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NATA

LumCAT: 4-2102-E

Luminaire:

Report No: NATA0100

Voltage(V): 219.9000

Test No:

Current(A): 0.0950

LampCAT: ParagonLED CBAC-88-36185-240V-30W

Power (W): 17.8000

Lamp flux(lm): 1472.0

PF: 0.8500

Number of Lamps: 1

Ballast type:

Length(mm): 100

Width(mm): 100

Phm Type: C

Height(mm): 0

Photometric Results

Lumens(lm): 1358.26

Efficiency(%): 92.27%

Lumens(lm)/Power(W): 77.41

Central intensity(cd): 13348.420

Maximum intensity(cd): 13348.420

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=12.4

[C90/270]Total=12.4

Field angle(10%Imax): [C0/180]Total=25.9

[C90/270]Total=25.9

Maximum s/h(1/2): C0_180=0.21 C90_270=0.21

Maximum s/h(1/4): C0_180=0.22 C90_270=0.22

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 93.61%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.518%

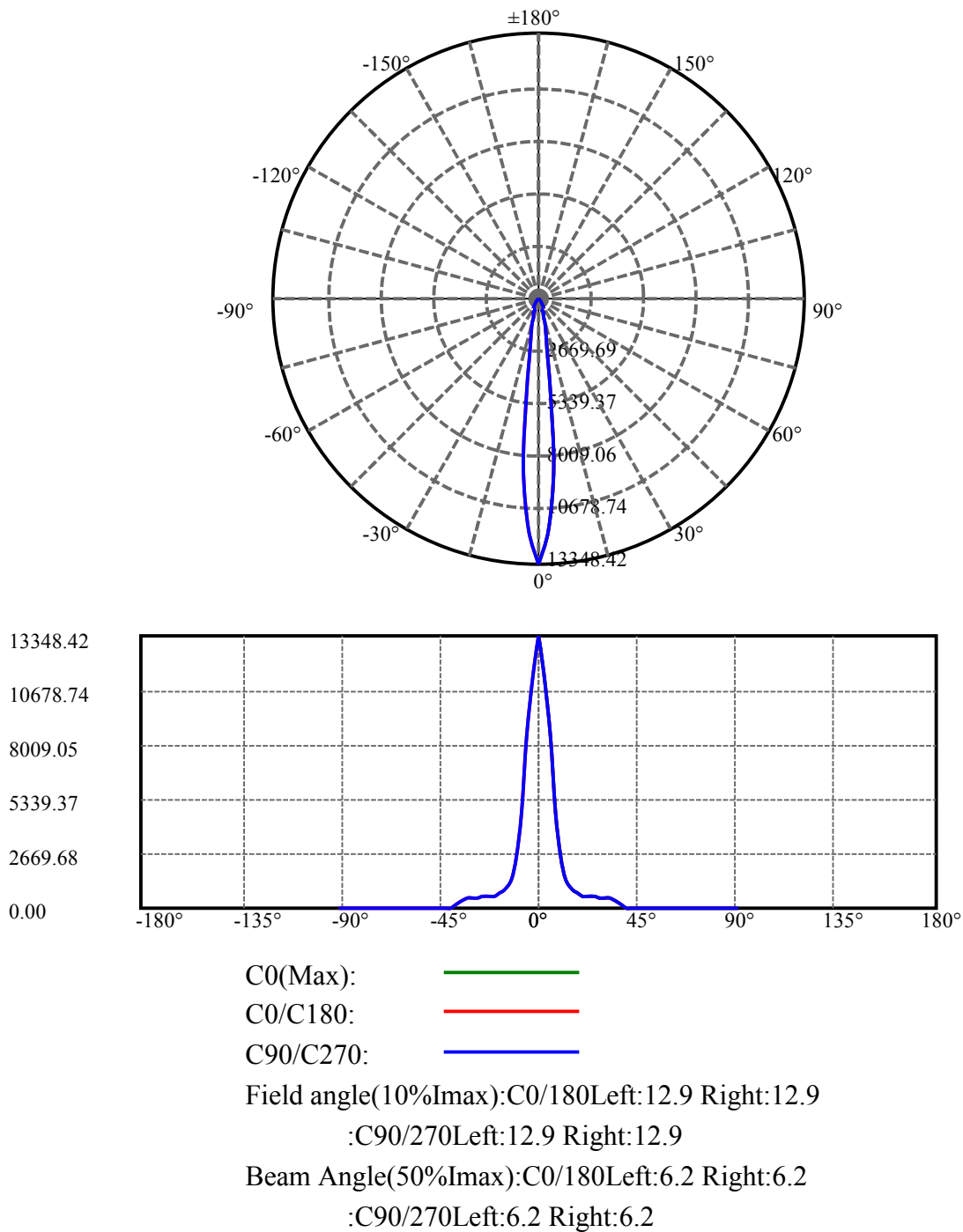
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	13348.424	19.959	19.959	1.356%	1.469%
2.5	11611.271	138.842	158.801	9.432%	11.692%
5.0	8439.953	201.650	360.452	13.699%	26.538%
7.5	4732.579	169.340	529.791	11.504%	39.005%
10.0	2551.534	121.460	651.251	8.251%	47.947%
12.5	1415.225	83.970	735.222	5.704%	54.130%
15.0	946.364	67.146	802.367	4.562%	59.073%
17.5	718.197	59.204	861.571	4.022%	63.432%
20.0	616.122	57.767	919.338	3.924%	67.685%
22.5	567.962	59.583	978.921	4.048%	72.072%
25.0	541.686	62.757	1041.677	4.263%	76.692%
27.5	523.036	66.206	1107.884	4.498%	81.566%
30.0	504.248	69.116	1177	4.695%	86.655%
32.5	478.564	70.489	1247.488	4.789%	91.844%
35.0	336.656	52.935	1300.423	3.596%	95.742%
37.5	159.939	26.691	1327.114	1.813%	97.707%
40.0	40.577	7.150	1334.264	.486%	98.233%
42.5	7.295	1.351	1335.615	.092%	98.333%
45.0	6.001	1.163	1336.778	.079%	98.418%
47.5	5.630	1.138	1337.916	.077%	98.502%
50.0	5.396	1.133	1339.049	.077%	98.585%
52.5	5.244	1.141	1340.19	.077%	98.669%
55.0	5.148	1.156	1341.346	.079%	98.755%
57.5	5.065	1.171	1342.517	.080%	98.841%
60.0	4.996	1.186	1343.703	.081%	98.928%
62.5	4.969	1.208	1344.911	.082%	99.017%
65.0	4.914	1.221	1346.132	.083%	99.107%
67.5	4.914	1.244	1347.376	.085%	99.199%
70.0	4.859	1.252	1348.628	.085%	99.291%
72.5	4.804	1.256	1349.884	.085%	99.383%
75.0	4.804	1.272	1351.156	.086%	99.477%
77.5	4.749	1.271	1352.427	.086%	99.570%
80.0	4.790	1.293	1353.72	.088%	99.666%
82.5	4.790	1.302	1355.022	.088%	99.761%
85.0	4.749	1.297	1356.318	.088%	99.857%
87.5	4.735	1.297	1357.615	.088%	99.952%
90.0	4.721	0.647	1358.262	.044%	100.000%

