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NATA

LumCAT: 2-1568-M	
Luminaire: BJB 47.319.2021	
Report No: NATA0100	Voltage(V): 36.4000
Test No: GC2019011802	Current(A): 0.6000
LampCAT: CITIZEN CLU038	Power (W): 21.8400
Lamp flux(lm): 2492.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 70	Width(mm): 70
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2277.36
Efficiency(%): 91.39%
Lumens(lm)/Power(W): 105.43
Central intensity(cd): 4598.860
Maximum intensity(cd): 4598.860
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=38.8
[C90/270]Total=38.8
Field angle(10%Imax): [C0/180]Total=73.1
[C90/270]Total=73.1
Maximum s/h(1/2): C0_180=0.64 C90_270=0.64
Maximum s/h(1/4): C0_180=0.61 C90_270=0.61
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 92.40%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.708%

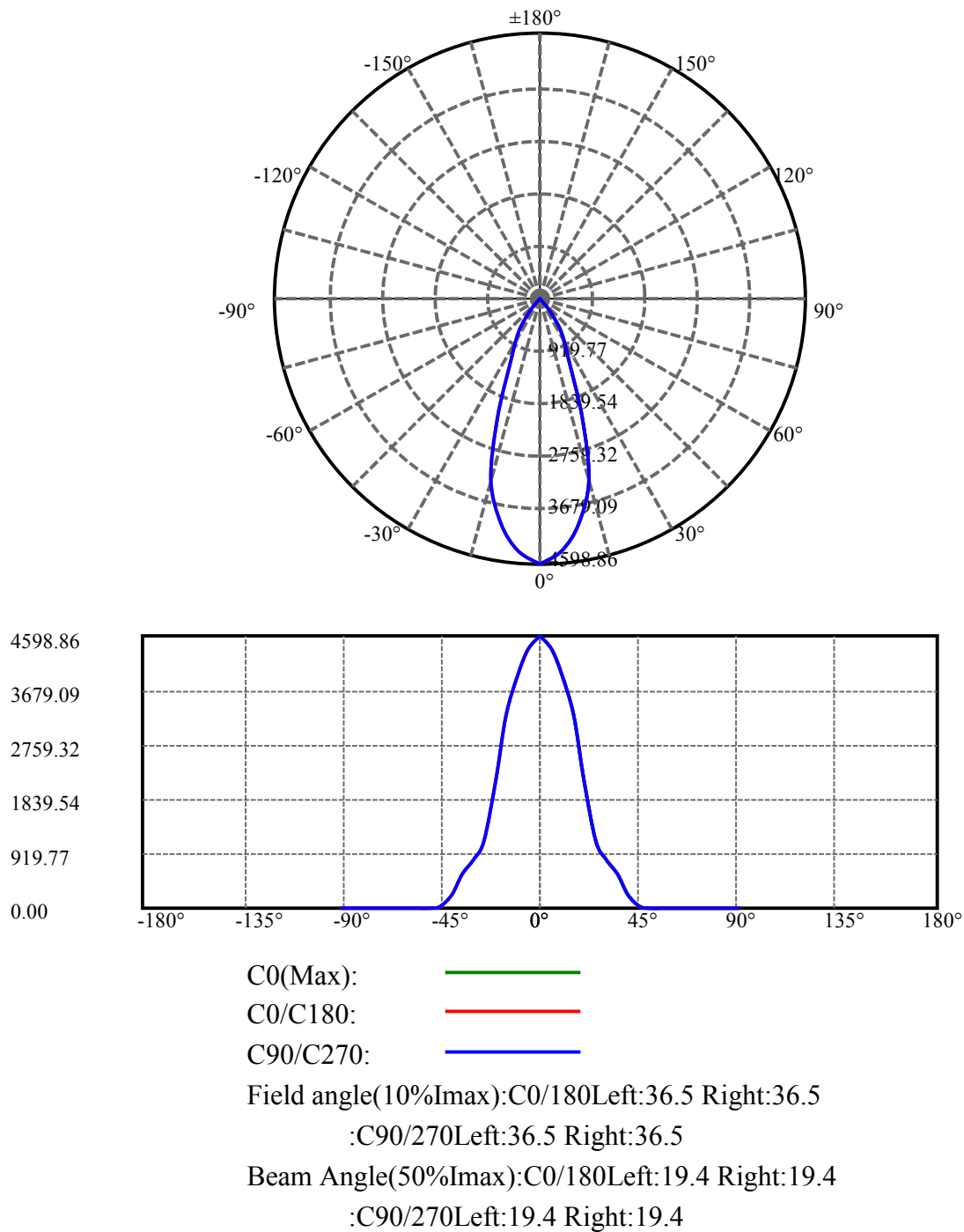
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4598.859	27.502	27.502	1.104%	1.208%
5.0	4378.570	209.179	236.681	8.394%	10.393%
10.0	3946.852	375.673	612.354	15.075%	26.889%
15.0	3247.805	460.761	1073.115	18.490%	47.121%
20.0	2167.383	406.328	1479.443	16.305%	64.963%
25.0	1154.749	267.501	1746.944	10.734%	76.709%
30.0	824.843	226.064	1973.008	9.072%	86.636%
35.0	562.978	177.000	2150.007	7.103%	94.408%
40.0	225.246	79.362	2229.37	3.185%	97.893%
45.0	16.966	6.576	2235.946	.264%	98.181%
50.0	11.278	4.736	2240.681	.190%	98.389%
55.0	10.160	4.562	2245.243	.183%	98.590%
60.0	9.851	4.676	2249.92	.188%	98.795%
65.0	9.675	4.806	2254.726	.193%	99.006%
70.0	9.513	4.900	2259.626	.197%	99.221%
75.0	9.443	5.000	2264.626	.201%	99.441%
80.0	9.401	5.075	2269.7	.204%	99.663%
85.0	9.345	5.103	2274.803	.205%	99.888%
90.0	9.345	2.561	2277.364	.103%	100.000%

