



TEST REPORT

NAME OF SAMPLE	LED TUBE
TRADE MARK	N/A
MODEL/TYPE	T8-150DW, 6000K
CLIENT	
ADDRESS OF CLIENT	
INSPECTION CLASSIFICATION	Commission Test
TEST ITEM	IES Test

Test Report

Name or sample	LED TUBE	Report No.	LCS1411210965S
Client		ADDRESS OF CLIENT	
Name of receipt	Delivering	Inspection Classification	Commission test
Test Model	T8-150DW, 6000K	Test date	2014.11.24
Rating of sample	AC100-240V, 50/60Hz, 22W, 6000K, 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: T8-150DW, 6000K
Luminaire: LED TUBE
Report No: LCS1411210965S
Test No: 1411240031
LampCAT: LED
Lamp flux(lm)
Number of Lamps: 1
Length(mm): 1500
Phm Type: C

Voltage(V): 230.500
Current(A): 0.105
Power (W): 23.800
PF: 0.984
Ballast type: -
Width(mm): 26
Height(mm): 31

Photometric Results

Lumens(lm): 2277.89
Lumens(lm)/Power(W): 95.71
Central intensity(cd): 602.468
Maximum intensity(cd): 603.126
Angle of maximum intensity: C=30.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Left=53.1 Right=55.6
 [C90/270]Left=69.3 Right=71.2
Field angle(10%Imax): [C0/180]Left=78.2 Right=80.7
 [C90/270]Left=124.3 Right=122.9
Beam angle of C30plane: 115.67
Maximum s/h: C0_180=1.22 C90_270=1.34
Up flux rate of LUM(%): 10.49%
Down flux rate of LUM(%): 89.51%
CIE Type : Semidirect lighting
Output flux ratio in π solid angle : 61.905%

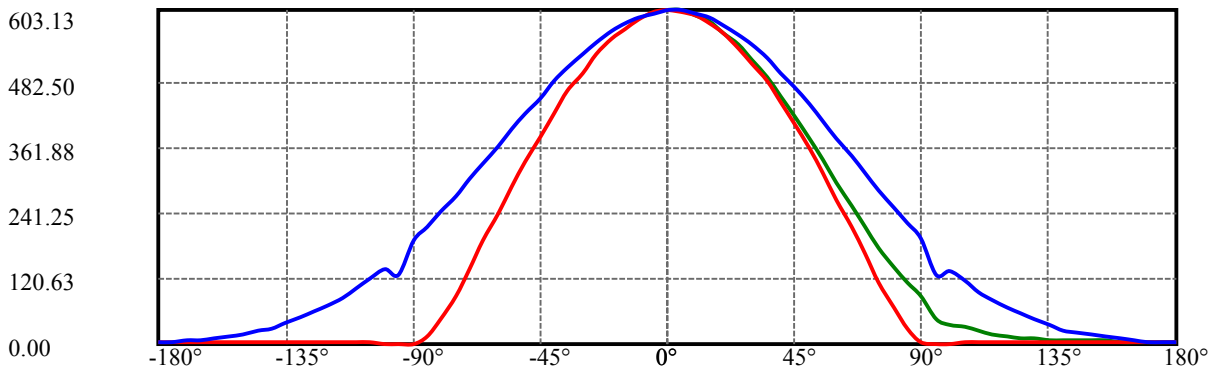
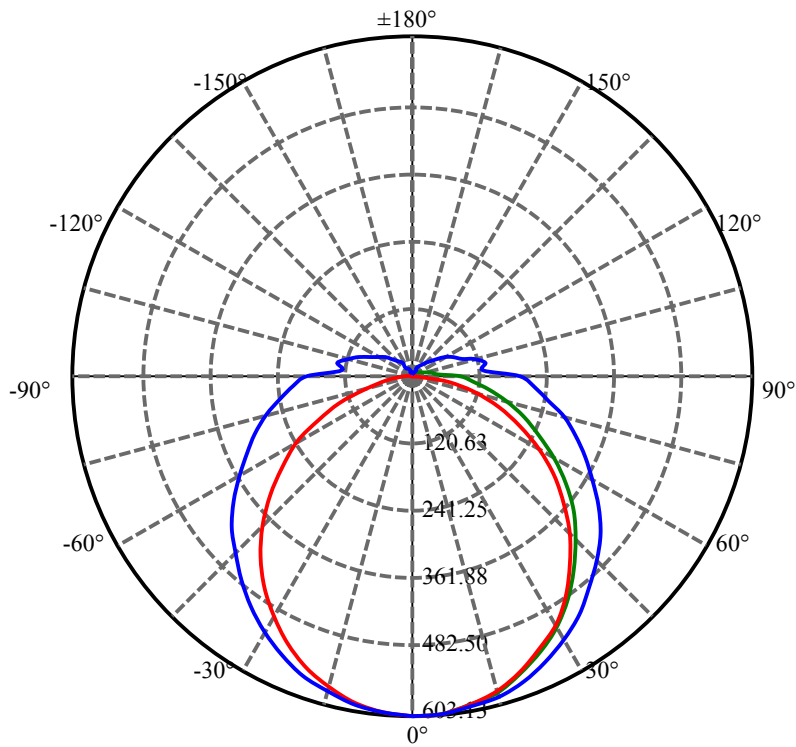
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	602.182	.000	.000	.000%	.000%
5.0	599.372	14.364	14.364	.631%	.631%
10.0	591.752	42.610	56.974	1.871%	2.501%
15.0	579.544	69.480	126.455	3.050%	5.551%
20.0	562.033	94.082	220.537	4.130%	9.682%
