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NATA

LumCAT: 1678-N	
Luminaire: 92.70.188.00+92.70.147.00	
Report No: NATA0100	Voltage(V): 35.3000
Test No: GC2019011116	Current(A): 0.3000
LampCAT: LUMILEDS LUXEON 1203	Power (W): 10.5900
Lamp flux(lm): 1246.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 46	Width(mm): 46
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1016.83
Efficiency(%): 81.61%
Lumens(lm)/Power(W): 96.97
Central intensity(cd): 1854.984
Maximum intensity(cd): 1854.984
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=40.8
[C90/270]Total=40.8
Field angle(10%Imax): [C0/180]Total=71.1
[C90/270]Total=71.1
Maximum s/h(1/2): C0_180=0.67 C90_270=0.67
Maximum s/h(1/4): C0_180=0.63 C90_270=0.63
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 82.42%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.604%

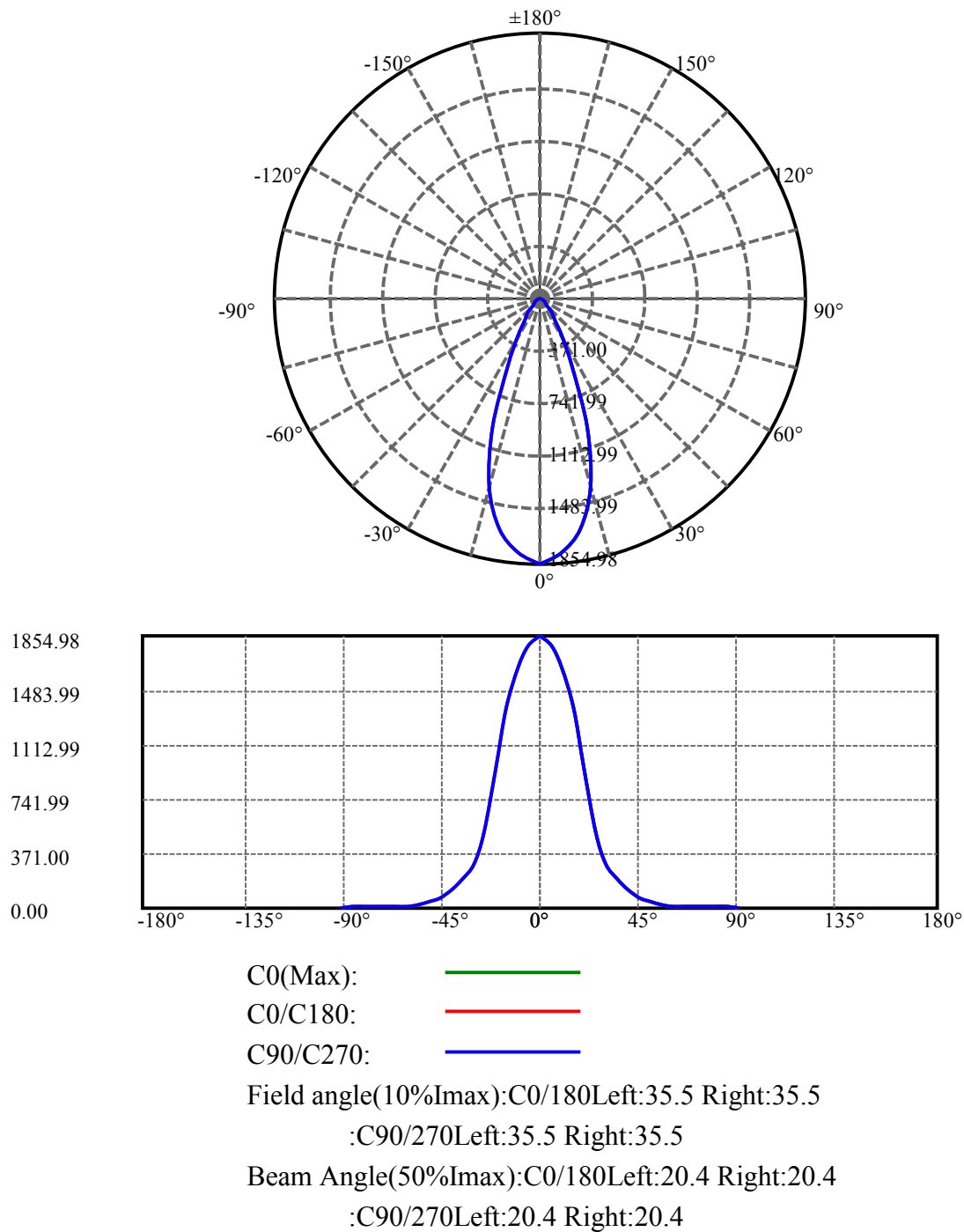
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1854.984	11.093	11.093	.890%	1.091%
5.0	1780.805	85.075	96.168	6.828%	9.458%
10.0	1631.531	155.294	251.462	12.463%	24.730%
15.0	1359.914	192.929	444.391	15.484%	43.704%
20.0	961.502	180.257	624.648	14.467%	61.431%
25.0	520.552	120.587	745.235	9.678%	73.290%
30.0	298.202	81.728	826.963	6.559%	81.328%
35.0	193.001	60.679	887.642	4.870%	87.295%
40.0	123.947	43.671	931.313	3.505%	91.590%
45.0	72.190	27.980	959.293	2.246%	94.342%
50.0	41.358	17.366	976.659	1.394%	96.050%
55.0	22.634	10.163	986.822	.816%	97.049%
60.0	11.060	5.250	992.072	.421%	97.566%
65.0	8.916	4.429	996.501	.355%	98.001%
70.0	8.754	4.509	1001.01	.362%	98.445%
75.0	8.824	4.672	1005.682	.375%	98.904%
80.0	9.387	5.067	1010.749	.407%	99.402%
85.0	9.021	4.926	1015.675	.395%	99.887%
90.0	4.198	1.150	1016.826	.092%	100.000%