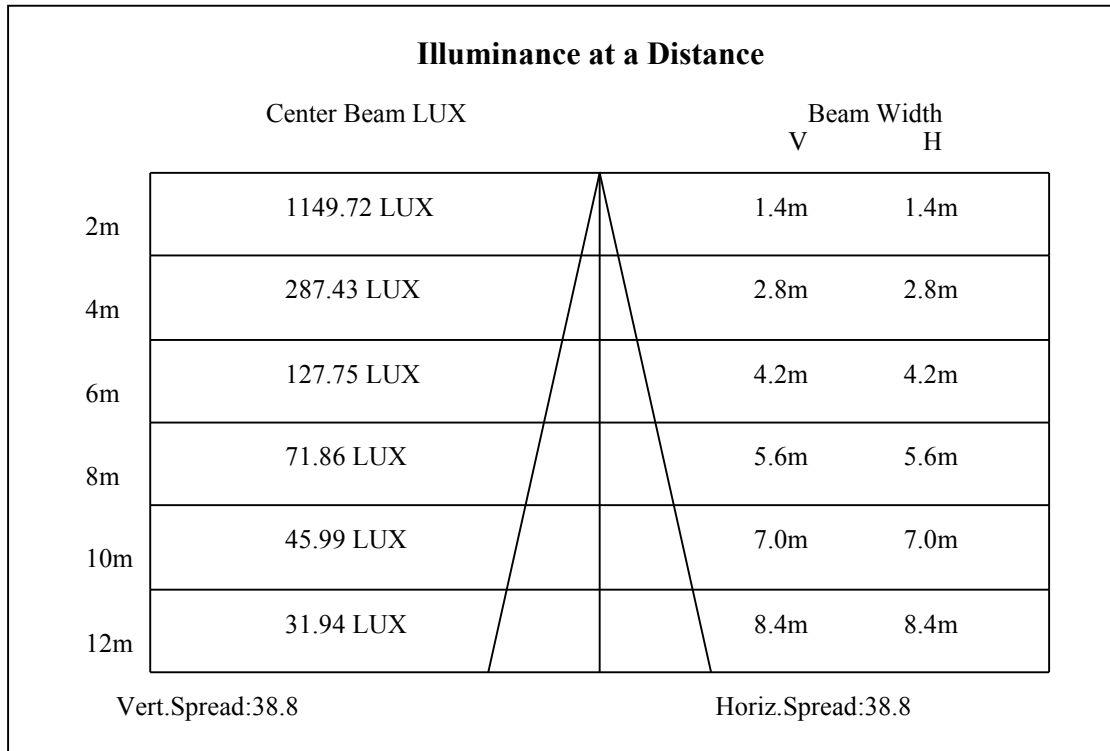
ZONAL LUMEN SUMMARY

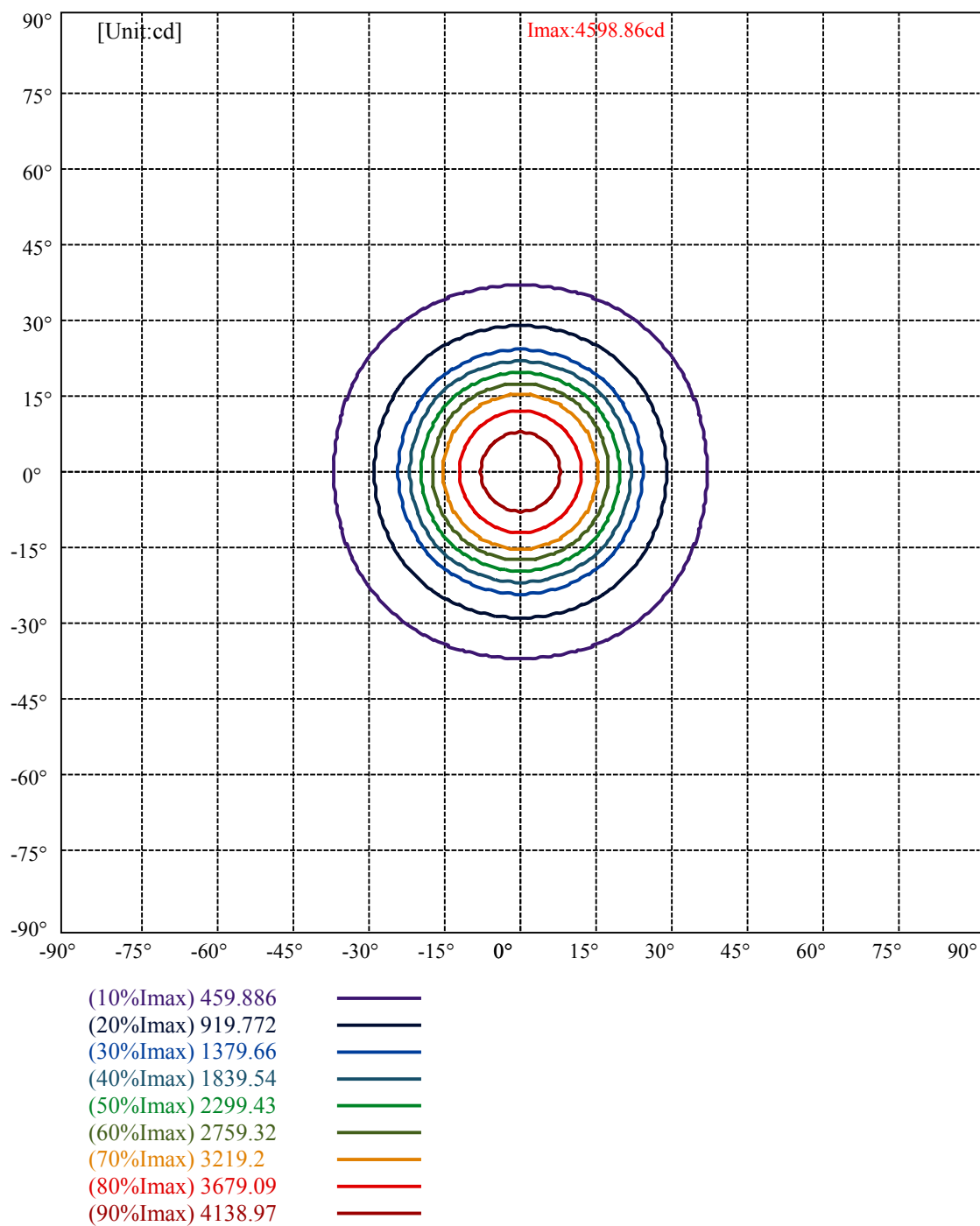
Zone	Lumens	%Lamp	%Fixt
0-30	1973.01	79.17%	86.64%
0-40	2229.37	89.46%	97.89%
0-60	2249.92	90.29%	98.79%
0-90	2274.80	91.28%	99.89%
0-120	2274.80	91.28%	99.89%
0-180	2277.36	91.39%	100.00%
60-90	29.56	1.19%	1.30%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.66	1821.89	73.11%	80.00%

