



# TEST REPORT

<b>NAME OF SAMPLE</b>	<b>LED TUBE</b>
<b>TRADE MARK</b>	<b>N/A</b>
<b>MODEL/TYPE</b>	<b>T8-120DW, 6000K</b>
<b>CLIENT</b>	
<b>ADDRESS OF CLIENT</b>	
<b>INSPECTION CLASSIFICATION</b>	<b>Commission Test</b>
<b>TEST ITEM</b>	<b>IES Test</b>

## Test Report

Name or sample	LED TUBE	Report No.	LCS1411261125S
Client		ADDRESS OF CLIENT	
Name of receipt	Delivering	Inspection Classification	Commission test
Test Model	T8-120DW, 6000K	Test date	2014.11.24
Rating of sample	AC100-240V, 50/60Hz, 18W, 6000K, 1200*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	

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LumCAT: T8-120DW, 6000K  
Luminaire: LED TUBE  
Report No: LCS1411261125S  
Test No: 1411240033  
LampCAT: LED  
Lamp flux(lm)  
Number of Lamps: 1  
Length(mm): 1200  
Phm Type: C

Voltage(V): 230.400  
Current(A): 0.086  
Power (W): 19.500  
PF: 0.976  
Ballast type: -  
Width(mm): 26  
Height(mm): 31

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### Photometric Results

Lumens(lm): 1822.50  
Lumens(lm)/Power(W): 93.46  
Central intensity(cd): 471.250  
Maximum intensity(cd): 474.939  
Angle of maximum intensity: C=90.0  $\gamma$ =5.0  
Beam Angle(50%Imax): [C0/180]Left=55.9 Right=54.3  
                                  [C90/270]Left=63.1 Right=80.3  
Field angle(10%Imax): [C0/180]Left=80.5 Right=78.9  
                                  [C90/270]Left=116.3 Right=130.1  
Beam angle of C90plane: 143.47  
Maximum s/h: C0\_180=1.26 C90\_270=1.44  
Up flux rate of LUM(%): 10.55%  
Down flux rate of LUM(%): 89.45%  
CIE Type : Semidirect lighting  
Output flux ratio in  $\pi$  solid angle : 61.248%

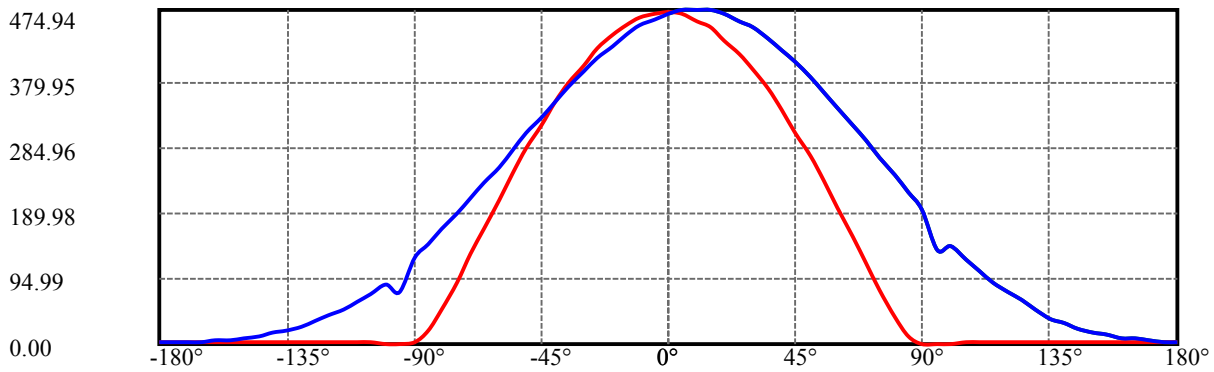
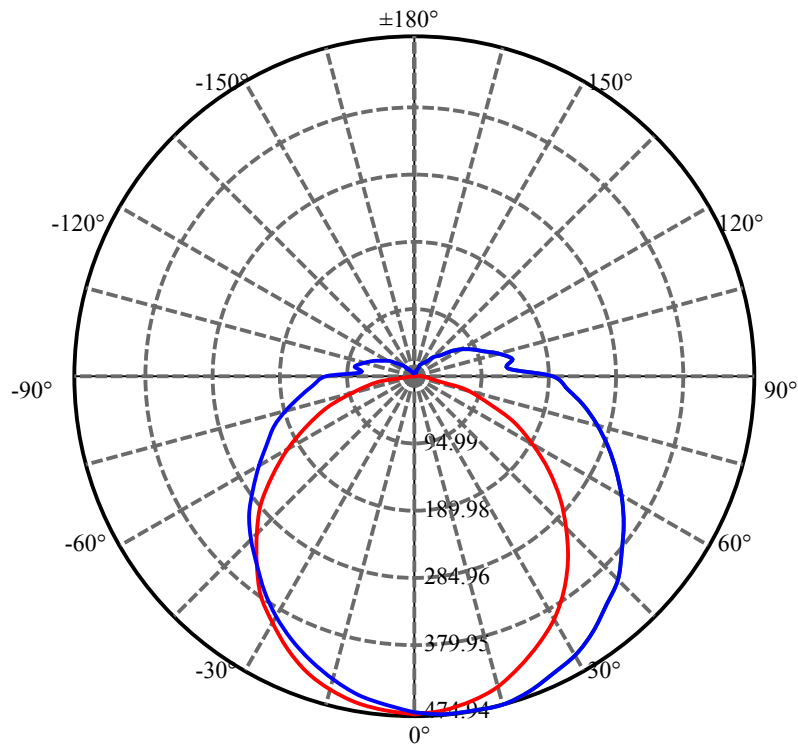
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	470.591	.000	.000	.000%	.000%
5.0	468.461	11.226	11.226	.616%	.616%
10.0	462.753	33.312	44.539	1.828%	2.444%
15.0	453.937	54.377	98.916	2.984%	5.427%
20.0	440.619	73.724	172.640	4.045%	9.473%
25.0	424.360	90.720	263.360	4.978%	14.451%
30.0	405.861	105.065	368.425	5.765%	20.215%
35.0	384.134	116.332	484.758	6.383%	26.599%
40.0	359.992	124.152	608.909	6.812%	33.411%
45.0	334.247	128.544	737.453	7.053%	40.464%
50.0	306.932	129.560	867.013	7.109%	47.573%
55.0	278.398	127.270	994.283	6.983%	54.556%
60.0	249.228	121.959	1116.242	6.692%	61.248%
65.0	219.420	113.929	1230.171	6.251%	67.499%
70.0	191.041	103.931	1334.103	5.703%	73.202%
75.0	162.836	92.498	1426.600	5.075%	78.277%
80.0	136.026	79.967	1506.568	4.388%	82.665%
85.0	112.488	67.527	1574.095	3.705%	86.370%
90.0	92.507	56.129	1630.224	3.080%	89.450%
95.0	53.444	39.963	1670.187	2.193%	91.643%
100.0	51.907	28.627	1698.813	1.571%	93.214%
105.0	46.122	26.230	1725.043	1.439%	94.653%
110.0	39.908	22.487	1747.530	1.234%	95.887%
115.0	33.595	18.611	1766.141	1.021%	96.908%
120.0	27.919	14.954	1781.095	.821%	97.728%
125.0	22.375	11.625	1792.720	.638%	98.366%
130.0	17.610	8.694	1801.414	.477%	98.843%
135.0	13.943	6.376	1807.790	.350%	99.193%
140.0	11.099	4.637	1812.427	.254%	99.447%
145.0	8.816	3.323	1815.750	.182%	99.630%
150.0	7.147	2.351	1818.100	.129%	99.759%
155.0	5.874	1.648	1819.748	.090%	99.849%
160.0	4.973	1.138	1820.886	.062%	99.912%
165.0	4.293	.764	1821.649	.042%	99.954%
170.0	3.865	.484	1822.133	.027%	99.980%
175.0	3.755	.273	1822.406	.015%	99.995%
180.0	3.821	.091	1822.496	.005%	100.000%

## ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	368.43	20.22%
0-40	608.91	33.41%
0-60	1116.24	61.25%
0-90	1630.22	89.45%
0-120	1781.10	97.73%
0-180	1822.50	100.00%
60-90	635.94	34.89%
90-120	207.00	11.36%
90-130	227.32	12.47%
90-150	244.01	13.39%
90-180	248.31	13.62%
0-76.96	1458.00	80.00%

## ZONAL LUMEN SUMMARY

0-10	44.54
10-20	128.10
20-30	195.79
30-40	240.48
40-50	258.10
50-60	249.23
60-70	217.86
70-80	172.46
80-90	123.66
90-100	68.59
100-110	48.72
110-120	33.57
120-130	20.32
130-140	11.01
140-150	5.67
150-160	2.79
160-170	1.25
170-180	0.27



C90(Max): ——

C0/C180: ——

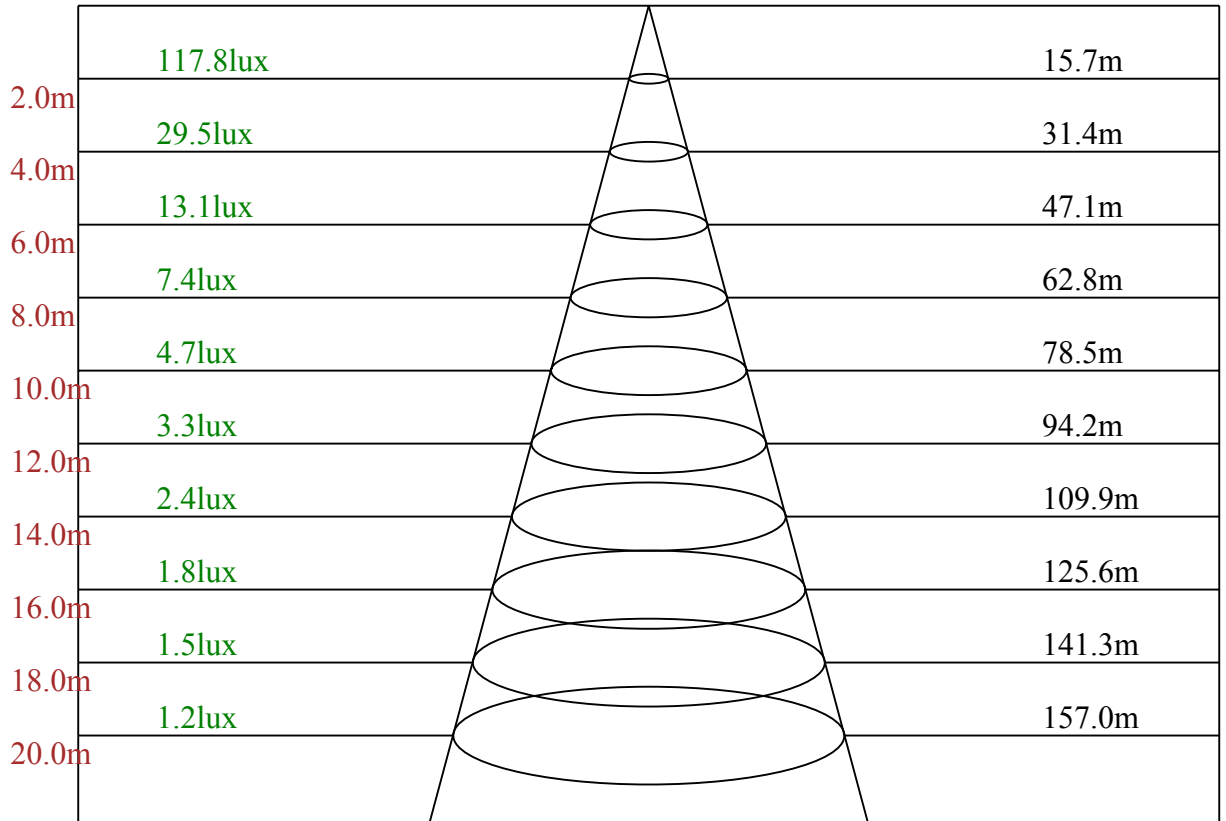
C90/C270: ——

Field angle(10%Imax):C0/180Left:80.5 Right:78.9

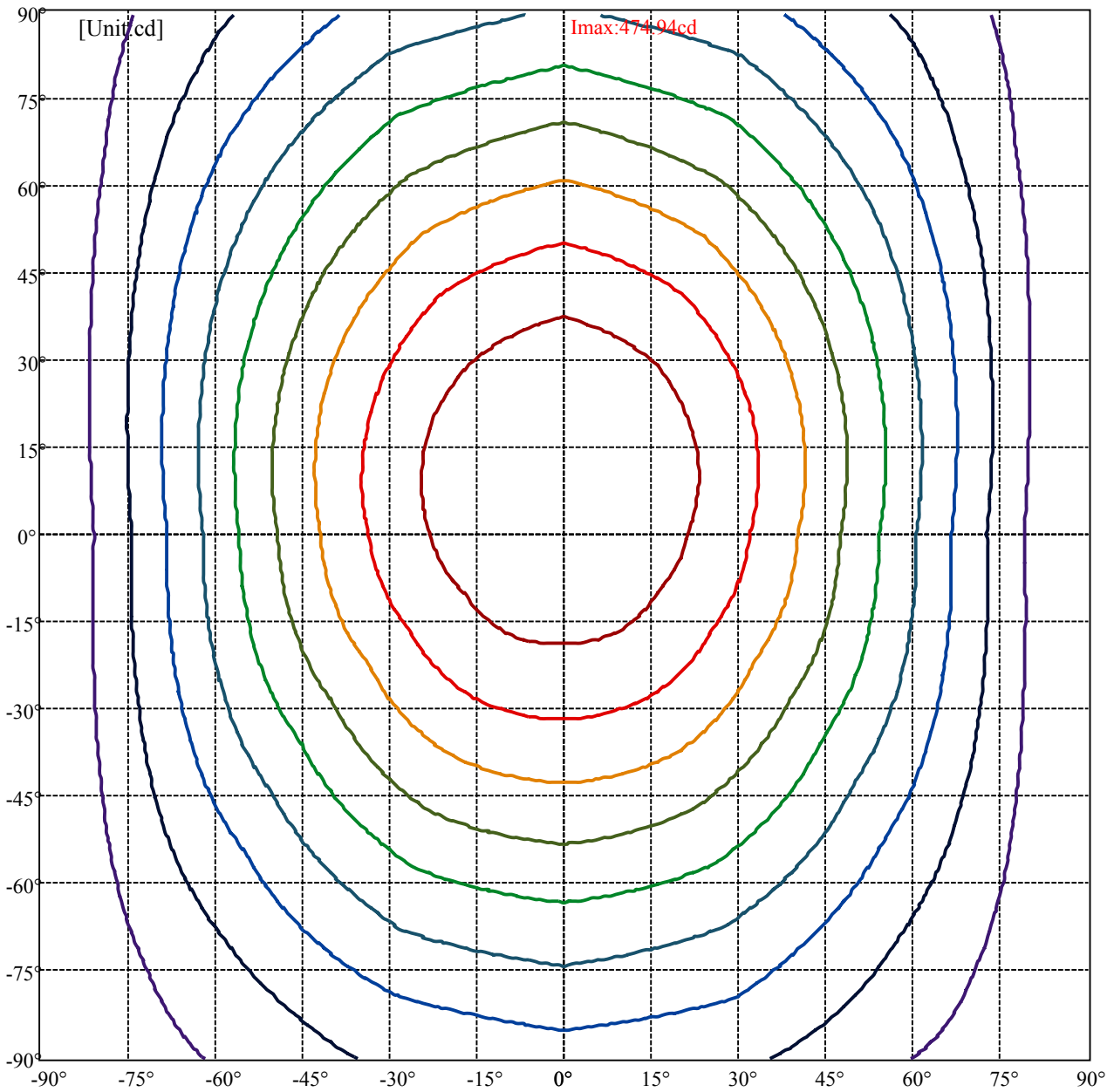
:C90/270Left:116.3 Right:130.1

Beam Angle(50%Imax):C0/180Left:55.9 Right:54.3

:C90/270Left:63.1 Right:80.3

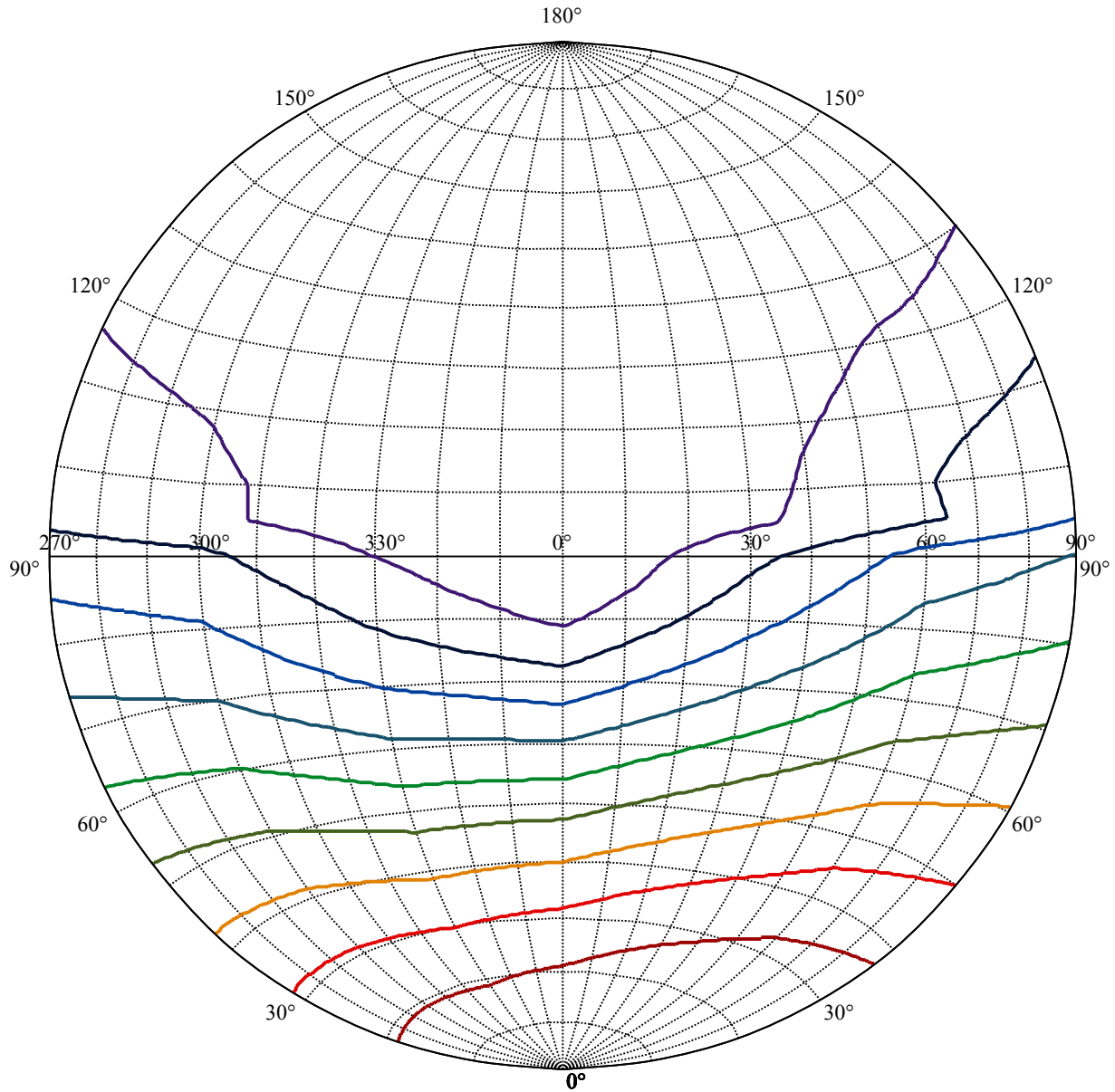


Beam angle of C90plane143.47



(10%Imax) 47.4939	—
(20%Imax) 94.9878	—
(30%Imax) 142.482	—
(40%Imax) 189.976	—
(50%Imax) 237.469	—
(60%Imax) 284.963	—
(70%Imax) 332.457	—
(80%Imax) 379.951	—
(90%Imax) 427.445	—