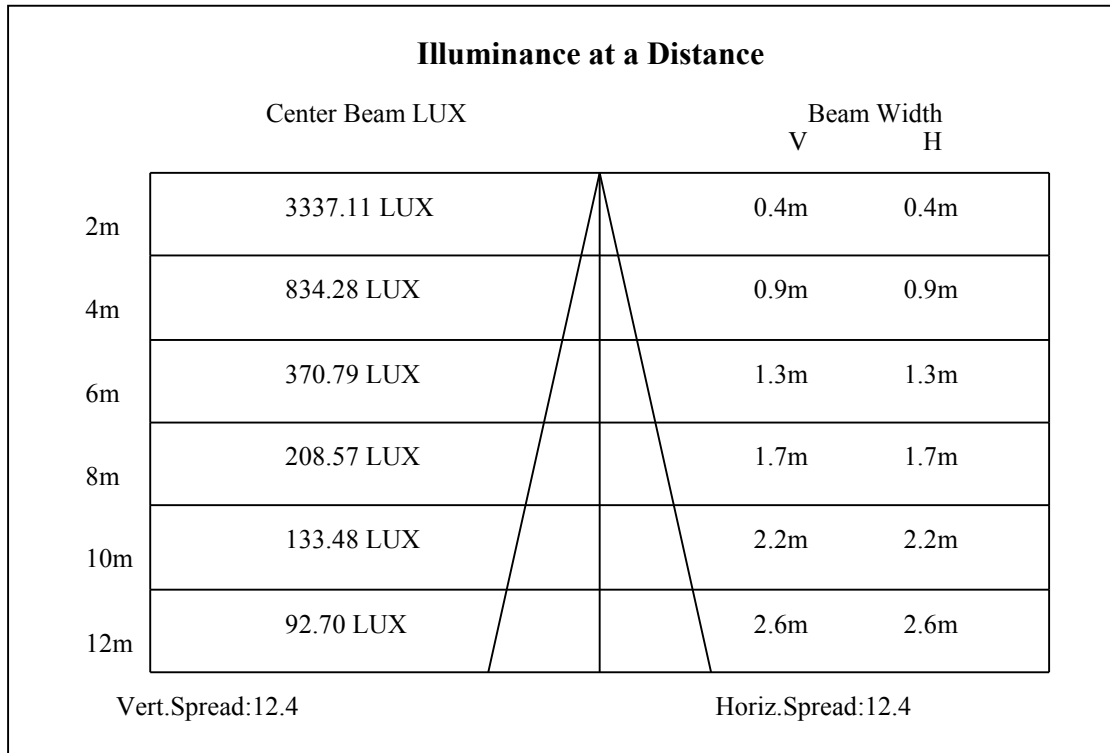
ZONAL LUMEN SUMMARY

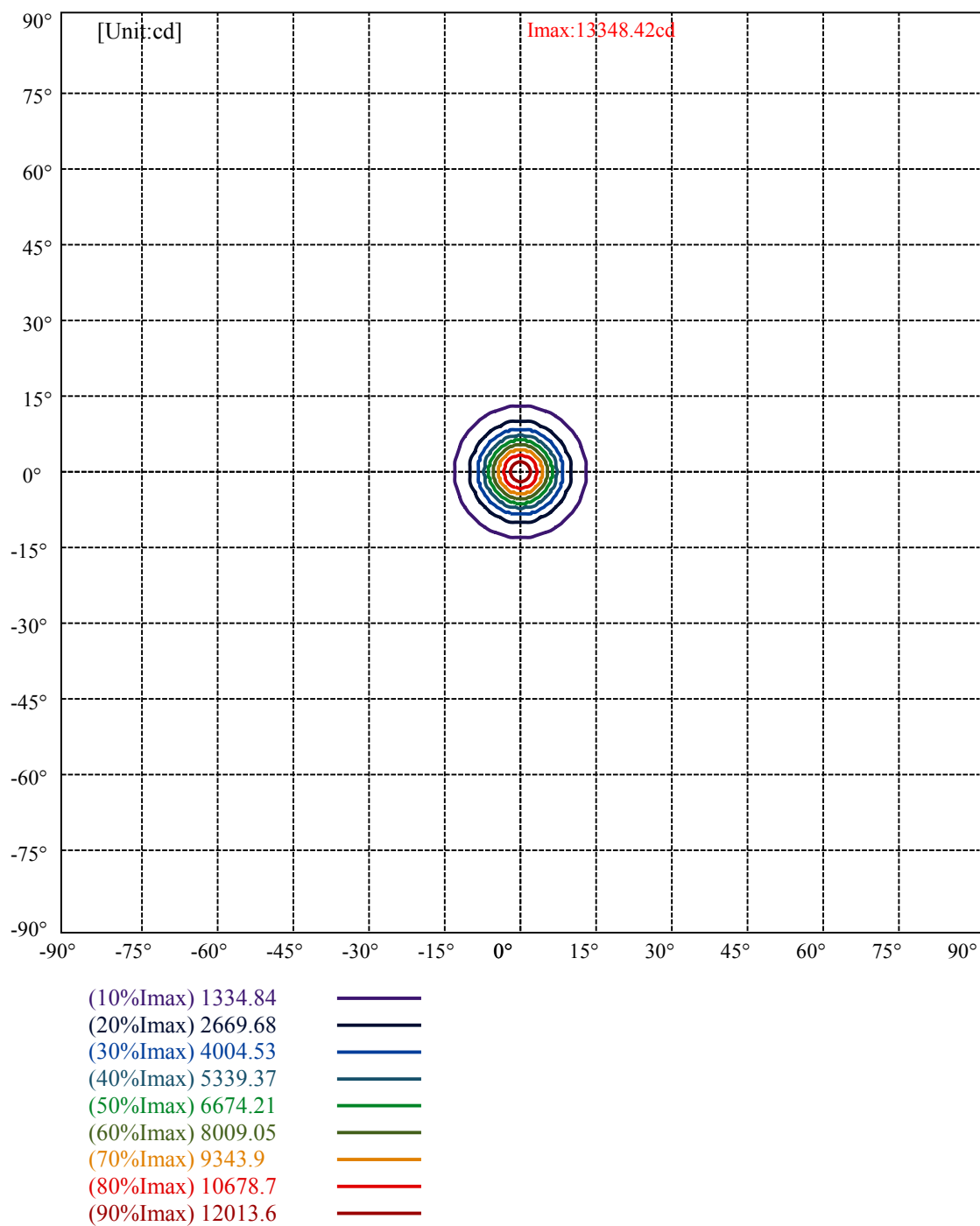
Zone	Lumens	%Lamp	%Fixt
0-30	1177.00	79.96%	86.65%
0-40	1334.26	90.64%	98.23%
0-60	1343.70	91.28%	98.93%
0-90	1357.62	92.23%	99.95%
0-120	1357.62	92.23%	99.95%
0-180	1358.26	92.27%	100.00%
60-90	15.10	1.03%	1.11%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-26.70	1086.61	73.82%	80.00%