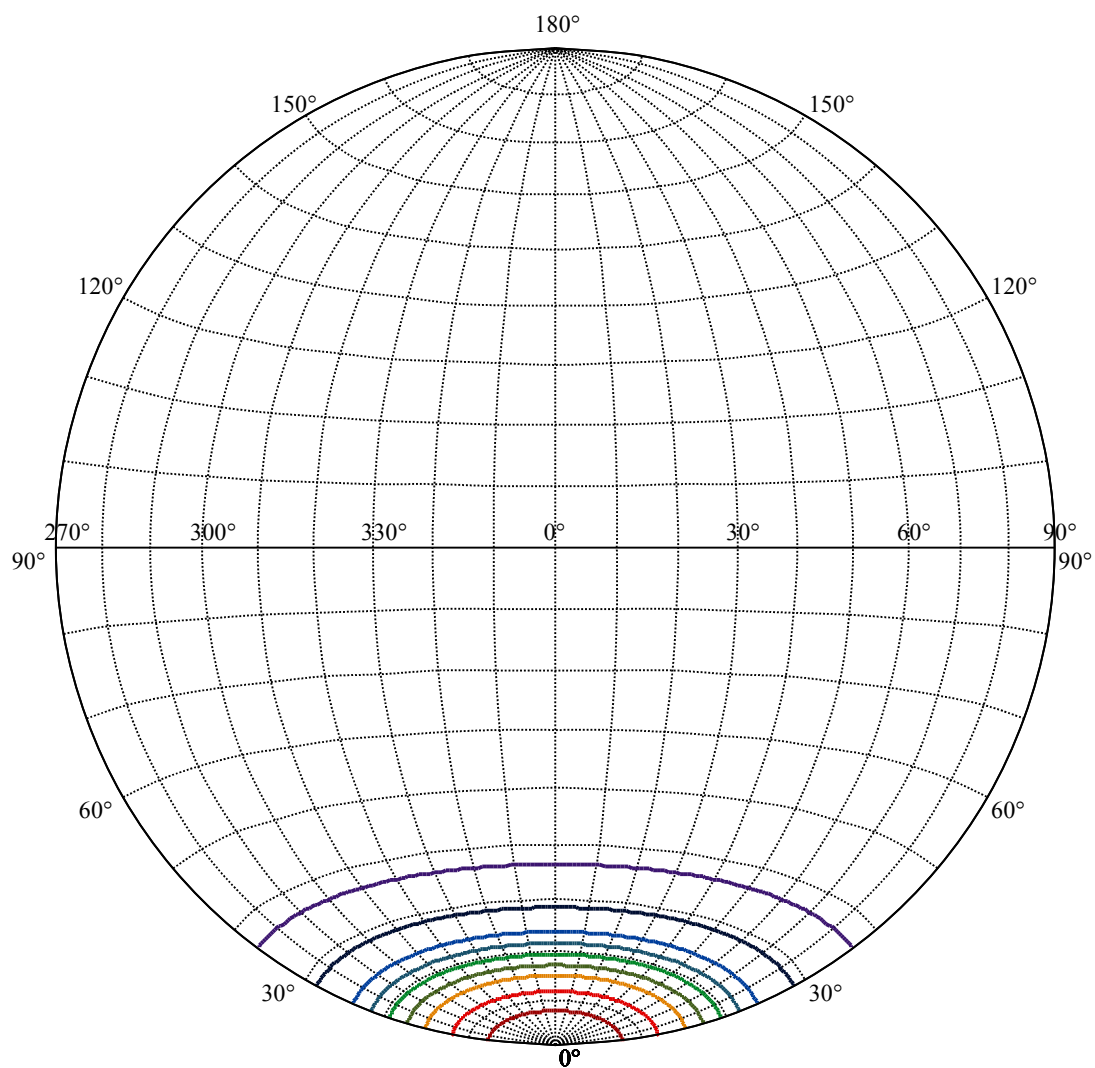
ZONAL LUMEN SUMMARY

0-10	612.35
10-20	867.09
20-30	493.56
30-40	256.36
40-50	11.31
50-60	9.24
60-70	9.71
70-80	10.07
80-90	5.10
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00