25.0	540.877	115.675	336.212	5.078%	14.760%
30.0	515.538	133.690	469.902	5.869%	20.629%
35.0	486.434	147.547	617.449	6.477%	27.106%
40.0	454.738	157.027	774.477	6.894%	34.000%
45.0	420.693	162.093	936.570	7.116%	41.116%
50.0	384.562	162.714	1099.283	7.143%	48.259%
55.0	347.246	159.119	1258.403	6.985%	55.244%
60.0	309.128	151.719	1410.122	6.661%	61.905%
65.0	271.218	141.083	1551.205	6.194%	68.098%
70.0	234.373	128.019	1679.224	5.620%	73.718%
75.0	198.100	113.042	1792.265	4.963%	78.681%
80.0	165.120	97.187	1889.453	4.267%	82.948%
85.0	135.741	81.751	1971.204	3.589%	86.537%
90.0	111.895	67.805	2039.008	2.977%	89.513%
95.0	68.167	49.302	2088.311	2.164%	91.678%
100.0	65.148	36.225	2124.535	1.590%	93.268%
105.0	57.287	32.760	2157.295	1.438%	94.706%
110.0	48.888	27.752	2185.048	1.218%	95.924%
115.0	41.049	22.773	2207.820	1.000%	96.924%
120.0	33.891	18.218	2226.039	.800%	97.724%
125.0	27.930	14.290	2240.328	.627%	98.351%
130.0	21.968	10.850	2251.178	.476%	98.827%
135.0	17.313	7.937	2259.115	.348%	99.176%
140.0	13.899	5.779	2264.895	.254%	99.430%
145.0	11.396	4.220	2269.115	.185%	99.615%
150.0	9.398	3.062	2272.177	.134%	99.749%
155.0	7.795	2.176	2274.353	.096%	99.845%
160.0	6.455	1.495	2275.847	.066%	99.910%
165.0	5.500	.985	2276.833	.043%	99.954%
170.0	4.765	.609	2277.442	.027%	99.980%
175.0	4.600	.335	2277.777	.015%	99.995%
180.0	4.611	.110	2277.887	.005%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Fixt
0-30	469.90	20.63%
0-40	774.48	34.00%
0-60	1410.12	61.90%
0-90	2039.01	89.51%
0-120	2226.04	97.72%
0-180	2277.89	100.00%
60-90	780.61	34.27%
90-120	254.84	11.19%
90-130	279.97	12.29%
90-150	300.97	13.21%
90-180	306.57	13.46%
0-76.55	1822.31	80.00%

