

TEST REPORT

NAME OF SAMPLE	LED TUBE
TRADE MARK	N/A
MODEL/TYPE	T8-150MW, 4000K
CLIENT	
ADDRESS OF CLIENT	
INSPECTION CLASSIFICATION	Commission Test
TEST ITEM	IES Test

Test Report

Name or sample	LED TUBE	Report No.	LCS1411261124S
Client		ADDRESS OF CLIENT	
Name of receipt	Delivering	Inspection Classification	Commission test
Test Model	T8-150MW, 4000K	Test date	2014.11.24
Rating of sample	AC100-240V, 50/60Hz, 22W, 4000K, 1500*26*31		
Test standard	This test report presents the results of measurements performed on the solid lighting in accordance with LM-79-08 Electrical and Photometric Measurements of Solid-State Lighting Products.		
Test result	Measured data see report attached.		
Testing laboratory			
Ambient Temperature (°C)	25	Relative Humidity (%)	50
Test report Special-purpose seal	Test by:	Marine Wu	
	Approved by:	Hart Qiu	
	Date of issue	2014-11-27	

LumCAT: T8-150MW, 4000K
Luminaire: LED TUBE
Report No: LCS1411261124S
Test No: 1411240032
LampCAT: LED
Lamp flux(lm)
Number of Lamps: 1
Length(mm): 1500
Phm Type: C

Voltage(V): 230.400
Current(A): 0.106
Power (W): 24.000
PF: 0.982
Ballast type: -
Width(mm): 26
Height(mm): 31

Photometric Results

Lumens(lm): 2273.38
Lumens(lm)/Power(W): 94.72
Central intensity(cd): 595.222
Maximum intensity(cd): 604.971
Angle of maximum intensity: C=30.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Left=54.2 Right=54.4
 [C90/270]Left=70.3 Right=70.0
Field angle(10%Imax): [C0/180]Left=79.2 Right=79.5
 [C90/270]Left=123.1 Right=124.1
Beam angle of C30plane: 115.34
Maximum s/h: C0_180=1.24 C90_270=1.32
Up flux rate of LUM(%): 10.58%
Down flux rate of LUM(%): 89.42%
CIE Type : Semidirect lighting
Output flux ratio in π solid angle : 61.814%

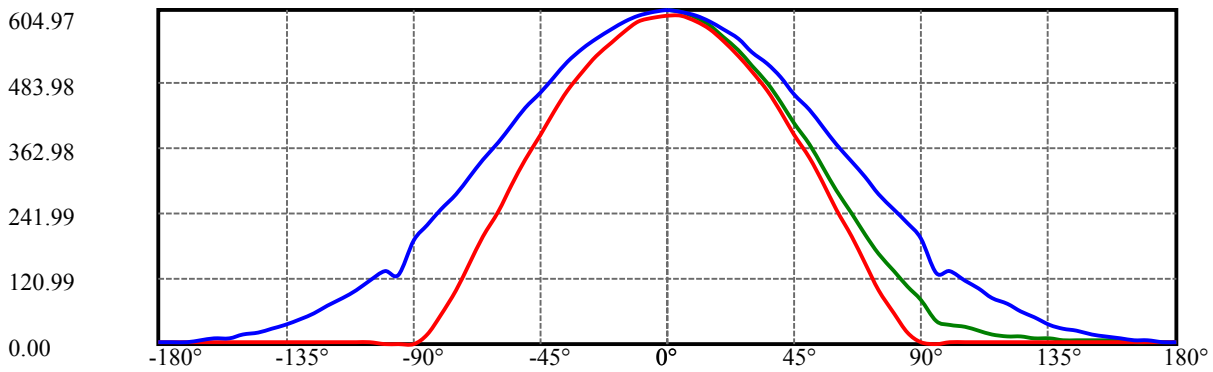
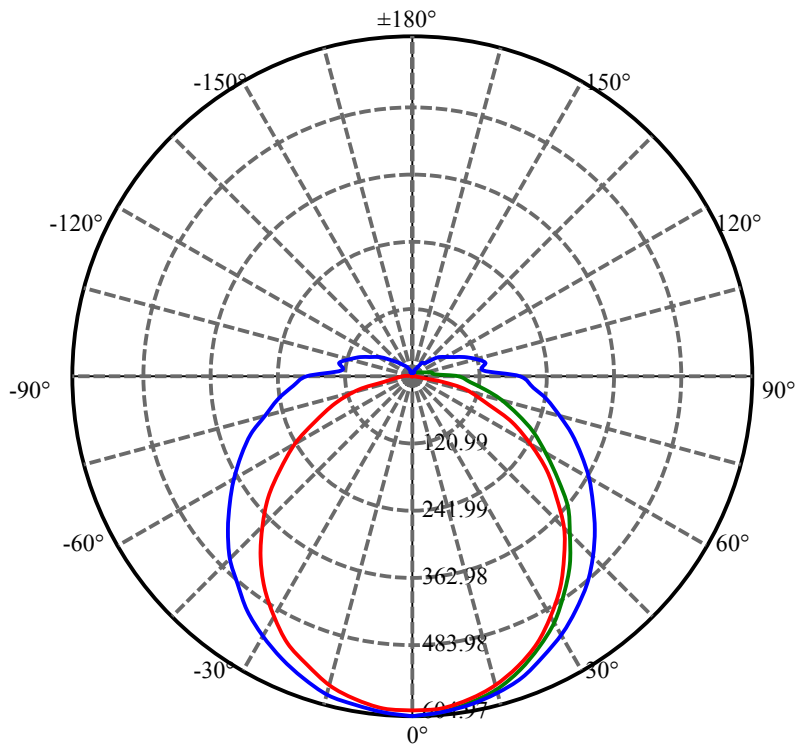
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	601.743	.000	.000	.000%	.000%
5.0	598.680	14.351	14.351	.631%	.631%
10.0	591.192	42.565	56.916	1.872%	2.504%
15.0	578.655	69.395	126.311	3.052%	5.556%
20.0	560.913	93.916	220.227	4.131%	9.687%
25.0	539.296	115.392	335.619	5.076%	14.763%
30.0	513.562	133.240	468.859	5.861%	20.624%
35.0	484.436	146.962	615.821	6.464%	27.088%
40.0	452.839	156.377	772.198	6.879%	33.967%
45.0	418.355	161.309	933.507	7.096%	41.063%
50.0	382.827	161.891	1095.397	7.121%	48.184%
55.0	346.411	158.561	1253.958	6.975%	55.158%
60.0	308.172	151.305	1405.263	6.656%	61.814%
65.0	270.581	140.696	1545.959	6.189%	68.003%
70.0	233.978	127.758	1673.717	5.620%	73.623%
75.0	198.243	112.976	1786.692	4.970%	78.592%
80.0	164.505	97.061	1883.753	4.269%	82.862%
85.0	135.400	81.491	1965.245	3.585%	86.446%
90.0	111.643	67.642	2032.887	2.975%	89.422%
95.0	68.255	49.257	2082.144	2.167%	91.588%
100.0	65.137	36.246	2118.390	1.594%	93.183%
105.0	57.375	32.781	2151.170	1.442%	94.625%
110.0	49.448	27.922	2179.092	1.228%	95.853%
115.0	41.412	23.006	2202.099	1.012%	96.865%
120.0	34.396	18.429	2220.528	.811%	97.675%
125.0	28.051	14.434	2234.962	.635%	98.310%
130.0	22.309	10.950	2245.912	.482%	98.792%
135.0	17.764	8.097	2254.009	.356%	99.148%
140.0	14.327	5.942	2259.951	.261%	99.410%
145.0	11.692	4.341	2264.292	.191%	99.600%
150.0	9.672	3.146	2267.438	.138%	99.739%
155.0	8.036	2.241	2269.679	.099%	99.837%
160.0	6.763	1.552	2271.231	.068%	99.906%
165.0	5.764	1.032	2272.263	.045%	99.951%
170.0	5.028	.640	2272.904	.028%	99.979%
175.0	4.853	.353	2273.257	.016%	99.995%
180.0	4.940	.117	2273.374	.005%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	468.86	20.62%
0-40	772.20	33.97%
0-60	1405.26	61.81%
0-90	2032.89	89.42%
0-120	2220.53	97.68%
0-180	2273.37	100.00%
60-90	778.93	34.26%
90-120	255.28	11.23%
90-130	280.67	12.35%
90-150	302.19	13.29%
90-180	308.01	13.55%
0-76.65	1818.70	80.00%