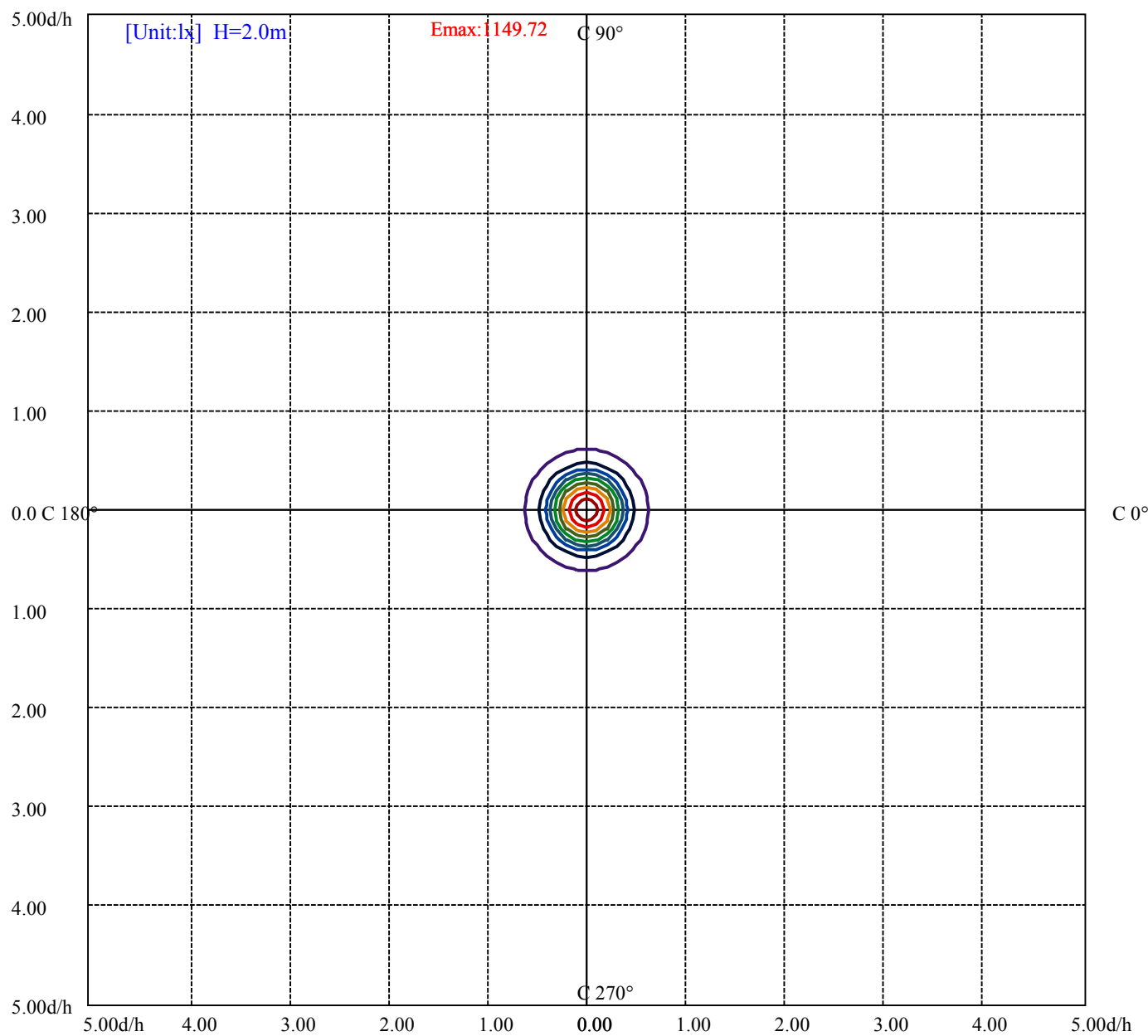
House

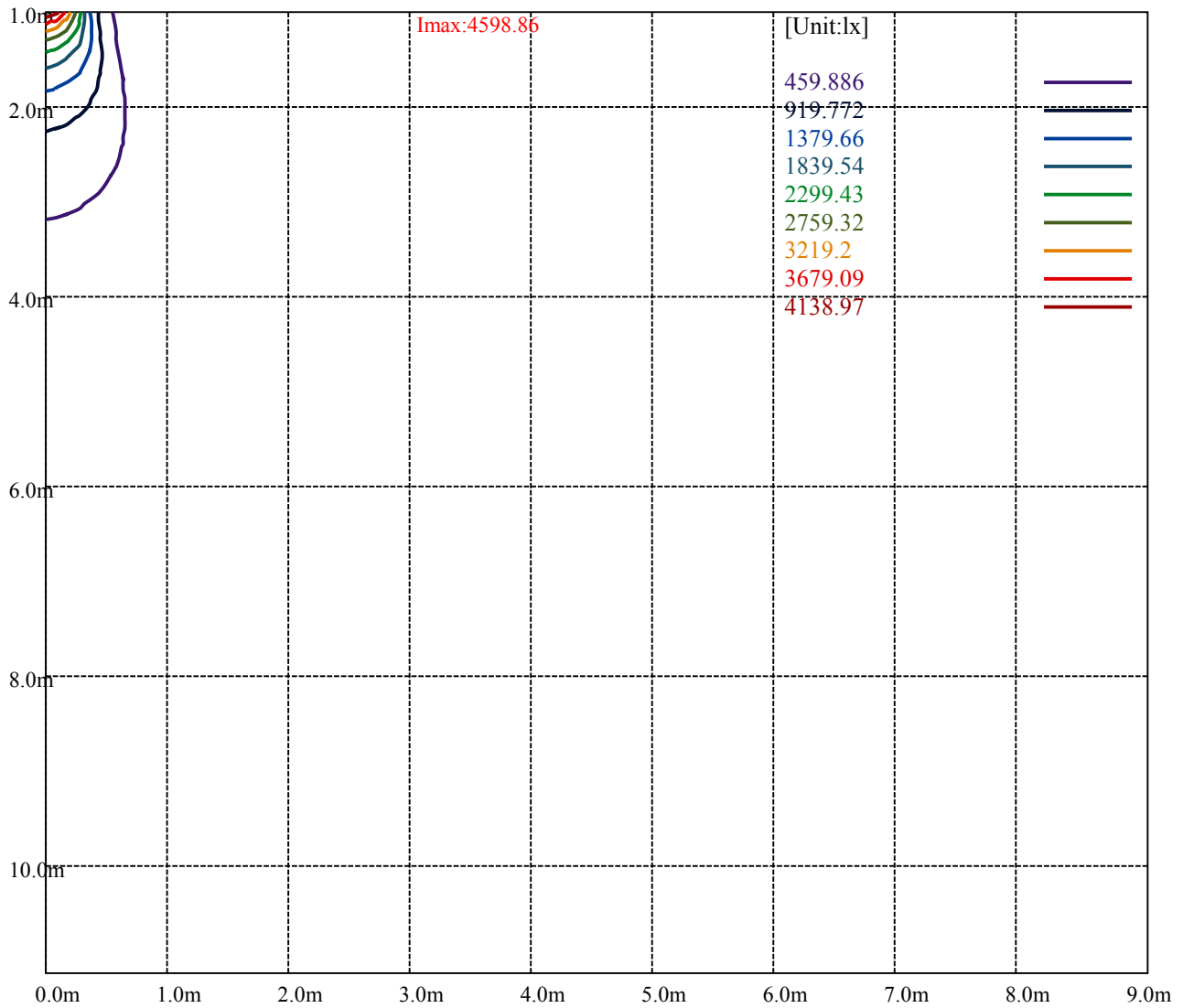
[Unit:cd]

Road

Imax:4598.86

(10%Imax)	459.886	—
(20%Imax)	919.772	—
(30%Imax)	1379.66	—
(40%Imax)	1839.54	—
(50%Imax)	2299.43	—
(60%Imax)	2759.32	—
(70%Imax)	3219.2	—
(80%Imax)	3679.09	—
(90%Imax)	4138.97	—

(10%E_{max}) 114.9713(20%E_{max}) 229.9427(30%E_{max}) 344.915(40%E_{max}) 459.885(50%E_{max}) 574.8575(60%E_{max}) 689.8275(70%E_{max}) 804.8(80%E_{max}) 919.77(90%E_{max}) 1034.743



