



NATA LIGHTING CO.,LTD.
www.nata.cn
Email:info@nata.com
Tel:+86-750-3770000 Fax:+86-750-3771111
Address:380JinOu Road,GaoXin Zone,Jiang Men City,Guangdong,China

NATA

LumCAT: 1680-N
Luminaire: 92.70.064.00
Report No: NATA0100
Test No: GC2019011113
LampCAT: SEOUL SAWx10 LES9.8
Lamp flux(lm): 1658.0
Number of Lamps: 1
Length(mm): 32
Phm Type: C

Voltage(V): 34.7000
Current(A): 0.3100
Power (W): 10.7570
PF: 0.0000
Ballast type: DC
Width(mm): 32
Height(mm): 0

Photometric Results

Lumens(lm): 1457.44
Efficiency(%): 87.90%
Lumens(lm)/Power(W): 136.17
Central intensity(cd): 1453.359
Maximum intensity(cd): 1453.992
Angle of maximum intensity: C=0.0 γ =5.0
Beam Angle(50%Imax): [C0/180]Total=63.5
[C90/270]Total=63.5
Field angle(10%Imax): [C0/180]Total=85.0
[C90/270]Total=85.0
Maximum s/h(1/2): C0_180=1.02 C90_270=1.02
Maximum s/h(1/4): C0_180=0.93 C90_270=0.93
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 88.34%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.833%

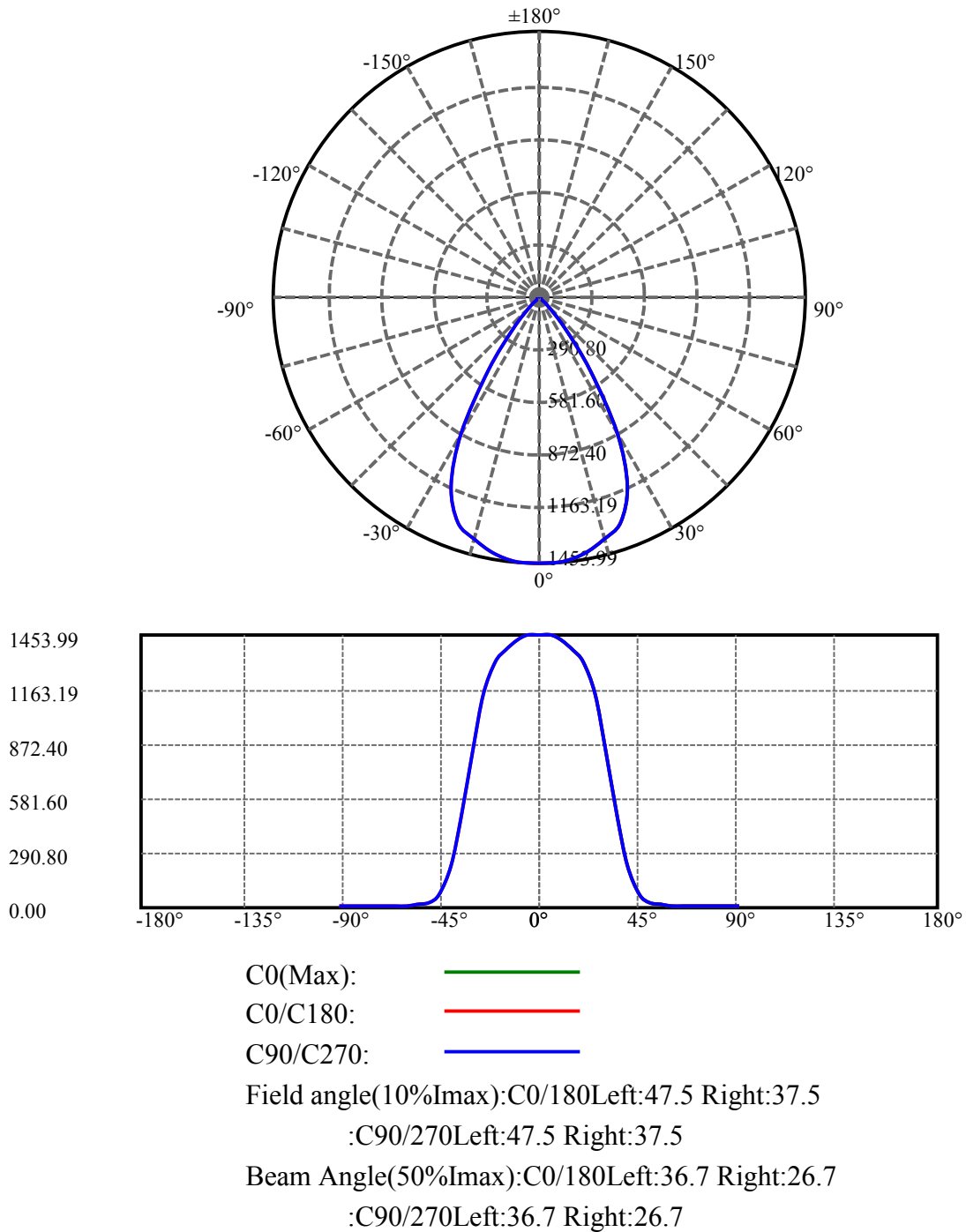
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1453.359	8.691	8.691	.524%	.596%
5.0	1453.992	69.462	78.153	4.190%	5.362%
10.0	1422.422	135.390	213.544	8.166%	14.652%
15.0	1372.008	194.645	408.188	11.740%	28.007%
20.0	1309.359	245.471	653.659	14.805%	44.850%
25.0	1135.990	263.155	916.815	15.872%	62.906%
30.0	852.813	233.729	1150.544	14.097%	78.943%
35.0	490.289	154.146	1304.69	9.297%	89.520%
40.0	221.541	78.057	1382.747	4.708%	94.875%
45.0	68.245	26.451	1409.198	1.595%	96.690%
50.0	26.895	11.293	1420.491	.681%	97.465%
55.0	15.075	6.769	1427.26	.408%	97.929%
60.0	12.101	5.744	1433.004	.346%	98.324%
65.0	10.751	5.341	1438.345	.322%	98.690%
70.0	9.816	5.056	1443.401	.305%	99.037%
75.0	8.613	4.560	1447.961	.275%	99.350%
80.0	7.601	4.103	1452.064	.247%	99.631%
85.0	6.708	3.663	1455.727	.221%	99.883%
90.0	6.237	1.709	1457.436	.103%	100.000%