ZONAL LUMEN SUMMARY

0-10	56.92
10-20	163.31
20-30	248.63
30-40	303.34
40-50	323.20
50-60	309.87
60-70	268.45
70-80	210.04
80-90	149.13
90-100	85.50
100-110	60.70
110-120	41.44
120-130	25.38
130-140	14.04
140-150	7.49
150-160	3.79
160-170	1.67
170-180	0.35



C30(Max): —

C0/C180: —

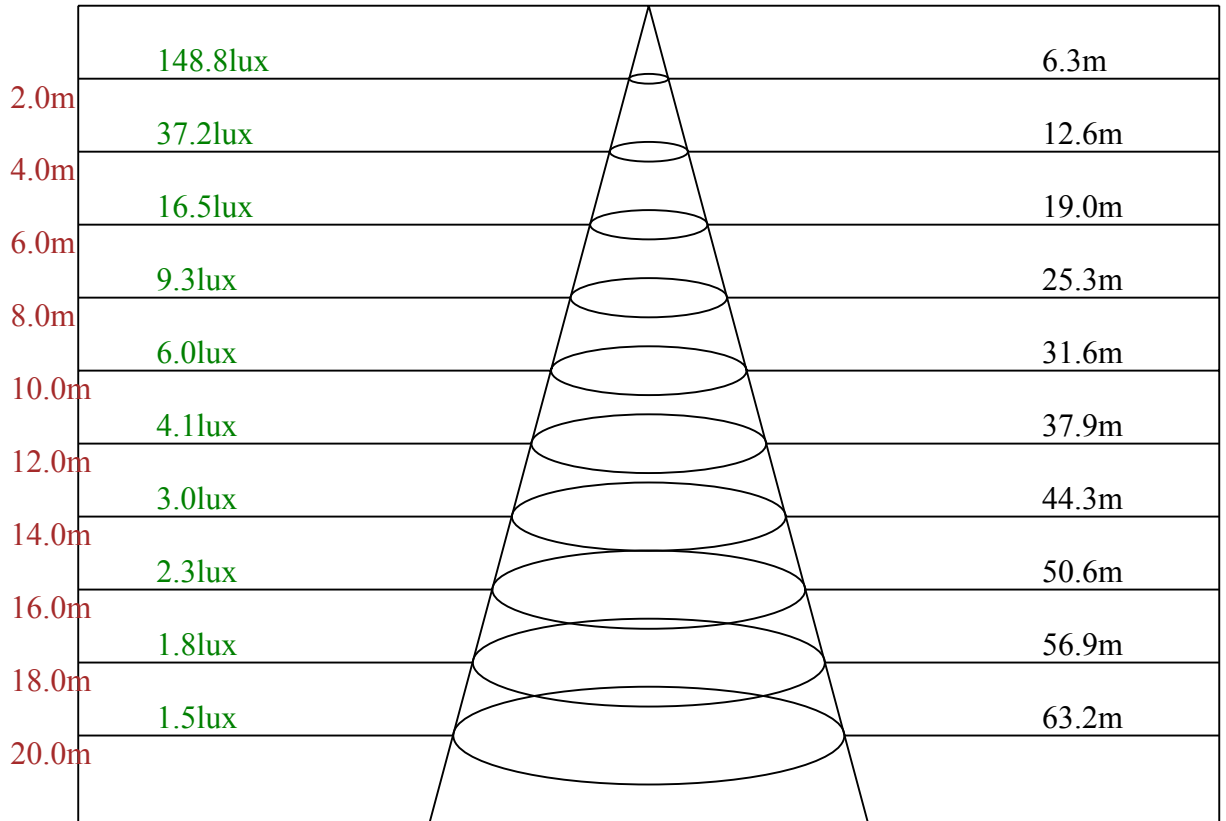
C90/C270: —

Field angle(10%Imax):C0/180Left:79.2 Right:79.5

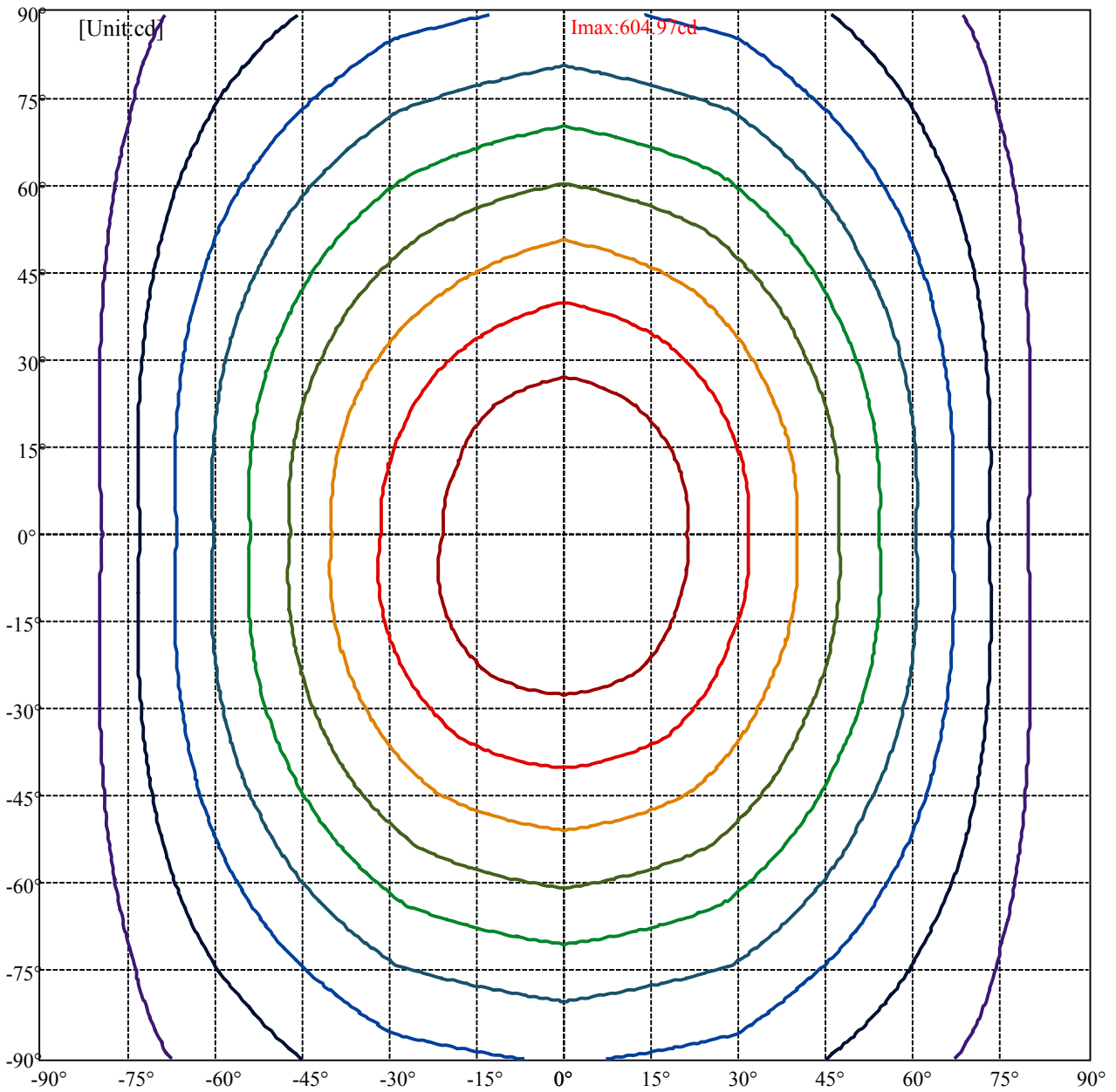