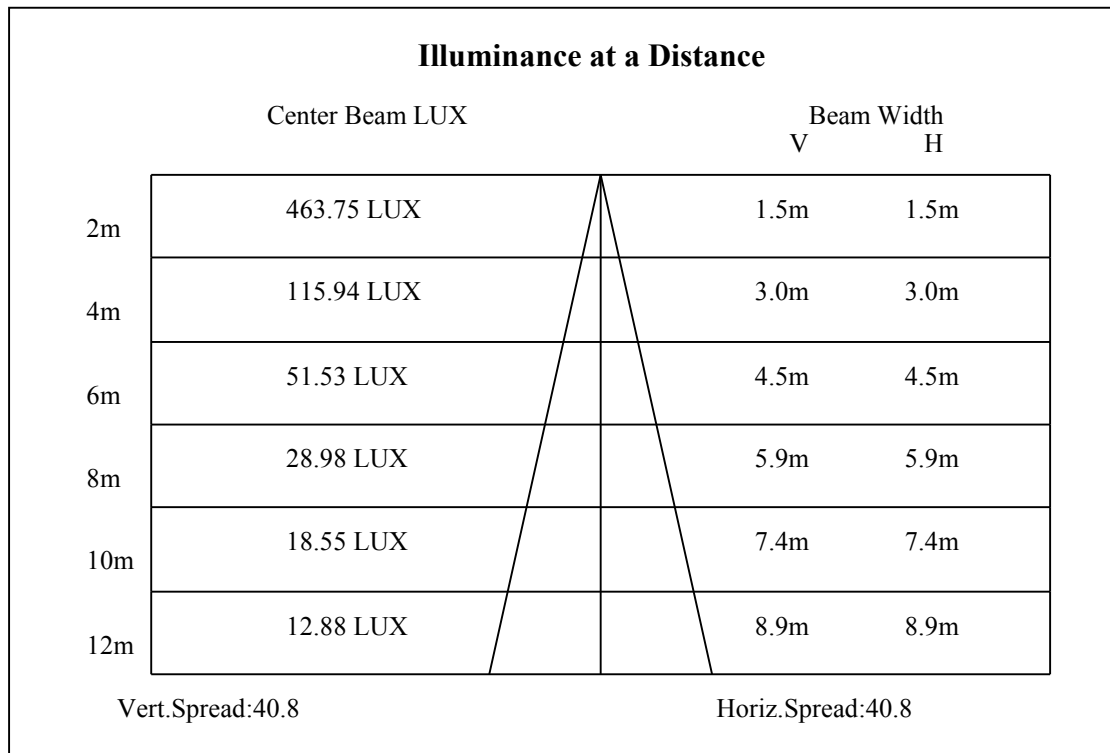
ZONAL LUMEN SUMMARY

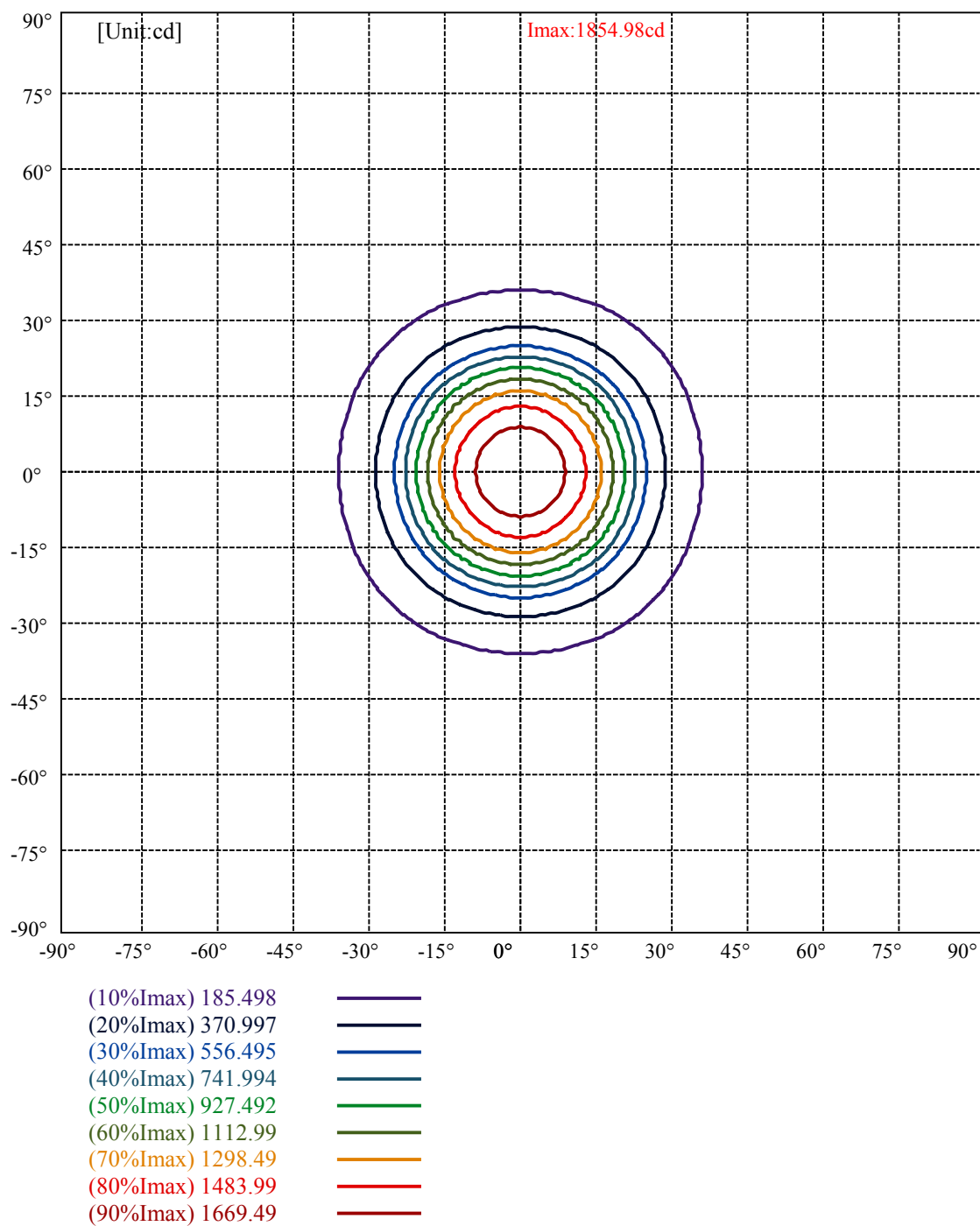
Zone	Lumens	%Lamp	%Fixt
0-30	826.96	66.37%	81.33%
0-40	931.31	74.74%	91.59%
0-60	992.07	79.62%	97.57%
0-90	1015.68	81.51%	99.89%
0-120	1015.68	81.51%	99.89%
0-180	1016.83	81.61%	100.00%
60-90	28.85	2.32%	2.84%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-29.17	813.46	65.29%	80.00%

