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NATA

LumCAT: 2-1795-N	
Luminaire: 92.70.129.00	
Report No: NATA0100	Voltage(V): 35.5000
Test No: GC2019012504	Current(A): 0.6000
LampCAT: CREE CXB1830	Power (W): 21.3000
Lamp flux(lm): 2906.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 69	Width(mm): 69
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2318.77
Efficiency(%): 79.79%
Lumens(lm)/Power(W): 110.08
Central intensity(cd): 4719.234
Maximum intensity(cd): 4719.234
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=40.7
[C90/270]Total=40.7
Field angle(10%Imax): [C0/180]Total=64.8
[C90/270]Total=64.8
Maximum s/h(1/2): C0_180=0.66 C90_270=0.66
Maximum s/h(1/4): C0_180=0.64 C90_270=0.64
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 80.69%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.669%

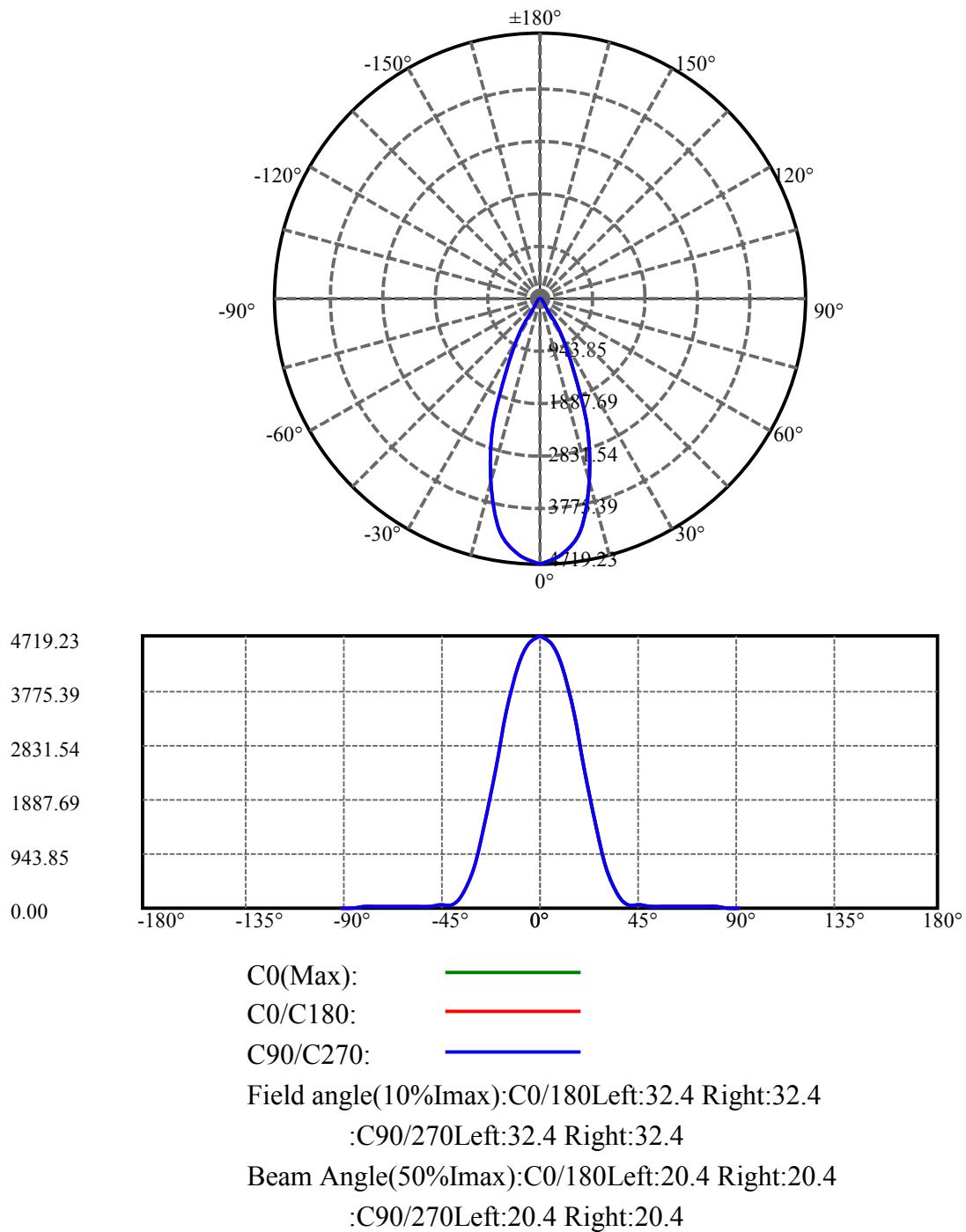
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	4719.234	28.222	28.222	.971%	1.217%
5.0	4559.906	217.842	246.064	7.496%	10.612%
10.0	4191.750	398.984	645.047	13.730%	27.819%
15.0	3406.359	483.255	1128.302	16.630%	48.660%
20.0	2432.461	456.023	1584.325	15.692%	68.326%
25.0	1428.202	330.847	1915.172	11.385%	82.594%
30.0	705.227	193.281	2108.453	6.651%	90.930%
35.0	221.316	69.581	2178.034	2.394%	93.931%
40.0	72.113	25.408	2203.442	.874%	95.026%
45.0	47.658	18.472	2221.914	.636%	95.823%
50.0	38.630	16.221	2238.135	.558%	96.522%
55.0	32.857	14.753	2252.888	.508%	97.159%
60.0	29.032	13.782	2266.669	.474%	97.753%
65.0	25.228	12.533	2279.202	.431%	98.294%
70.0	21.994	11.329	2290.531	.390%	98.782%
75.0	18.900	10.007	2300.537	.344%	99.214%
80.0	15.701	8.475	2309.013	.292%	99.579%
85.0	12.579	6.869	2315.882	.236%	99.875%
90.0	10.540	2.889	2318.77	.099%	100.000%

