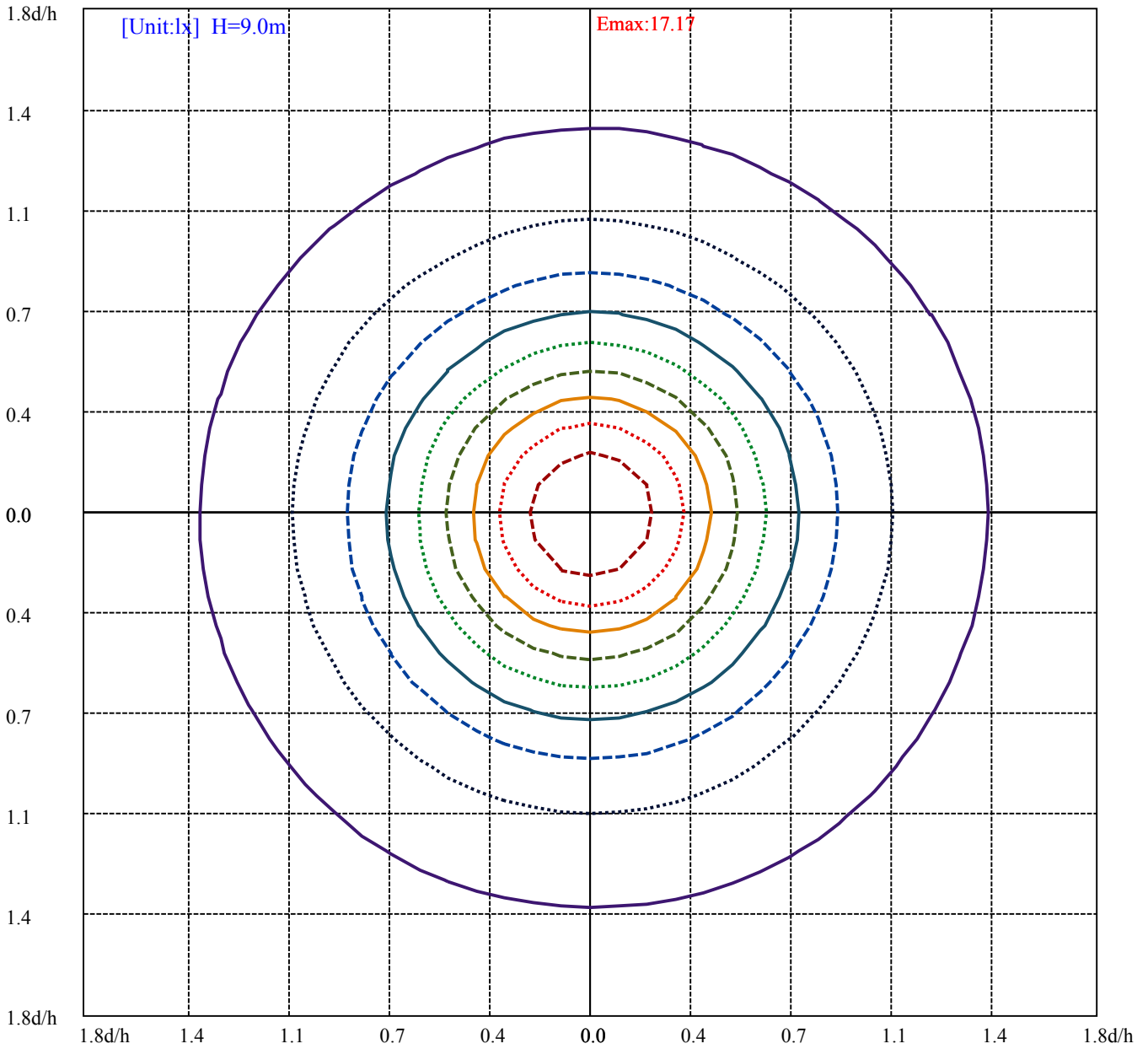
(10%Imax) 139.046	———
(20%Imax) 278.092
(30%Imax) 417.138	- - - -
(40%Imax) 556.184	———
(50%Imax) 695.231
(60%Imax) 834.277	- - - -
(70%Imax) 973.323	———
(80%Imax) 1112.37
(90%Imax) 1251.42	- - - -