ZONAL LUMEN SUMMARY

0-10	56.97
10-20	163.56
20-30	249.37
30-40	304.57
40-50	324.81
50-60	310.84
60-70	269.10
70-80	210.23
80-90	149.56
90-100	85.53
100-110	60.51
110-120	40.99
120-130	25.14
130-140	13.72
140-150	7.28
150-160	3.67
160-170	1.59
170-180	0.34



C30(Max): —

C0/C180: —

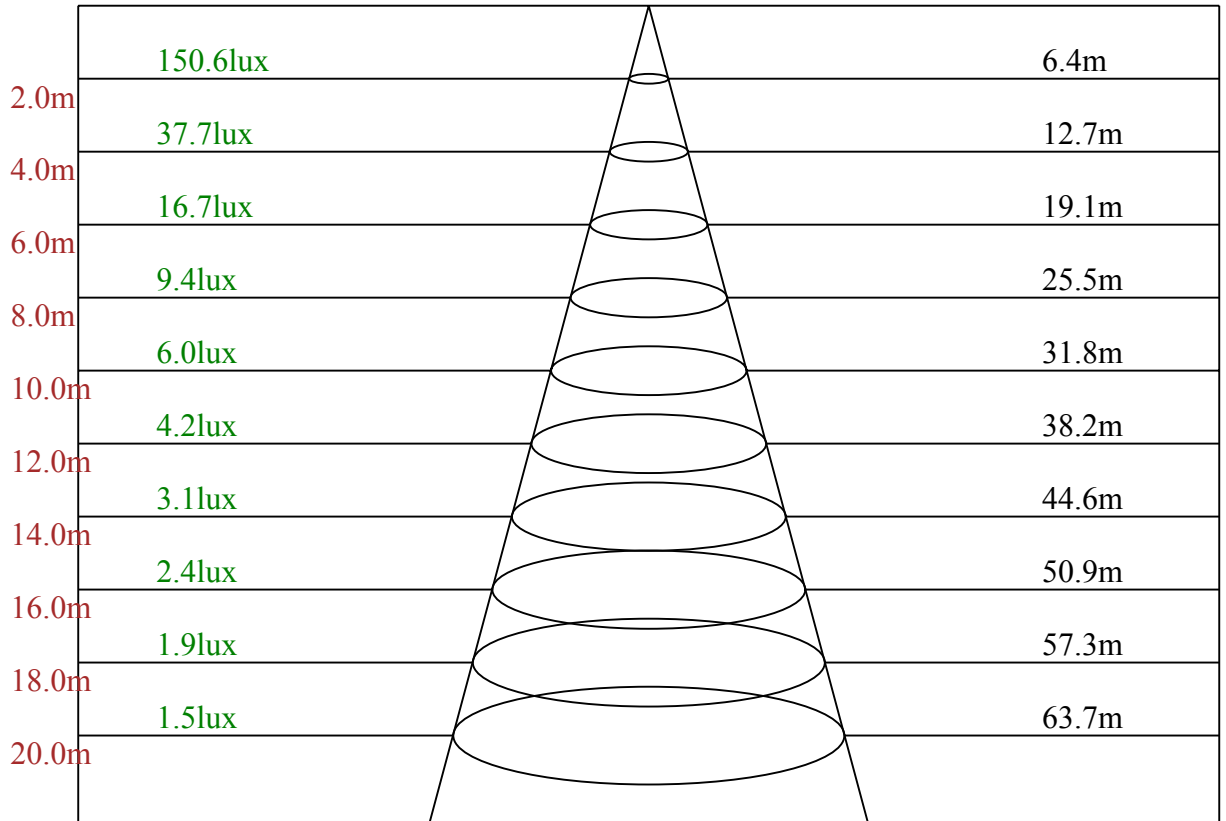
C90/C270: —

Field angle(10%Imax):C0/180Left:78.2 Right:80.7