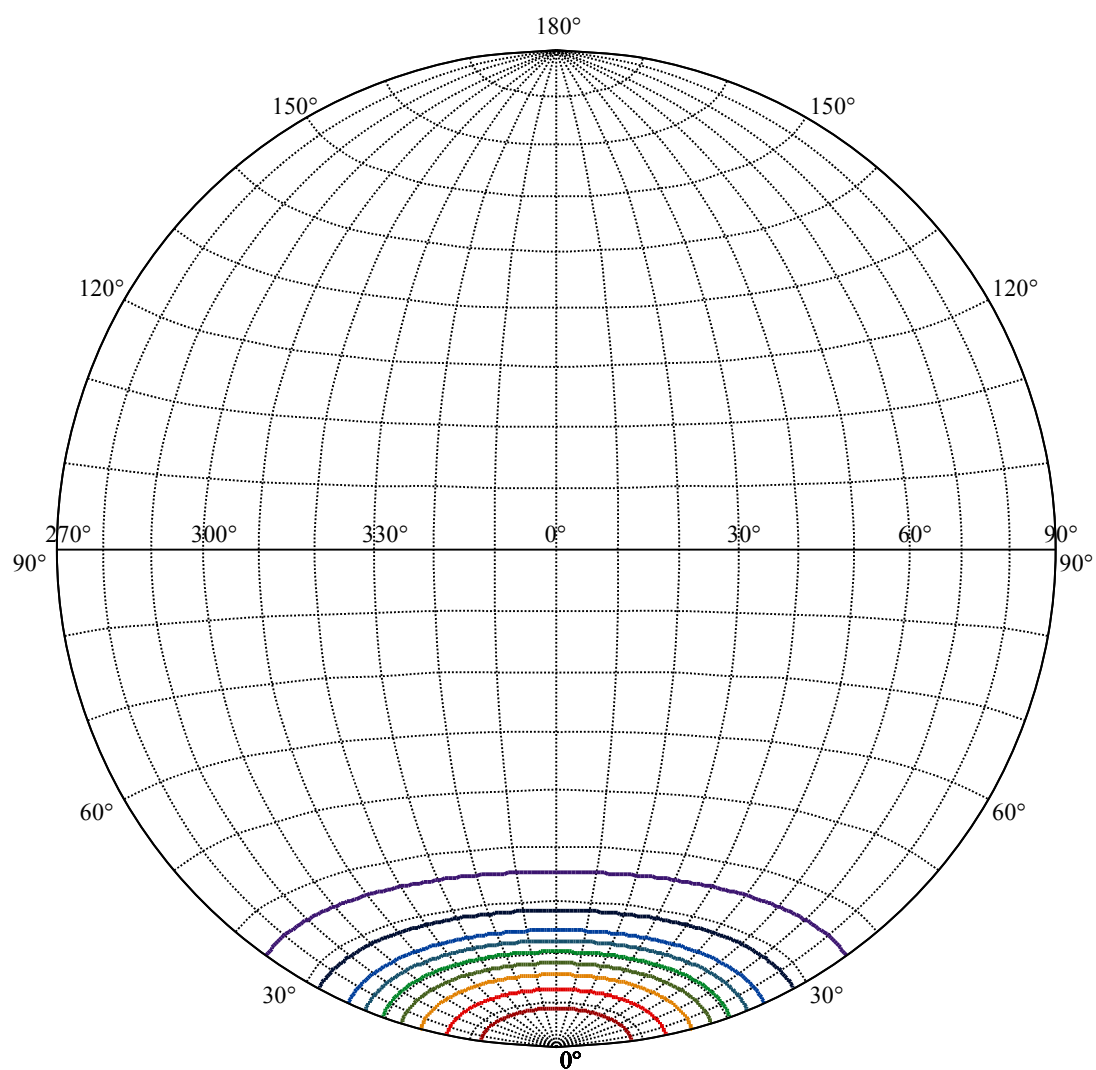
ZONAL LUMEN SUMMARY

0-10	251.46
10-20	373.19
20-30	202.32
30-40	104.35
40-50	45.35
50-60	15.41
60-70	8.94
70-80	9.74
80-90	4.93
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