Equipment: GMS1800B
 Temperature(°C): 25.0

Date: 2013-12-17
 Humidity(%): 70.0%

Operator: Iris.Zhu
 Distance(m): 13.23

ISO illuminance diagram



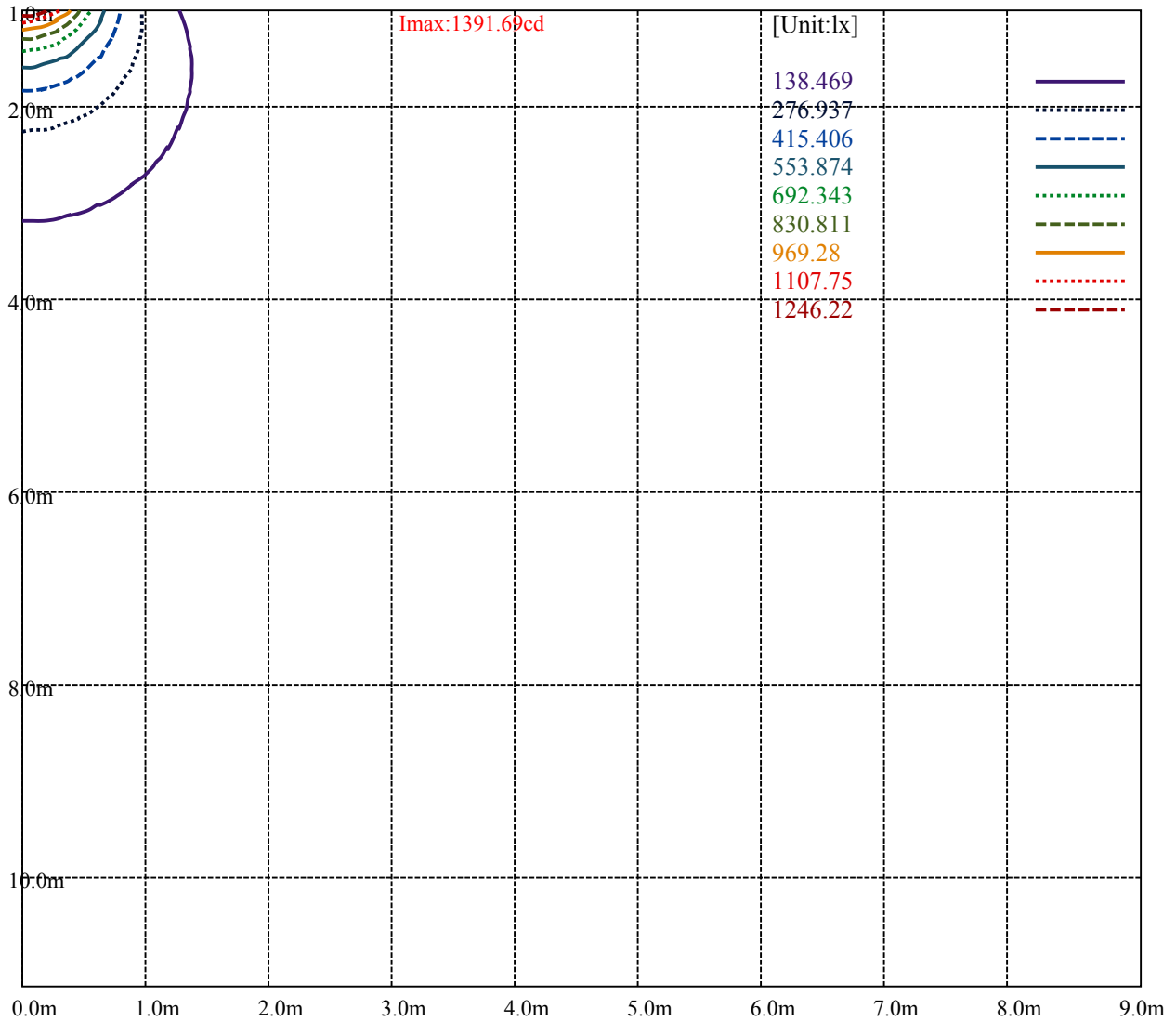
- | | |
|--------------------|-----------|
| (10%Emax) 1.717481 | ——— |
| (20%Emax) 3.434963 | |
| (30%Emax) 5.152444 | - - - - - |
| (40%Emax) 6.869926 | ——— |
| (50%Emax) 8.58742 | |
| (60%Emax) 10.3049 | - - - - - |
| (70%Emax) 12.02238 | ——— |
| (80%Emax) 13.73988 | |
| (90%Emax) 15.45728 | - - - - - |