:C90/270Left:123.1 Right:124.1

Beam Angle(50%Imax):C0/180Left:54.2 Right:54.4

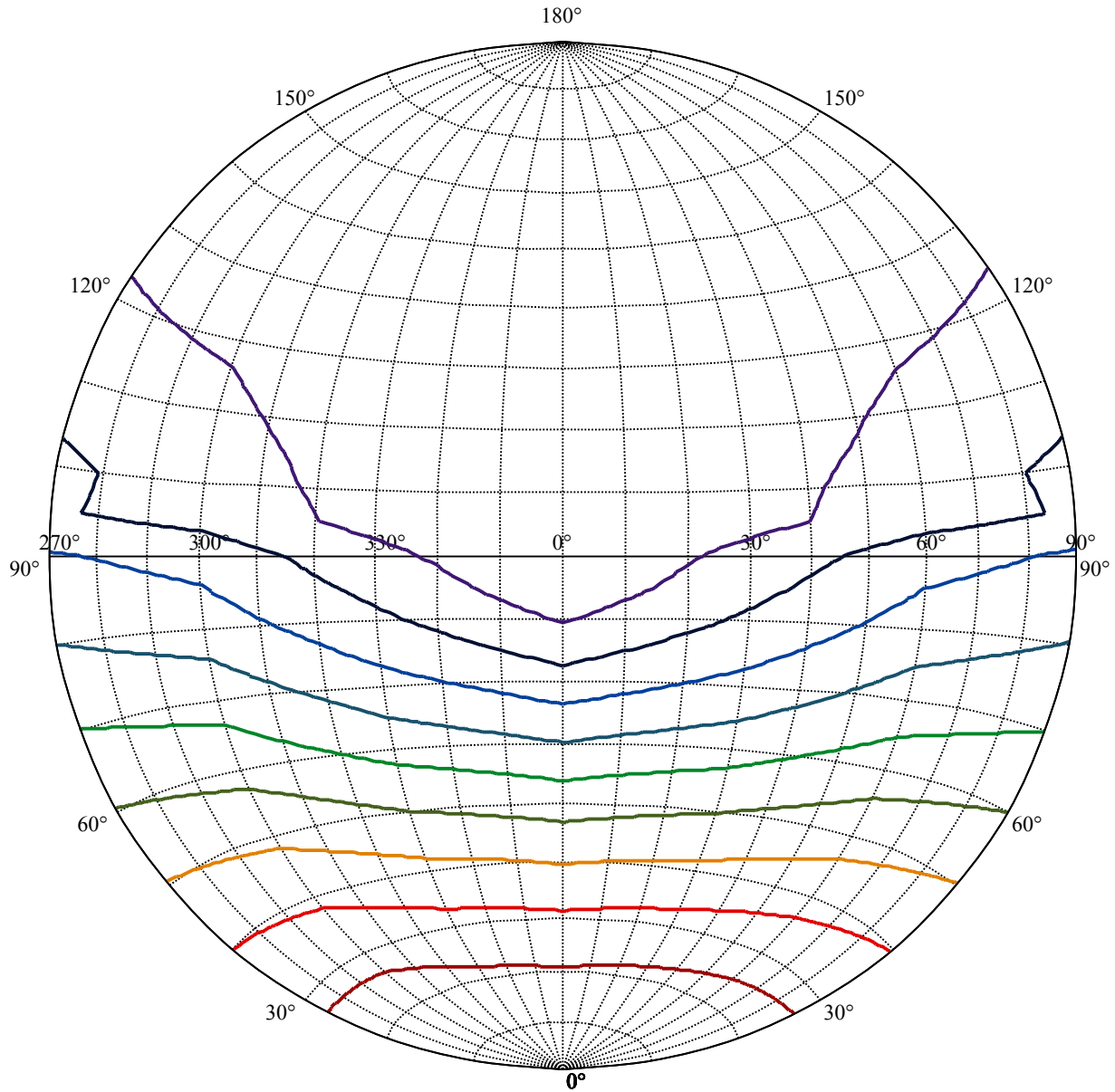
:C90/270Left:70.3 Right:70.0



Beam angle of C30plane115.34



- (10%Imax) 60.387
- (20%Imax) 120.774
- (30%Imax) 181.161
- (40%Imax) 241.548
- (50%Imax) 301.935
- (60%Imax) 362.322
- (70%Imax) 422.709
- (80%Imax) 483.096
- (90%Imax) 543.483



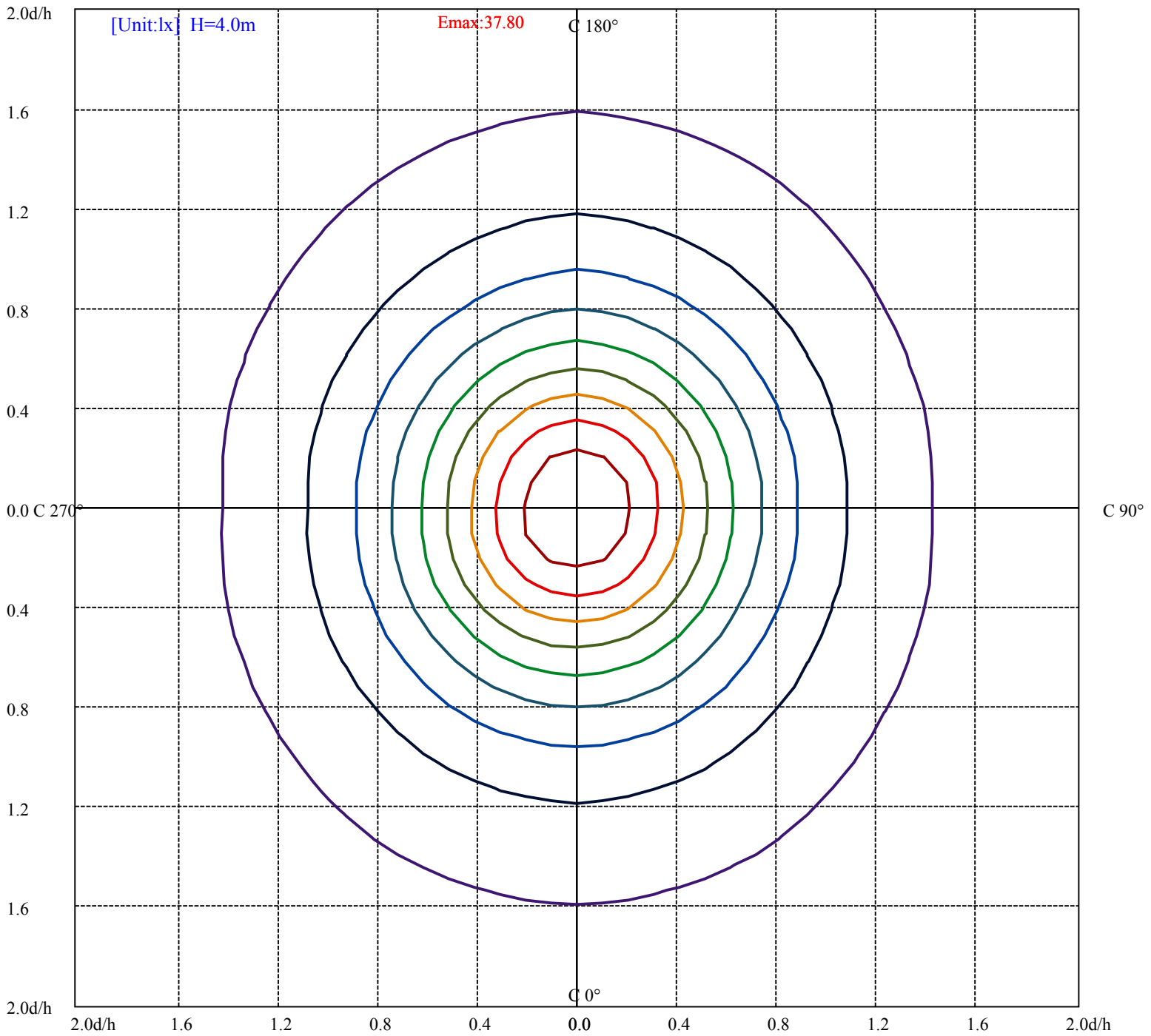
House

[Unit:cd]