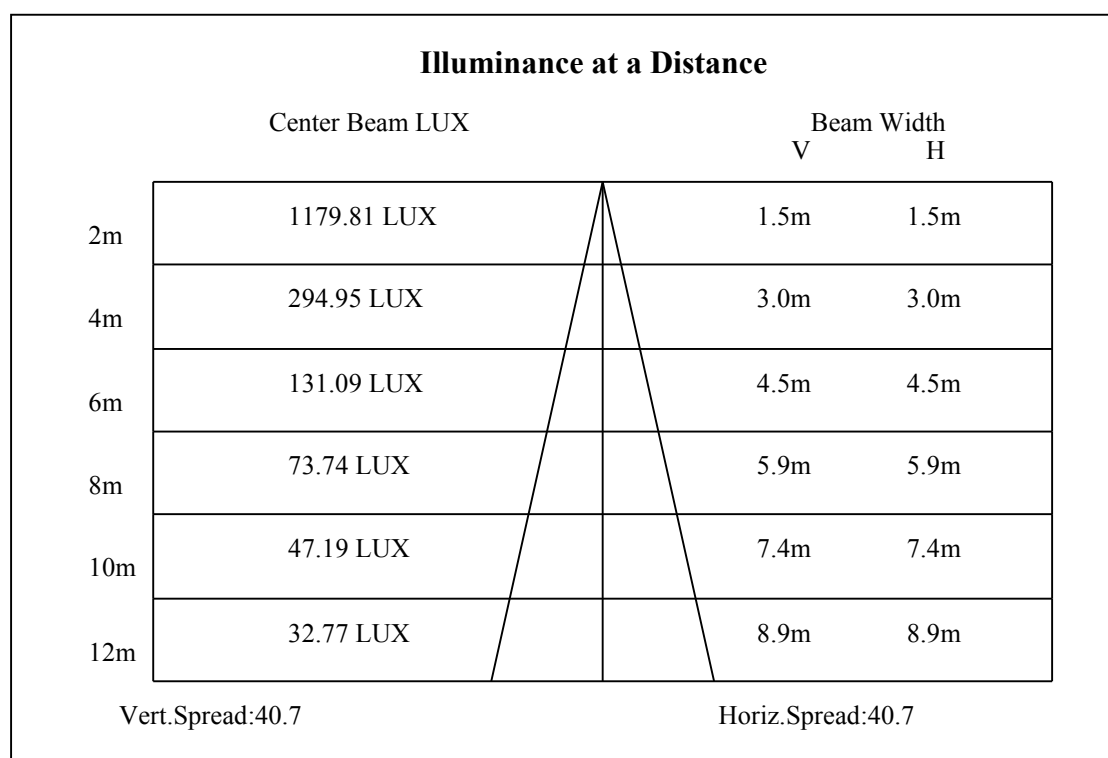
ZONAL LUMEN SUMMARY

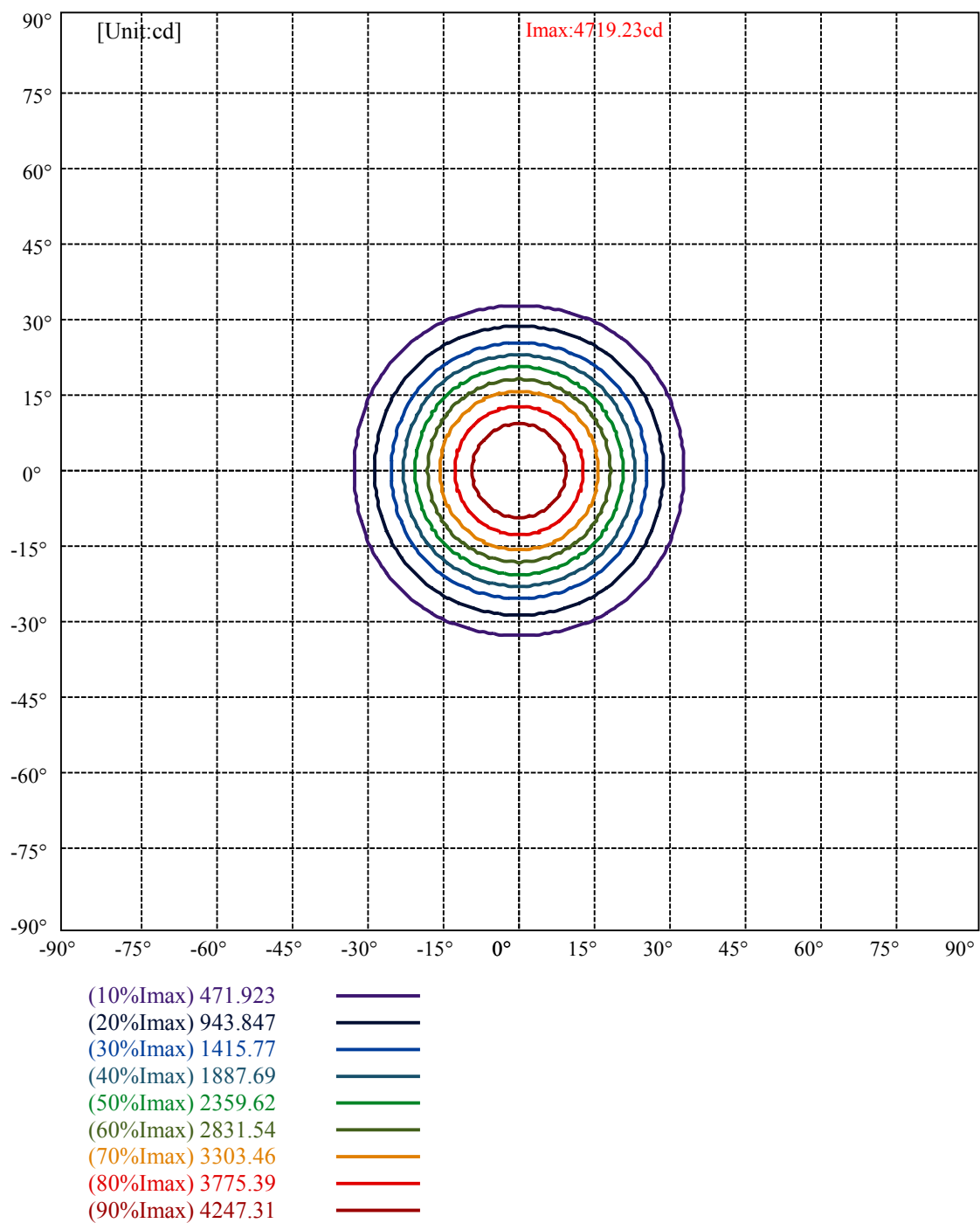
Zone	Lumens	%Lamp	%Fixt
0-30	2108.45	72.56%	90.93%
0-40	2203.44	75.82%	95.03%
0-60	2266.67	78.00%	97.75%
0-90	2315.88	79.69%	99.88%
0-120	2315.88	79.69%	99.88%
0-180	2318.77	79.79%	100.00%
60-90	62.99	2.17%	2.72%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-24.09	1855.02	63.83%	80.00%