Equipment: GMS1800B
Temperature(°C): 25.0

Date: 2013-12-17
Humidity(%): 70.0%

Operator: Iris.Zhu
Distance(m): 13.23

Space ISO Lux diagram



ZHONGSHAN CITY CHANGLONG ELECTRICAL CO., LTD MQG-LED-220A

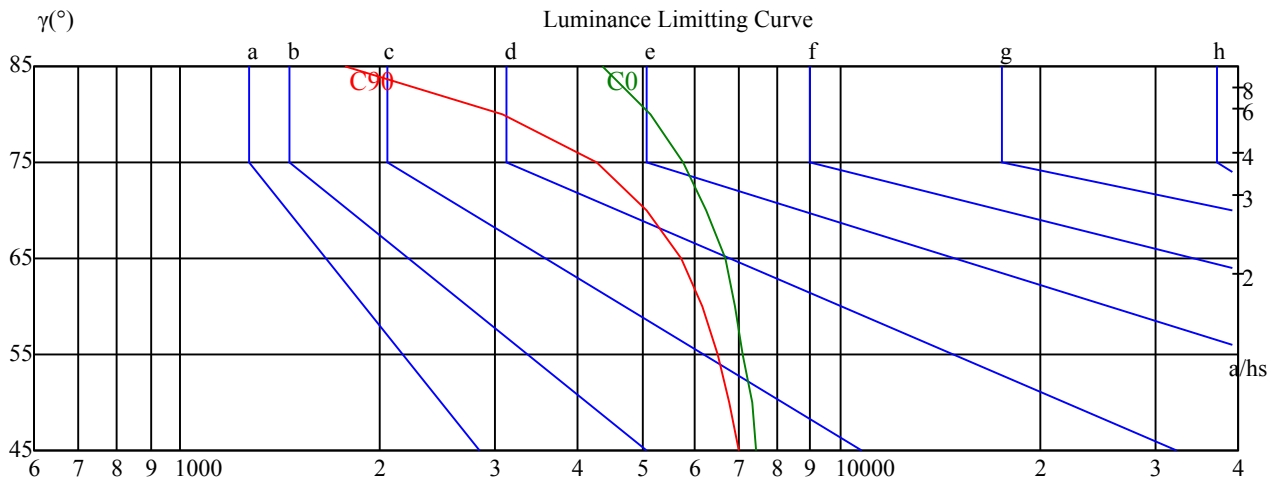
Luminance Limiting Curve(no luminous side)

Luminance Table

γ	45	50	55	60	65	70	75	80	85
C0	7465	7327	7127	6927	6675	6258	5779	5155	4346
C45	0	0	0	0	0	0	0	0	0
C90	7022	6802	6502	6170	5730	5067	4268	3080	1779