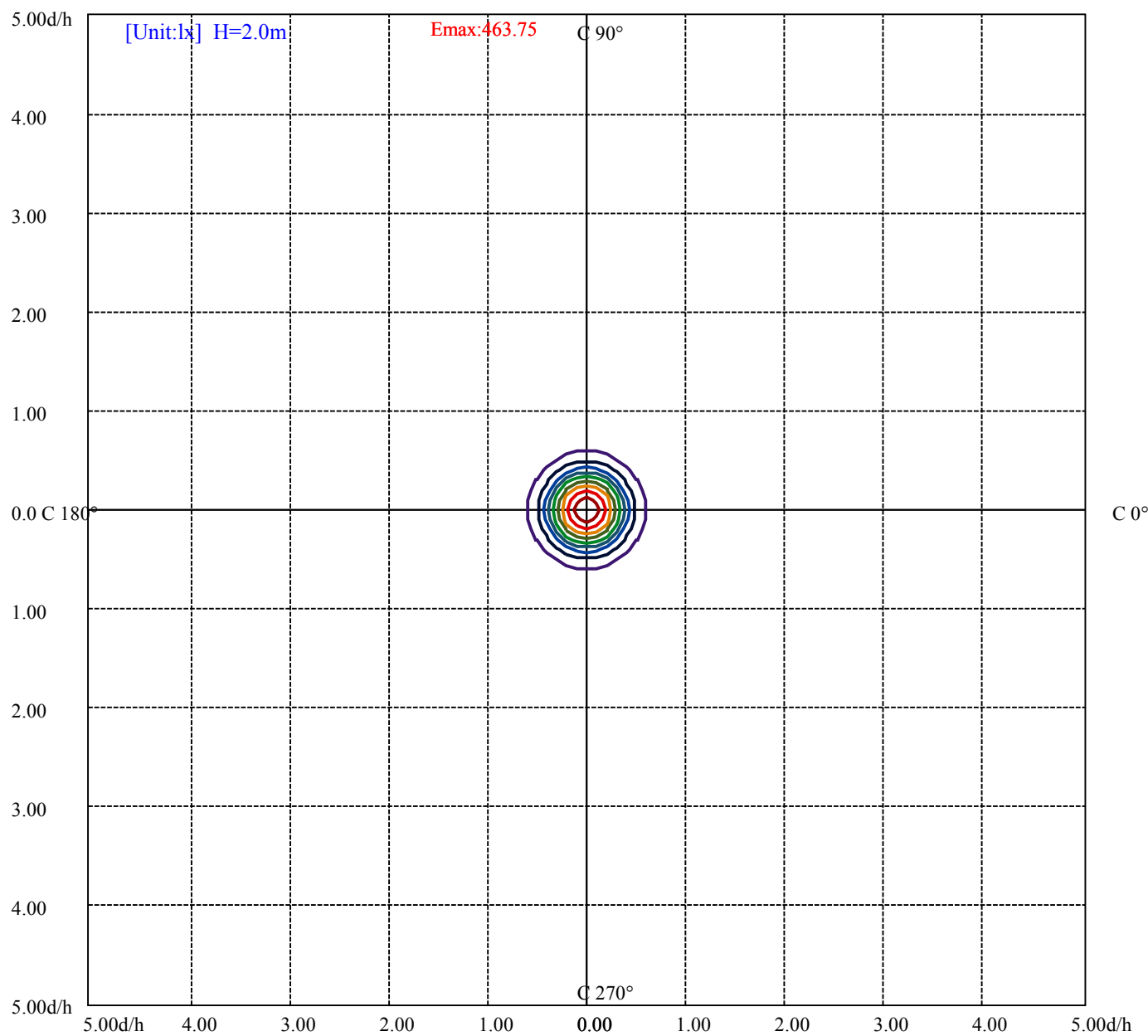


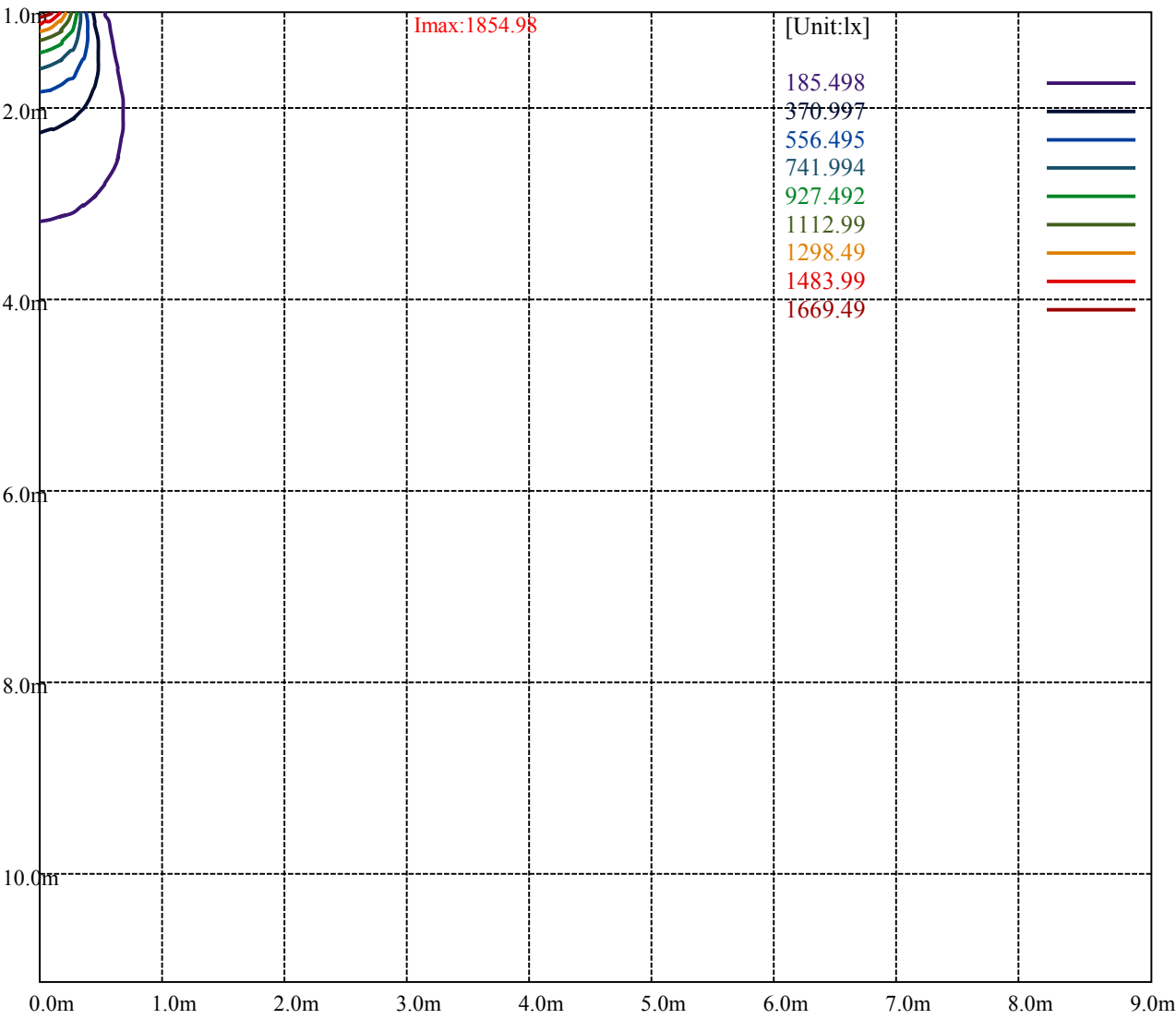
House

[Unit:cd]

Road

I_{max}:1854.98(10%I_{max}) 185.498(20%I_{max}) 370.997(30%I_{max}) 556.495(40%I_{max}) 741.994(50%I_{max}) 927.492(60%I_{max}) 1112.99(70%I_{max}) 1298.49(80%I_{max}) 1483.99(90%I_{max}) 1669.49

(10%E_{max}) 46.3745(20%E_{max}) 92.749(30%E_{max}) 139.1237(40%E_{max}) 185.4982(50%E_{max}) 231.8728(60%E_{max}) 278.2475(70%E_{max}) 324.6225(80%E_{max}) 370.9975(90%E_{max}) 417.37