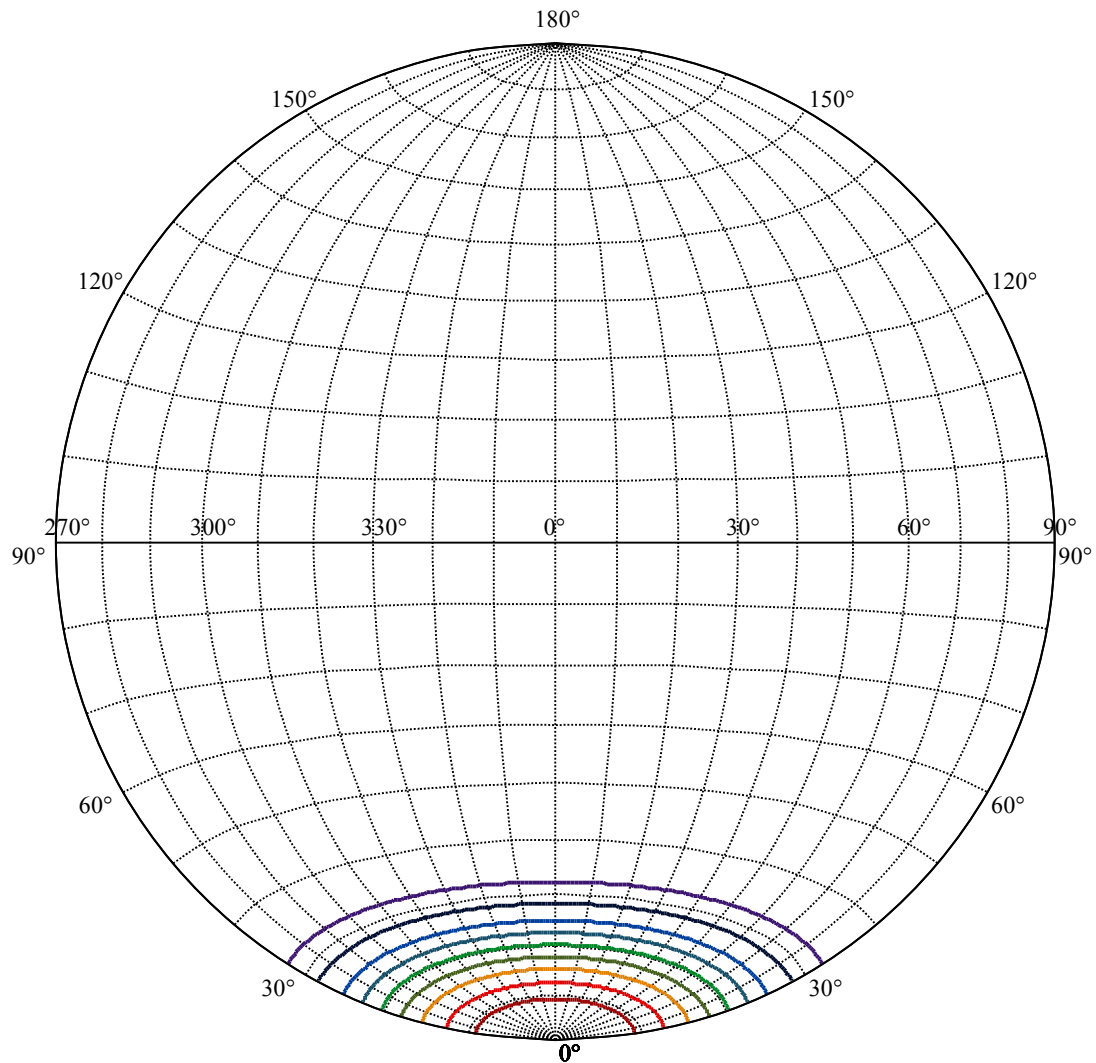
ZONAL LUMEN SUMMARY

0-10	645.05
10-20	939.28
20-30	524.13
30-40	94.99
40-50	34.69
50-60	28.53
60-70	23.86
70-80	18.48
80-90	6.87
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:4719.23

