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NATA

LumCAT: 1408-N	
Luminaire: 92.70.044.00	
Report No: NATA0100	Voltage(V): 35.7000
Test No: GC2019022010	Current(A): 0.2000
LampCAT: LUMILEDS LUXEON 1202S	Power (W): 7.1400
Lamp flux(lm): 906.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 39	Width(mm): 39
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 769.71
Efficiency(%): 84.96%
Lumens(lm)/Power(W): 108.32
Central intensity(cd): 734.428
Maximum intensity(cd): 734.428
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=58.2
[C90/270]Total=58.2
Field angle(10%Imax): [C0/180]Total=98.9
[C90/270]Total=98.9
Maximum s/h(1/2): C0_180=0.86 C90_270=0.86
Maximum s/h(1/4): C0_180=0.91 C90_270=0.91
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 85.36%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 95.879%

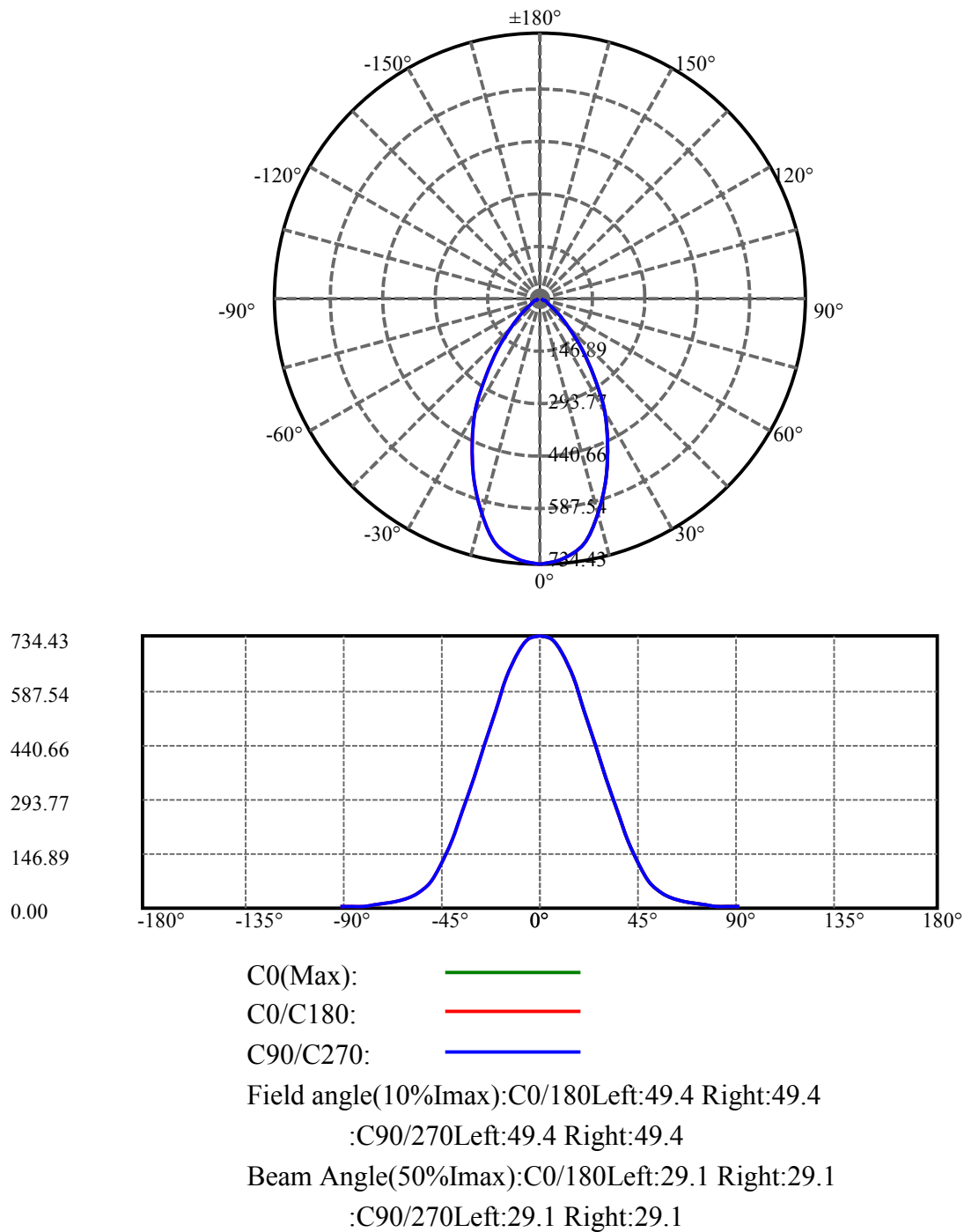
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	734.428	4.392	4.392	.485%	.571%
5.0	723.607	34.569	38.961	3.816%	5.062%
10.0	687.375	65.426	104.388	7.221%	13.562%
15.0	619.467	87.883	192.27	9.700%	24.980%
20.0	534.326	100.172	292.443	11.057%	37.994%
25.0	439.973	101.921	394.364	11.250%	51.235%
30.0	351.541	96.346	490.71	10.634%	63.753%
35.0	261.014	82.062	572.773	9.058%	74.414%
40.0	181.716	64.025	636.798	7.067%	82.732%
45.0	113.295	43.912	680.71	4.847%	88.437%
50.0	68.400	28.721	709.431	3.170%	92.168%
55.0	41.639	18.696	728.127	2.064%	94.597%
60.0	28.174	13.374	741.501	1.476%	96.335%
65.0	19.448	9.662	751.163	1.066%	97.590%
70.0	13.908	7.164	758.327	.791%	98.521%
75.0	9.633	5.100	763.427	.563%	99.184%
80.0	6.384	3.446	766.873	.380%	99.631%
85.0	3.818	2.085	768.958	.230%	99.902%
90.0	2.749	0.753	769.711	.083%	100.000%