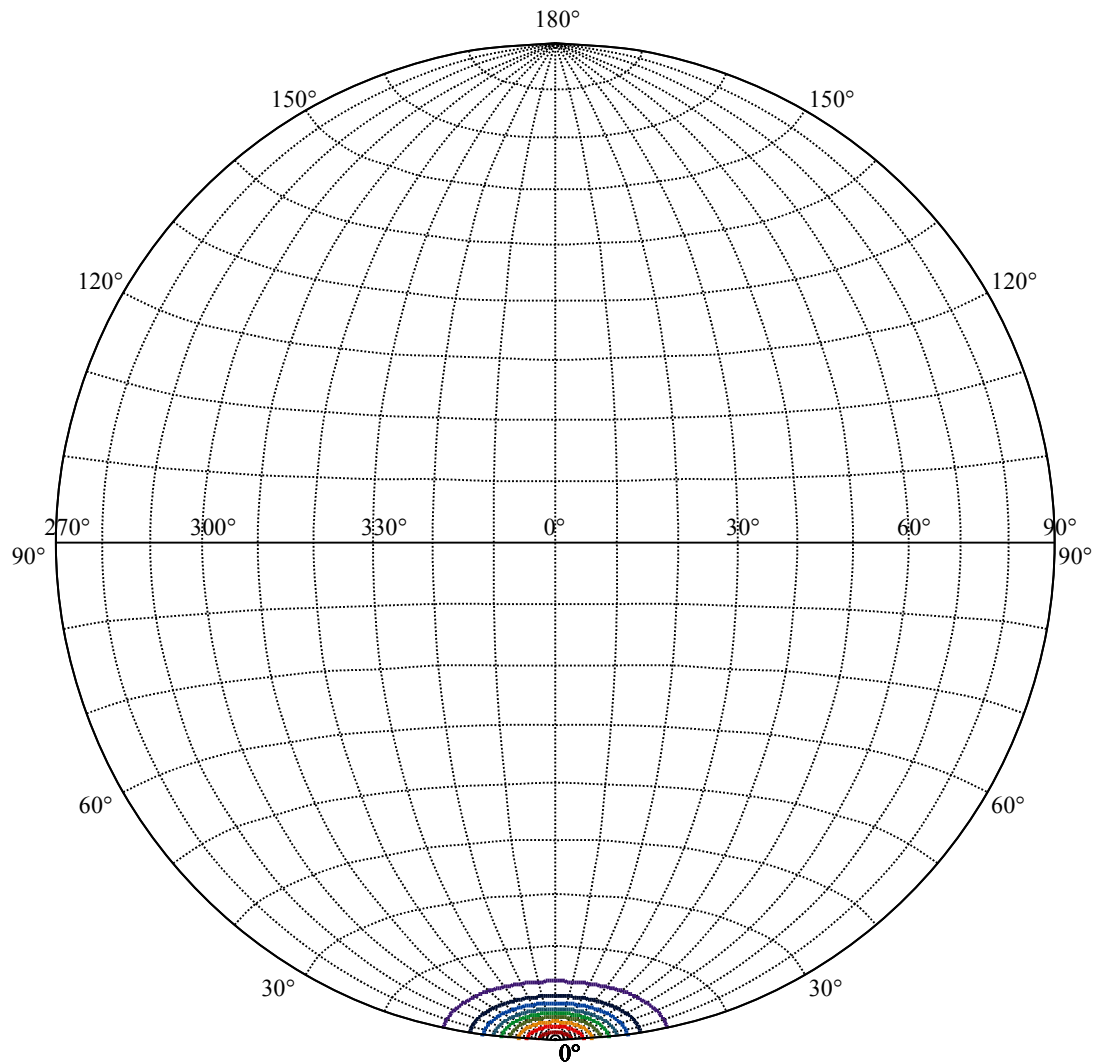
ZONAL LUMEN SUMMARY

0-10	651.25
10-20	268.09
20-30	257.66
30-40	157.26
40-50	4.79
50-60	4.65
60-70	4.93