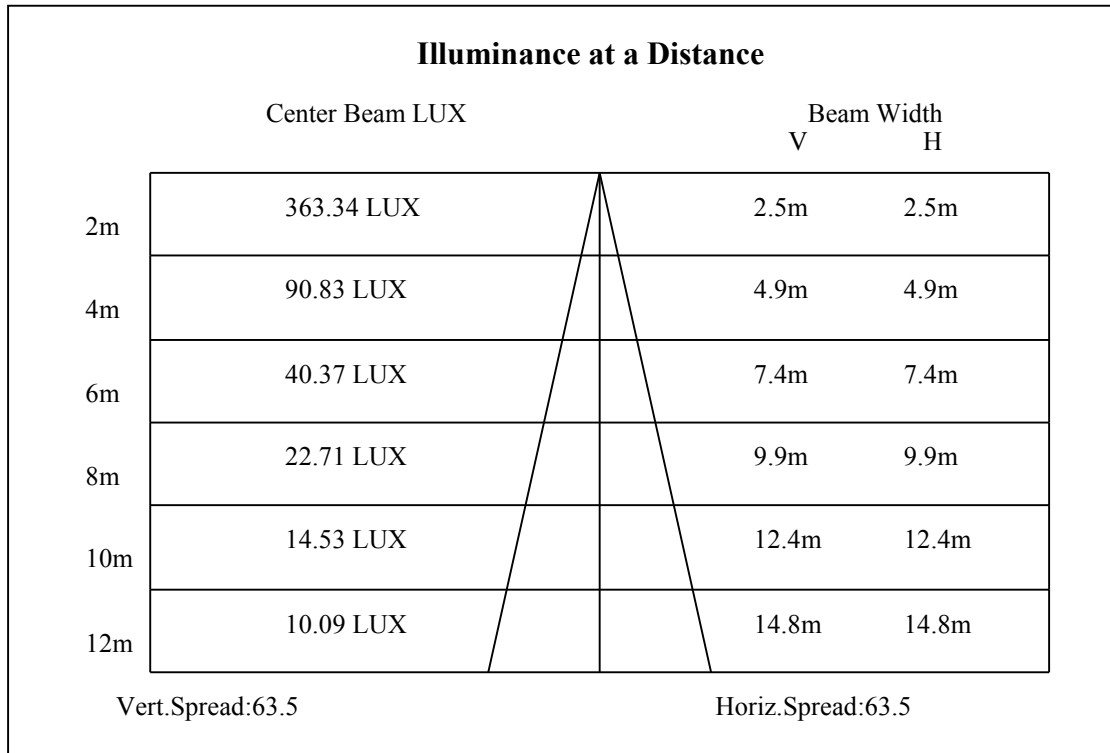
ZONAL LUMEN SUMMARY

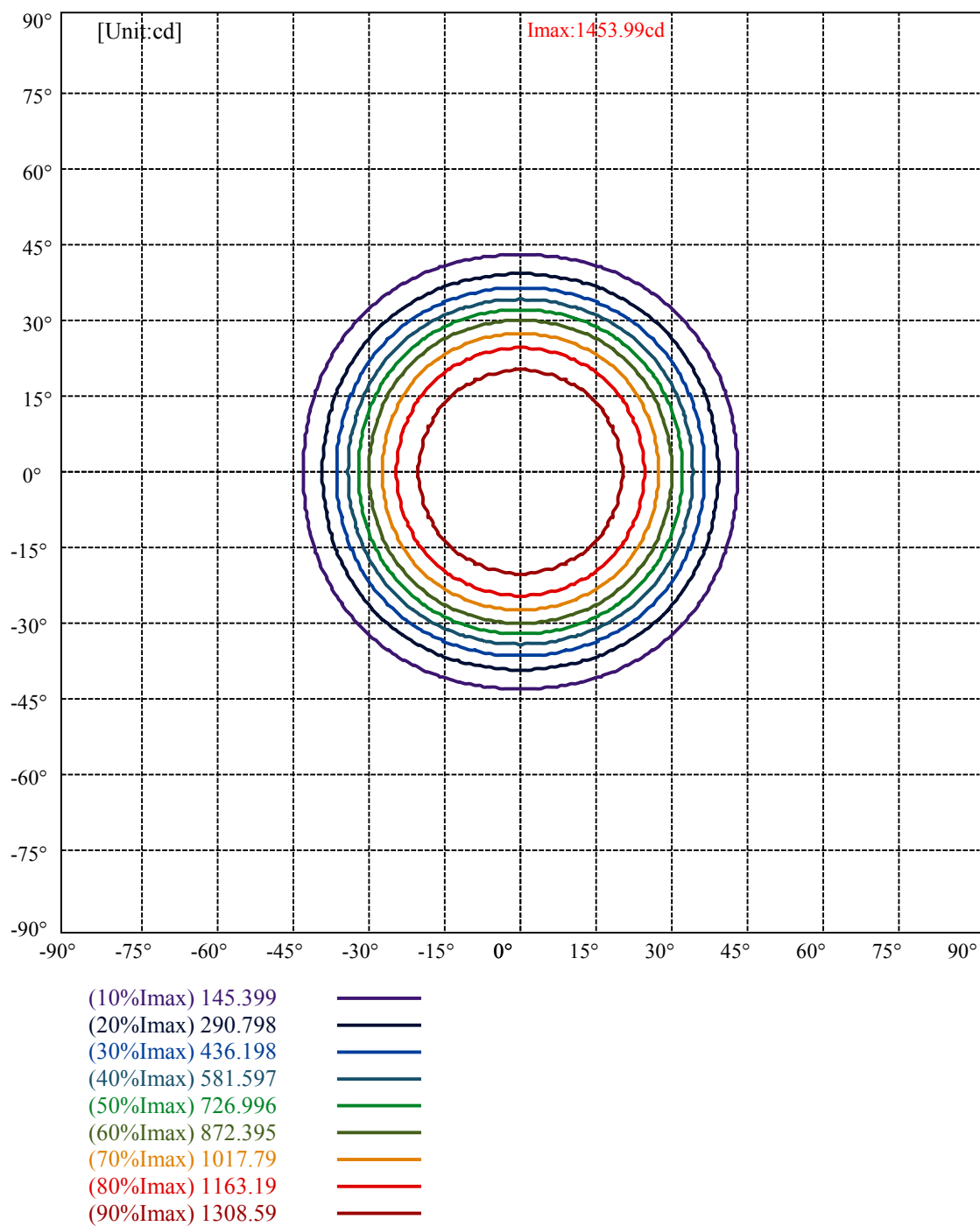
Zone	Lumens	%Lamp	%Fixt
0-30	1150.54	69.39%	78.94%
0-40	1382.75	83.40%	94.88%
0-60	1433.00	86.43%	98.32%
0-90	1455.73	87.80%	99.88%
0-120	1455.73	87.80%	99.88%
0-180	1457.44	87.90%	100.00%
60-90	28.47	1.72%	1.95%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-30.50	1165.95	70.32%	80.00%