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



Equipment: GMS1800B
Temperature($^{\circ}$ C): 25.0

Date: 2013-12-17
Humidity(%): 70.0%

Operator: Iris.Zhu
Distance(m): 13.23

ZHONGSHAN CITY CHANGLONG ELECTRICAL CO., LTD MQG-LED-220A

UGR Glare

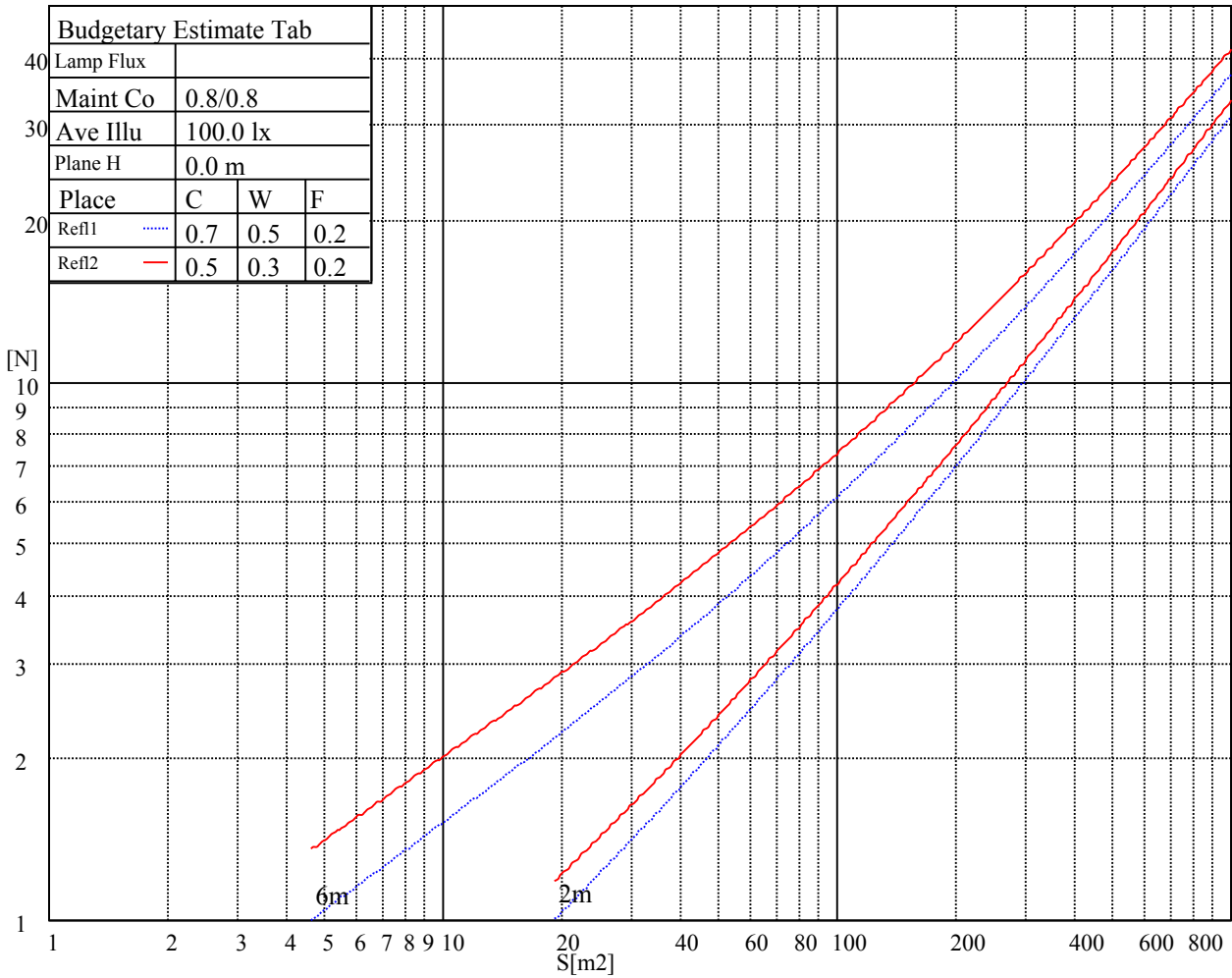
Illuminatin assessment according UGR											
Rf of Ceiling	70	70	50	50	30	70	70	50	50	30	
Rf of Wall	50	30	50	30	30	50	30	50	30	30	
Rf of Floor	20	20	20	20	20	20	20	20	20	20	
Room dimensions		Viewed crosswise					Viewed endwise				
X	Y										
2H	2H	14.8	16.2	15.1	16.4	16.7	14.3	15.7	14.6	15.9	16.2
	3H	16.4	17.6	16.8	17.9	18.2	15.7	16.9	16.0	17.2	17.5
	4H	16.9	17.9	17.3	18.3	18.6	16.0	17.0	16.4	17.4	17.7
	6H	17.4	18.5	17.8	18.8	19.1	16.3	17.3	16.7	17.7	18.0
	8H	17.6	18.7	18.0	19.0	19.3	16.4	17.4	16.8	17.8	18.1
	12H	17.6	18.3	18.0	18.7	19.2	16.3	17.0	16.7	17.4	17.9
4H	2H	15.2	16.3	15.6	16.6	17.0	14.8	15.8	15.2	16.2	16.5