Luminance Table

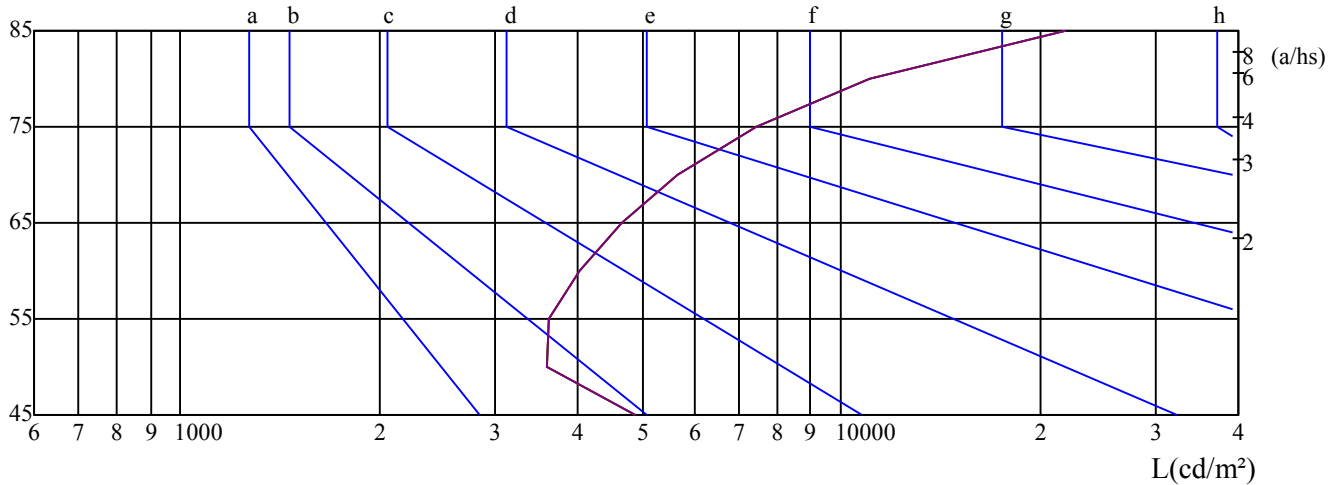
γ	45	50	55	60	65	70	75	80	85
C0	4897	3581	3615	4021	4672	5677	7446	11048	21881
C45	4897	3581	3615	4021	4672	5677	7446	11048	21881
C90	4897	3581	3615	4021	4672	5677	7446	11048	21881

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
4672	4672	4672	7446	7446	7446	21881	21881	21881