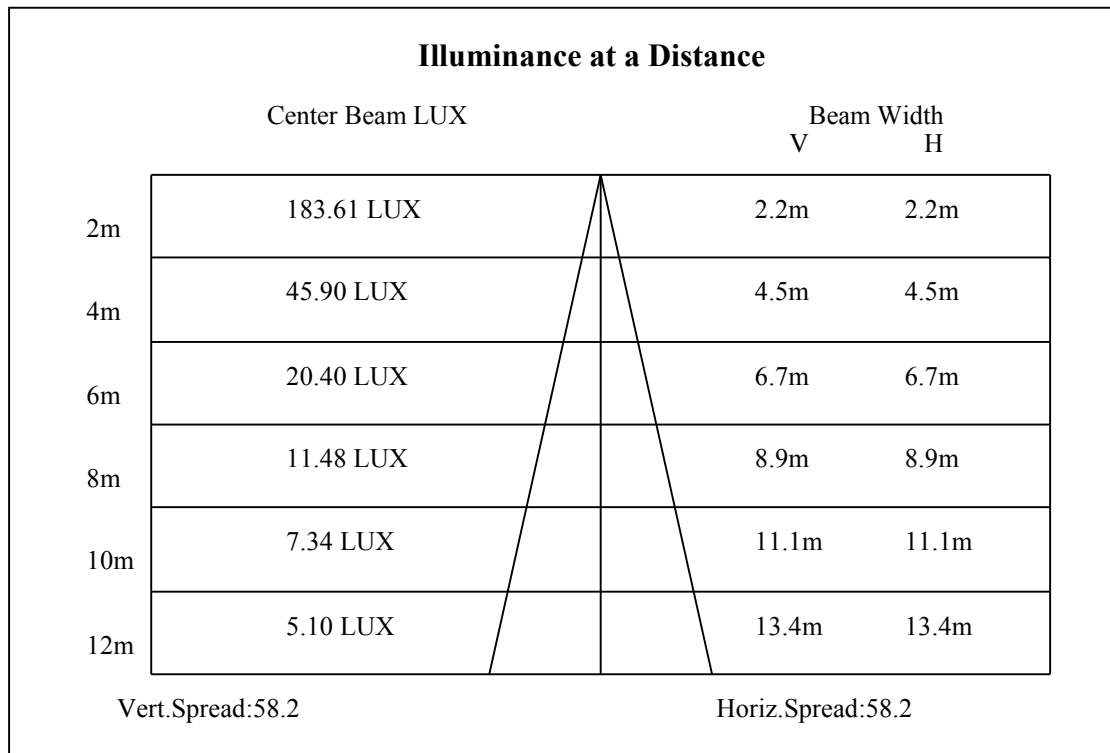
ZONAL LUMEN SUMMARY

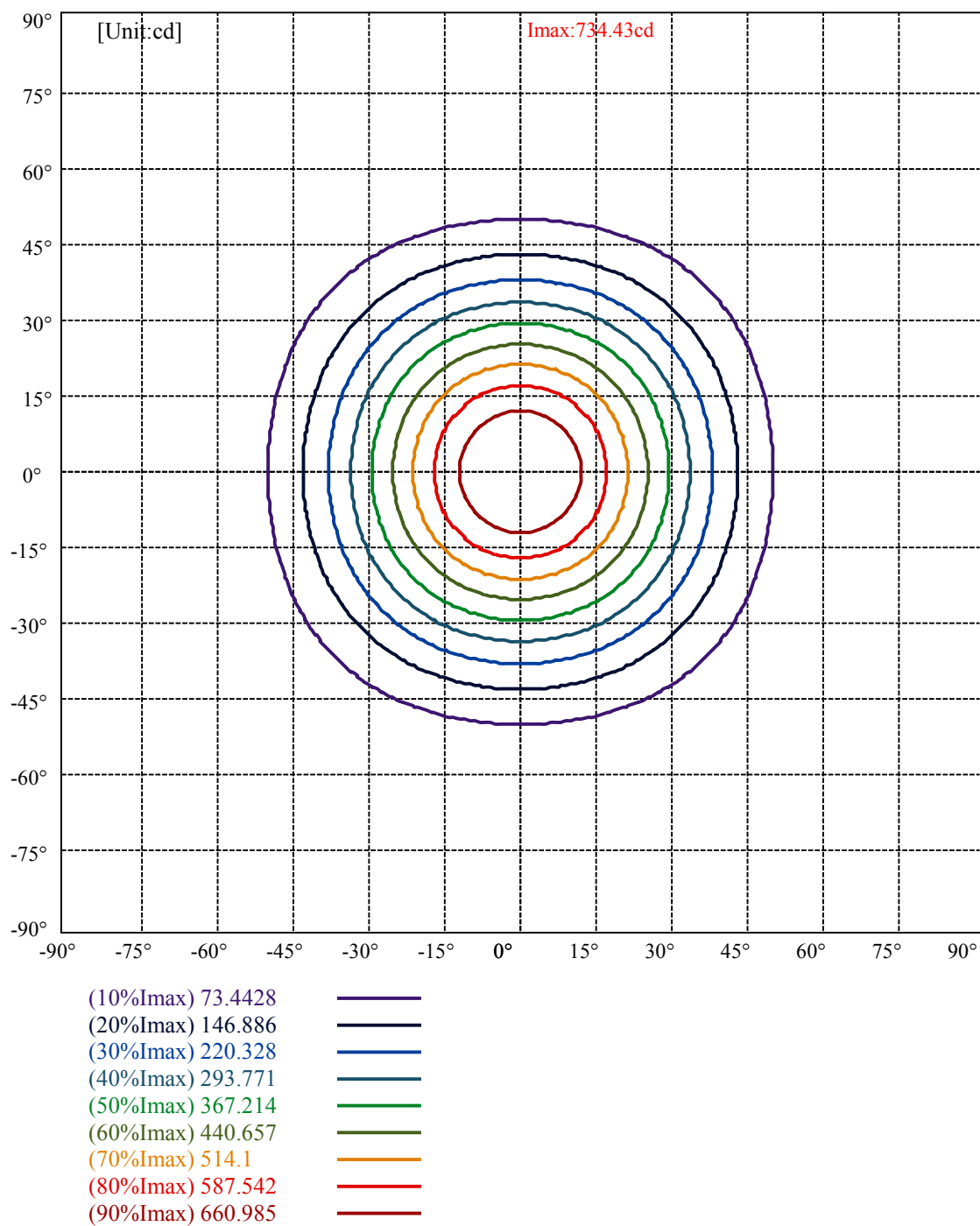
Zone	Lumens	%Lamp	%Fixt
0-30	490.71	54.16%	63.75%
0-40	636.80	70.29%	82.73%
0-60	741.50	81.84%	96.33%
0-90	768.96	84.87%	99.90%
0-120	768.96	84.87%	99.90%
0-180	769.71	84.96%	100.00%
60-90	40.83	4.51%	5.30%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-38.36	615.77	67.97%	80.00%