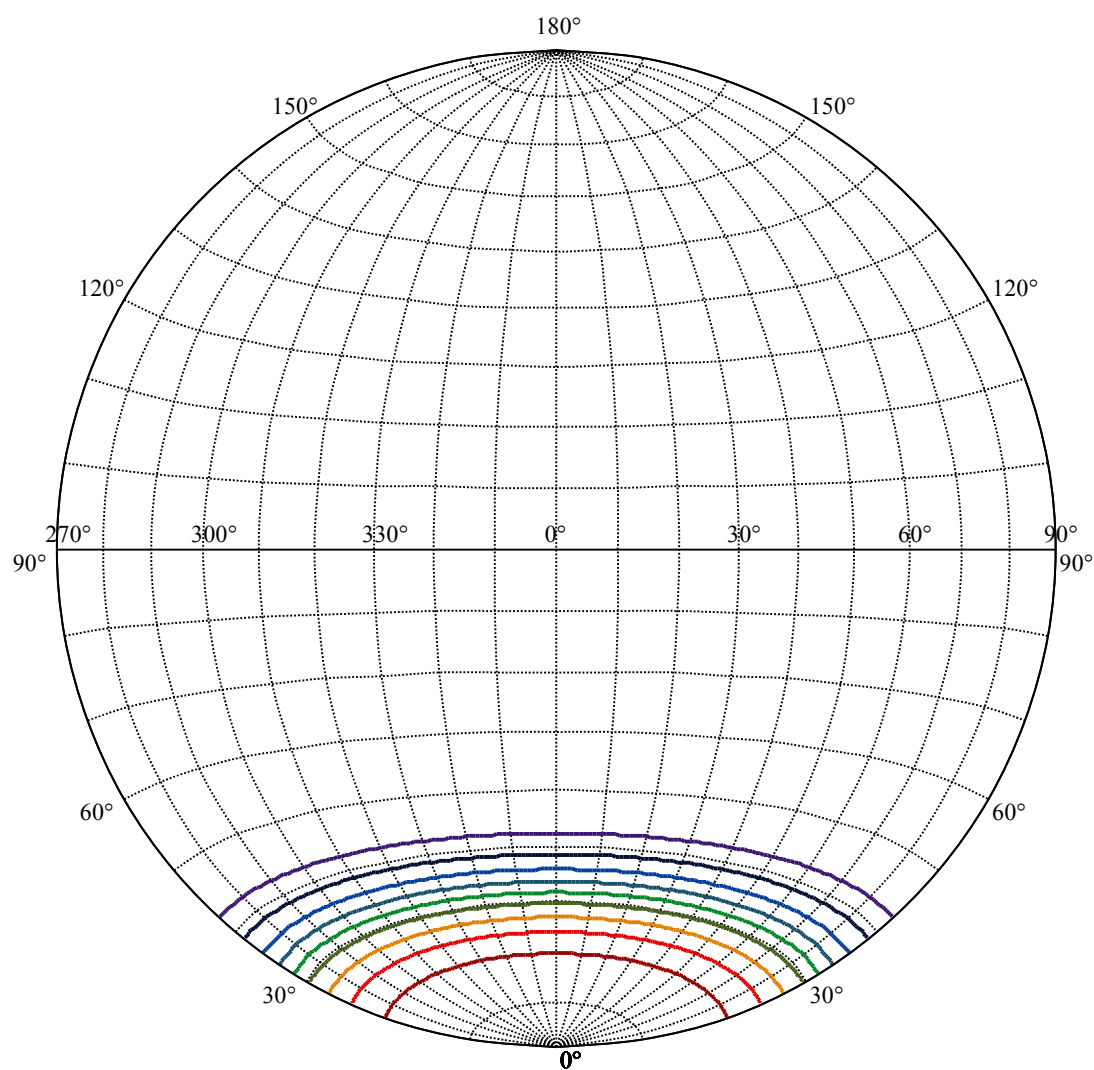
ZONAL LUMEN SUMMARY

0-10	213.54
10-20	440.12
20-30	496.88
30-40	232.20
40-50	37.74
50-60	12.51
60-70	10.40
70-80	8.66
80-90	3.66
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:1453.99