70-80	5.09
80-90	3.90
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









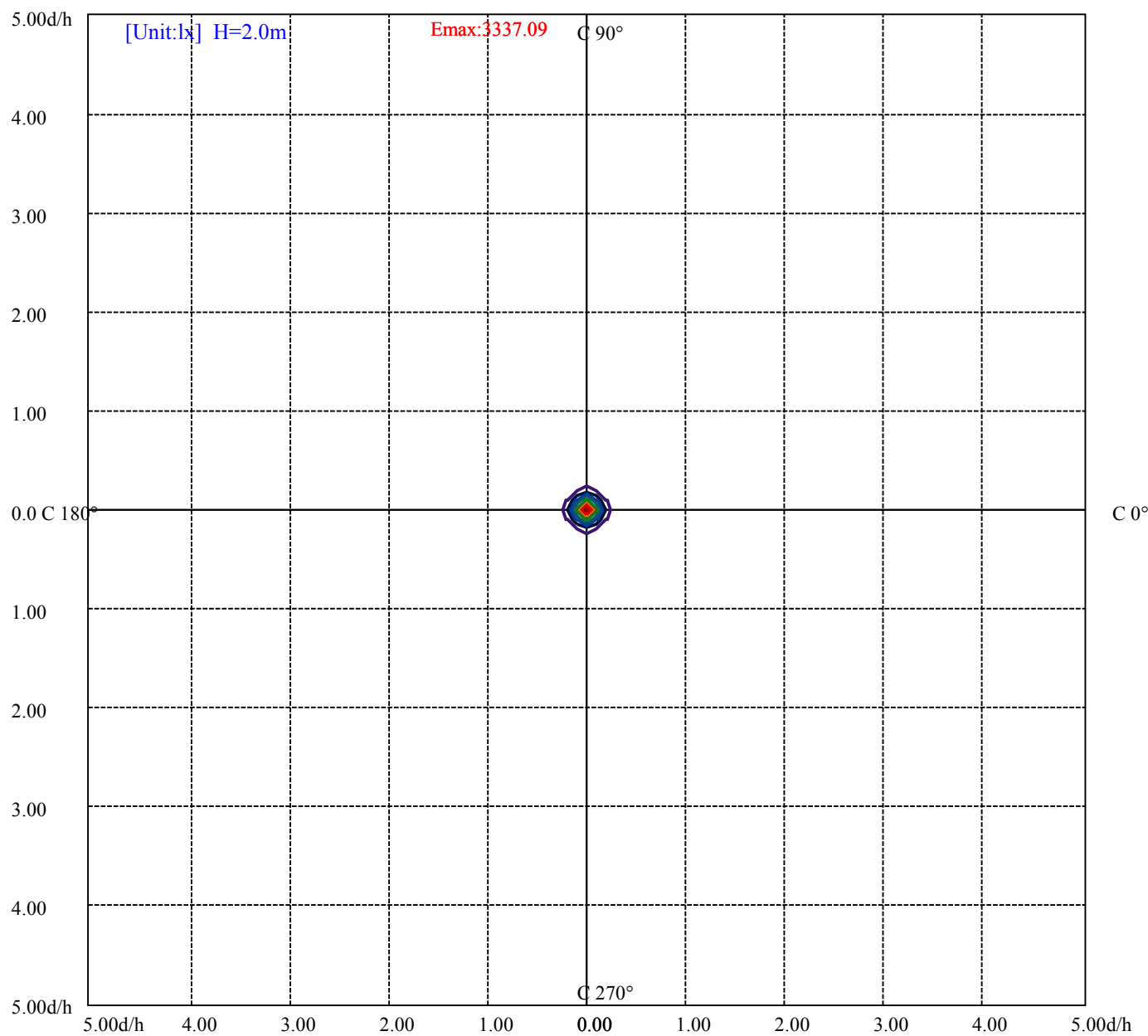
House

[Unit:cd]