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

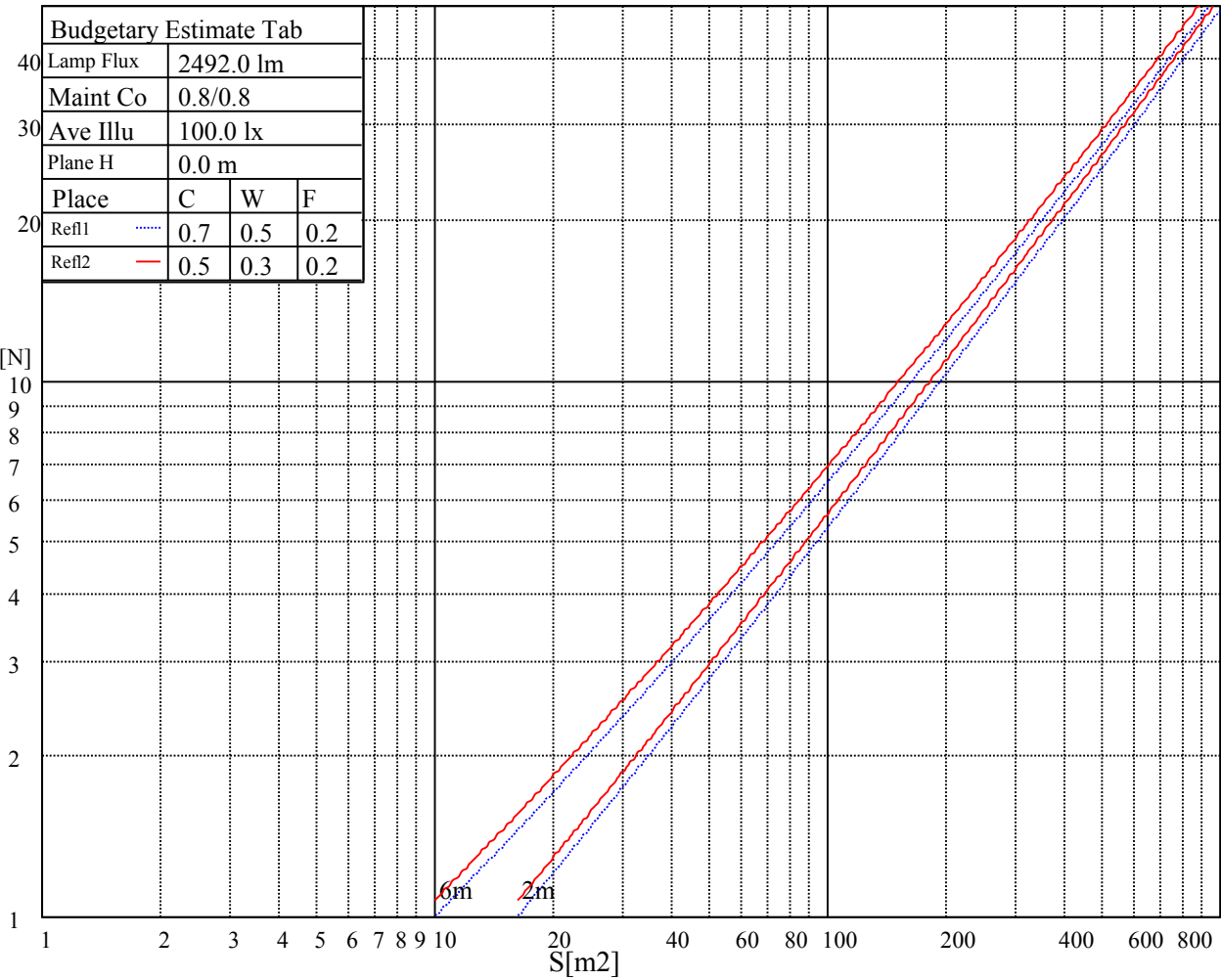
 $\gamma(^{\circ})$ 

C0 ———

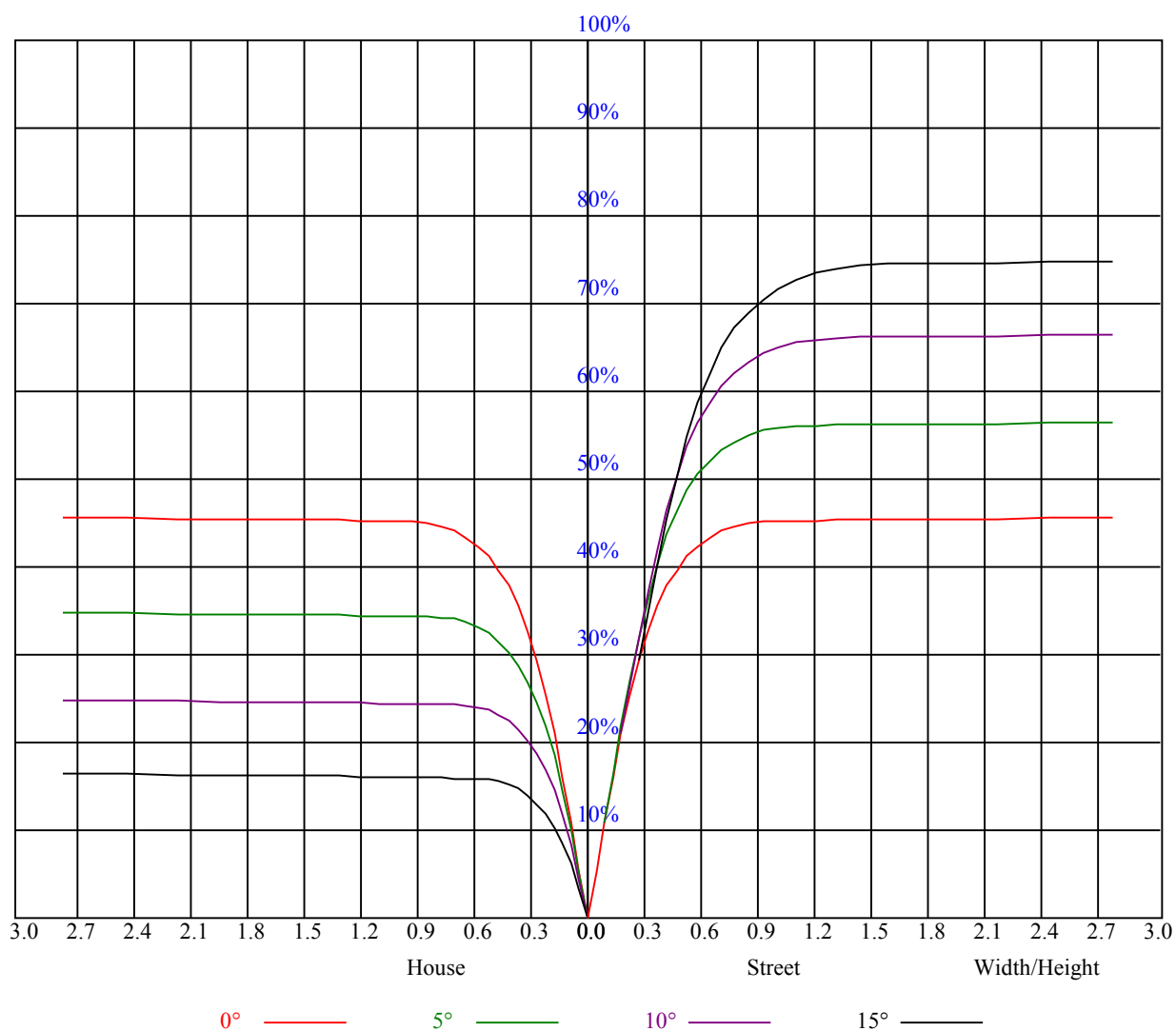
C45 ———

C90 ———

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	2.33	3.24	2.69	3.55	3.87	2.26	3.17	2.62	3.48	3.80
	3H	5.64	6.45	6.03	6.78	7.15	5.58	6.38	5.96	6.72	7.09
	4H	7.44	8.19	7.85	8.54	8.93	7.36	8.11	7.77	8.46	8.86
	6H	9.45	10.13	9.87	10.50	10.90	9.37	10.06	9.79	10.43	10.83
	8H	10.55	11.19	10.99	11.58	11.99	10.49	11.13	10.92	11.52	11.93
	12H	12.33	12.94	12.77	13.33	13.76	12.28	12.89	12.72	13.28	13.71
4H	2H	3.27	4.01	3.68	4.37	4.76	3.22	3.97	3.63	4.32	4.71
	3H	6.81	7.42	7.23	7.83	8.24	6.77	7.38	7.18	7.79	8.19
	4H	8.77	9.32	9.21	9.74	10.19	8.71	9.25	9.15	9.68	10.13
	6H	10.94	11.41	11.41	11.86	12.33	10.88	11.35	11.35	11.80	12.27
	8H	12.13	12.57	12.61	13.02	13.50	12.08	12.52	12.56	12.97	13.45
	12H	13.81	14.18	14.30	14.67	15.15	13.77	14.14	14.26	14.63	15.11
8H	4H	9.51	9.94	9.99	10.40	10.87	9.46	9.89	9.94	10.35	10.82
	6H	11.94	12.28	12.45	12.79	13.28	11.90	12.24	12.41	12.74	13.23
	8H	13.33	13.63	13.86	14.15	14.65	13.29	13.59	13.82	14.11	14.61
	12H	15.13	15.39	15.66	15.89	16.47	15.10	15.36	15.63	15.86	16.44
12H	4H	9.72	10.09	10.21	10.58	11.06	9.67	10.05	10.17	10.54	11.02
	6H	12.46	12.57	12.80	13.04	13.59	12.42	12.53	12.76	13.00	13.55
	8H	13.78	14.04	14.30	14.54	15.12	13.74	14.00	14.27	14.50	15.09