Luminance Table

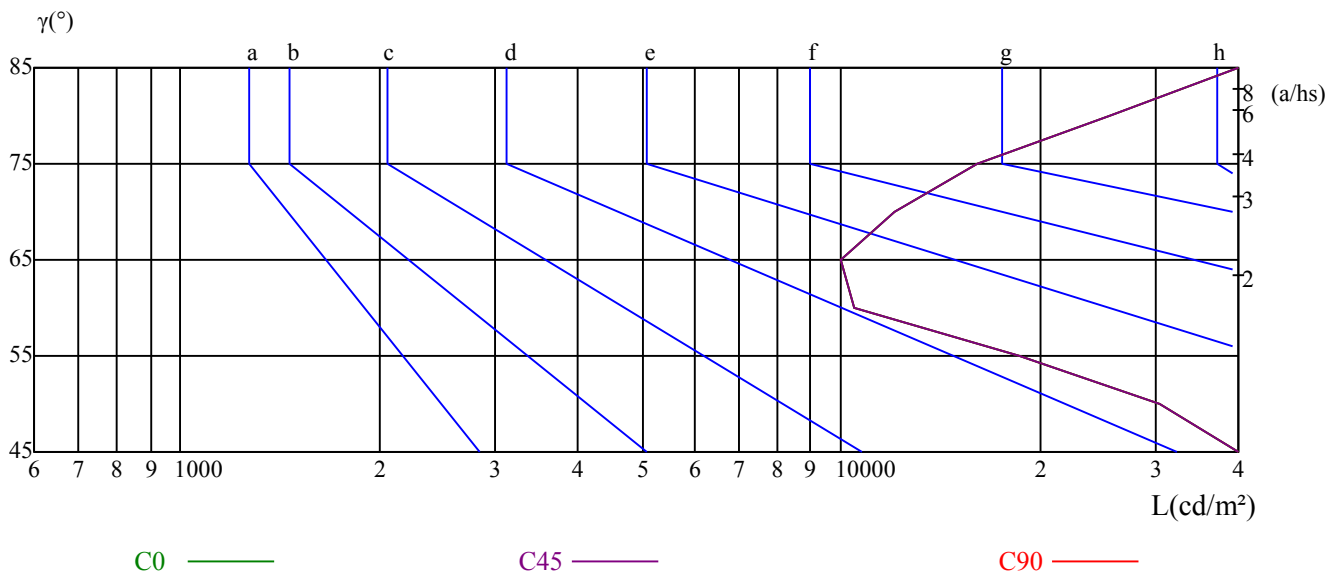
γ	45	50	55	60	65	70	75	80	85
C0	48248	30407	18649	10454	9970	12096	16113	25546	48916
C45	48248	30407	18649	10454	9970	12096	16113	25546	48916
C90	48248	30407	18649	10454	9970	12096	16113	25546	48916

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
9970	9970	9970	16113	16113	16113	48916	48916	48916