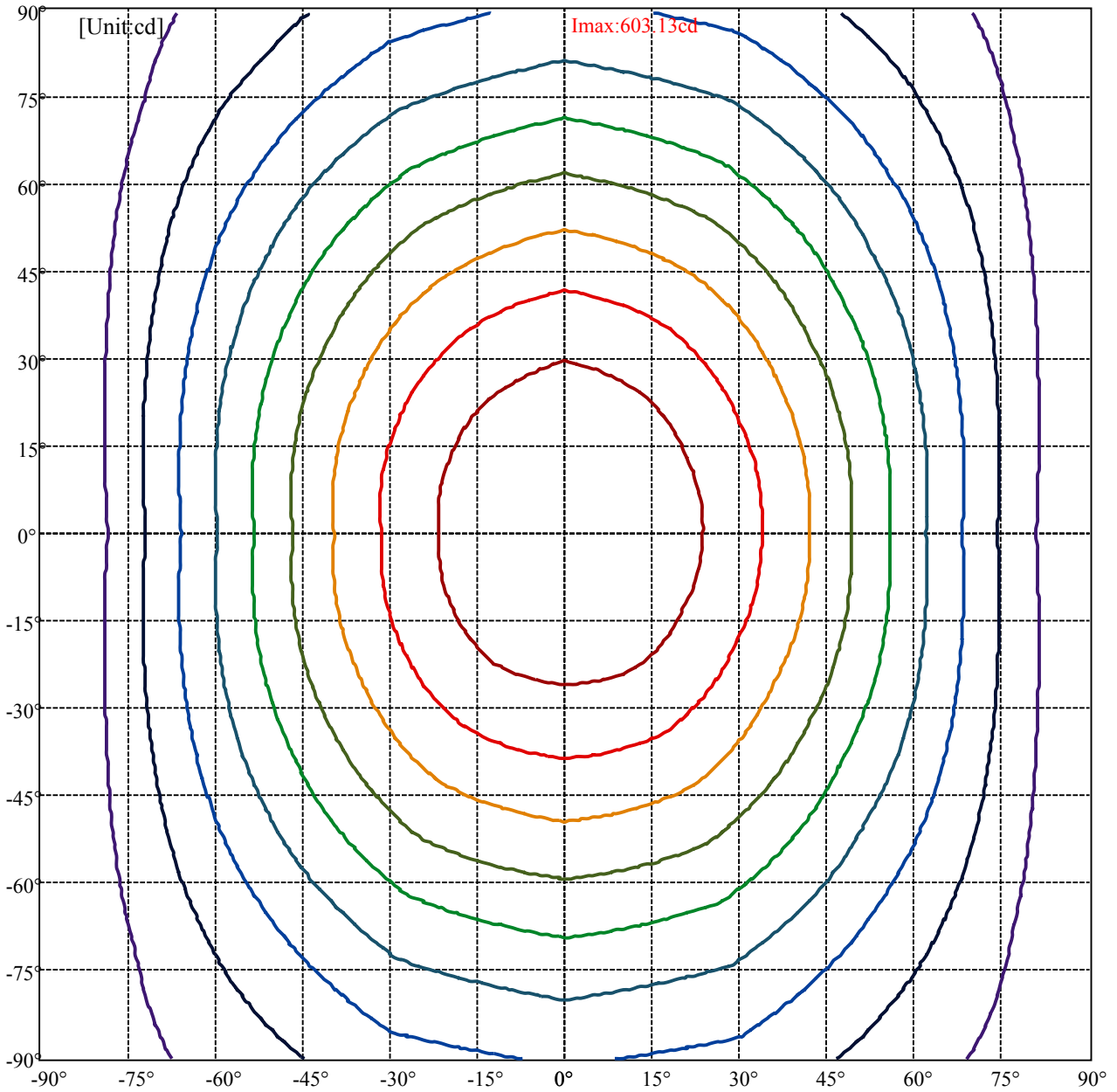
:C90/270Left:124.3 Right:122.9










Beam Angle(50%Imax):C0/180Left:53.1 Right:55.6

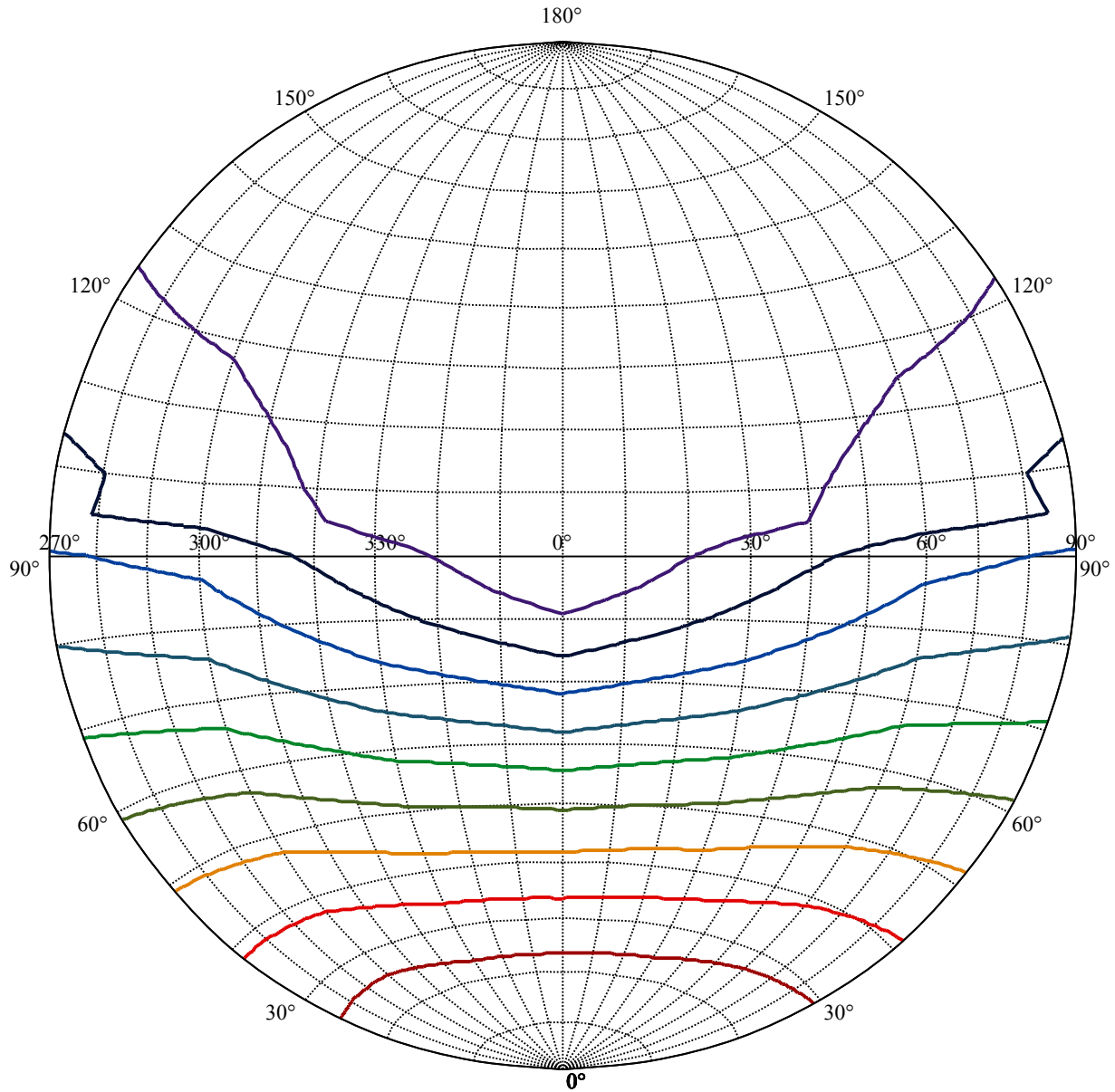
:C90/270Left:69.3 Right:71.2



Beam angle of C30plane115.67



(10%Imax) 60.2291	
(20%Imax) 120.458	
(30%Imax) 180.687	
(40%Imax) 240.917	
(50%Imax) 301.146	
(60%Imax) 361.375	
(70%Imax) 421.604	
(80%Imax) 481.833	
(90%Imax) 542.062	