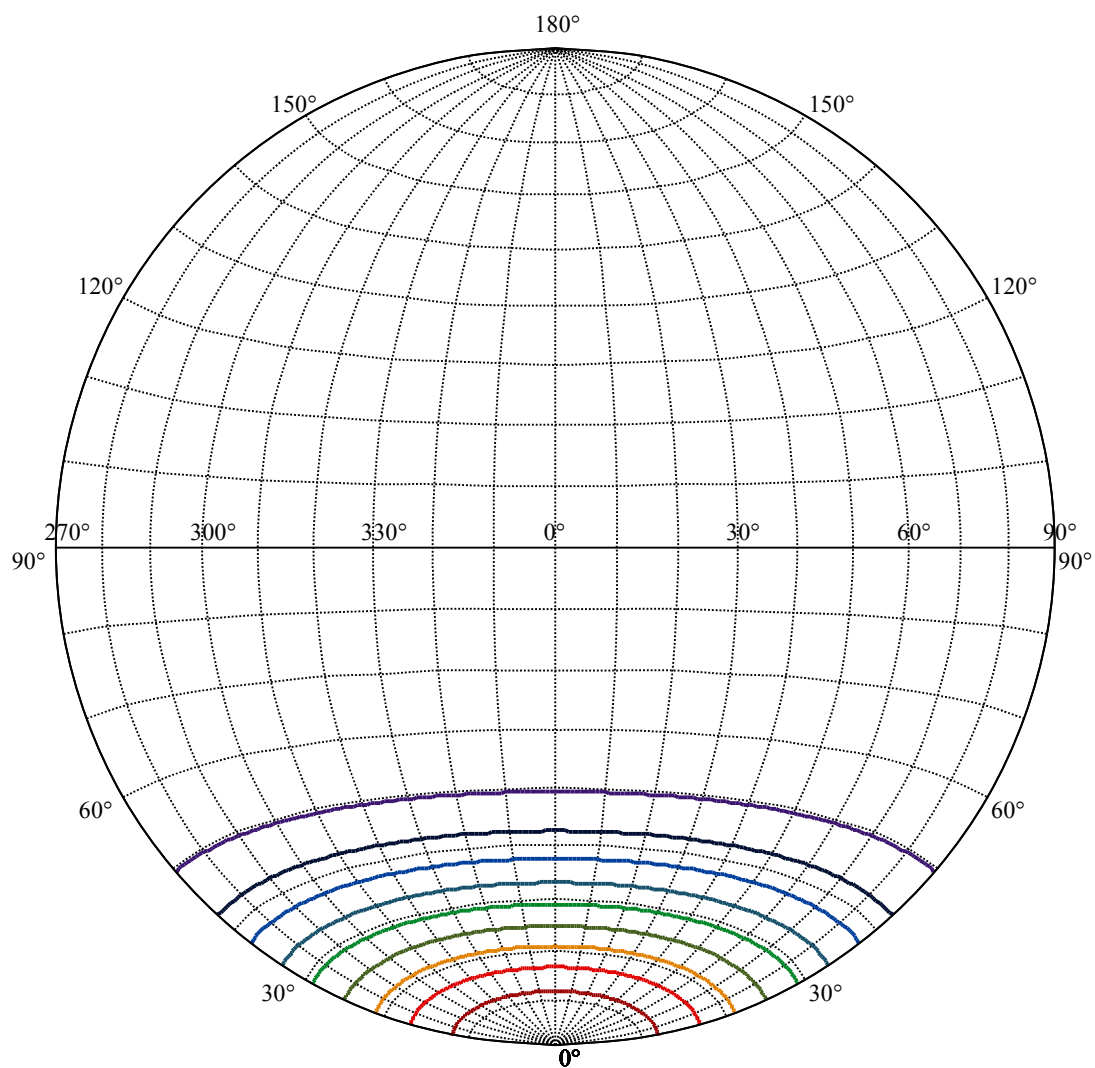
ZONAL LUMEN SUMMARY

0-10	104.39
10-20	188.06
20-30	198.27
30-40	146.09
40-50	72.63
50-60	32.07
60-70	16.83
70-80	8.55
80-90	2.08
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









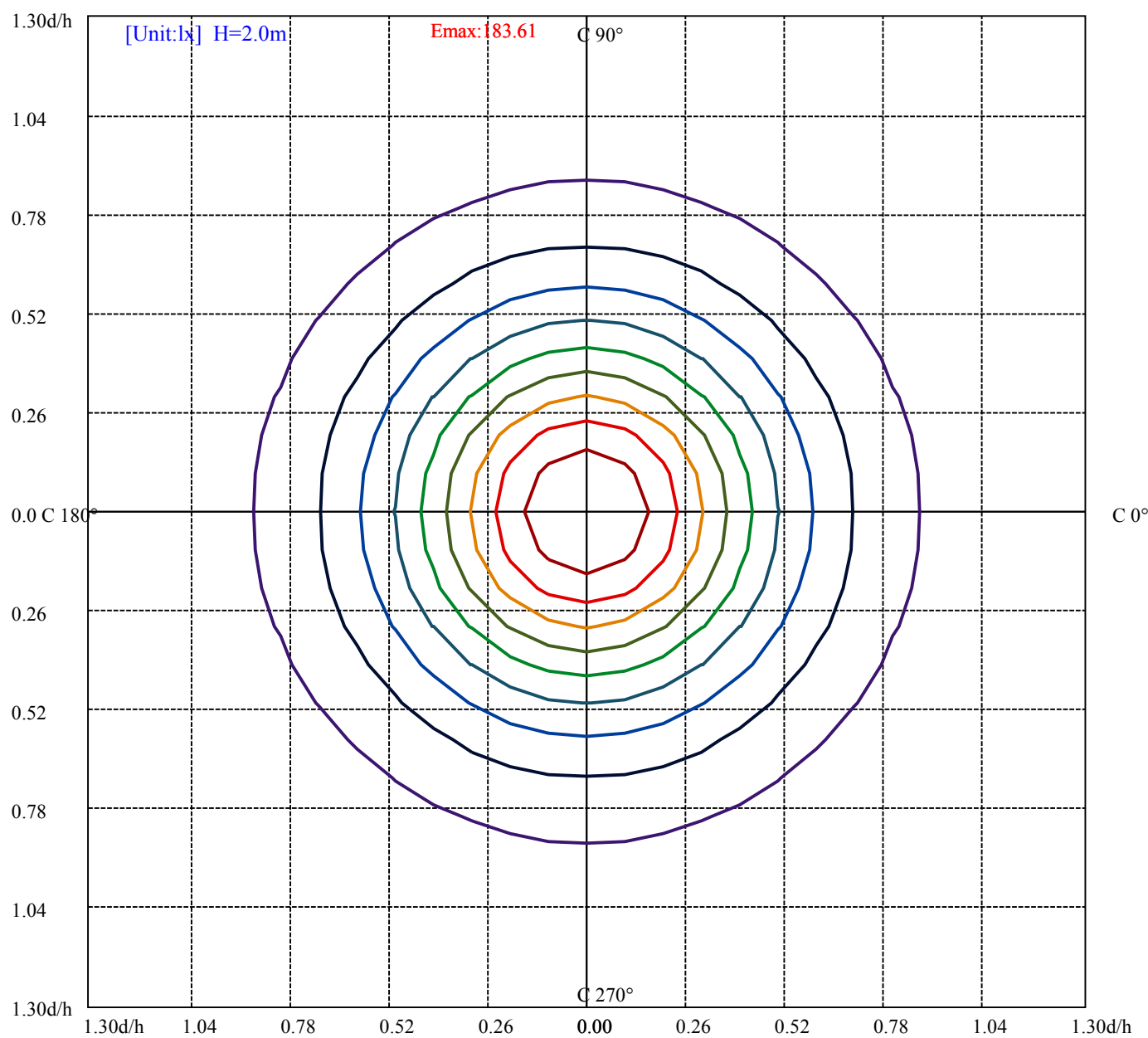
House

[Unit:cd]