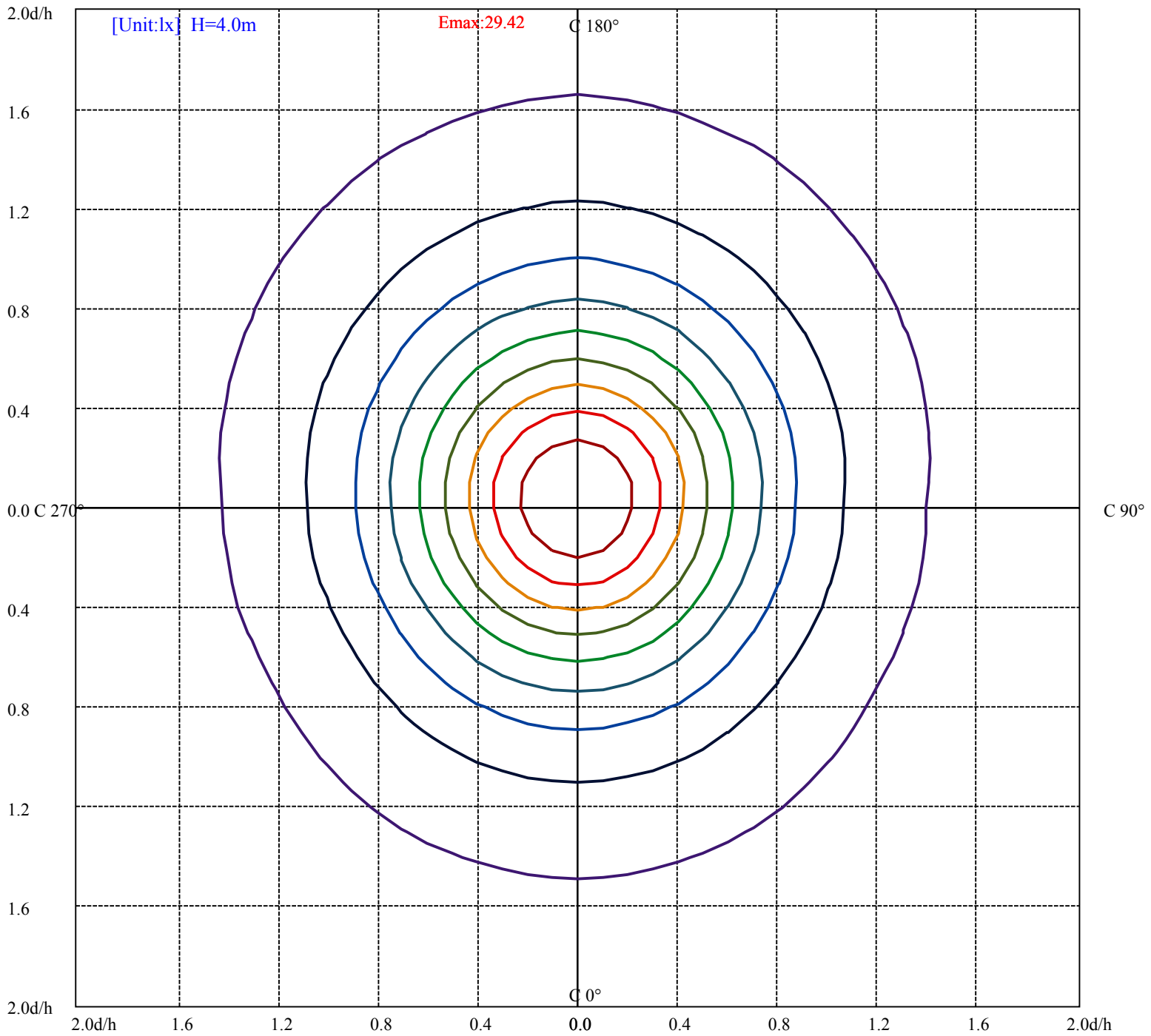


House

[Unit:cd]

Road

<b>Imax:474.94</b>	
(10%Imax) 47.4939	
(20%Imax) 94.9878	
(30%Imax) 142.482	
(40%Imax) 189.976	
(50%Imax) 237.469	
(60%Imax) 284.963	
(70%Imax) 332.457	
(80%Imax) 379.951	
(90%Imax) 427.445	

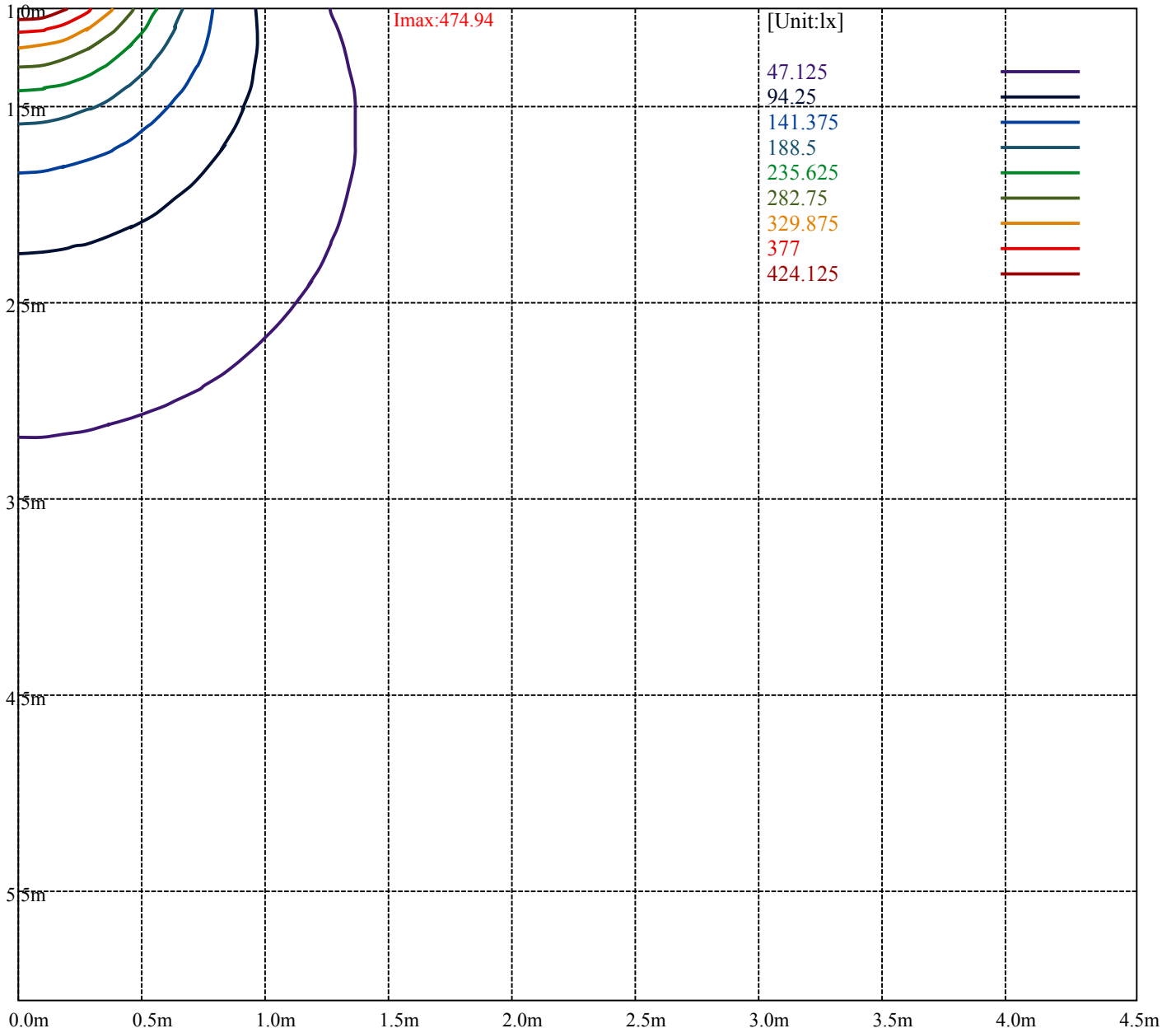


- (10%Emax) 2.942431
- (20%Emax) 5.884862
- (30%Emax) 8.827312
- (40%Emax) 11.76975
- (50%Emax) 14.71219
- (60%Emax) 17.65456
- (70%Emax) 20.597
- (80%Emax) 23.53944
- (90%Emax) 26.48187