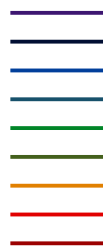


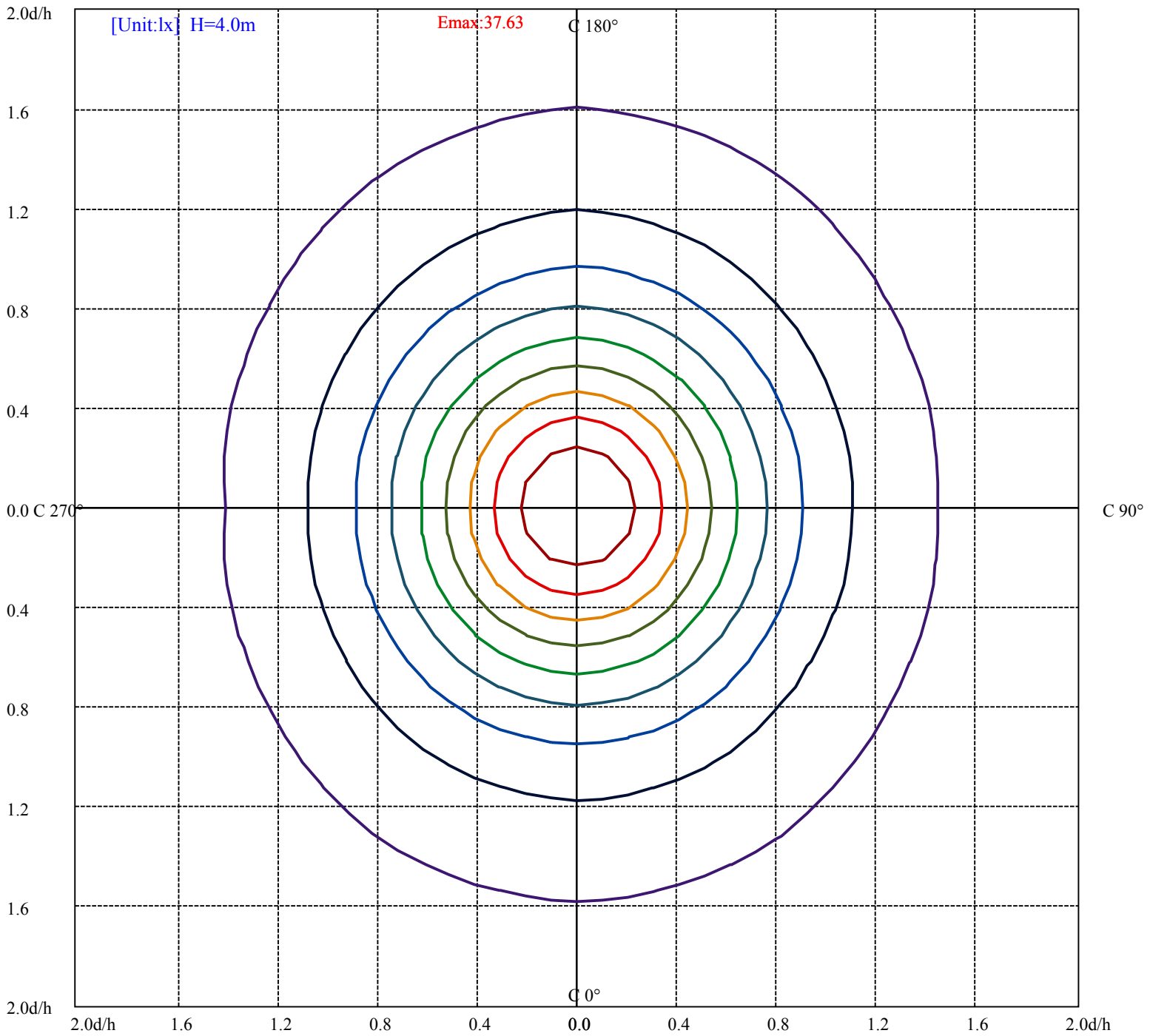
House

Road

[Unit:cd]

- I_{max}:603.13
- (10%I_{max}) 60.3126
- (20%I_{max}) 120.625
- (30%I_{max}) 180.938
- (40%I_{max}) 241.25
- (50%I_{max}) 301.563
- (60%I_{max}) 361.876
- (70%I_{max}) 422.188
- (80%I_{max}) 482.501
- (90%I_{max}) 542.814