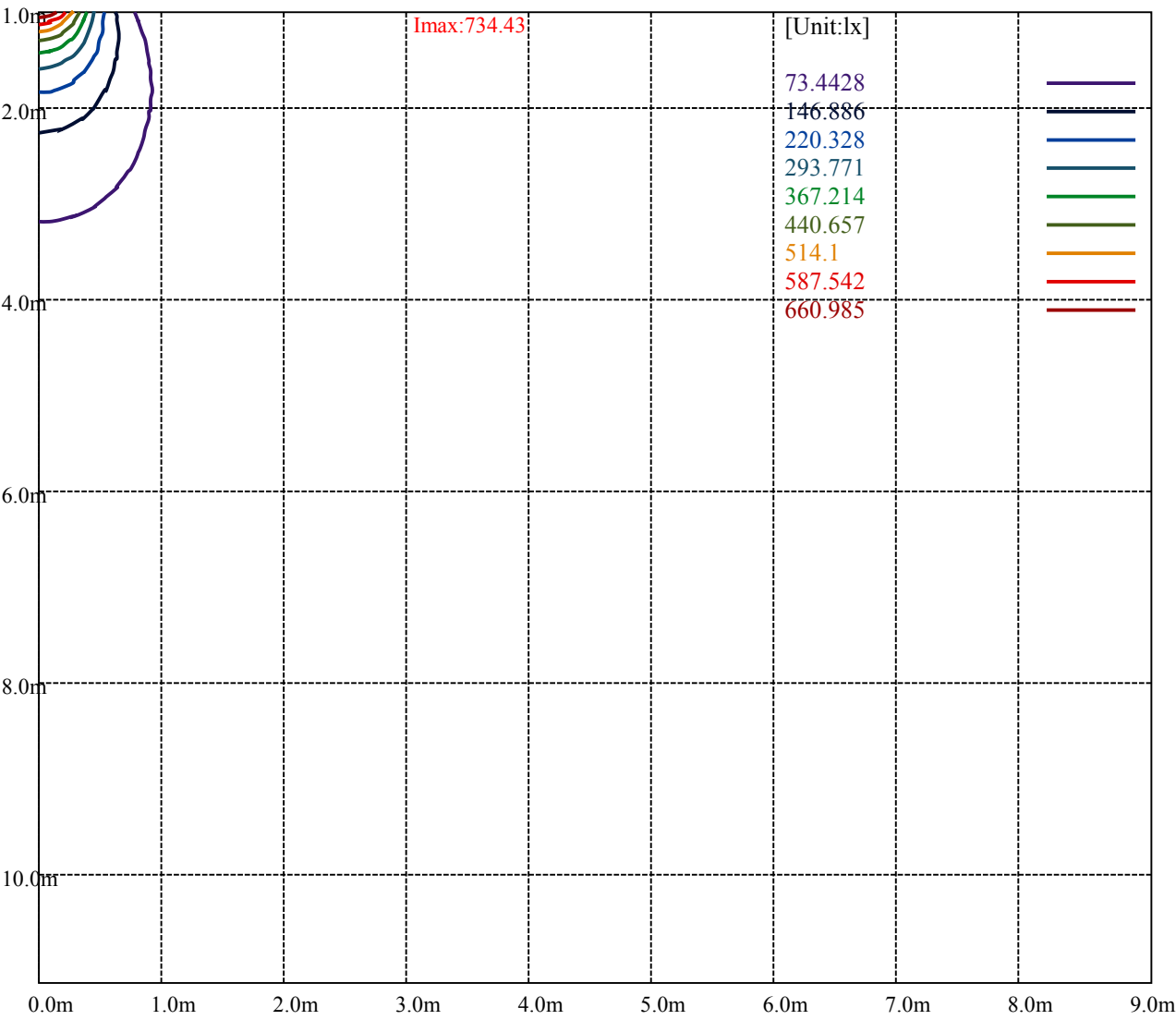
Road

Imax:734.43
(10%Imax) 73.4428
(20%Imax) 146.886
(30%Imax) 220.328
(40%Imax) 293.771
(50%Imax) 367.214
(60%Imax) 440.657
(70%Imax) 514.1
(80%Imax) 587.542
(90%Imax) 660.985





(10%Emax)	18.3607	
(20%Emax)	36.7215	
(30%Emax)	55.082	
(40%Emax)	73.44275	
(50%Emax)	91.8035	
(60%Emax)	110.1643	
(70%Emax)	128.5247	
(80%Emax)	146.8855	
(90%Emax)	165.2462	