Road

- Imax:604.97
- (10%Imax) 60.4971
- (20%Imax) 120.994
- (30%Imax) 181.491
- (40%Imax) 241.988
- (50%Imax) 302.485
- (60%Imax) 362.982
- (70%Imax) 423.479
- (80%Imax) 483.977
- (90%Imax) 544.474

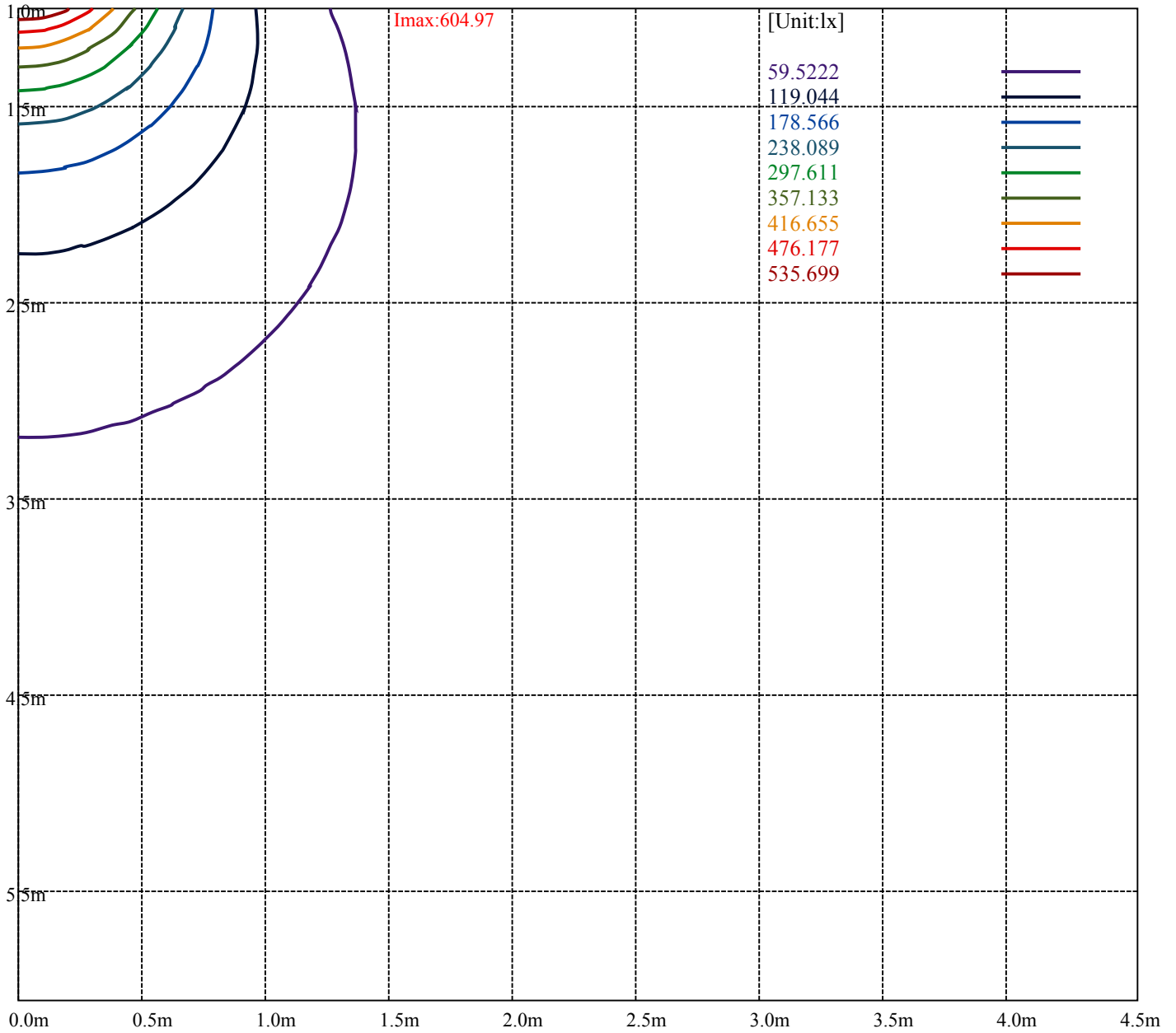




- (10%Emax) 3.780244
 - (20%Emax) 7.5605
 - (30%Emax) 11.34075
 - (40%Emax) 15.121
 - (50%Emax) 18.90119
 - (60%Emax) 22.68144
 - (70%Emax) 26.46169
 - (80%Emax) 30.24194
 - (90%Emax) 34.02219
- Equipment: GMS-1800B
Temperature(°C): 25.0