(10%Imax) 145.399

(20%Imax) 290.798

(30%Imax) 436.198

(40%Imax) 581.597

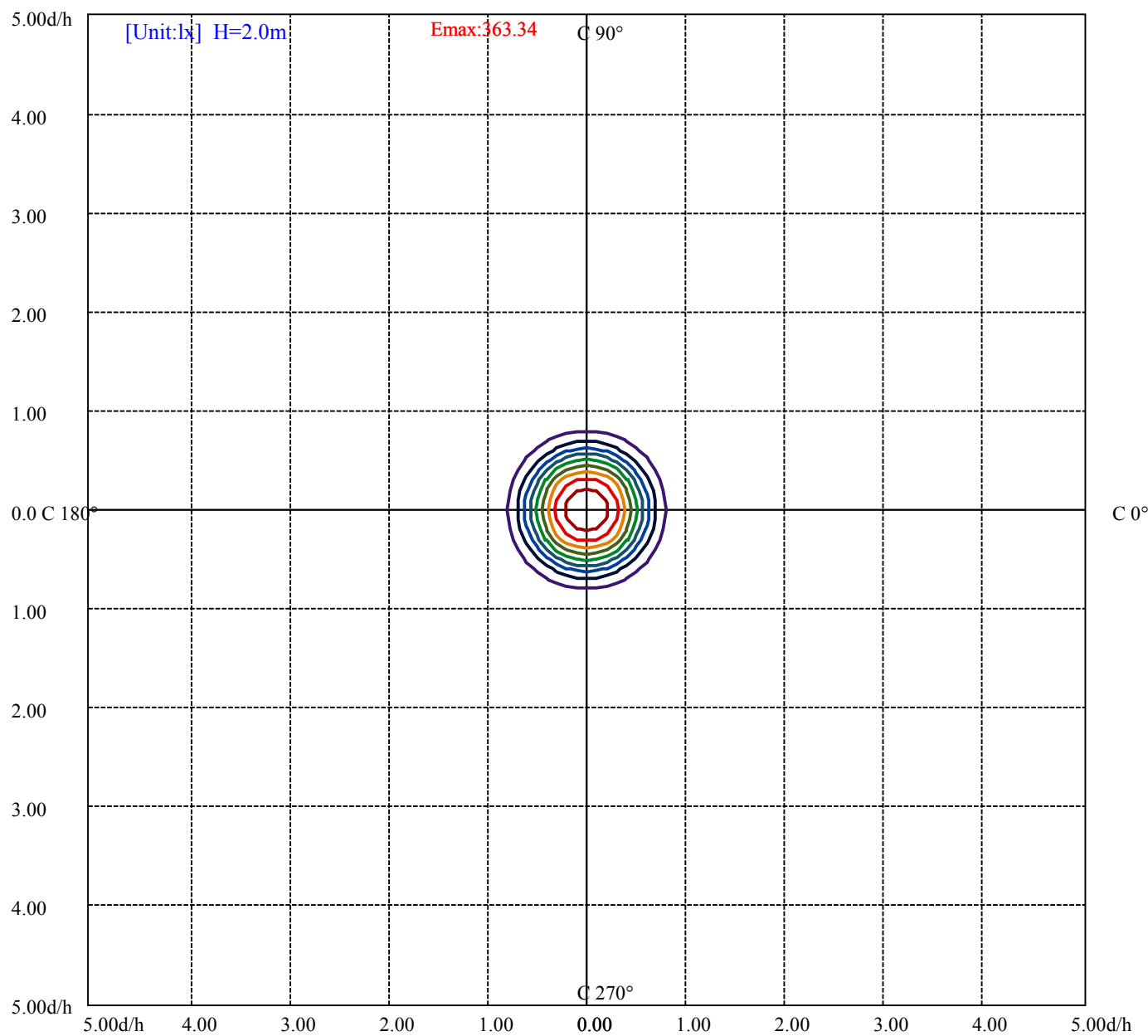
(50%Imax) 726.996

(60%Imax) 872.395

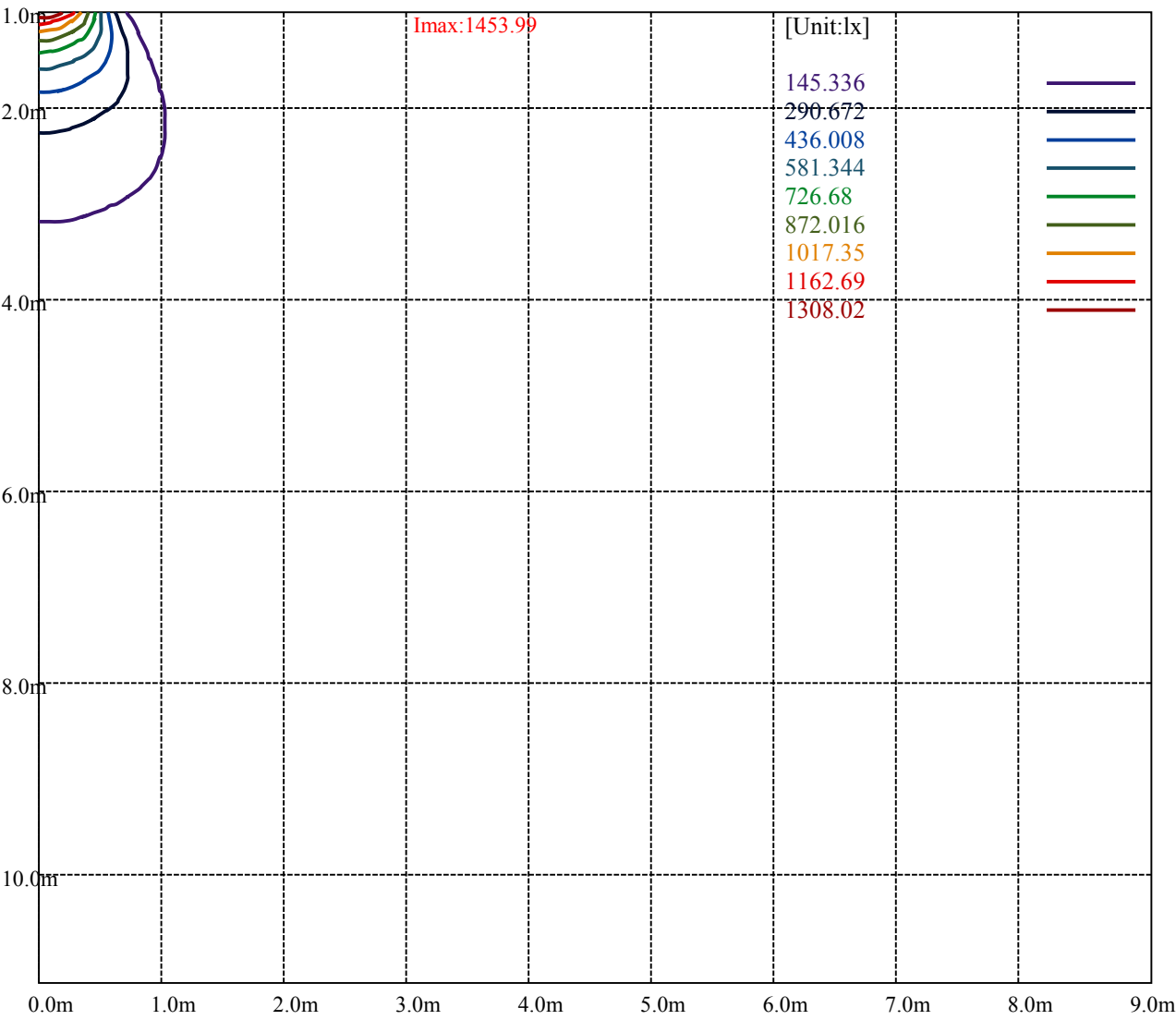
(70%Imax) 1017.79

(80%Imax) 1163.19

(90%Imax) 1308.59



(10%E _{max}) 36.334	—
(20%E _{max}) 72.668	—
(30%E _{max}) 109.002	—
(40%E _{max}) 145.336	—
(50%E _{max}) 181.67	—
(60%E _{max}) 218.004	—
(70%E _{max}) 254.3375	—
(80%E _{max}) 290.6725	—
(90%E _{max}) 327.005	—