Luminance Table

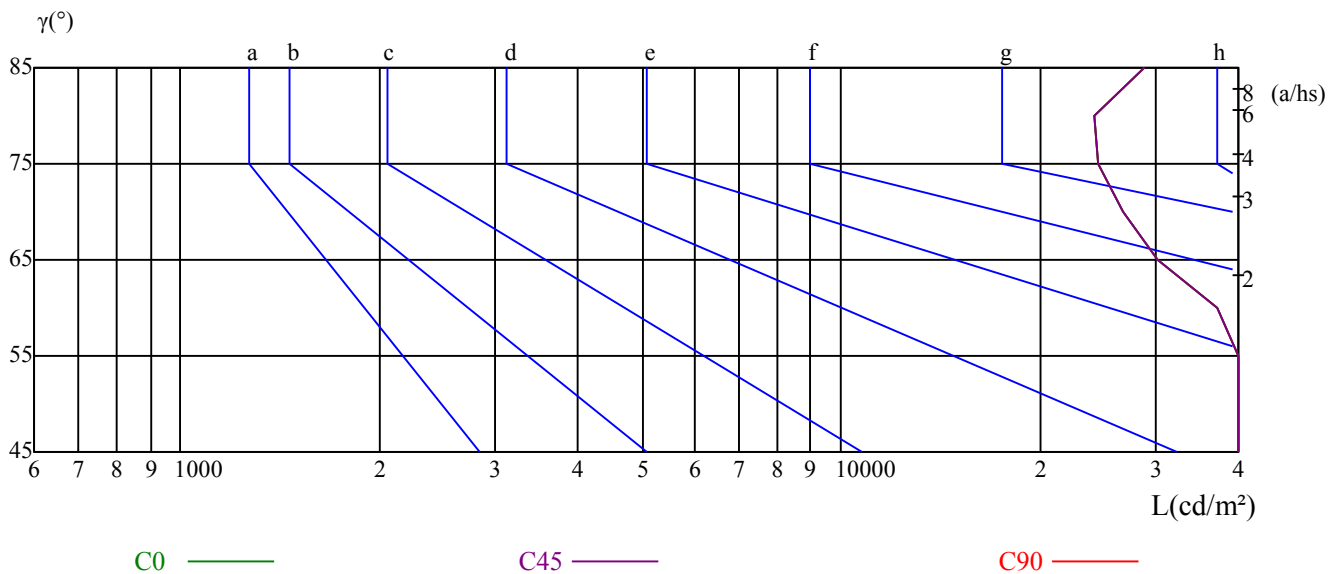
γ	45	50	55	60	65	70	75	80	85
C0	105340	69962	47729	37047	30256	26735	24470	24172	28801
C45	105340	69962	47729	37047	30256	26735	24470	24172	28801
C90	105340	69962	47729	37047	30256	26735	24470	24172	28801

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
30256	30256	30256	24470	24470	24470	28801	28801	28801