(10%Imax) 471.923

(20%Imax) 943.847

(30%Imax) 1415.77

(40%Imax) 1887.69

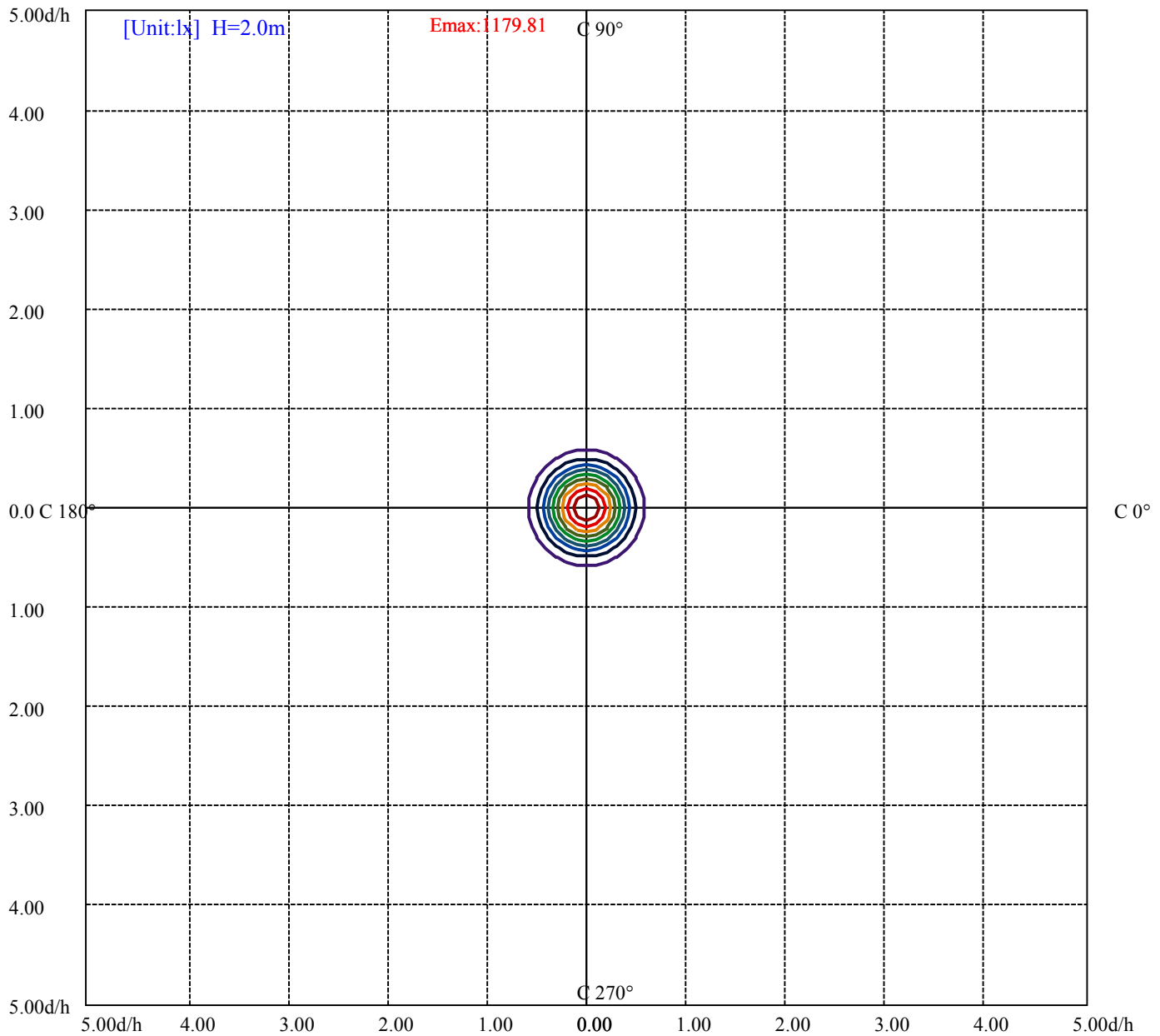
(50%Imax) 2359.62

(60%Imax) 2831.54

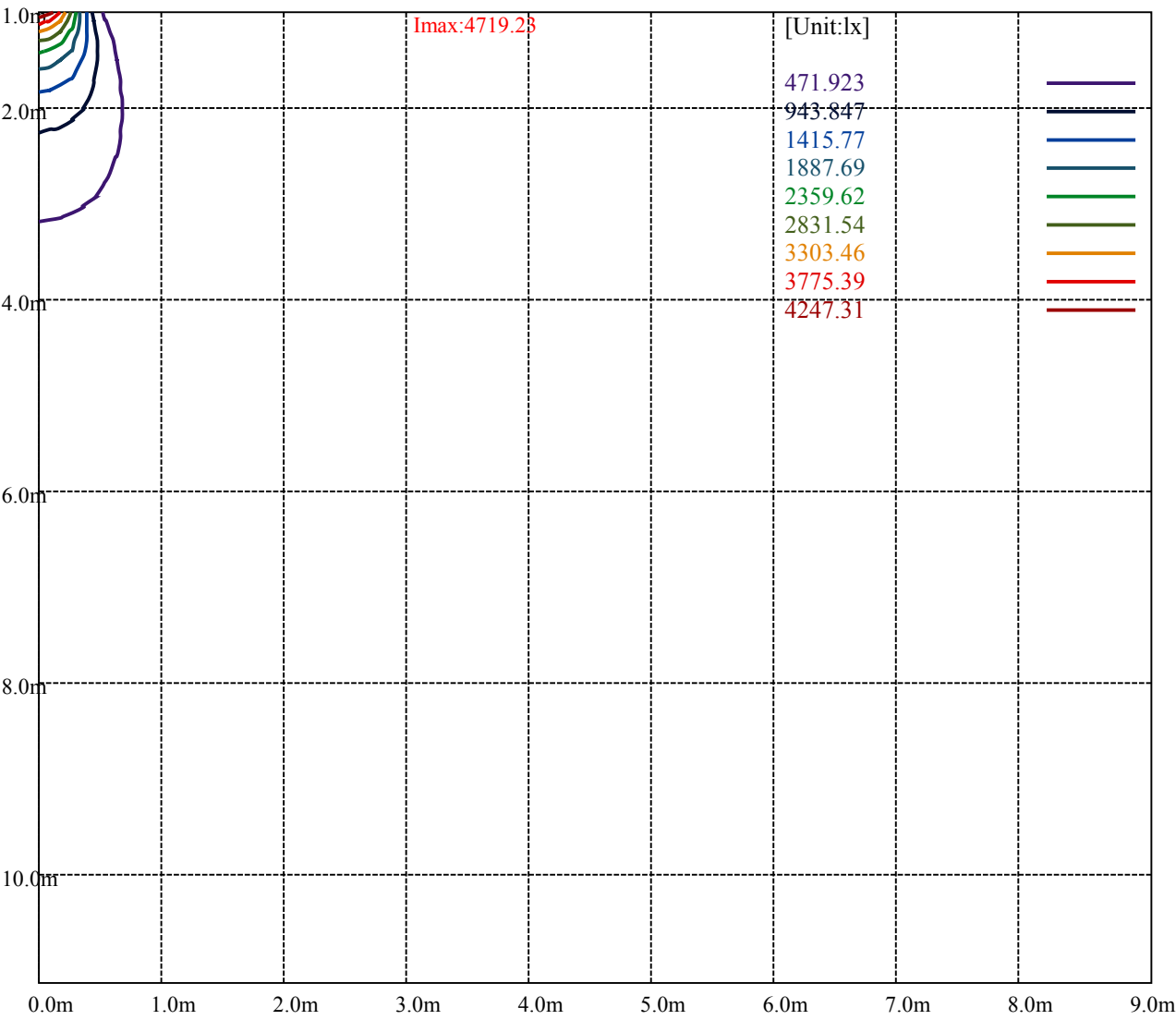
(70%Imax) 3303.46

(80%Imax) 3775.39

(90%Imax) 4247.31



(10%Emax)	117.9808	—
(20%Emax)	235.9615	—
(30%Emax)	353.9425	—
(40%Emax)	471.9225	—
(50%Emax)	589.9025	—
(60%Emax)	707.885	—
(70%Emax)	825.865	—
(80%Emax)	943.845	—
(90%Emax)	1061.828	—