Luminance Table

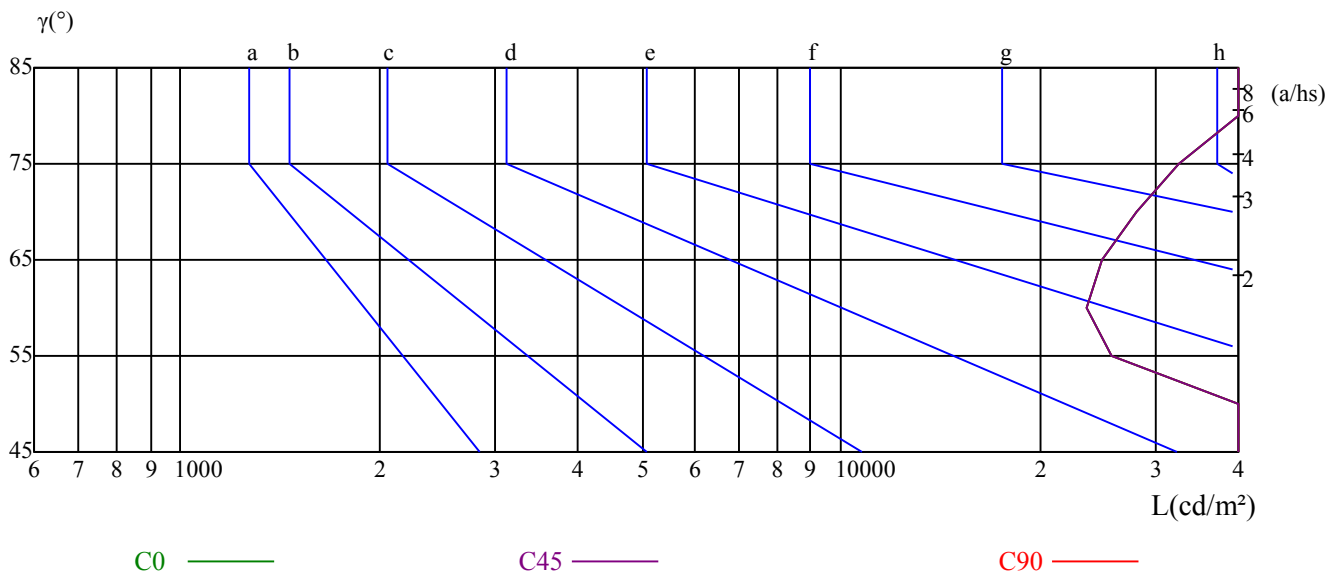
γ	45	50	55	60	65	70	75	80	85
C0	94251	40860	25666	23634	24842	28026	32499	42745	75160
C45	94251	40860	25666	23634	24842	28026	32499	42745	75160
C90	94251	40860	25666	23634	24842	28026	32499	42745	75160

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
24842	24842	24842	32499	32499	32499	75160	75160	75160