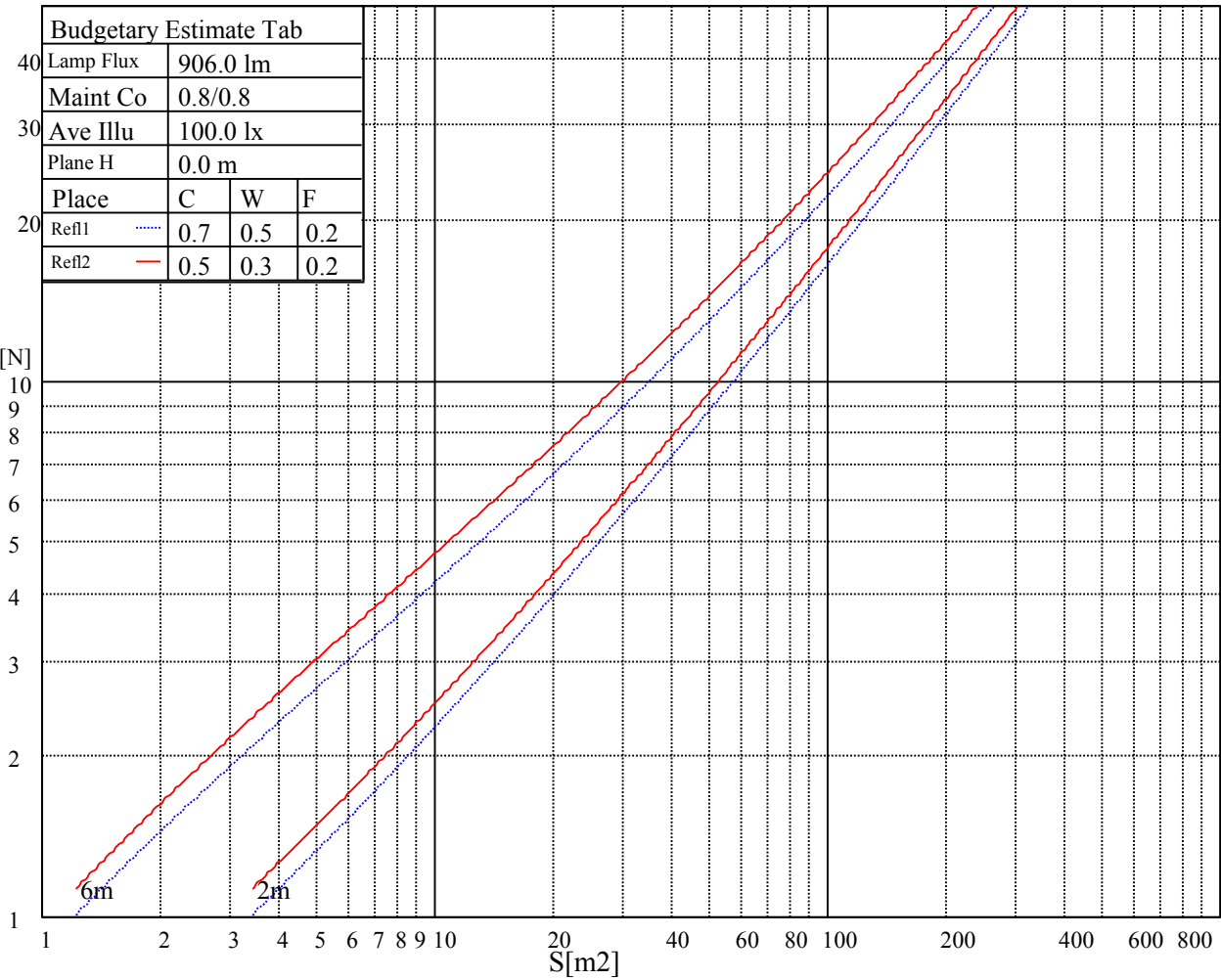
Glare Table

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

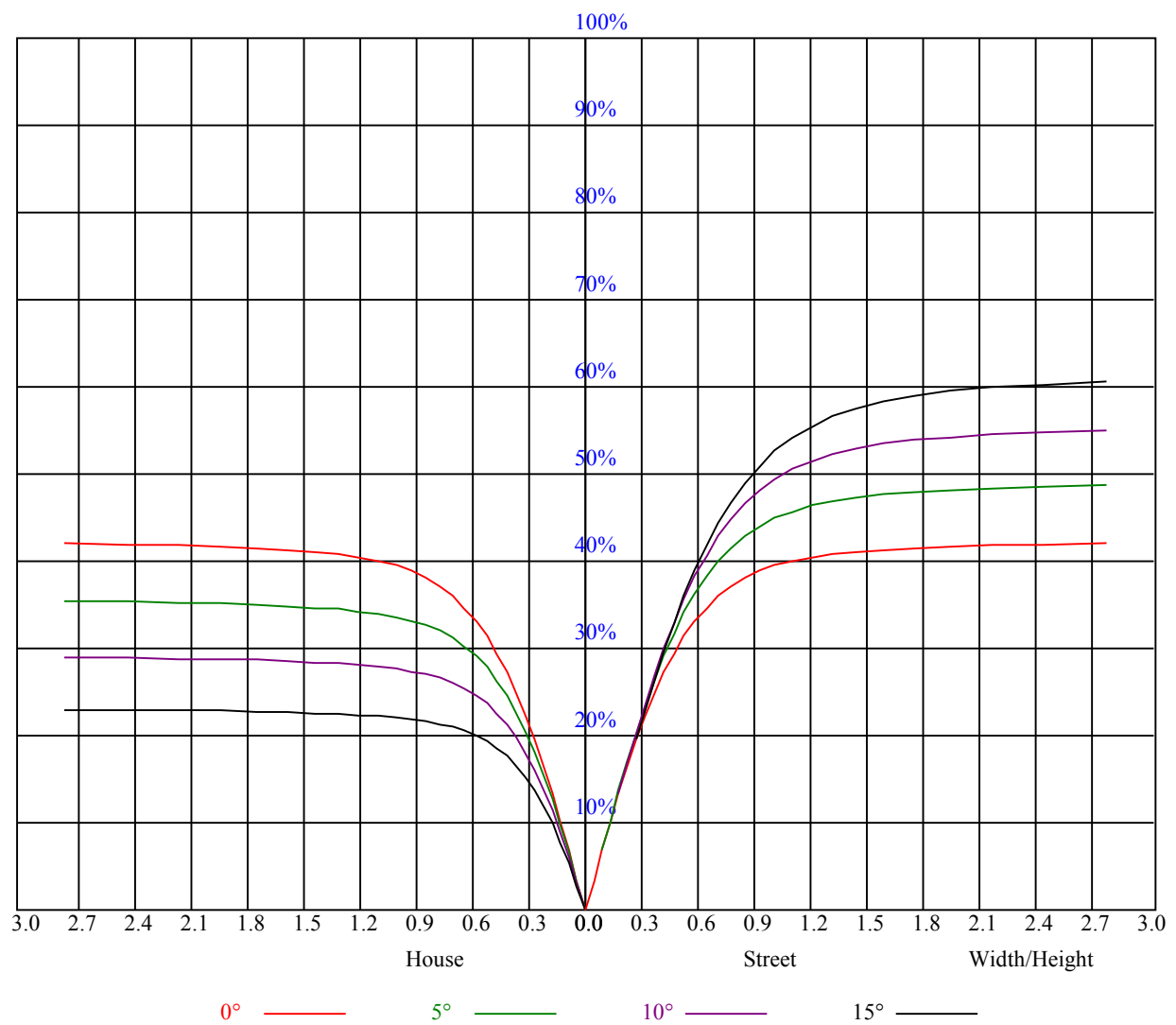
Luminance Limiting Curve



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	22.08	23.25	22.45	23.57	23.88	22.25	23.43	22.62	23.74	24.05
	3H	23.06	24.09	23.44	24.42	24.79	23.23	24.26	23.61	24.60	24.96
	4H	23.44	24.40	23.85	24.76	25.14	23.61	24.57	24.01	24.92	25.31
	6H	23.77	24.65	24.19	25.03	25.42	23.93	24.81	24.35	25.19	25.58
	8H	23.91	24.75	24.34	25.14	25.54	24.07	24.90	24.50	25.29	25.70
	12H	24.15	24.94	24.58	25.33	25.76	24.30	25.10	24.74	25.48	25.91
4H	2H	22.34	23.30	22.74	23.65	24.04	22.49	23.45	22.89	23.80	24.19
	3H	23.53	24.32	23.94	24.72	25.13	23.67	24.46	24.09	24.87	25.27
	4H	24.03	24.74	24.47	25.16	25.60	24.17	24.87	24.61	25.30	25.74
	6H	24.43	25.03	24.90	25.48	25.95	24.56	25.17	25.03	25.61	26.08
	8H	24.63	25.20	25.11	25.65	26.12	24.76	25.33	25.24	25.78	26.25
	12H	24.91	25.41	25.40	25.89	26.37	25.04	25.54	25.53	26.02	26.50
8H	4H	24.19	24.75	24.66	25.20	25.68	24.31	24.88	24.79	25.33	25.80
	6H	24.73	25.18	25.23	25.68	26.17	24.85	25.30	25.35	25.80	26.28
	8H	25.03	25.44	25.56	25.96	26.45	25.15	25.55	25.67	26.07	26.57
	12H	25.81	26.17	26.33	26.67	27.24	25.93	26.29	26.45	26.78	27.36
12H	4H	24.19	24.68	24.68	25.17	25.64	24.31	24.81	24.80	25.29	25.77
	6H	25.22	25.18	25.30	25.65	26.20	25.34	25.30	25.42	25.76	26.31