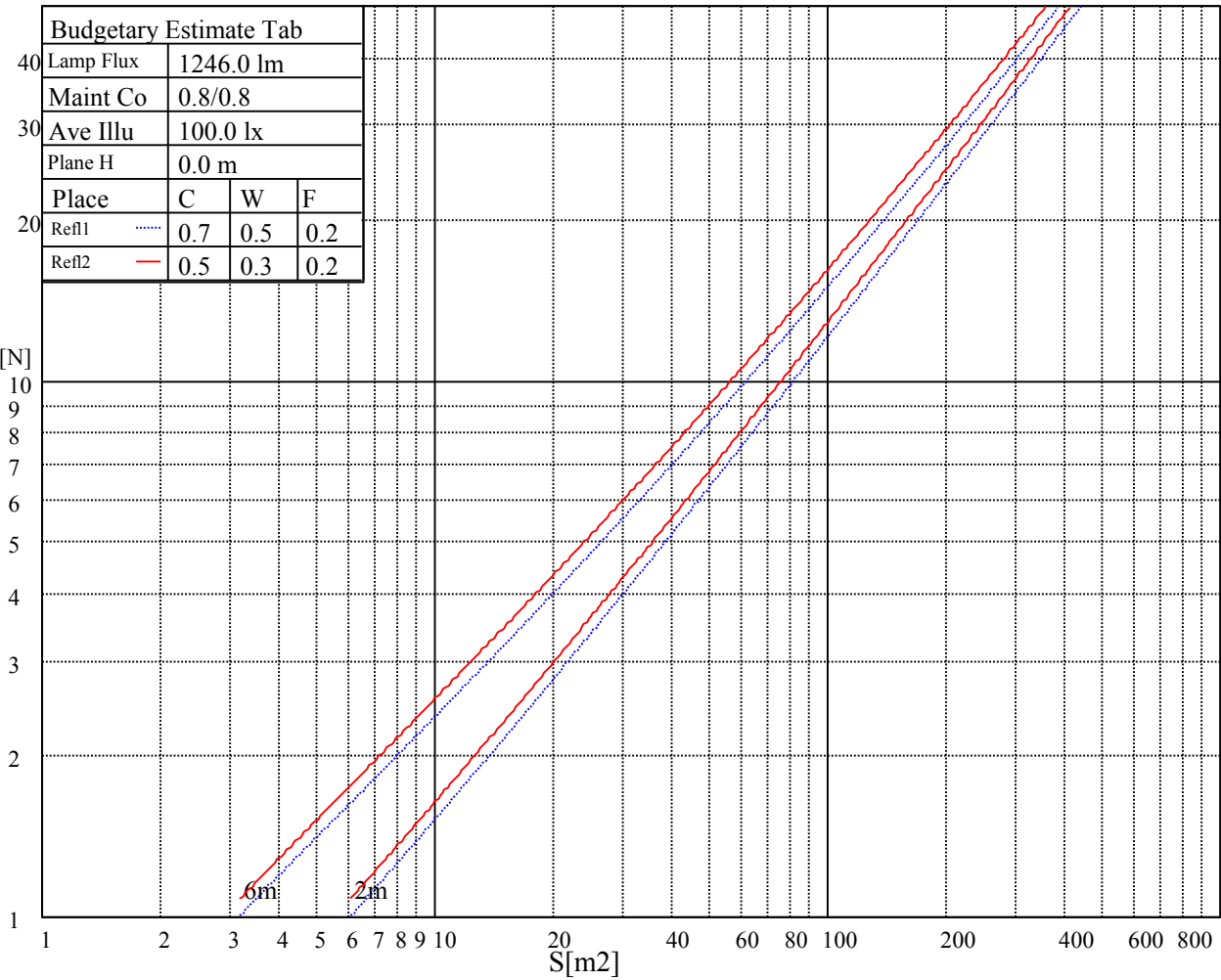
Glare Table

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

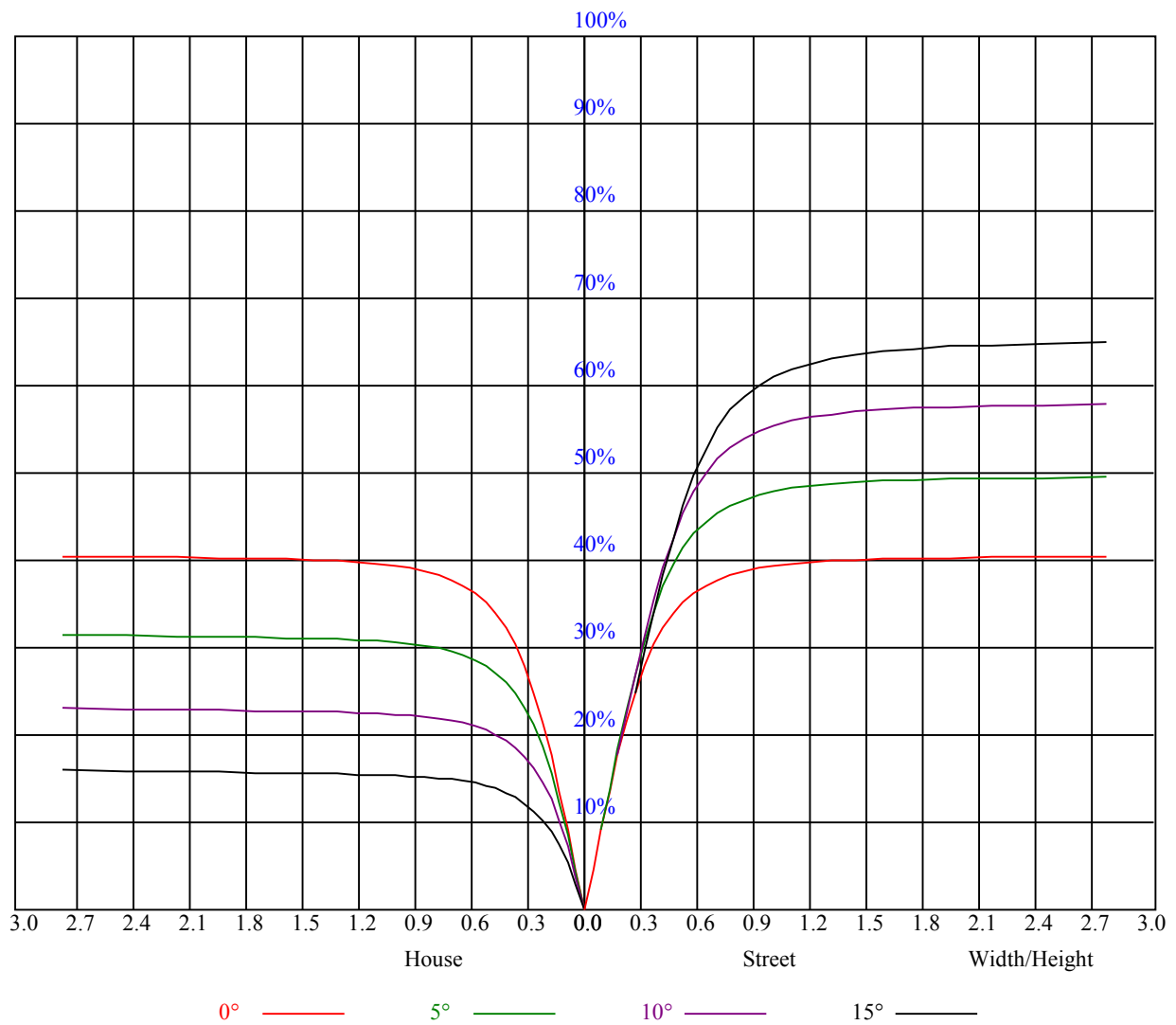
Luminance Limiting Curve



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	14.09	15.12	14.45	15.43	15.74	14.13	15.16	14.49	15.47	15.79
	3H	15.40	16.31	15.78	16.64	17.01	15.46	16.37	15.85	16.71	17.07
	4H	16.47	17.31	16.88	17.67	18.06	16.60	17.45	17.01	17.80	18.19
	6H	18.03	18.80	18.45	19.18	19.58	18.23	19.00	18.65	19.38	19.77
	8H	19.02	19.74	19.45	20.14	20.55	19.20	19.93	19.63	20.32	20.73
	12H	20.71	21.41	21.14	21.79	22.22	20.81	21.51	21.24	21.89	22.32
4H	2H	14.26	15.11	14.67	15.46	15.85	14.30	15.15	14.71	15.50	15.89
	3H	16.04	16.73	16.45	17.14	17.54	16.10	16.79	16.51	17.20	17.61
	4H	17.42	18.04	17.86	18.47	18.91	17.55	18.17	17.99	18.59	19.04
	6H	19.04	19.57	19.51	20.02	20.49	19.22	19.75	19.69	20.20	20.68
	8H	20.27	20.77	20.75	21.22	21.69	20.43	20.93	20.91	21.38	21.86
	12H	22.00	22.44	22.49	22.92	23.40	22.08	22.52	22.58	23.01	23.48
8H	4H	18.07	18.57	18.55	19.02	19.50	18.17	18.67	18.65	19.12	19.60
	6H	20.12	20.52	20.63	21.03	21.51	20.27	20.67	20.78	21.17	21.66
	8H	21.54	21.89	22.07	22.41	22.91	21.66	22.02	22.19	22.54	23.04
	12H	23.36	23.68	23.89	24.17	24.75	23.42	23.73	23.94	24.23	24.81
12H	4H	18.29	18.72	18.78	19.21	19.69	18.37	18.81	18.86	19.30	19.77
	6H	20.81	20.84	21.02	21.31	21.86	20.94	20.97	21.14	21.44	21.99
	8H	22.02	22.33	22.54	22.83	23.41	22.12	22.44	22.64	22.93	23.51
Variation with the observer position at spacings:											
S = 1.0H		2.4/-3.1					2.4/-3.1				
S = 1.5H		3.6/-2.6					3.6/-2.6				
S = 2.0H		4.4/-2.1					4.4/-2.1				
Standard tables:		BK4					BK4				
Uncorrected UGR		4.9					4.9				



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	0.98	0.98	0.98	0.96	0.96	0.96	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.82
1	0.91	0.88	0.86	0.89	0.87	0.85	0.85	0.84	0.82	0.82	0.81	0.80	0.79	0.78	0.77	0.76