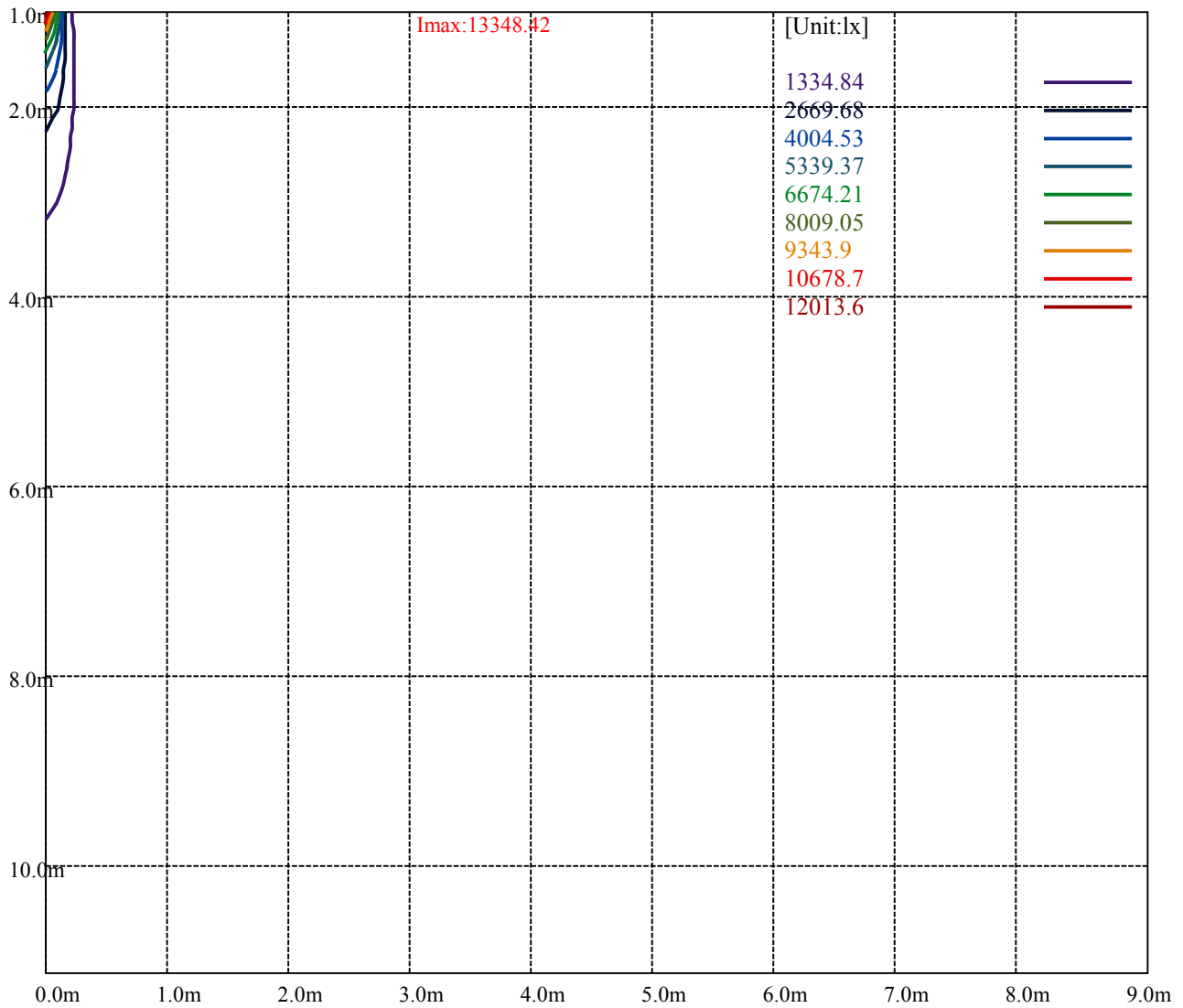
Road

Imax:13348.42

(10%Imax)	1334.84	—
(20%Imax)	2669.68	—
(30%Imax)	4004.53	—
(40%Imax)	5339.37	—
(50%Imax)	6674.21	—
(60%Imax)	8009.05	—
(70%Imax)	9343.9	—
(80%Imax)	10678.7	—
(90%Imax)	12013.6	—



(10%E _{max}) 333.7075	—
(20%E _{max}) 667.415	—
(30%E _{max}) 1001.125	—
(40%E _{max}) 1334.833	—
(50%E _{max}) 1668.54	—
(60%E _{max}) 2002.248	—
(70%E _{max}) 2335.955	—
(80%E _{max}) 2669.675	—
(90%E _{max}) 3003.375	—



Luminance Table

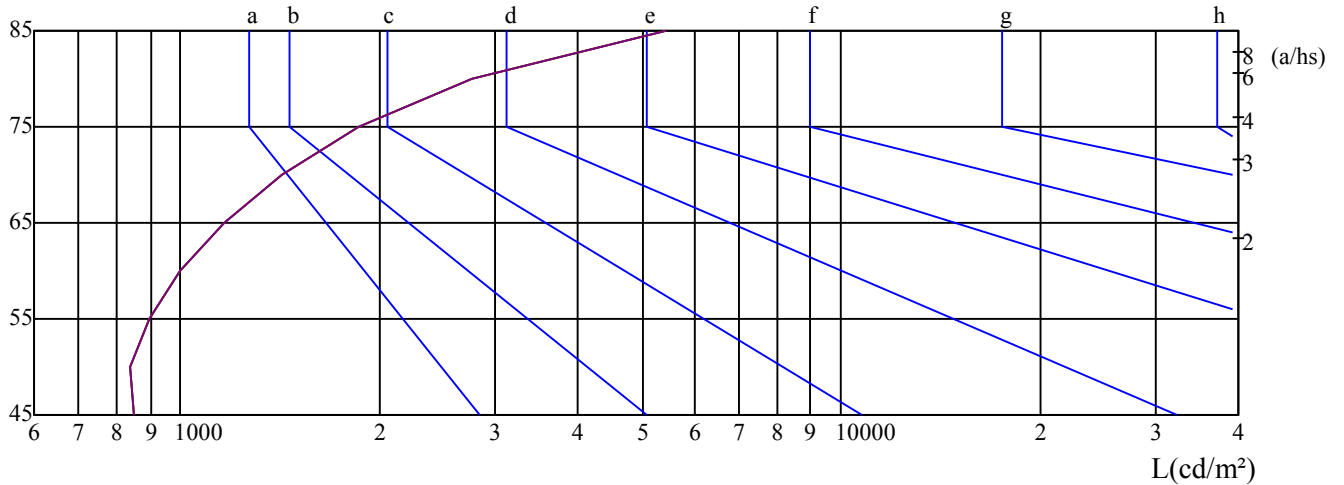
γ	45	50	55	60	65	70	75	80	85
C0	849	839	897	999	1163	1421	1856	2758	5448
C45	849	839	897	999	1163	1421	1856	2758	5448
C90	849	839	897	999	1163	1421	1856	2758	5448