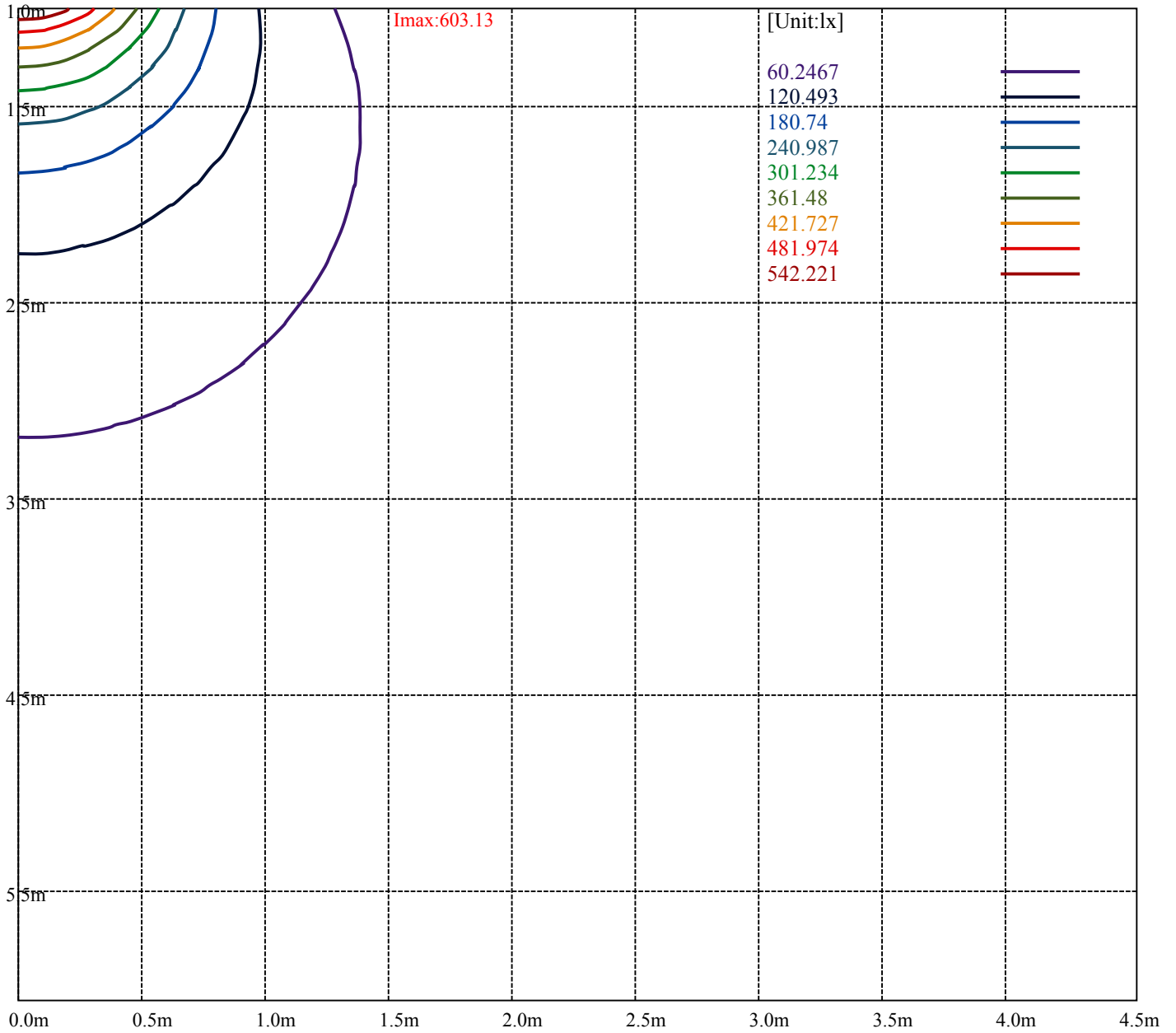


(10%Emax)	3.763362	—
(20%Emax)	7.52675	—
(30%Emax)	11.29006	—
(40%Emax)	15.05344	—
(50%Emax)	18.81681	—
(60%Emax)	22.58019	—
(70%Emax)	26.34356	—
(80%Emax)	30.10687	—
(90%Emax)	33.87025	—

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

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

Operator: Marine
Distance(m): 11.48



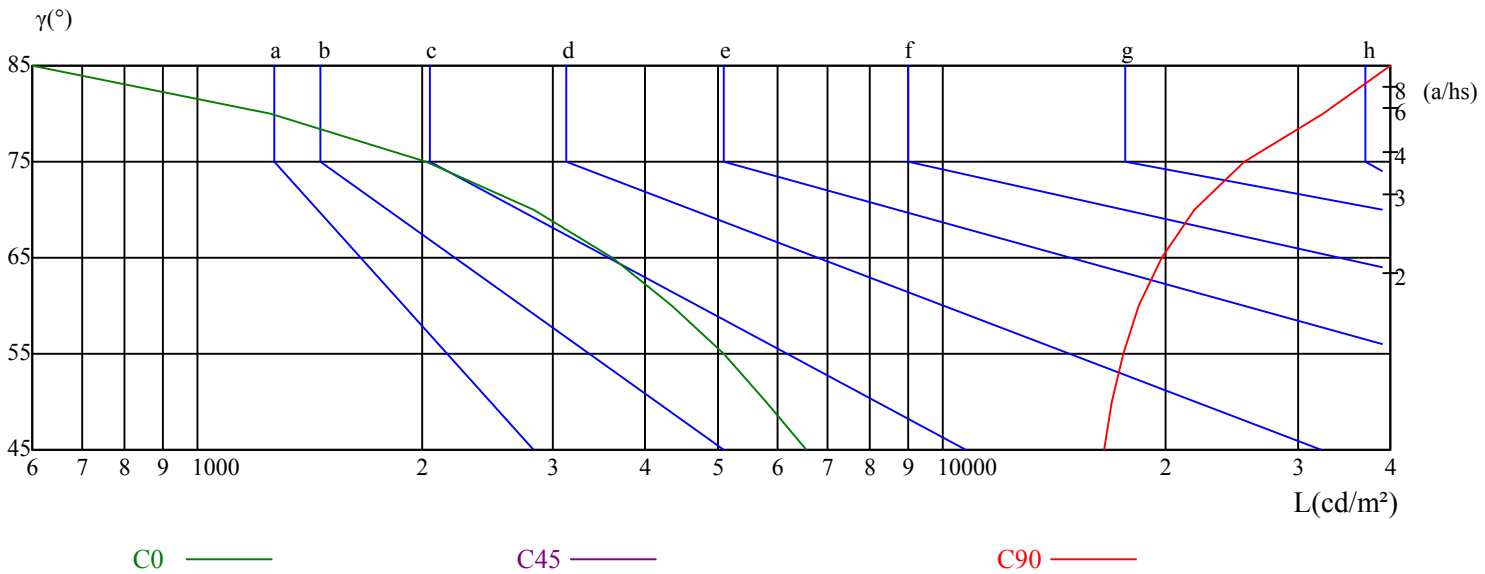
Luminance Table

γ	45	50	55	60	65	70	75	80	85
C0	6566	5813	5077	4327	3598	2834	2026	1253	546
C45	0	0	0	0	0	0	0	0	0
C90	16485	16885	17488	18407	19701	21851	25495	32579	52046