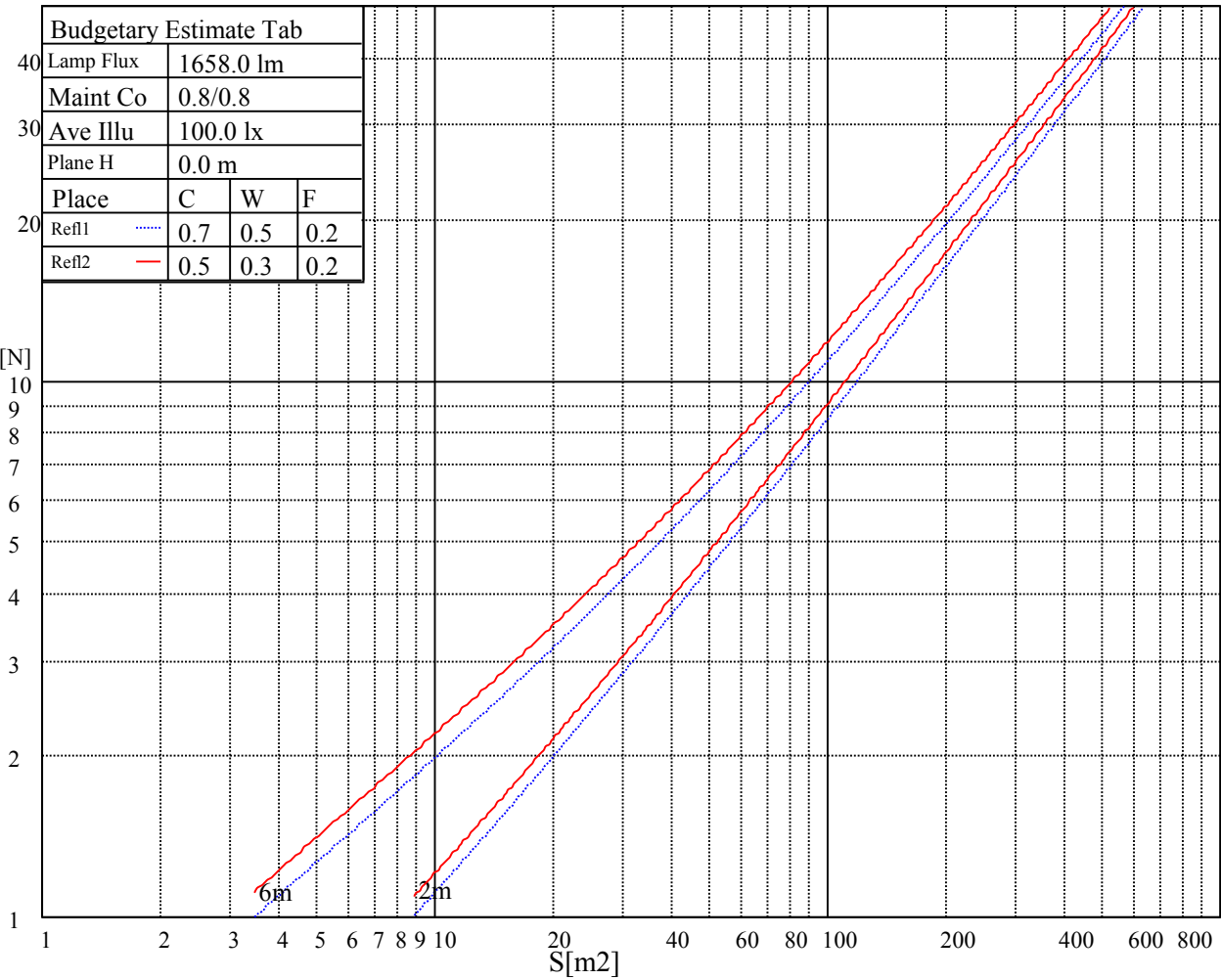
Glare Table

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

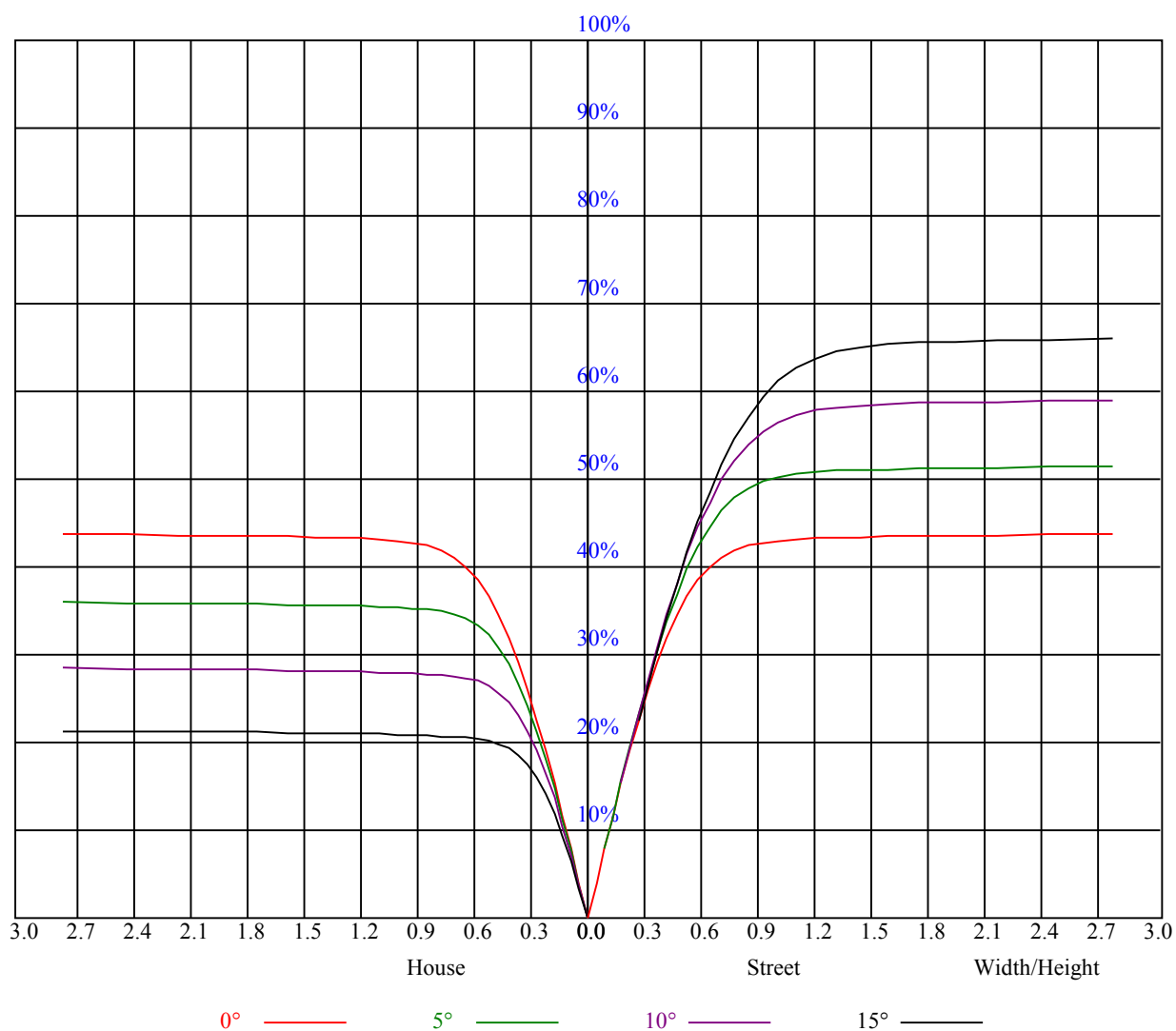
Luminance Limiting Curve



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	13.25	14.22	13.61	14.53	14.85	12.53	13.50	12.89	13.81	14.13
	3H	15.79	16.64	16.17	16.98	17.35	14.73	15.58	15.11	15.92	16.29
	4H	17.05	17.85	17.46	18.20	18.59	15.91	16.71	16.32	17.06	17.45
	6H	18.37	19.10	18.79	19.47	19.87	17.26	17.98	17.68	18.36	18.76
	8H	19.05	19.73	19.48	20.12	20.53	18.03	18.71	18.47	19.11	19.52
	12H	20.15	20.80	20.58	21.18	21.61	19.38	20.03	19.82	20.42	20.85
4H	2H	13.70	14.50	14.11	14.85	15.24	13.13	13.93	13.54	14.28	14.67
	3H	16.54	17.19	16.96	17.60	18.01	15.67	16.32	16.09	16.73	17.14
	4H	18.00	18.58	18.44	19.01	19.45	17.05	17.63	17.49	18.06	18.51
	6H	19.43	19.92	19.90	20.37	20.85	18.54	19.04	19.01	19.49	19.96
	8H	20.25	20.71	20.72	21.16	21.64	19.44	19.90	19.92	20.35	20.83
	12H	21.37	21.77	21.86	22.26	22.74	20.76	21.16	21.25	21.65	22.13
8H	4H	18.42	18.88	18.89	19.33	19.81	17.64	18.11	18.12	18.56	19.03
	6H	20.13	20.49	20.64	21.00	21.48	19.41	19.78	19.92	20.28	20.77
	8H	21.14	21.46	21.67	21.99	22.48	20.50	20.83	21.03	21.35	21.85
	12H	22.53	22.81	23.05	23.31	23.89	22.04	22.33	22.57	22.82	23.40
12H	4H	18.51	18.91	19.00	19.40	19.88	17.79	18.19	18.28	18.68	19.16
	6H	20.57	20.65	20.85	21.12	21.67	19.93	20.00	20.21	20.47	21.02