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
1163	1163	1163	1856	1856	1856	5448	5448	5448

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

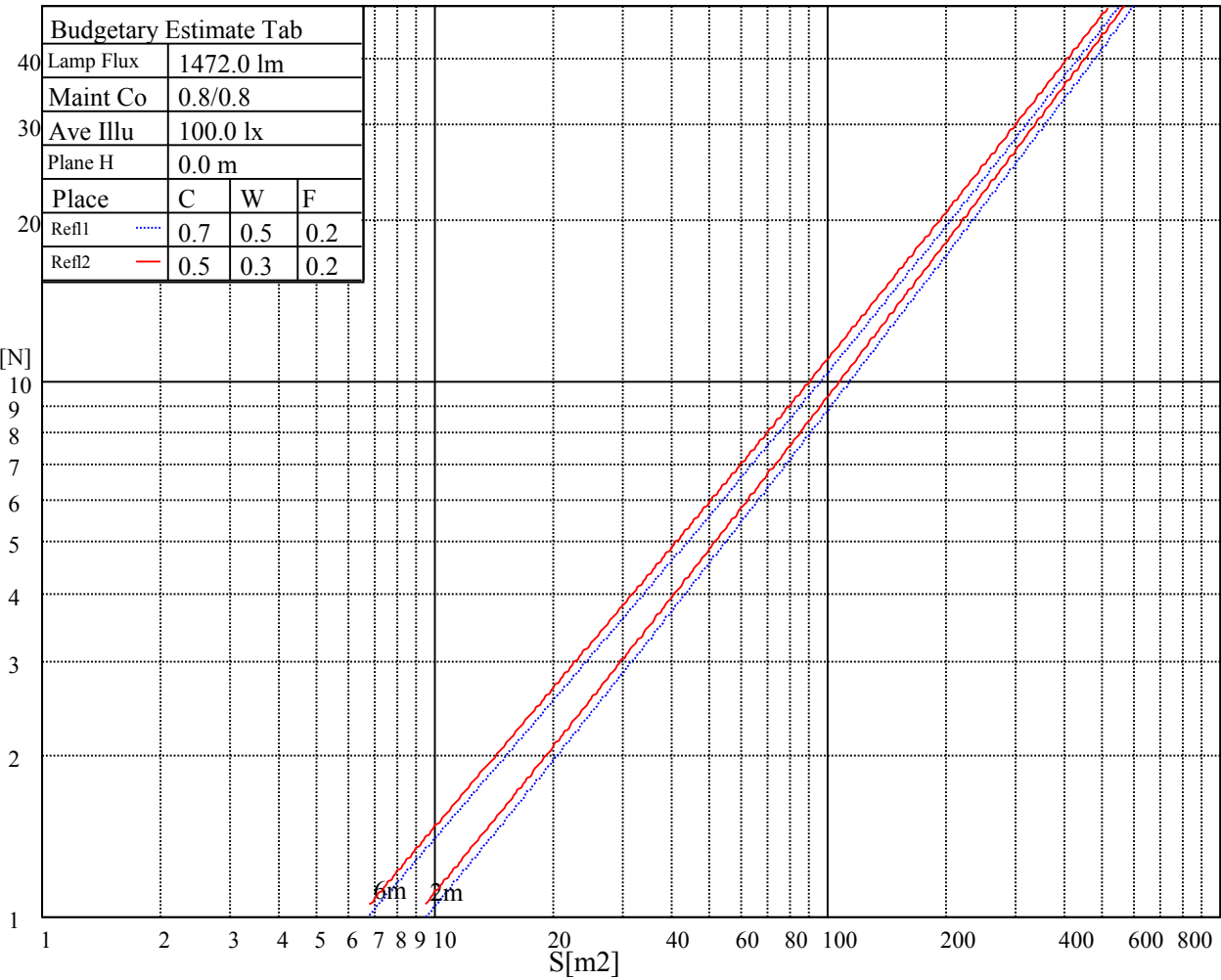
 $\gamma(^{\circ})$ 

C0 ———

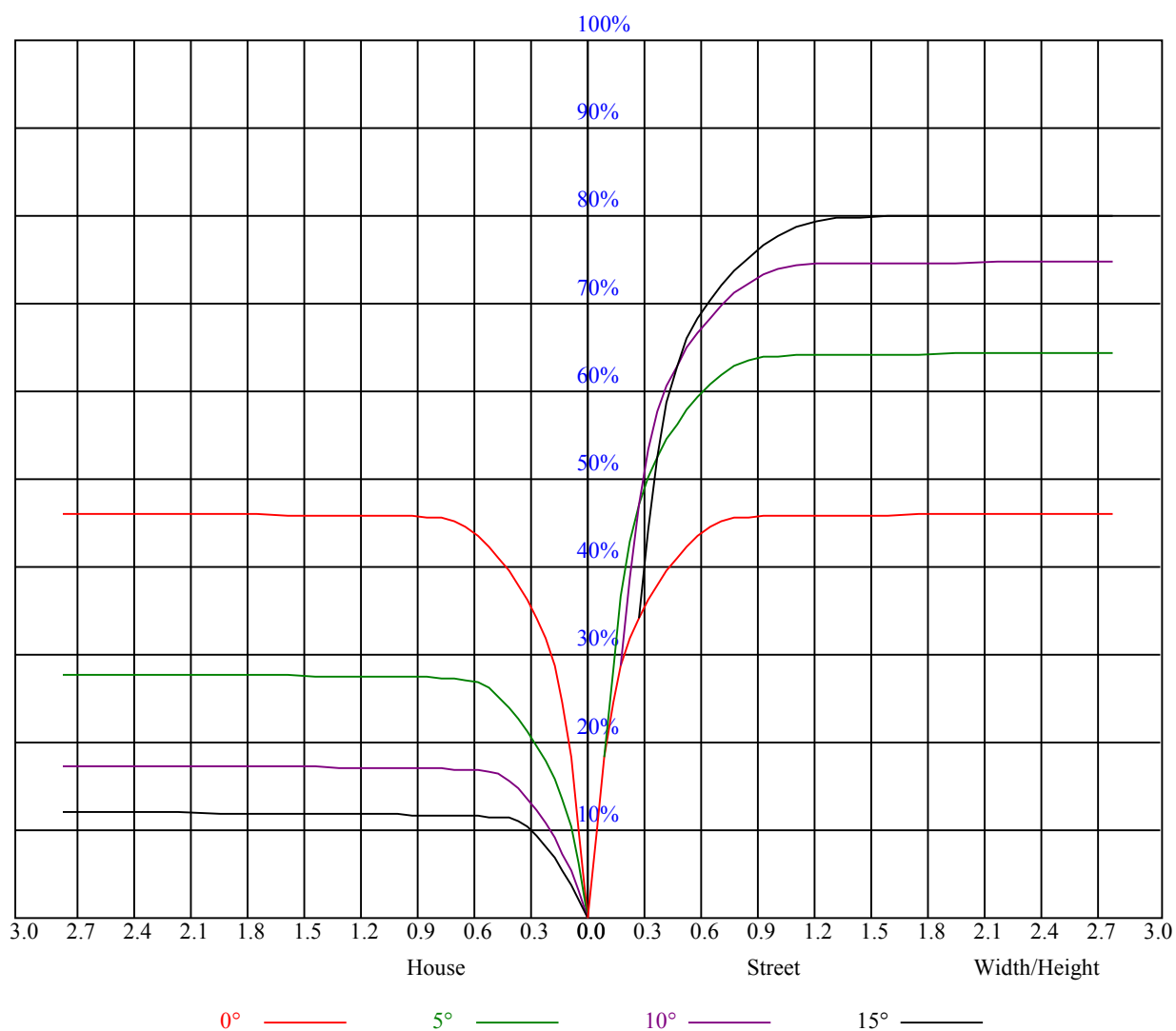
C45 ———

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	-1.29	-0.39	-0.93	-0.08	0.24	-1.26	-0.36	-0.90	-0.05	0.26
	3H	2.03	2.82	2.41	3.16	3.53	2.07	2.86	2.45	3.20	3.57
	4H	3.82	4.56	4.23	4.91	5.30	3.89	4.62	4.30	4.98	5.37
	6H	5.82	6.49	6.24	6.87	7.26	5.93	6.60	6.35	6.98	7.37
	8H	6.92	7.55	7.36	7.94	8.36	7.04	7.67	7.48	8.06	8.47
	12H	8.71	9.31	9.15	9.70	10.13	8.82	9.42	9.25	9.80	10.23
4H	2H	-0.35	0.38	0.06	0.74	1.13	-0.33	0.40	0.08	0.76	1.15
	3H	3.20	3.80	3.61	4.21	4.62	3.23	3.84	3.65	4.25	4.65
	4H	5.15	5.69	5.59	6.11	6.56	5.21	5.74	5.65	6.17	6.62