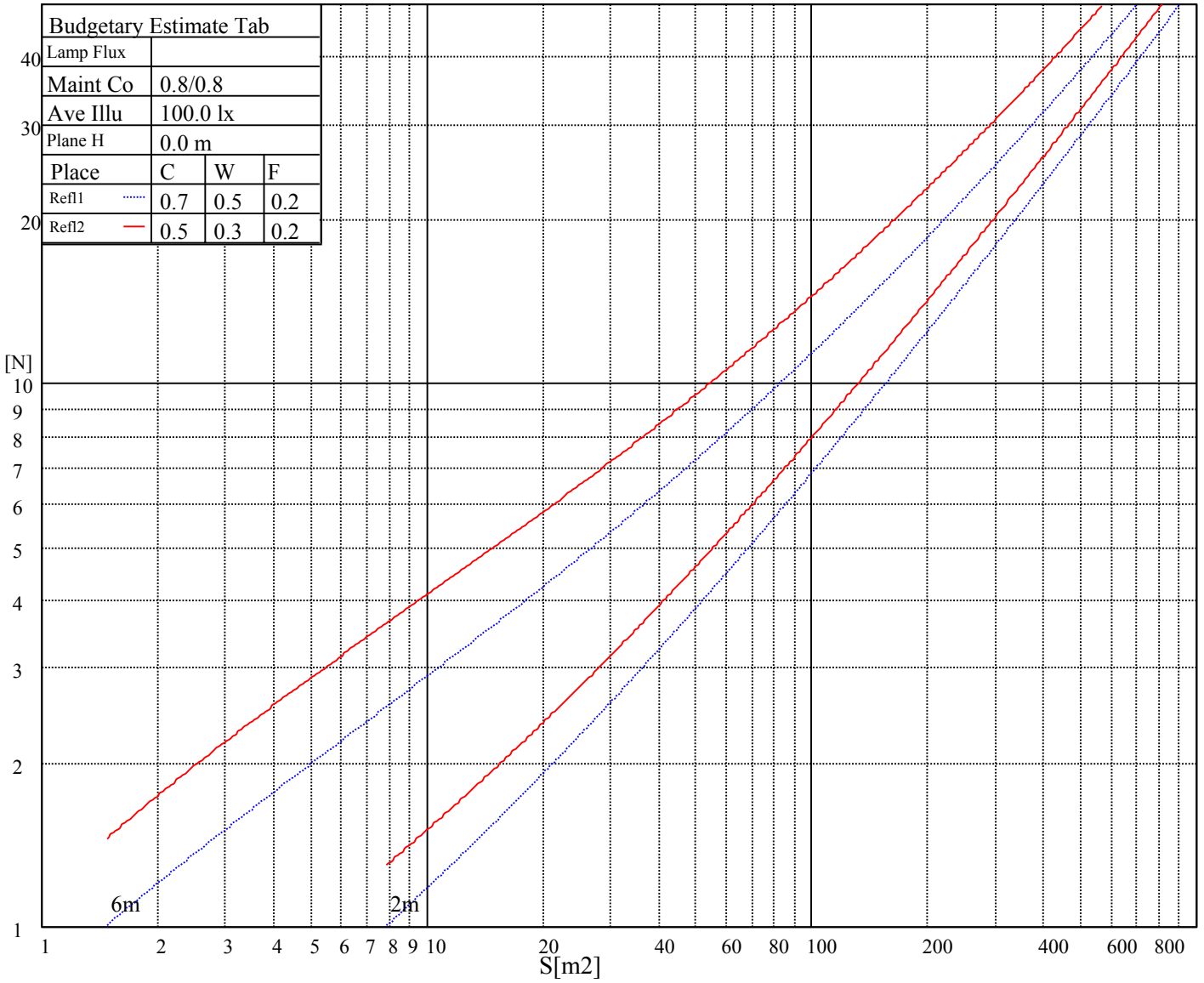
Glare Table

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	14.7	16.0	15.1	16.4	16.9	16.9	18.2	17.3	18.6	19.1
	3H	16.0	17.1	16.4	17.6	18.1	19.4	20.6	19.9	21.0	21.5
	4H	16.2	17.2	16.7	17.7	18.3	20.5	21.6	21.1	22.1	22.6
	6H	16.6	17.6	17.1	18.1	18.7	22.1	23.1	22.6	23.6	24.2
	8H	16.7	17.7	17.2	18.2	18.8	23.0	24.0	23.5	24.5	25.0
	12H	16.5	17.3	17.1	17.8	18.5	23.7	24.5	24.2	25.0	25.7
4H	2H	15.5	16.5	16.0	17.0	17.6	17.1	18.2	17.7	18.7	19.2
	3H	16.9	17.7	17.5	18.3	18.9	19.8	20.6	20.4	21.2	21.8
	4H	17.6	18.4	18.2	19.0	19.6	21.4	22.2	22.0	22.8	23.4
	6H	18.1	18.9	18.7	19.4	20.1	23.1	23.9	23.7	24.5	25.1
	8H	18.0	18.5	18.7	19.1	19.9	23.9	24.4	24.5	25.0	25.7
	12H	18.1	18.6	18.7	19.2	19.9	25.0	25.4	25.6	26.1	26.8
8H	4H	18.3	18.7	18.9	19.4	20.1	21.5	22.0	22.2	22.7	23.4
	6H	19.0	19.4	19.6	20.1	20.8	23.4	23.9	24.1	24.6	25.3
	8H	19.2	19.7	19.9	20.3	21.1	24.5	25.0	25.2	25.7	26.4
	12H	19.4	19.9	20.0	20.5	21.2	25.8	26.2	26.4	26.9	27.6
12H	4H	18.5	19.0	19.2	19.6	20.4	21.6	22.1	22.2	22.7	23.4
	6H	19.3	19.8	20.0	20.5	21.2	23.5	24.0	24.2	24.6	25.4
	8H	19.7	20.2	20.3	20.8	21.5	24.7	25.1	25.3	25.8	26.5
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					0.3/-0.7				
Standard tables:		BKFF					BKBF				
Uncorrected UGR		3.5					8.3				
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	0.90
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	0.47
4	0.65	0.55	0.48	0.63	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	0.36	0.50	0.41	0.35	0.47	0.39	0.34	0.44	0.38	0.33	0.42	0.36	0.32	0.29
7	0.47	0.38	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	0.08	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	0.16	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	0.07	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	0.12	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	0.08	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	602.47	600.89	592.98	580.20	560.05	535.41	507.74	473.23	435.81
30.0	603.13	601.41	592.46	581.65	562.55	539.36	513.94	482.05	447.40
60.0	601.15	600.89	595.22	583.89	569.14	552.01	528.56	502.08	475.33
90.0	601.68	601.81	595.62	589.16	575.20	558.46	540.28	516.57	490.35
120.0	602.07	598.78	593.38	581.39	565.58	547.79	523.55	496.41	469.01
150.0	602.60	599.83	589.69	577.70	557.54	533.04	506.69	473.62	438.05
180.0	602.47	598.12	587.05	570.06	549.90	522.10	490.09	456.36	416.71
210.0	603.13	597.86	589.56	574.54	555.17	531.19	501.95	470.72	434.76
240.0	601.15	597.99	590.35	578.23	561.50	542.79	518.55	491.41	464.14
270.0	601.68	597.46	590.74	579.15	564.00	545.42	523.68	500.37	473.49
300.0	602.07	599.04	592.06	580.60	564.66	546.21	522.76	496.68	469.14
330.0	602.60	598.38	591.93	577.96	559.12	536.73	508.67	477.71	442.66
360.0	602.47	600.89	592.98	580.20	560.05	535.41	507.74	473.23	435.81