Equipment: GMS-1800B  
 Temperature(°C): 25.0

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

Operator: Marine  
 Distance(m): 11.48



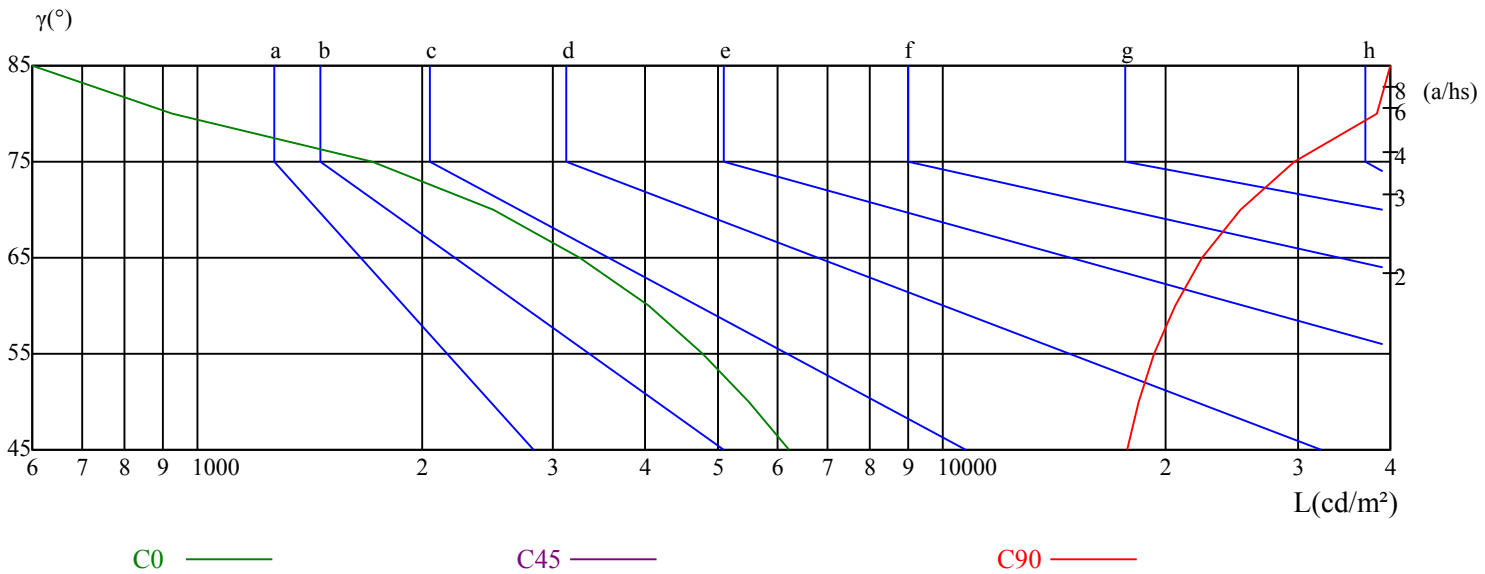
Luminance Table

$\gamma$	45	50	55	60	65	70	75	80	85
C0	6232	5487	4769	4036	3261	2500	1715	927	298
C45	0	0	0	0	0	0	0	0	0
C90	17702	18380	19319	20605	22389	25223	29790	38474	61343