	6H	7.31	7.77	7.79	8.22	8.70	7.40	7.86	7.88	8.31	8.79
	8H	8.51	8.94	8.99	9.39	9.87	8.61	9.04	9.09	9.49	9.97
	12H	10.19	10.56	10.69	11.05	11.53	10.29	10.65	10.78	11.14	11.62
8H	4H	5.89	6.32	6.37	6.77	7.25	5.93	6.36	6.41	6.81	7.29
	6H	8.33	8.66	8.84	9.16	9.65	8.39	8.73	8.90	9.23	9.72
	8H	9.71	10.01	10.25	10.53	11.03	9.79	10.09	10.33	10.61	11.11
	12H	11.52	11.77	12.05	12.27	12.86	11.59	11.85	12.12	12.35	12.93
12H	4H	6.11	6.47	6.60	6.96	7.44	6.14	6.51	6.64	7.00	7.48
	6H	8.83	8.95	9.19	9.42	9.97	8.89	9.00	9.24	9.48	10.03
	8H	10.17	10.42	10.69	10.92	11.50	10.23	10.49	10.76	10.99	11.57
Variation with the observer position at spacings:											
S = 1.0H		6.0/-9.4					6.0/-9.4				
S = 1.5H		8.4/-7.1					8.4/-7.1				
S = 2.0H		9.9/-5.4					9.9/-5.4				
Standard tables:		BK2					BK2				
Uncorrected UGR		-2.9					-2.9				