Luminance Table

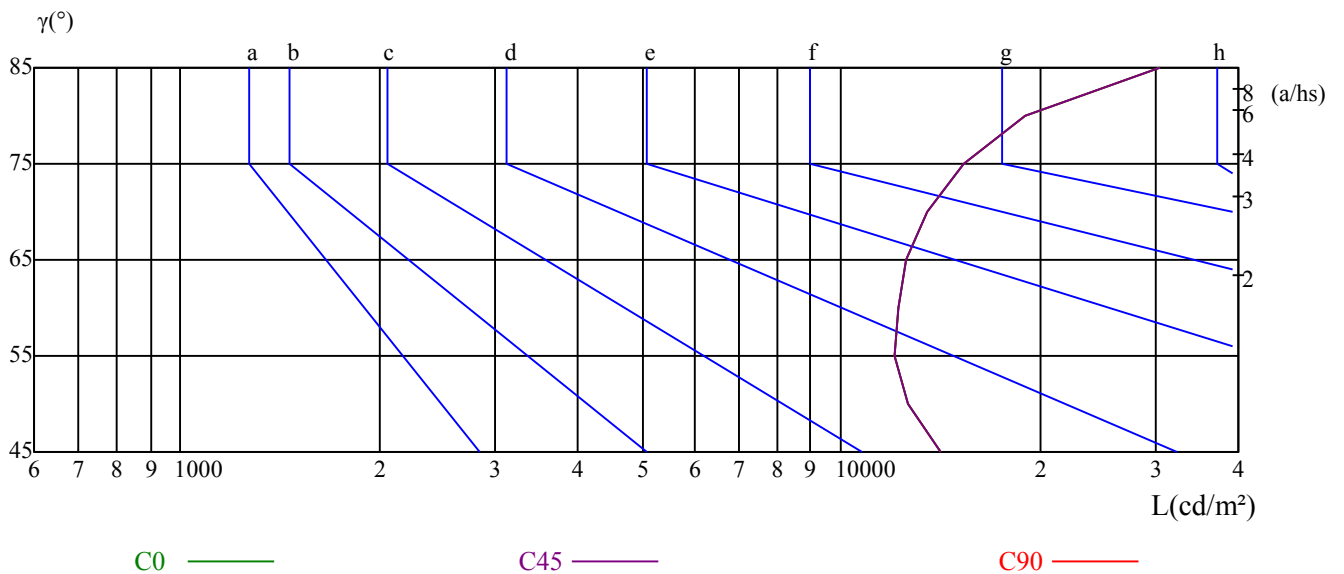
γ	45	50	55	60	65	70	75	80	85
C0	14156	12623	12032	12196	12538	13507	15338	18991	30314
C45	14156	12623	12032	12196	12538	13507	15338	18991	30314
C90	14156	12623	12032	12196	12538	13507	15338	18991	30314

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
12538	12538	12538	15338	15338	15338	30314	30314	30314