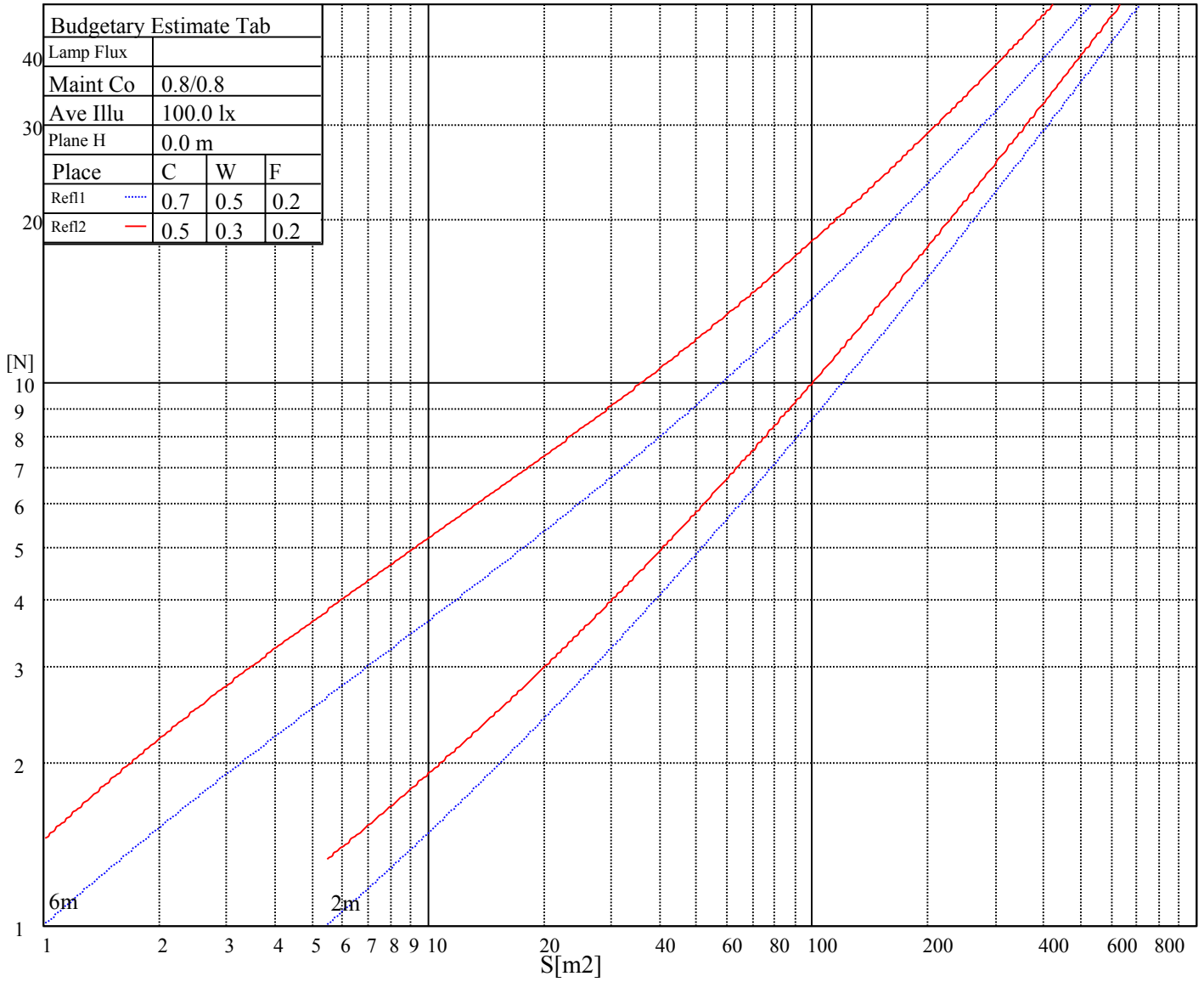
Glare Table

Glare	Quality	Service Values Illuminance(lx)							
		a	b	c	d	e	f	g	h
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	15.6	16.9	16.0	17.3	17.8	18.4	19.7	18.8	20.1	20.6
	3H	16.7	17.9	17.2	18.4	18.9	21.0	22.2	21.5	22.7	23.2
	4H	17.0	18.0	17.5	18.5	19.1	22.3	23.3	22.8	23.8	24.4
	6H	17.2	18.3	17.8	18.8	19.4	23.9	25.0	24.5	25.5	26.0
	8H	17.3	18.3	17.9	18.9	19.4	24.8	25.9	25.4	26.4	26.9
	12H	17.1	17.9	17.7	18.5	19.1	25.6	26.4	26.2	27.0	27.6
4H	2H	16.5	17.6	17.1	18.1	18.6	18.6	19.6	19.1	20.2	20.7
	3H	18.0	18.8	18.5	19.3	20.0	21.5	22.3	22.1	22.8	23.5
	4H	18.6	19.4	19.2	20.0	20.6	23.2	24.0	23.7	24.5	25.2
	6H	19.0	19.8	19.6	20.4	21.0	25.0	25.8	25.6	26.4	27.0
	8H	18.9	19.4	19.6	20.1	20.8	25.8	26.3	26.5	26.9	27.7
	12H	19.0	19.5	19.7	20.1	20.9	26.9	27.4	27.6	28.0	28.8
8H	4H	19.5	19.9	20.1	20.6	21.3	23.3	23.8	23.9	24.4	25.1
	6H	20.2	20.6	20.8	21.3	22.0	25.3	25.8	26.0	26.4	27.2
	8H	20.4	20.9	21.1	21.5	22.3	26.5	26.9	27.1	27.6	28.3
	12H	20.6	21.0	21.2	21.7	22.4	27.7	28.2	28.4	28.9	29.6
12H	4H	19.8	20.3	20.4	20.9	21.6	23.3	23.8	24.0	24.4	25.2
	6H	20.6	21.1	21.3	21.8	22.5	25.4	25.9	26.0	26.5	27.2
	8H	21.0	21.5	21.6	22.1	22.8	26.6	27.1	27.2	27.7	28.4
Variation with the observer position at spacings:											
S = 1.0H		0.2/-0.5					0.2/-1.2				
S = 1.5H		0.4/-0.7					0.4/-1.0				
S = 2.0H		0.8/-1.0					0.2/-0.8				
Standard tables:		BKFF					BKBF				
Uncorrected UGR		4.4					10.0				
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	0.85	0.88	0.84	0.81	0.82	0.79	0.76	0.77	0.75	0.72	0.69
2	0.84	0.76	0.70	0.81	0.74	0.68	0.76	0.70	0.65	0.71	0.66	0.62	0.66	0.62	0.59	0.56
3	0.73	0.64	0.57	0.71	0.62	0.56	0.66	0.59	0.53	0.62	0.56	0.51	0.58	0.53	0.49	0.46
4	0.64	0.55	0.48	0.62	0.53	0.47	0.58	0.51	0.45	0.55	0.48	0.43	0.51	0.46	0.41	0.39
5	0.57	0.48	0.41	0.55	0.46	0.40	0.52	0.44	0.38	0.49	0.42	0.37	0.46	0.40	0.36	0.33