	3H	17.0	17.8	17.5	18.2	18.6	16.3	17.1	16.8	17.5	17.9
	4H	17.8	18.6	18.3	19.0	19.4	17.0	17.8	17.4	18.2	18.6
	6H	18.5	19.2	18.9	19.6	20.1	17.4	18.2	17.8	18.6	19.0
	8H	18.6	19.0	19.1	19.5	20.0	17.3	17.8	17.9	18.3	18.8
	12H	18.7	19.2	19.2	19.6	20.2	17.4	17.8	17.9	18.3	18.9
8H	4H	18.0	18.4	18.5	18.9	19.4	17.2	17.6	17.7	18.1	18.7
	6H	18.7	19.2	19.2	19.7	20.2	17.7	18.1	18.2	18.6	19.2
	8H	19.1	19.5	19.6	20.0	20.5	17.9	18.3	18.4	18.8	19.3
	12H	19.3	19.7	19.8	20.2	20.7	18.0	18.4	18.5	18.9	19.4
12H	4H	18.0	18.5	18.5	18.9	19.5	17.3	17.7	17.8	18.2	18.7
	6H	18.8	19.2	19.3	19.7	20.2	17.8	18.2	18.3	18.7	19.2
	8H	19.1	19.6	19.6	20.1	20.6	18.0	18.4	18.5	18.9	19.4
Variation with the observer position at spacings:											
S = 1.0H		0.3/-0.6					0.3/-0.5				
S = 1.5H		0.6/-0.6					0.6/-0.7				
S = 2.0H		0.8/-0.7					1.0/-1.0				
Standard tables:		BK3					BK3				
Uncorrected UGR		0.3					-0.6				
According 1000lm											