	8H	25.14	25.50	25.66	25.99	26.57	25.25	25.61	25.77	26.10	26.68
Variation with the observer position at spacings:											
S = 1.0H		1.5/-2.3					1.5/-2.3				
S = 1.5H		3.1/-2.9					3.1/-2.9				
S = 2.0H		5.0/-3.0					5.0/-3.0				
Standard tables:		BK2					BK2				
Uncorrected UGR		8.0					8.0				



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	1.02	1.02	1.02	0.99	0.99	0.99	0.95	0.95	0.95	0.91	0.91	0.91	0.87	0.87	0.87	0.85
1	0.93	0.91	0.88	0.91	0.89	0.87	0.88	0.86	0.84	0.85	0.83	0.82	0.82	0.80	0.79	0.78
2	0.86	0.82	0.79	0.84	0.81	0.78	0.82	0.79	0.76	0.79	0.77	0.74	0.77	0.75	0.73	0.71
3	0.79	0.75	0.71	0.78	0.74	0.70	0.76	0.72	0.69	0.74	0.71	0.68	0.72	0.69	0.67	0.66
4	0.74	0.69	0.65	0.73	0.68	0.64	0.71	0.67	0.63	0.69	0.66	0.63	0.68	0.65	0.62	0.61
5	0.69	0.63	0.59	0.68	0.63	0.59	0.66	0.62	0.59	0.65	0.61	0.58	0.64	0.60	0.58	0.56
6	0.64	0.59	0.55	0.64	0.59	0.55	0.62	0.58	0.54	0.61	0.57	0.54	0.60	0.56	0.54	0.52
7	0.60	0.55	0.51	0.60	0.55	0.51	0.59	0.54	0.51	0.58	0.53	0.50	0.57	0.53	0.50	0.49
8	0.57	0.51	0.48	0.56	0.51	0.48	0.55	0.51	0.47	0.54	0.50	0.47	0.54	0.50	0.47	0.46
9	0.54	0.48	0.45	0.53	0.48	0.45	0.52	0.48	0.45	0.52	0.47	0.44	0.51	0.47	0.44	0.43
10	0.51	0.46	0.42	0.50	0.45	0.42	0.50	0.45	0.42	0.49	0.45	0.42	0.48	0.45	0.42	0.41



NATA 1408-N

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	730.29	718.14	681.75	615.32	537.24	440.38	349.26	259.14	180.79		