6	0.51	0.42	0.35	0.50	0.41	0.35	0.47	0.39	0.33	0.44	0.37	0.32	0.41	0.36	0.31	0.29
7	0.46	0.37	0.31	0.45	0.36	0.30	0.42	0.35	0.29	0.40	0.33	0.28	0.38	0.32	0.27	0.25
8	0.42	0.33	0.27	0.41	0.33	0.27	0.39	0.31	0.26	0.37	0.30	0.25	0.35	0.29	0.25	0.22
9	0.39	0.30	0.24	0.38	0.30	0.24	0.36	0.28	0.23	0.34	0.27	0.23	0.32	0.26	0.22	0.20
10	0.35	0.27	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	0.38	0.21	0.07	0.37	0.21	0.07	0.35	0.20	0.06	0.33	0.19	0.06	0.31	0.18	0.06	
2	0.33	0.18	0.06	0.32	0.18	0.05	0.30	0.17	0.05	0.29	0.16	0.05	0.27	0.15	0.05	
3	0.29	0.16	0.05	0.29	0.15	0.05	0.27	0.15	0.04	0.26	0.14	0.04	0.24	0.13	0.04	
4	0.27	0.14	0.04	0.26	0.14	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	0.24	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	0.21	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	0.19	0.09	0.03	0.18	0.09	0.03	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	0.08	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	0.21	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	471.25	468.22	459.52	449.25	432.25	411.97	389.83	363.09	332.92
30.0	470.46	471.38	468.09	460.32	449.91	433.83	414.73	394.05	368.62
60.0	471.12	472.83	472.44	469.67	461.24	450.04	437.39	420.13	400.37
90.0	470.06	474.94	474.81	474.28	468.22	459.66	449.64	434.89	418.42
120.0	469.67	473.23	474.15	469.93	462.42	452.81	438.31	421.06	403.40
150.0	470.99	472.83	469.27	463.87	452.28	437.52	420.13	398.40	373.36
180.0	471.25	468.88	463.87	452.94	438.45	419.34	397.08	372.31	343.06
210.0	470.46	465.45	455.84	443.85	426.33	405.90	384.17	357.95	329.49
240.0	471.12	464.40	453.73	441.74	425.80	407.35	387.33	365.59	341.61
270.0	470.06	461.50	452.54	439.24	423.30	405.51	386.93	366.38	344.38
300.0	469.67	463.61	453.33	440.82	424.22	406.30	385.22	362.56	340.03
330.0	470.99	464.27	455.44	441.34	423.03	402.08	379.56	353.21	324.22
360.0	471.25	468.22	459.52	449.25	432.25	411.97	389.83	363.09	332.92