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	396.95	352.81	306.96	258.61	210.92	161.65	111.46	65.87	27.14
30.0	411.83	371.65	331.60	291.16	249.39	210.66	172.59	138.73	109.61
60.0	443.98	411.17	378.90	343.85	310.52	277.85	246.36	215.40	187.34
90.0	464.00	433.70	402.74	371.78	339.11	308.02	277.19	246.49	218.70
120.0	437.26	403.93	371.12	336.08	302.75	269.94	237.54	208.02	180.23
150.0	401.56	360.45	319.88	278.90	236.88	198.01	160.33	127.13	95.12
180.0	373.76	330.81	282.86	234.51	185.89	136.75	87.48	44.40	12.38
210.0	396.95	358.74	317.37	276.14	237.14	198.14	161.12	129.37	101.71
240.0	432.52	399.84	368.75	335.03	301.96	269.68	240.17	211.45	185.23
270.0	445.30	417.50	386.93	355.97	324.88	296.69	267.05	240.17	212.77
300.0	438.05	405.64	372.44	340.82	307.76	277.06	245.44	216.46	189.98
330.0	406.17	368.49	327.39	286.68	247.42	208.02	170.48	137.94	108.69
360.0	396.95	352.81	306.96	258.61	210.92	161.65	111.46	65.87	27.14

C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	4.08	1.32	1.45	1.84	2.11	2.37	2.63	2.77	3.16
30.0	84.98	43.34	36.23	30.56	24.90	18.31	12.38	10.41	9.35
60.0	160.60	96.17	92.88	82.21	70.75	59.81	49.01	39.13	27.53
90.0	190.90	126.34	132.80	113.96	94.20	80.63	67.06	55.20	44.13
120.0	153.88	93.14	90.11	78.91	67.72	57.18	46.90	37.68	29.91
150.0	73.65	39.13	32.15	27.14	22.40	18.18	15.15	12.65	10.67
180.0	1.19	1.45	1.71	1.98	2.24	2.37	2.77	3.03	3.16
210.0	78.39	40.71	34.52	29.77	25.16	20.16	16.86	14.36	11.99
240.0	159.54	100.39	94.07	85.63	74.96	63.90	53.36	44.27	34.39
270.0	187.34	126.21	134.51	116.59	99.99	84.18	70.88	58.49	47.03
300.0	164.02	107.11	94.72	87.48	76.68	65.21	54.81	45.06	32.01
330.0	84.18	42.69	36.62	31.36	25.56	20.29	14.89	12.12	10.28
360.0	4.08	1.32	1.45	1.84	2.11	2.37	2.63	2.77	3.16

C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	3.43	3.56	3.82	3.95	4.08	4.35	4.48	4.48	4.61
30.0	8.43	7.25	6.59	5.93	5.40	4.87	4.48	4.48	4.61
60.0	18.84	15.02	11.99	9.88	8.30	6.98	5.80	4.61	4.61
90.0	33.33	24.64	20.16	15.68	12.25	8.83	6.98	5.01	4.61
120.0	23.32	18.84	15.15	11.73	9.22	6.98	5.67	4.35	4.48
150.0	9.22	7.90	6.85	5.93	5.27	4.61	4.35	4.48	4.61
180.0	3.29	3.56	3.69	3.95	4.08	4.22	4.35	4.61	4.74
210.0	10.28	8.70	7.64	6.72	5.93	5.27	4.74	4.61	4.61
240.0	28.06	22.53	17.65	13.96	10.80	8.56	6.59	5.27	4.61
270.0	36.49	28.98	22.79	17.52	13.31	9.88	7.51	5.67	4.61
300.0	24.11	18.31	13.70	11.20	9.22	7.64	6.32	5.27	4.48
330.0	8.96	7.51	6.72	6.32	5.67	5.27	4.74	4.35	4.61
360.0	3.43	3.56	3.82	3.95	4.08	4.35	4.48	4.48	4.61

Intensity data(cd)

C/γ(°)	180.0
0.0	4.61
30.0	4.61
60.0	4.61
90.0	4.74
120.0	4.48
150.0	4.61
180.0	4.61
210.0	4.61
240.0	4.61
270.0	4.74
300.0	4.48
330.0	4.61
360.0	4.61