Equipment: GMS1800B
Temperature(°C): 25.0

Date: 2013-12-17
Humidity(%): 70.0%

Operator: Iris.Zhu
Distance(m): 13.23

Budgetary Estimate Table



ZHONGSHAN CITY CHANGLONG ELECTRICAL CO., LTD MQG-LED-220A

Utilization factor table for indoor luminaire

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	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.01	1.01	1.01	0.99
1	1.04	1.00	0.96	1.02	0.98	0.95	0.97	0.94	0.91	0.93	0.91	0.88	0.90	0.88	0.86	0.84
2	0.91	0.84	0.79	0.89	0.83	0.78	0.85	0.80	0.76	0.82	0.78	0.74	0.79	0.75	0.72	0.70
3	0.80	0.72	0.65	0.78	0.71	0.65	0.75	0.69	0.64	0.72	0.67	0.62	0.70	0.65	0.61	0.59
4	0.71	0.62	0.56	0.70	0.61	0.55	0.67	0.60	0.54	0.65	0.58	0.53	0.62	0.57	0.53	0.50
5	0.63	0.54	0.48	0.62	0.54	0.48	0.60	0.53	0.47	0.58	0.52	0.46	0.56	0.50	0.46	0.44
6	0.57	0.48	0.42	0.56	0.48	0.42	0.54	0.47	0.41	0.53	0.46	0.41	0.51	0.45	0.40	0.38
7	0.52	0.43	0.37	0.51	0.43	0.37	0.49	0.42	0.37	0.48	0.41	0.36	0.46	0.40	0.36	0.34
8	0.47	0.39	0.33	0.47	0.39	0.33	0.45	0.38	0.33	0.44	0.37	0.32	0.43	0.37	0.32	0.30
9	0.43	0.35	0.30	0.43	0.35	0.30	0.42	0.34	0.29	0.41	0.34	0.29	0.39	0.33	0.29	0.27
10	0.40	0.32	0.27	0.40	0.32	0.27	0.39	0.32	0.27	0.38	0.31	0.27	0.37	0.31	0.26	0.25
RCR	COEFFICIENTS OF UTILIZATION RHOFc=20 WLC															
1	0.30	0.17	0.05	0.29	0.17	0.05	0.28	0.16	0.05	0.27	0.15	0.05	0.26	0.15	0.05	
2	0.29	0.16	0.05	0.28	0.15	0.05	0.27	0.15	0.05	0.26	0.14	0.04	0.25	0.14	0.04	
3	0.27	0.14	0.04	0.26	0.14	0.04	0.25	0.13	0.04	0.24	0.13	0.04	0.23	0.13	0.04	
4	0.25	0.13	0.04	0.24	0.13	0.04	0.23	0.12	0.04	0.22	0.12	0.04	0.21	0.12	0.04	
5	0.23	0.12	0.03	0.22	0.11	0.03	0.21	0.11	0.03	0.21	0.11	0.03	0.20	0.11	0.03	
6	0.21	0.11	0.03	0.21	0.10	0.03	0.20	0.10	0.03	0.19	0.10	0.03	0.19	0.10	0.03	
7	0.20	0.10	0.03	0.19	0.10	0.03	0.19	0.09	0.03	0.18	0.09	0.03	0.17	0.09	0.03	
8	0.18	0.09	0.03	0.18	0.09	0.03	0.17	0.09	0.02	0.17	0.09	0.02	0.16	0.08	0.02	
9	0.17	0.08	0.02	0.17	0.08	0.02	0.16	0.08	0.02	0.16	0.08	0.02	0.15	0.08	0.02	
10	0.16	0.08	0.02	0.16	0.08	0.02	0.15	0.08	0.02	0.15	0.07	0.02	0.15	0.07	0.02	
RCR	COEFFICIENTS OF UTILIZATION RHOFc=20 CCLU															
0	0.20	0.20	0.20	0.17	0.17	0.17	0.11	0.11	0.11	0.07	0.07	0.07	0.02	0.02	0.02	
1	0.15	0.14	0.14	0.14	0.13	0.12	0.10	0.09	0.08	0.06	0.05	0.05	0.02	0.02	0.02	
2	0.12	0.11	0.10	0.11	0.10	0.08	0.09	0.07	0.06	0.06	0.05	0.04	0.02	0.02	0.01	
3	0.10	0.08	0.07	0.10	0.08	0.06	0.08	0.06	0.05	0.05	0.04	0.03	0.02	0.01	0.01	
4	0.09	0.07	0.05	0.09	0.06	0.05	0.07	0.05	0.04	0.05	0.04	0.02	0.02	0.01	0.01	
5	0.08	0.06	0.04	0.08	0.05	0.04	0.07	0.05	0.03	0.05	0.03	0.02	0.02	0.01	0.01	
6	0.07	0.05	0.03	0.07	0.05	0.03	0.06	0.04	0.02	0.05	0.03	0.02	0.02	0.01	0.01	
7	0.06	0.04	0.03	0.06	0.04	0.03	0.06	0.04	0.02	0.04	0.03	0.01	0.02	0.01	0.00	
8	0.05	0.04	0.02	0.06	0.04	0.02	0.06	0.03	0.02	0.04	0.02	0.01	0.02	0.01	0.00	
9	0.05	0.03	0.02	0.05	0.03	0.02	0.05	0.03	0.02	0.04	0.02	0.01	0.02	0.01	0.00	
10	0.05	0.03	0.02	0.05	0.03	0.02	0.05	0.03	0.01	0.04	0.02	0.01	0.02	0.01	0.00	