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	1.11	1.11	1.11	1.09	1.09	1.09	1.04	1.04	1.04	1.00	1.00	1.00	0.96	0.96	0.96	0.94
1	1.04	1.01	0.99	1.02	0.99	0.98	0.98	0.96	0.95	0.94	0.93	0.92	0.91	0.90	0.89	0.87
2	0.98	0.95	0.92	0.97	0.94	0.91	0.94	0.91	0.89	0.91	0.89	0.87	0.89	0.87	0.86	0.84
3	0.94	0.90	0.87	0.93	0.89	0.86	0.90	0.87	0.85	0.88	0.86	0.84	0.86	0.84	0.82	0.81
4	0.90	0.86	0.83	0.89	0.85	0.82	0.87	0.84	0.81	0.85	0.83	0.80	0.84	0.81	0.80	0.78
5	0.87	0.82	0.79	0.86	0.82	0.79	0.84	0.81	0.78	0.83	0.80	0.78	0.82	0.79	0.77	0.76
6	0.84	0.79	0.76	0.83	0.79	0.76	0.82	0.78	0.76	0.80	0.77	0.75	0.79	0.77	0.75	0.74
7	0.81	0.77	0.74	0.80	0.76	0.74	0.79	0.76	0.73	0.78	0.75	0.73	0.77	0.75	0.72	0.71
8	0.78	0.74	0.71	0.78	0.74	0.71	0.77	0.74	0.71	0.76	0.73	0.71	0.75	0.73	0.70	0.70
9	0.76	0.72	0.69	0.76	0.72	0.69	0.75	0.72	0.69	0.74	0.71	0.69	0.74	0.71	0.69	0.68
10	0.74	0.70	0.68	0.74	0.70	0.67	0.73	0.70	0.67	0.72	0.69	0.67	0.72	0.69	0.67	0.66



Intensity data(cd)

C/ γ (°)	0.0	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0
0.0	13312.64	11322.07	8421.43	4688.60	2575.26	1419.63	931.44	710.89	610.96
45.0	13241.06	11587.89	8462.61	4786.88	2577.08	1413.85	951.87	720.41	617.62
90.0	13499.83	11947.24	8413.17	4667.96	2476.71	1413.57	950.27	721.07	618.28
135.0	13340.17	11587.89	8462.61	4786.88	2577.08	1413.85	951.87	720.41	617.62
180.0	13312.64	11322.07	8421.43	4688.60	2575.26	1419.63	931.44	710.89	610.96
225.0	13241.06	11587.89	8462.61	4786.88	2577.08	1413.85	951.87	720.41	617.62
270.0	13499.83	11947.24	8413.17	4667.96	2476.71	1413.57	950.27	721.07	618.28
315.0	13340.17	11587.89	8462.61	4786.88	2577.08	1413.85	951.87	720.41	617.62
360.0	13312.64	11322.07	8421.43	4688.60	2575.26	1419.63	931.44	710.89	610.96
C/ γ (°)	22.5	25.0	27.5	30.0	32.5	35.0	37.5	40.0	42.5
0.0	563.34	536.74	516.76	498.54	476.35	331.49	171.12	43.27	6.61
45.0	568.73	541.98	524.25	504.59	475.91	338.32	167.48	43.05	8.04
90.0	571.04	546.05	526.89	509.27	486.09	338.49	133.68	32.92	6.50
135.0	568.73	541.98	524.25	504.59	475.91	338.32	167.48	43.05	8.04
180.0	563.34	536.74	516.76	498.54	476.35	331.49	171.12	43.27	6.61
225.0	568.73	541.98	524.25	504.59	475.91	338.32	167.48	43.05	8.04
270.0	571.04	546.05	526.89	509.27	486.09	338.49	133.68	32.92	6.50
315.0	568.73	541.98	524.25	504.59	475.91	338.32	167.48	43.05	8.04
360.0	563.34	536.74	516.76	498.54	476.35	331.49	171.12	43.27	6.61
C/ γ (°)	45.0	47.5	50.0	52.5	55.0	57.5	60.0	62.5	65.0
0.0	6.06	5.73	5.45	5.29	5.23	5.12	5.07	5.07	4.96
45.0	6.00	5.62	5.40	5.23	5.12	5.07	4.96	4.96	4.90
90.0	5.95	5.56	5.34	5.23	5.12	5.01	5.01	4.90	4.90
135.0	6.00	5.62	5.40	5.23	5.12	5.07	4.96	4.96	4.90
180.0	6.06	5.73	5.45	5.29	5.23	5.12	5.07	5.07	4.96
225.0	6.00	5.62	5.40	5.23	5.12	5.07	4.96	4.96	4.90
270.0	5.95	5.56	5.34	5.23	5.12	5.01	5.01	4.90	4.90
315.0	6.00	5.62	5.40	5.23	5.12	5.07	4.96	4.96	4.90
360.0	6.06	5.73	5.45	5.29	5.23	5.12	5.07	5.07	4.96
C/ γ (°)	67.5	70.0	72.5	75.0	77.5	80.0	82.5	85.0	87.5
0.0	4.96	4.90	4.84	4.84	4.79	4.84	4.79	4.79	4.73
45.0	4.90	4.84	4.79	4.79	4.73	4.79	4.79	4.73	4.73
90.0	4.90	4.84	4.79	4.79	4.73	4.73	4.79	4.73	4.73
135.0	4.90	4.84	4.79	4.79	4.73	4.79	4.79	4.73	4.73
180.0	4.96	4.90	4.84	4.84	4.79	4.84	4.79	4.79	4.73
225.0	4.90	4.84	4.79	4.79	4.73	4.79	4.79	4.73	4.73
270.0	4.90	4.84	4.79	4.79	4.73	4.73	4.79	4.73	4.73
315.0	4.90	4.84	4.79	4.79	4.73	4.79	4.79	4.73	4.73
360.0	4.96	4.90	4.84	4.84	4.79	4.84	4.79	4.79	4.73
C/ γ (°)	90.0								
0.0	4.68								
45.0	4.73								
90.0	4.73								
135.0	4.73								
180.0	4.68								
225.0	4.73								
270.0	4.73								
315.0	4.73								
360.0	4.68								