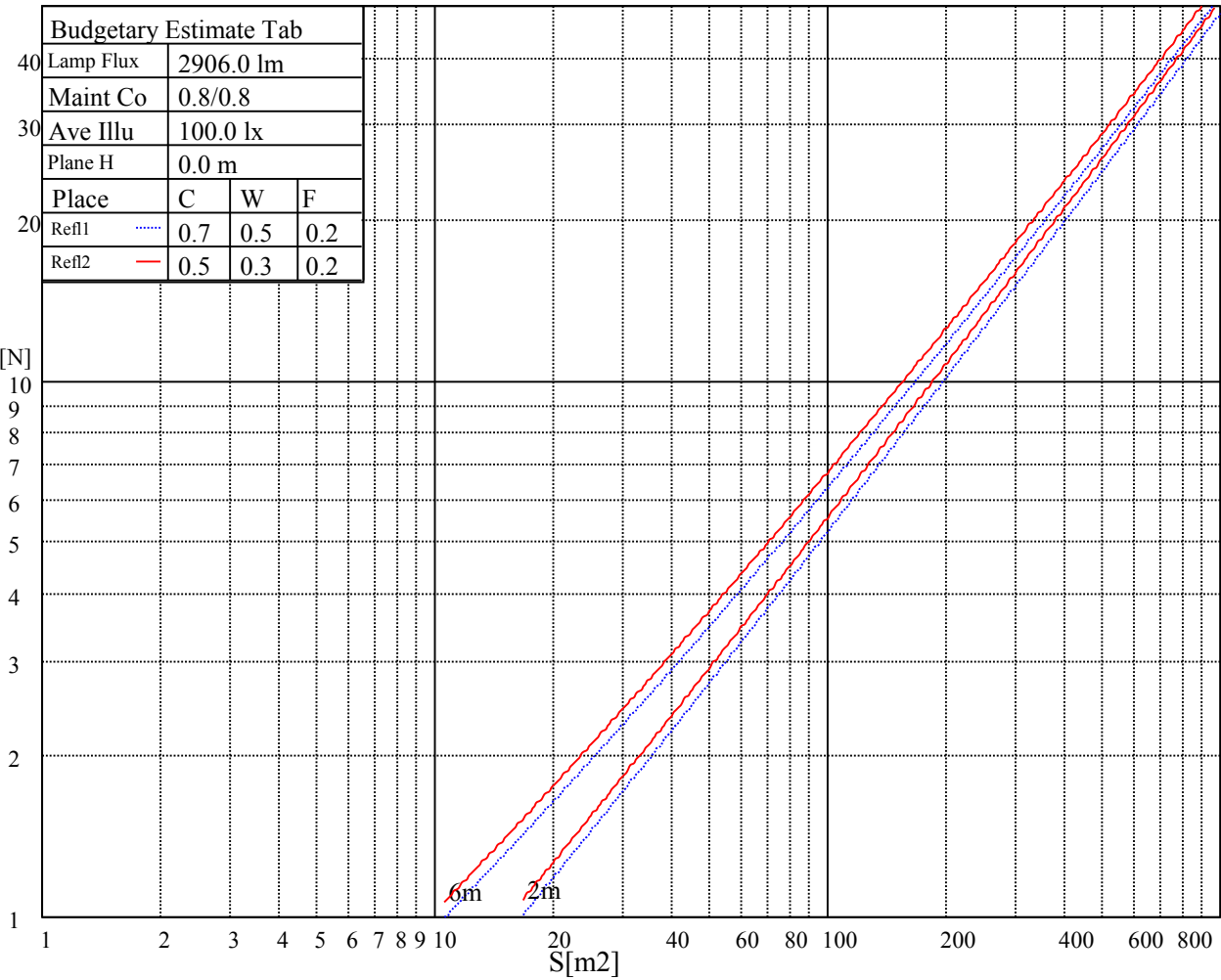
Glare Table

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

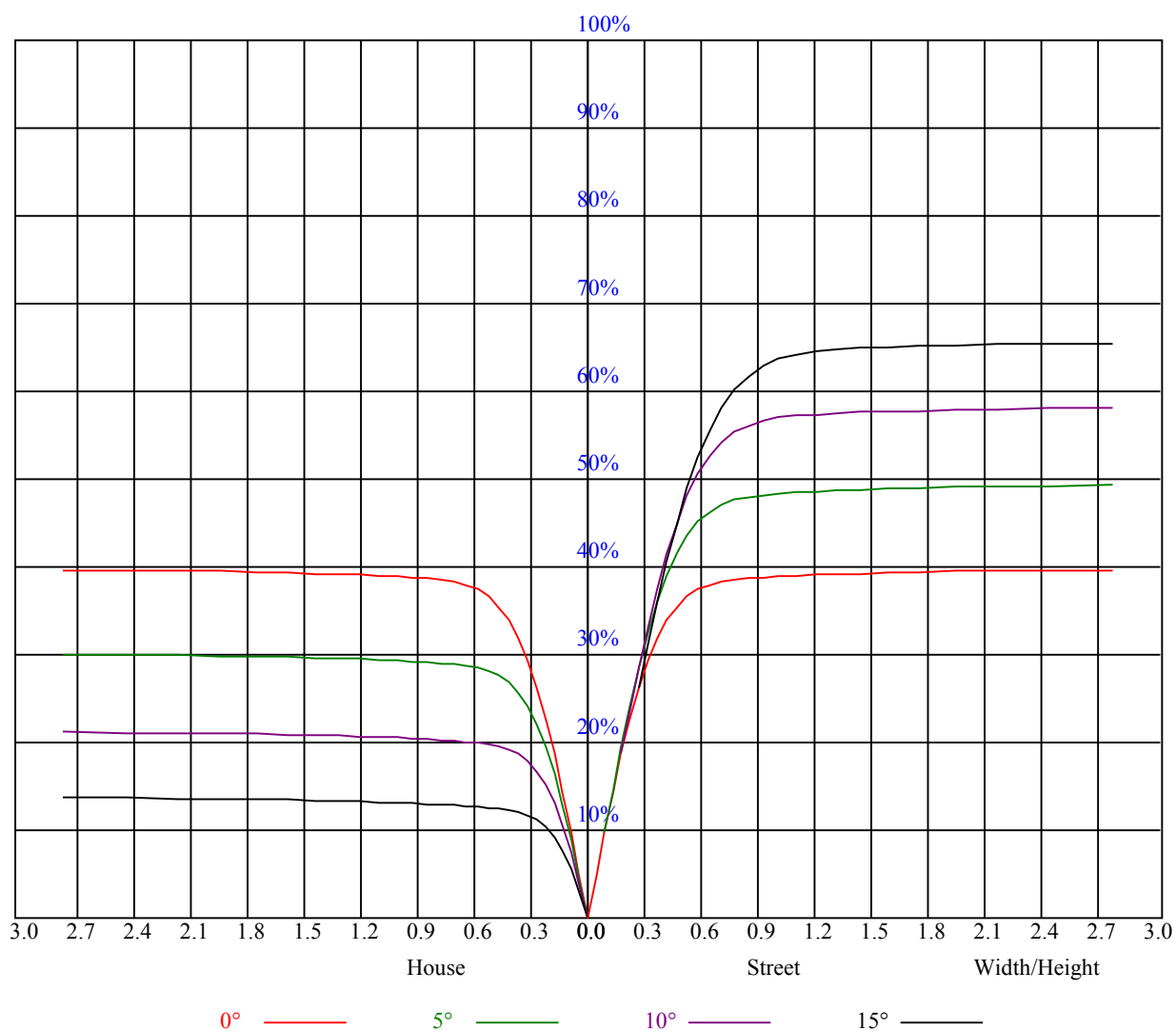
Luminance Limiting Curve



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	10.02	10.99	10.39	11.30	11.61	10.05	11.01	10.41	11.32	11.64
	3H	12.36	13.21	12.74	13.55	13.91	12.35	13.20	12.73	13.53	13.90
	4H	13.52	14.31	13.93	14.66	15.05	13.49	14.28	13.90	14.64	15.03
	6H	14.69	15.42	15.11	15.79	16.19	14.68	15.40	15.10	15.78	16.18
	8H	15.29	15.97	15.72	16.36	16.77	15.30	15.98	15.74	16.37	16.78
	12H	16.26	16.91	16.69	17.29	17.72	16.33	16.98	16.77	17.36	17.79
4H	2H	10.66	11.45	11.07	11.81	12.20	10.68	11.47	11.09	11.82	12.21
	3H	13.25	13.90	13.67	14.31	14.72	13.25	13.90	13.66	14.31	14.71
	4H	14.58	15.16	15.02	15.59	16.04	14.56	15.14	15.00	15.57	16.02
	6H	15.81	16.31	16.28	16.76	17.23	15.80	16.30	16.27	16.75	17.22
	8H	16.52	16.99	17.00	17.44	17.91	16.54	17.01	17.02	17.46	17.93
	12H	17.50	17.90	17.99	18.39	18.87	17.58	17.98	18.07	18.47	18.95
8H	4H	15.05	15.51	15.53	15.96	16.44	15.03	15.50	15.51	15.95	16.42
	6H	16.55	16.92	17.06	17.42	17.91	16.55	16.92	17.06	17.42	17.91
	8H	17.43	17.76	17.97	18.28	18.78	17.46	17.79	17.99	18.31	18.81
	12H	18.70	18.98	19.23	19.48	20.06	18.78	19.06	19.30	19.56	20.14
12H	4H	15.14	15.54	15.64	16.03	16.51	15.13	15.53	15.62	16.02	16.49
	6H	16.99	17.07	17.28	17.54	18.09	16.99	17.07	17.28	17.54	18.09