Variation with the observer position at spacings:											
S = 1.0H		4.9/-8.2					4.9/-8.2				
S = 1.5H		7.2/-6.1					7.2/-6.1				
S = 2.0H		8.6/-4.6					8.6/-4.6				
Standard tables:		BK2					BK2				
Uncorrected UGR		1.7					1.7				



RHOC	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	1.10	1.10	1.10	1.07	1.07	1.07	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.92
1	1.02	1.00	0.97	1.00	0.98	0.96	0.96	0.94	0.93	0.93	0.91	0.90	0.90	0.89	0.88	0.86
2	0.96	0.93	0.90	0.95	0.92	0.89	0.92	0.89	0.87	0.89	0.87	0.85	0.86	0.85	0.83	0.82
3	0.91	0.87	0.84	0.90	0.86	0.83	0.88	0.85	0.82	0.85	0.83	0.81	0.83	0.81	0.79	0.78
4	0.87	0.82	0.79	0.86	0.82	0.79	0.84	0.80	0.78	0.82	0.79	0.77	0.80	0.78	0.76	0.75
5	0.83	0.78	0.75	0.82	0.78	0.75	0.80	0.77	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.71
6	0.79	0.75	0.71	0.79	0.74	0.71	0.77	0.73	0.71	0.76	0.73	0.70	0.75	0.72	0.70	0.69
7	0.76	0.71	0.68	0.75	0.71	0.68	0.74	0.70	0.68	0.73	0.70	0.67	0.72	0.69	0.67	0.66
8	0.73	0.68	0.65	0.73	0.68	0.65	0.72	0.68	0.65	0.71	0.67	0.65	0.70	0.67	0.64	0.63
9	0.70	0.66	0.63	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.68	0.64	0.62	0.61
10	0.68	0.63	0.60	0.67	0.63	0.60	0.67	0.63	0.60	0.66	0.62	0.60	0.65	0.62	0.60	0.59



NATA 2-1568-M

Intensity data(cd)										Appendix Page: 15 Total:15	
C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	4604.06	4366.13	3939.75	3234.94	2218.50	1194.19	828.56	587.81	291.94		