45.0	737.49	724.89	693.00	622.69	536.79	439.59	354.43	262.97	182.93		
90.0	736.82	725.40	685.58	612.62	523.86	427.11	341.72	252.11	174.83		
135.0	733.11	729.23	699.58	632.31	546.13	453.60	363.94	272.93	198.79		
180.0	730.29	724.05	687.43	622.63	536.74	440.94	355.28	264.49	185.79		
225.0	737.49	727.59	692.33	624.49	539.89	446.68	353.93	260.83	176.34		
270.0	736.82	723.94	691.48	625.28	541.74	456.30	360.51	269.94	186.98		
315.0	733.11	715.61	667.86	600.41	512.21	415.18	333.28	245.70	167.29		
360.0	730.29	718.14	681.75	615.32	537.24	440.38	349.26	259.14	180.79		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	109.24	64.52	40.28	27.06	18.45	13.39	9.11	6.02	3.60		
45.0	114.41	68.63	41.29	28.46	18.73	13.22	9.28	6.13	3.66		
90.0	110.48	66.99	40.67	27.17	18.96	13.44	8.94	6.08	3.71		
135.0	126.73	78.36	47.64	32.34	21.94	15.58	10.91	7.26	4.28		
180.0	117.06	74.19	45.17	30.26	21.09	15.08	10.29	6.86	4.11		
225.0	113.46	67.78	41.40	28.29	19.58	14.06	10.01	6.58	3.99		
270.0	116.78	67.95	41.01	28.01	19.46	14.06	10.07	6.58	3.83		
315.0	98.21	58.78	35.66	23.79	17.38	12.43	8.44	5.57	3.38		
360.0	109.24	64.52	40.28	27.06	18.45	13.39	9.11	6.02	3.60		
C/γ(°)	90.0										
0.0	2.76										
45.0	2.76										
90.0	2.70										
135.0	2.81										
180.0	2.76										
225.0	2.76										
270.0	2.76										
315.0	2.70										
360.0	2.76										