Date: 2014-11-24
Humidity(%): 50.0%

Operator: Marine
Distance(m): 11.48



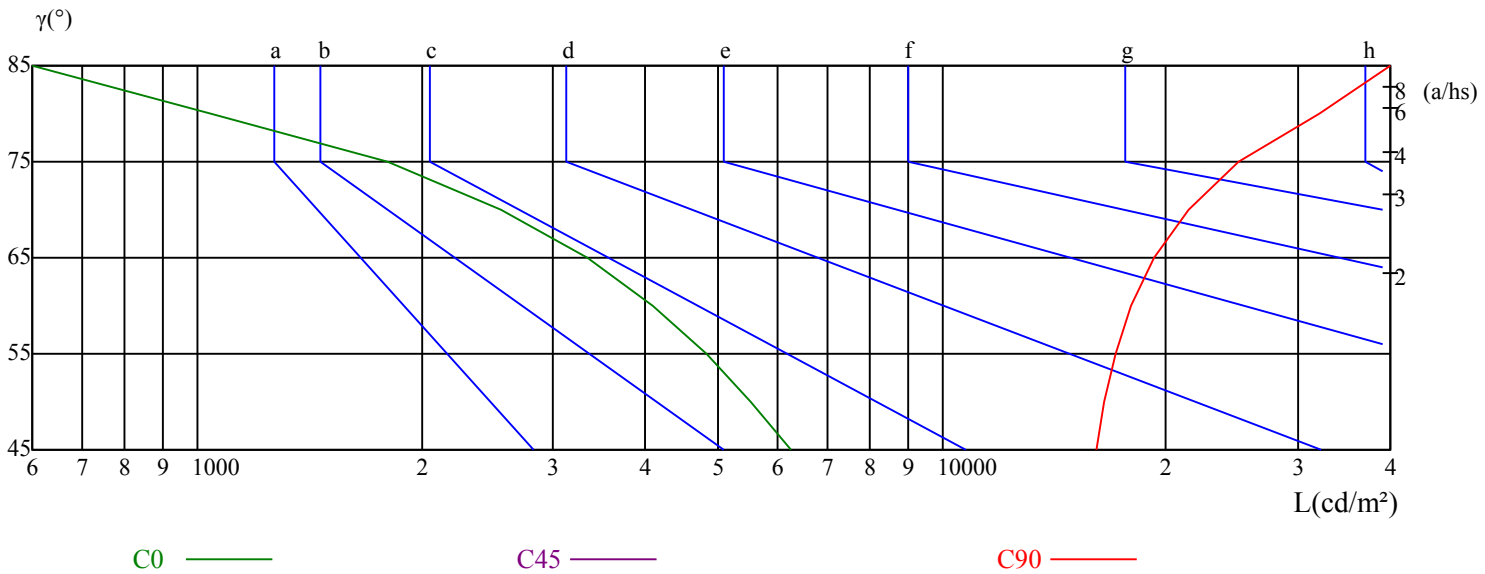
Luminance Table

γ	45	50	55	60	65	70	75	80	85
C0	6282	5549	4837	4078	3330	2552	1796	1045	397
C45	0	0	0	0	0	0	0	0	0
C90	16073	16551	17116	17963	19242	21421	25071	32161	51732