	8H	17.74	18.02	18.26	18.52	19.10	17.77	18.05	18.29	18.55	19.13
Variation with the observer position at spacings:											
S = 1.0H		3.3/-1.8					3.3/-1.8				
S = 1.5H		4.3/-1.5					4.3/-1.5				
S = 2.0H		5.1/-1.2					5.1/-1.2				
Standard tables:		BKBF					BKBF				
Uncorrected UGR		5.1					5.1				



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	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86	0.82	0.82	0.82	0.81
1	0.89	0.87	0.85	0.87	0.85	0.84	0.84	0.82	0.81	0.81	0.80	0.79	0.78	0.77	0.76	0.75
2	0.84	0.81	0.78	0.83	0.80	0.77	0.80	0.78	0.76	0.78	0.76	0.74	0.75	0.74	0.73	0.71
3	0.80	0.76	0.73	0.79	0.75	0.73	0.77	0.74	0.71	0.75	0.72	0.70	0.73	0.71	0.69	0.68
4	0.76	0.72	0.69	0.75	0.71	0.69	0.73	0.70	0.68	0.72	0.69	0.67	0.70	0.68	0.66	0.65
5	0.73	0.69	0.66	0.72	0.68	0.65	0.70	0.67	0.65	0.69	0.66	0.64	0.68	0.66	0.64	0.63
6	0.70	0.66	0.63	0.69	0.65	0.62	0.68	0.65	0.62	0.67	0.64	0.62	0.66	0.63	0.61	0.60
7	0.67	0.63	0.60	0.66	0.63	0.60	0.65	0.62	0.60	0.65	0.62	0.59	0.64	0.61	0.59	0.58
8	0.64	0.60	0.58	0.64	0.60	0.58	0.63	0.60	0.57	0.62	0.59	0.57	0.62	0.59	0.57	0.56
9	0.62	0.58	0.56	0.62	0.58	0.56	0.61	0.58	0.55	0.60	0.57	0.55	0.60	0.57	0.55	0.54
10	0.60	0.56	0.54	0.60	0.56	0.54	0.59	0.56	0.53	0.59	0.55	0.53	0.58	0.55	0.53	0.52



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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	4719.94	4636.13	4365.00	3755.25	2788.88	1792.69	985.50	302.63	86.51		