Equipment: GMS1800B
Temperature(°C): 25.0

Date: 2013-12-17
Humidity(%): 70.0%

Operator: Iris.Zhu
Distance(m): 13.23

ZHONGSHAN CITY CHANGLONG ELECTRICAL CO., LTD MQG-LED-220A

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	1384.69	1380.31	1360.53	1328.33	1282.82	1225.76	1155.39	1078.90	994.54
30.0	1391.69	1384.86	1363.51	1328.85	1280.89	1219.28	1149.09	1070.15	980.53
60.0	1390.64	1378.38	1352.13	1312.92	1258.49	1194.42	1120.91	1034.79	945.00
90.0	1390.46	1379.43	1352.13	1311.17	1258.14	1191.62	1117.06	1031.99	945.70
120.0	1384.69	1371.73	1344.25	1301.02	1246.76	1178.85	1103.93	1021.14	927.50
150.0	1385.39	1374.71	1349.68	1311.17	1258.49	1195.65	1123.54	1039.17	950.78
180.0	1384.69	1374.88	1349.68	1311.87	1262.34	1198.28	1127.21	1044.42	956.90
210.0	1391.69	1384.16	1361.76	1324.47	1275.47	1214.73	1141.56	1061.40	970.38
240.0	1390.64	1386.96	1368.76	1336.20	1288.42	1229.96	1160.99	1079.60	993.31
270.0	1390.46	1386.09	1367.18	1333.40	1286.84	1226.46	1157.32	1078.38	989.11
300.0	1384.69	1383.46	1367.01	1336.20	1292.44	1234.16	1167.12	1090.46	1003.11
330.0	1385.39	1381.36	1362.81	1330.60	1283.34	1225.93	1155.39	1077.50	991.74
360.0	1384.69	1380.31	1360.53	1328.33	1282.82	1225.76	1155.39	1078.90	994.54
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	900.02	803.05	696.98	590.56	480.99	364.94	255.02	152.63	64.59
30.0	887.07	784.32	680.53	572.88	458.24	346.57	234.19	134.78	54.79
60.0	845.58	744.41	638.69	525.45	413.95	303.33	196.74	99.24	30.11
90.0	846.63	745.47	635.89	525.97	412.90	295.46	188.34	91.19	26.43
120.0	831.06	730.06	624.52	510.40	398.72	283.90	178.53	87.17	20.48
150.0	855.91	751.59	646.75	534.55	423.40	313.13	203.04	108.35	33.96
180.0	863.26	760.52	656.37	547.85	433.21	321.89	214.24	117.45	40.08
210.0	876.39	776.10	667.40	558.53	447.38	335.36	223.34	124.97	46.38
240.0	896.52	797.27	693.83	581.98	471.01	359.34	245.75	143.88	56.54
270.0	896.17	797.62	690.15	581.81	469.61	351.82	244.52	138.10	50.93
300.0	911.57	811.28	709.58	602.64	488.17	376.15	265.88	158.23	70.54
330.0	895.99	797.80	694.53	583.91	474.16	363.19	254.50	149.13	64.76
360.0	900.02	803.05	696.98	590.56	480.99	364.94	255.02	152.63	64.59
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	9.98	1.23	1.58	2.10	3.50	4.03	4.55	5.25	5.43
30.0	5.43	0.88	1.40	2.98	3.50	3.68	4.38	4.73	5.60
60.0	0.88	0.70	2.10	2.45	2.80	3.33	4.03	4.90	5.43
90.0	0.53	0.70	1.58	1.93	2.63	3.15	4.03	4.55	5.25
120.0	1.05	1.40	1.58	1.75	2.80	3.33	3.68	4.38	4.90
150.0	1.40	1.40	1.75	2.28	2.80	3.50	3.68	4.38	5.25
180.0	0.35	1.40	1.93	2.45	2.80	3.33	4.03	4.55	5.25
210.0	2.45	1.23	1.75	2.28	2.80	3.33	3.68	4.55	5.08
240.0	7.00	1.05	1.40	2.28	2.45	2.98	3.50	4.20	4.55
270.0	4.20	0.88	1.05	1.75	2.28	3.15	3.50	3.85	4.55
300.0	11.55	0.88	1.58	2.10	2.80	3.50	3.68	4.03	4.90
330.0	9.45	0.70	1.23	2.45	2.98	4.03	4.38	5.08	5.25
360.0	9.98	1.23	1.58	2.10	3.50	4.03	4.55	5.25	5.43
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	6.13	6.48	6.65	6.83	7.53	7.88	8.05	8.05	8.05
30.0	5.78	6.48	6.65	7.00	7.35	7.53	8.05	8.05	8.75
60.0	5.78	6.30	6.65	7.35	7.35	7.88	8.05	8.23	8.58
90.0	5.60	5.95	6.30	7.18	7.53	7.88	8.40	8.40	8.58
120.0	5.60	5.95	6.30	7.18	7.35	7.70	8.05	8.40	8.58
150.0	5.43	6.13	6.65	6.83	7.35	7.70	8.05	8.23	8.40
180.0	5.60	6.30	6.65	7.18	7.35	7.53	8.05	8.58	8.05
210.0	5.78	6.13	6.65	7.00	7.53	8.05	8.05	8.05	8.23
240.0	5.25	5.60	6.48	6.30	7.18	7.53	8.23	8.23	8.40
270.0	5.25	5.78	6.48	7.00	7.35	7.70	7.88	8.23	8.58
300.0	5.60	5.78	6.30	6.65	7.00	7.35	7.70	8.40	8.58
330.0	5.60	6.13	6.48	7.18	7.18	7.70	7.88	8.40	8.23
360.0	6.13	6.48	6.65	6.83	7.53	7.88	8.05	8.05	8.05

Equipment: GMS1800B
Temperature(°C): 25.0

Date: 2013-12-17
Humidity(%): 70.0%

Operator: Iris.Zhu
Distance(m): 13.23

Intensity data(cd)

C/γ(°)	180.0
0.0	8.40
30.0	8.75
60.0	8.58
90.0	8.75
120.0	8.58
150.0	8.58
180.0	8.40
210.0	8.75
240.0	8.58
270.0	8.75
300.0	8.58
330.0	8.58
360.0	8.40