	8H	21.45	21.73	21.97	22.23	22.81	20.89	21.17	21.41	21.67	22.25
Variation with the observer position at spacings:											
S = 1.0H		4.8/-7.2					4.8/-7.2				
S = 1.5H		7.2/-5.8					7.2/-5.8				
S = 2.0H		8.8/-4.9					8.8/-4.9				
Standard tables:		BK2					BK2				
Uncorrected UGR		8.3					8.3				



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	1.05	1.05	1.05	1.03	1.03	1.03	0.98	0.98	0.98	0.94	0.94	0.94	0.90	0.90	0.90	0.88
1	0.97	0.95	0.93	0.95	0.93	0.91	0.92	0.90	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82
2	0.91	0.87	0.84	0.89	0.86	0.83	0.86	0.84	0.81	0.84	0.82	0.80	0.81	0.80	0.78	0.77
3	0.85	0.81	0.77	0.84	0.80	0.77	0.82	0.78	0.76	0.79	0.77	0.74	0.77	0.75	0.73	0.72
4	0.80	0.75	0.72	0.79	0.75	0.71	0.77	0.73	0.70	0.75	0.72	0.70	0.74	0.71	0.69	0.67
5	0.75	0.70	0.67	0.75	0.70	0.66	0.73	0.69	0.66	0.72	0.68	0.65	0.70	0.67	0.65	0.63
6	0.71	0.66	0.62	0.71	0.66	0.62	0.69	0.65	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.60
7	0.67	0.62	0.59	0.67	0.62	0.59	0.66	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.56
8	0.64	0.59	0.55	0.63	0.59	0.55	0.62	0.58	0.55	0.62	0.58	0.55	0.61	0.57	0.55	0.53
9	0.61	0.56	0.52	0.60	0.56	0.52	0.59	0.55	0.52	0.59	0.55	0.52	0.58	0.54	0.52	0.51
10	0.58	0.53	0.50	0.57	0.53	0.50	0.57	0.52	0.49	0.56	0.52	0.49	0.55	0.52	0.49	0.48



NATA 1680-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	1461.38	1459.69	1420.31	1363.50	1326.94	1227.94	956.25	597.38	285.75		