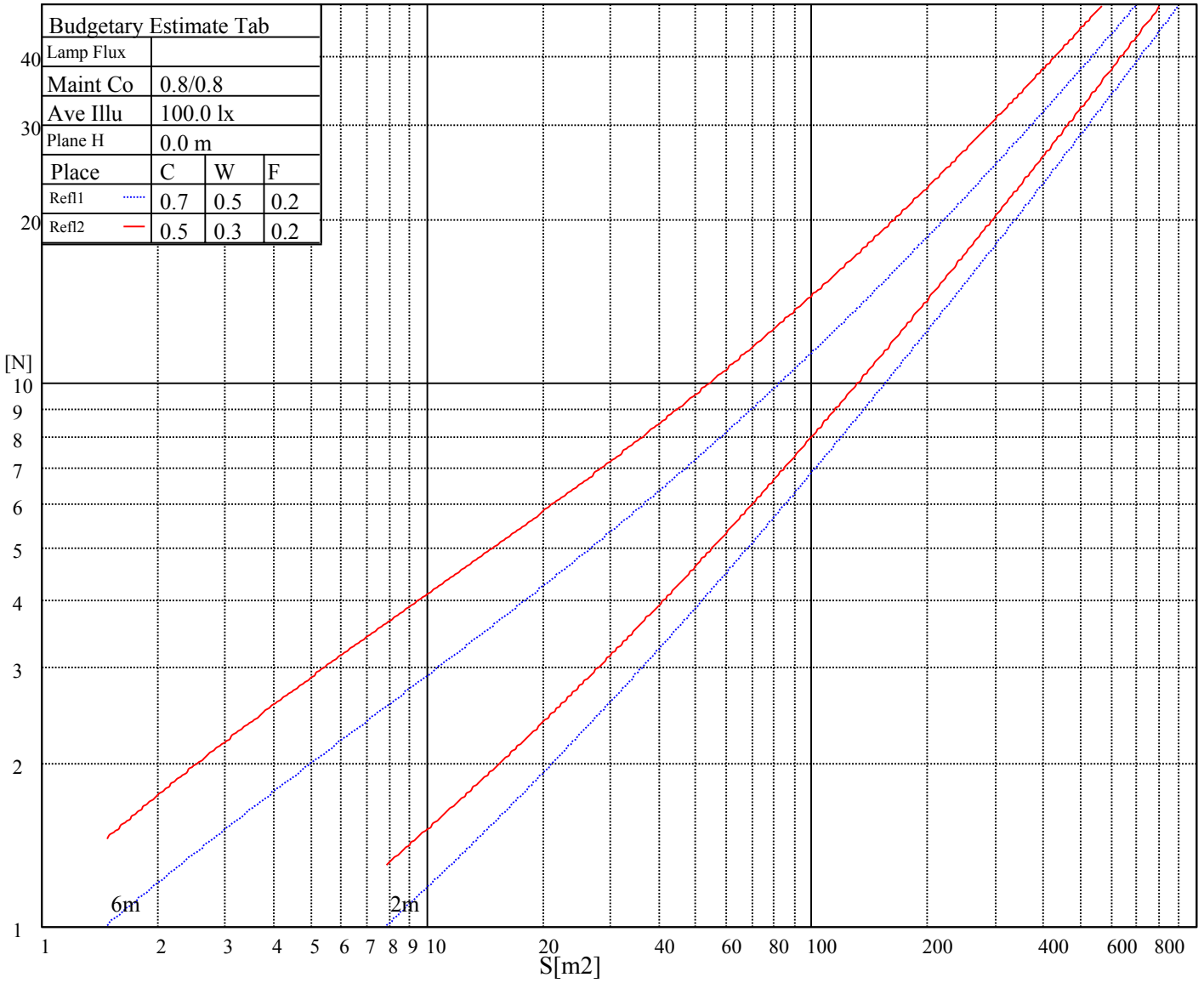
Glare Table

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	14.4	15.7	14.8	16.1	16.6	16.7	18.0	17.2	18.5	18.9
	3H	15.6	16.8	16.1	17.2	17.8	19.2	20.4	19.7	20.9	21.4
	4H	15.8	16.8	16.3	17.3	17.9	20.4	21.4	20.9	21.9	22.5
	6H	16.1	17.1	16.7	17.7	18.2	22.0	23.0	22.5	23.5	24.1
	8H	16.2	17.2	16.7	17.7	18.3	22.8	23.9	23.4	24.4	24.9
	12H	16.0	16.8	16.6	17.4	18.0	23.6	24.3	24.1	24.9	25.6
4H	2H	15.2	16.2	15.7	16.7	17.3	17.0	18.0	17.5	18.5	19.1
	3H	16.6	17.4	17.2	17.9	18.6	19.7	20.5	20.3	21.0	21.7
	4H	17.2	18.0	17.8	18.6	19.2	21.3	22.1	21.9	22.6	23.3
	6H	17.7	18.4	18.2	19.0	19.7	23.0	23.8	23.6	24.4	25.0
	8H	17.6	18.1	18.2	18.7	19.4	23.8	24.2	24.4	24.9	25.6
	12H	17.6	18.1	18.3	18.8	19.5	24.8	25.3	25.5	26.0	26.7
8H	4H	17.9	18.4	18.6	19.0	19.8	21.4	21.9	22.0	22.5	23.2
	6H	18.6	19.1	19.2	19.7	20.4	23.3	23.8	24.0	24.4	25.2
	8H	18.8	19.3	19.5	19.9	20.7	24.4	24.9	25.1	25.5	26.3
	12H	19.0	19.5	19.6	20.1	20.8	25.7	26.1	26.3	26.8	27.5
12H	4H	18.2	18.7	18.8	19.3	20.0	21.4	21.9	22.1	22.5	23.3
	6H	19.0	19.5	19.6	20.1	20.8	23.4	23.9	24.0	24.5	25.2
	8H	19.3	19.8	20.0	20.4	21.2	24.5	25.0	25.2	25.7	26.4
Variation with the observer position at spacings:											
S = 1.0H		0.3/-0.5					0.2/-1.1				
S = 1.5H		0.5/-0.7					0.4/-1.0				
S = 2.0H		0.8/-1.0					0.2/-0.8				
Standard tables:		BKFF					BKBF				
Uncorrected UGR		3.1					8.2				
According 1000lm											



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	1.17	1.17	1.17	1.13	1.13	1.13	1.05	1.05	1.05	0.99	0.99	0.99	0.92	0.92	0.92	0.89
1	0.98	0.93	0.88	0.95	0.90	0.86	0.88	0.85	0.81	0.83	0.80	0.77	0.77	0.75	0.73	0.70
2	0.84	0.77	0.70	0.81	0.74	0.68	0.76	0.70	0.65	0.71	0.66	0.62	0.67	0.63	0.59	0.56
3	0.73	0.64	0.57	0.71	0.63	0.56	0.66	0.59	0.54	0.62	0.56	0.51	0.58	0.53	0.49	0.46
4	0.65	0.55	0.48	0.62	0.54	0.47	0.59	0.51	0.45	0.55	0.49	0.44	0.52	0.46	0.42	0.39
5	0.57	0.48	0.41	0.56	0.47	0.40	0.52	0.45	0.39	0.49	0.43	0.37	0.46	0.41	0.36	0.34
6	0.52	0.42	0.35	0.50	0.41	0.35	0.47	0.39	0.34	0.44	0.38	0.33	0.42	0.36	0.31	0.29