45.0	4609.13	4349.25	3905.44	3159.00	2131.31	1149.75	816.19	524.81	302.06		
90.0	4589.44	4318.31	3846.94	3110.06	2050.31	1106.83	803.64	506.36	143.72		
135.0	4592.81	4410.56	4006.69	3414.94	2366.44	1313.44	861.19	626.63	299.25		
180.0	4604.06	4402.69	3939.19	3252.94	2124.00	1091.31	809.89	559.58	166.16		
225.0	4609.13	4443.75	4030.88	3277.13	2216.81	1107.00	832.28	596.31	189.28		
270.0	4589.44	4437.00	4043.81	3405.38	2304.56	1231.88	850.50	618.19	303.75		
315.0	4592.81	4300.88	3862.13	3128.06	1927.13	1043.61	796.50	484.14	105.81		
360.0	4604.06	4366.13	3939.75	3234.94	2218.50	1194.19	828.56	587.81	291.94		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	16.76	11.64	10.13	9.79	9.56	9.45	9.39	9.34	9.34		
45.0	16.09	11.14	10.24	9.96	9.79	9.56	9.51	9.45	9.39		
90.0	16.31	10.80	10.18	9.90	9.68	9.56	9.45	9.39	9.34		
135.0	18.73	11.53	10.18	9.84	9.68	9.51	9.45	9.39	9.34		
180.0	16.09	10.91	10.07	9.73	9.62	9.45	9.34	9.34	9.28		
225.0	16.88	11.59	10.24	9.90	9.73	9.56	9.51	9.45	9.39		
270.0	18.90	11.81	10.24	9.90	9.73	9.56	9.51	9.45	9.34		
315.0	15.98	10.80	10.01	9.79	9.62	9.45	9.39	9.39	9.34		
360.0	16.76	11.64	10.13	9.79	9.56	9.45	9.39	9.34	9.34		
C/γ(°)	90.0										
0.0	9.28										
45.0	9.39										
90.0	9.39										
135.0	9.34										
180.0	9.28										
225.0	9.39										
270.0	9.34										
315.0	9.34										
360.0	9.28										