45.0	1449.00	1458.00	1425.38	1372.50	1316.81	1186.88	894.94	549.56	285.19		
90.0	1452.38	1469.25	1451.25	1431.00	1358.44	1107.51	824.40	414.68	159.36		
135.0	1450.69	1457.44	1446.75	1416.38	1360.13	1183.50	870.75	480.94	212.68		
180.0	1461.38	1455.75	1413.56	1359.00	1287.56	1072.24	765.23	397.46	153.51		
225.0	1449.00	1441.13	1397.81	1329.75	1256.06	1064.93	771.08	449.44	187.14		
270.0	1452.38	1446.75	1422.00	1361.81	1283.63	1122.75	880.31	532.13	286.31		
315.0	1450.69	1443.94	1402.31	1342.13	1285.31	1122.19	859.56	500.74	202.39		
360.0	1461.38	1459.69	1420.31	1363.50	1326.94	1227.94	956.25	597.38	285.75		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	83.59	25.76	14.40	11.48	10.18	9.34	8.21	7.48	6.69		
45.0	62.44	21.32	12.54	11.42	10.63	9.73	8.49	7.59	6.64		
90.0	42.53	17.94	13.28	12.49	11.70	11.03	9.68	8.27	6.41		
135.0	53.33	20.81	12.83	10.80	9.51	8.66	7.76	6.86	6.53		
180.0	57.09	27.11	14.74	10.91	9.45	8.49	7.54	6.81	6.81		
225.0	76.11	33.98	18.34	13.05	10.97	10.24	9.23	8.16	6.98		
270.0	98.04	41.23	20.03	15.24	13.67	12.04	10.01	8.38	6.98		
315.0	72.84	27.00	14.46	11.42	9.90	9.00	7.99	7.26	6.64		
360.0	83.59	25.76	14.40	11.48	10.18	9.34	8.21	7.48	6.69		
C/γ(°)	90.0										
0.0	6.36										
45.0	6.13										
90.0	6.02										
135.0	6.30										
180.0	6.47										
225.0	6.36										
270.0	6.08										
315.0	6.19										
360.0	6.36										