7	0.47	0.37	0.31	0.45	0.37	0.31	0.43	0.35	0.30	0.40	0.34	0.29	0.38	0.32	0.28	0.26
8	0.42	0.34	0.28	0.41	0.33	0.27	0.39	0.32	0.26	0.37	0.30	0.26	0.35	0.29	0.25	0.23
9	0.39	0.30	0.25	0.38	0.30	0.24	0.36	0.29	0.24	0.34	0.28	0.23	0.32	0.27	0.22	0.20
10	0.36	0.28	0.22	0.35	0.27	0.22	0.33	0.26	0.21	0.31	0.25	0.21	0.30	0.24	0.20	0.18
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 WLC															
1	0.37	0.21	0.07	0.36	0.21	0.07	0.34	0.20	0.06	0.32	0.19	0.06	0.31	0.18	0.06	
2	0.33	0.18	0.05	0.32	0.17	0.05	0.30	0.17	0.05	0.28	0.16	0.05	0.27	0.15	0.05	
3	0.29	0.16	0.05	0.28	0.15	0.05	0.27	0.15	0.04	0.25	0.14	0.04	0.24	0.13	0.04	
4	0.26	0.14	0.04	0.26	0.13	0.04	0.24	0.13	0.04	0.23	0.12	0.04	0.22	0.12	0.04	
5	0.24	0.12	0.04	0.23	0.12	0.04	0.22	0.12	0.03	0.21	0.11	0.03	0.20	0.11	0.03	
6	0.22	0.11	0.03	0.22	0.11	0.03	0.20	0.10	0.03	0.19	0.10	0.03	0.18	0.10	0.03	
7	0.20	0.10	0.03	0.20	0.10	0.03	0.19	0.10	0.03	0.18	0.09	0.03	0.17	0.09	0.03	
8	0.19	0.09	0.03	0.18	0.09	0.03	0.18	0.09	0.02	0.17	0.08	0.02	0.16	0.08	0.02	
9	0.18	0.09	0.02	0.17	0.08	0.02	0.16	0.08	0.02	0.16	0.08	0.02	0.15	0.07	0.02	
10	0.17	0.08	0.02	0.16	0.08	0.02	0.15	0.08	0.02	0.15	0.07	0.02	0.14	0.07	0.02	
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 CCLU															
0	0.27	0.27	0.27	0.23	0.23	0.23	0.16	0.16	0.16	0.09	0.09	0.09	0.03	0.03	0.03	
1	0.23	0.22	0.20	0.20	0.19	0.18	0.14	0.13	0.12	0.09	0.08	0.07	0.03	0.03	0.02	
2	0.20	0.18	0.17	0.18	0.16	0.14	0.13	0.12	0.10	0.08	0.07	0.06	0.03	0.02	0.02	
3	0.18	0.16	0.14	0.16	0.14	0.12	0.13	0.11	0.09	0.08	0.07	0.05	0.03	0.02	0.02	
4	0.17	0.14	0.13	0.15	0.13	0.11	0.12	0.10	0.08	0.08	0.06	0.05	0.03	0.02	0.02	
5	0.16	0.13	0.12	0.15	0.12	0.10	0.12	0.09	0.08	0.08	0.06	0.05	0.03	0.02	0.02	
6	0.15	0.13	0.11	0.14	0.11	0.10	0.11	0.09	0.07	0.07	0.06	0.04	0.03	0.02	0.01	
7	0.14	0.12	0.10	0.13	0.11	0.09	0.11	0.08	0.07	0.07	0.05	0.04	0.03	0.02	0.01	
8	0.14	0.12	0.10	0.13	0.11	0.09	0.10	0.08	0.07	0.07	0.05	0.04	0.03	0.02	0.01	
9	0.13	0.11	0.10	0.13	0.10	0.09	0.10	0.08	0.06	0.07	0.05	0.04	0.02	0.02	0.01	
10	0.13	0.11	0.10	0.12	0.10	0.09	0.10	0.08	0.06	0.07	0.05	0.04	0.02	0.02	0.01	