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	301.43	266.39	230.68	193.01	152.96	114.09	75.49	39.00	11.86
30.0	340.82	312.63	281.14	249.52	216.85	185.89	156.12	127.79	104.08
60.0	379.69	356.11	331.86	306.96	280.48	256.24	230.29	206.58	182.20
90.0	400.63	379.95	358.48	335.82	311.58	288.26	263.75	238.98	216.06
120.0	381.66	357.95	334.37	308.55	282.72	257.30	232.13	206.71	182.73
150.0	346.75	318.29	286.68	254.93	221.86	190.77	160.07	130.82	105.53
180.0	311.44	278.77	242.01	204.60	164.81	127.27	87.21	50.46	18.71
210.0	300.64	269.29	237.27	206.18	174.96	144.13	116.59	91.04	67.45
240.0	316.85	292.60	266.39	240.57	215.01	192.08	168.11	143.07	124.37
270.0	321.59	299.59	275.61	252.03	228.71	207.37	185.23	163.49	142.68
300.0	314.61	288.65	264.54	238.46	213.56	189.19	167.05	145.84	126.47
330.0	294.84	262.96	231.74	200.12	169.56	139.91	111.98	88.53	67.72
360.0	301.43	266.39	230.68	193.01	152.96	114.09	75.49	39.00	11.86

C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	0.79	1.05	1.32	1.58	1.71	1.98	2.11	2.37	2.63
30.0	82.21	39.92	33.20	30.17	25.29	19.63	15.02	11.59	9.62
60.0	159.28	88.66	91.04	84.45	74.44	64.29	54.28	39.79	32.28
90.0	192.22	132.67	138.33	120.41	103.42	88.40	74.70	61.52	47.82
120.0	160.46	91.43	87.87	82.74	73.25	62.97	52.83	42.95	32.41
150.0	83.53	45.58	32.94	28.85	25.03	20.03	16.73	13.70	11.59
180.0	2.24	1.05	1.32	1.45	1.58	1.84	1.98	2.24	2.50
210.0	49.80	25.56	18.71	15.15	12.78	10.41	8.56	7.11	5.93
240.0	104.74	60.47	56.52	50.06	42.82	35.70	29.77	23.85	18.58
270.0	122.79	74.57	84.58	71.41	60.34	49.80	41.24	33.07	25.03
300.0	105.40	56.78	57.44	50.72	44.79	37.42	29.64	24.11	17.92
330.0	46.64	23.58	19.63	16.47	13.44	10.67	8.17	6.19	5.01
360.0	0.79	1.05	1.32	1.58	1.71	1.98	2.11	2.37	2.63

C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	2.77	2.90	3.03	3.29	3.43	3.56	3.56	3.69	3.69
30.0	7.90	6.32	5.53	5.14	4.74	4.22	3.95	3.69	3.69
60.0	24.37	18.05	12.78	9.88	8.04	6.46	5.27	4.08	3.69
90.0	36.76	29.38	22.66	17.13	12.91	9.49	6.85	4.74	3.69
120.0	26.22	21.08	16.73	13.04	9.09	7.38	5.53	4.08	3.69
150.0	9.75	8.17	6.85	5.80	5.01	4.22	3.69	3.56	3.82
180.0	2.63	2.90	3.03	3.03	3.29	3.43	3.56	3.69	3.69
210.0	5.14	4.48	4.08	3.82	3.56	3.69	3.69	3.82	3.82
240.0	14.62	11.20	8.83	6.85	5.40	4.48	3.82	3.82	3.82
270.0	19.50	15.02	11.33	8.56	6.59	5.01	4.08	3.82	3.82
300.0	13.17	9.62	7.11	5.53	4.87	4.22	3.82	3.69	3.82
330.0	4.48	4.08	3.82	3.69	3.56	3.56	3.69	3.69	3.82
360.0	2.77	2.90	3.03	3.29	3.43	3.56	3.56	3.69	3.69



Intensity data(cd)

<b>C/γ(°)</b>	<b>180.0</b>
<b>0.0</b>	<b>3.82</b>
<b>30.0</b>	<b>3.82</b>
<b>60.0</b>	<b>3.82</b>
<b>90.0</b>	<b>3.82</b>
<b>120.0</b>	<b>3.82</b>
<b>150.0</b>	<b>3.82</b>
<b>180.0</b>	<b>3.82</b>
<b>210.0</b>	<b>3.82</b>
<b>240.0</b>	<b>3.82</b>
<b>270.0</b>	<b>3.82</b>
<b>300.0</b>	<b>3.82</b>
<b>330.0</b>	<b>3.82</b>
<b>360.0</b>	<b>3.82</b>