45.0	4698.00	4587.75	4329.00	3659.63	2675.81	1793.81	871.88	297.56	81.96		
90.0	4725.56	4565.81	4132.69	3309.75	2286.56	1080.23	577.24	136.01	62.10		
135.0	4733.44	4565.25	4189.50	3358.13	2414.25	1458.56	644.63	290.25	65.53		
180.0	4719.94	4503.38	4051.69	3153.38	2171.81	1083.38	515.53	116.04	61.76		
225.0	4698.00	4447.69	4011.19	3122.44	2178.00	1081.01	563.68	136.01	61.99		
270.0	4725.56	4574.25	4212.00	3513.38	2473.88	1604.25	788.63	294.75	79.14		
315.0	4733.44	4599.00	4242.94	3378.94	2470.50	1531.69	694.74	197.27	77.91		
360.0	4719.94	4636.13	4365.00	3755.25	2788.88	1792.69	985.50	302.63	86.51		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	52.43	40.84	34.03	29.81	26.04	22.84	19.35	16.93	13.05		
45.0	49.78	39.77	33.08	29.19	25.37	22.16	18.79	16.09	12.88		
90.0	44.33	37.24	31.95	28.24	24.53	21.15	18.06	14.68	12.09		
135.0	45.56	38.14	32.51	29.03	25.26	22.28	19.07	15.47	12.38		
180.0	45.17	37.35	32.46	28.74	24.69	21.38	18.68	14.96	12.83		
225.0	45.79	37.18	31.78	28.29	24.13	20.81	17.83	14.74	12.15		
270.0	49.16	39.32	33.92	29.93	26.44	23.34	20.36	16.99	12.54		
315.0	49.05	39.21	33.13	29.03	25.37	21.99	19.07	15.75	12.71		
360.0	52.43	40.84	34.03	29.81	26.04	22.84	19.35	16.93	13.05		
C/ γ (°)	90.0										
0.0	10.86										
45.0	10.58										
90.0	10.35										
135.0	10.46										
180.0	10.58										
225.0	10.29										
270.0	10.52										
315.0	10.69										
360.0	10.86										