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	595.22	593.77	584.42	569.93	548.98	523.16	493.91	459.13	420.92
30.0	604.97	600.62	590.61	577.17	556.75	532.12	503.79	472.44	436.86
60.0	604.71	600.62	592.32	581.26	564.00	543.71	519.07	492.86	463.74
90.0	603.39	600.49	594.04	583.76	570.72	552.01	530.01	508.14	481.66
120.0	604.58	601.94	592.19	582.18	565.05	542.79	516.57	488.38	457.29
150.0	597.59	593.51	585.08	569.79	549.90	527.77	499.44	467.69	435.81
180.0	595.22	592.19	584.68	568.08	547.27	522.89	492.20	457.29	420.53
210.0	604.97	601.28	594.30	582.44	562.68	538.44	512.75	480.08	445.03
240.0	604.71	601.55	597.20	585.21	569.93	552.80	528.95	502.87	475.60
270.0	603.39	601.02	595.09	585.74	570.98	552.54	533.96	510.11	483.24
300.0	604.58	601.41	596.41	584.16	569.53	550.30	527.90	501.29	473.62
330.0	597.59	595.75	587.98	574.14	555.17	533.04	504.19	472.96	439.76
360.0	595.22	593.77	584.42	569.93	548.98	523.16	493.91	459.13	420.92
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	379.82	336.74	292.47	243.73	195.25	145.58	98.81	54.94	19.76
30.0	398.26	360.45	319.09	278.11	237.40	199.86	163.89	130.95	103.55
60.0	432.39	399.84	368.09	334.10	301.04	270.47	239.77	210.13	184.18
90.0	452.41	425.14	394.18	362.82	331.21	301.96	272.58	243.33	217.38
120.0	425.14	395.10	363.48	332.39	299.72	269.02	238.59	209.08	182.73
150.0	399.32	360.32	322.25	280.88	241.09	203.28	165.87	133.06	104.74
180.0	377.97	335.42	289.97	241.09	193.40	144.52	97.49	51.78	17.39
210.0	408.67	368.49	329.89	287.86	247.28	206.84	169.82	135.96	102.89
240.0	443.98	412.10	379.69	345.04	312.50	279.69	246.36	215.27	186.42
270.0	457.02	426.85	396.02	366.12	334.50	303.80	271.66	242.01	214.22
300.0	443.45	410.78	377.97	343.72	311.71	279.17	247.02	214.22	186.55
330.0	401.82	362.69	323.83	282.20	241.88	203.55	167.05	133.33	105.00
360.0	379.82	336.74	292.47	243.73	195.25	145.58	98.81	54.94	19.76
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	2.37	1.32	1.84	2.24	2.50	2.77	3.03	3.29	3.56
30.0	80.76	42.55	34.25	29.91	24.90	19.10	15.02	12.25	10.80
60.0	158.49	96.83	96.04	82.47	72.99	62.18	51.91	41.24	29.91
90.0	190.77	127.40	132.40	115.41	99.99	84.71	71.67	57.97	47.30
120.0	156.64	93.80	92.35	83.79	72.33	61.26	51.38	41.10	32.41
150.0	81.29	41.50	33.86	28.98	25.95	20.68	16.47	14.89	13.04
180.0	1.45	1.32	1.45	1.98	2.11	2.37	2.63	2.90	3.03
210.0	79.31	41.50	35.04	29.25	23.85	18.97	15.55	12.78	10.80
240.0	161.26	102.63	92.35	84.45	72.85	61.13	50.33	41.24	32.67
270.0	187.08	126.47	132.80	114.62	97.10	81.81	67.98	55.46	44.13
300.0	162.18	101.44	93.93	85.63	74.30	63.50	52.70	42.16	30.43
330.0	78.12	42.29	35.31	29.77	24.50	18.44	14.10	11.33	9.62
360.0	2.37	1.32	1.84	2.24	2.50	2.77	3.03	3.29	3.56
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	3.82	3.95	4.22	4.35	4.48	4.74	4.87	4.87	4.87
30.0	9.62	8.04	7.25	6.72	6.06	5.80	5.14	4.61	4.74
60.0	22.79	17.52	13.96	11.59	9.62	7.90	6.59	5.40	4.61
90.0	36.23	29.12	23.19	18.18	14.10	10.67	8.04	6.06	4.74
120.0	26.61	22.00	17.79	14.23	11.33	9.09	7.25	5.67	5.01
150.0	11.33	9.75	8.70	7.64	6.98	6.19	5.40	5.01	5.01
180.0	3.29	3.43	3.69	3.95	4.22	4.35	4.48	4.87	4.87
210.0	8.96	7.51	6.59	5.80	5.14	4.61	4.48	4.61	4.74
240.0	25.82	20.42	15.81	12.25	9.49	7.38	5.80	4.61	4.61
270.0	34.25	26.88	20.68	15.68	11.73	8.70	6.46	4.87	4.74
300.0	22.26	16.60	12.52	10.28	8.43	7.11	6.19	5.27	5.40
330.0	8.17	6.72	5.93	5.40	4.87	4.61	4.48	4.48	4.87
360.0	3.82	3.95	4.22	4.35	4.48	4.74	4.87	4.87	4.87

Intensity data(cd)

C/γ(°)	180.0
0.0	4.87
30.0	4.74
60.0	4.74
90.0	4.87
120.0	5.40
150.0	5.01
180.0	4.87
210.0	4.74
240.0	4.74
270.0	4.87
300.0	5.40
330.0	5.01
360.0	4.87