2	0.85	0.82	0.79	0.84	0.81	0.78	0.81	0.78	0.76	0.78	0.76	0.75	0.76	0.75	0.73	0.72
3	0.80	0.76	0.73	0.79	0.75	0.72	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	0.68	0.75	0.71	0.68	0.73	0.70	0.67	0.72	0.69	0.66	0.70	0.68	0.66	0.64
5	0.72	0.68	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.65	0.63	0.67	0.65	0.63	0.61
6	0.69	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.60	0.66	0.63	0.60	0.65	0.62	0.60	0.59
7	0.66	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.63	0.60	0.57	0.62	0.59	0.57	0.56
8	0.63	0.59	0.56	0.62	0.58	0.55	0.62	0.58	0.55	0.61	0.57	0.55	0.60	0.57	0.55	0.54
9	0.60	0.56	0.53	0.60	0.56	0.53	0.59	0.56	0.53	0.59	0.55	0.53	0.58	0.55	0.53	0.52
10	0.58	0.54	0.51	0.58	0.54	0.51	0.57	0.53	0.51	0.56	0.53	0.51	0.56	0.53	0.51	0.50



NATA 1678-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	1843.88	1783.13	1652.06	1428.75	1047.94	592.88	338.63	212.06	137.53		
45.0	1865.81	1802.81	1684.13	1433.81	1022.63	580.50	317.81	201.99	136.07		
90.0	1857.94	1782.00	1634.06	1368.56	933.30	481.73	283.61	184.61	116.44		
135.0	1852.31	1776.94	1628.44	1375.31	978.75	528.19	304.31	198.45	128.76		
180.0	1843.88	1754.44	1574.44	1220.63	854.04	467.49	278.10	182.14	117.11		
225.0	1865.81	1785.94	1618.31	1331.44	911.98	473.40	281.93	183.71	110.25		
270.0	1857.94	1792.69	1657.13	1401.19	1024.31	554.63	298.69	192.99	124.48		
315.0	1852.31	1768.50	1603.69	1319.63	919.07	485.61	282.54	188.04	120.94		
360.0	1843.88	1783.13	1652.06	1428.75	1047.94	592.88	338.63	212.06	137.53		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	85.89	46.07	24.30	11.25	8.44	8.49	8.89	9.23	9.45		
45.0	74.70	42.19	23.40	11.31	8.49	8.44	8.49	10.46	9.79		
90.0	65.59	39.99	21.66	10.97	9.23	8.89	8.83	9.23	9.00		
135.0	74.76	45.06	24.92	12.54	10.18	9.84	9.68	9.68	9.11		
180.0	66.83	38.14	21.26	10.58	9.17	9.06	9.06	9.28	8.61		
225.0	66.43	37.80	21.04	10.29	8.44	8.33	8.44	9.39	9.45		
270.0	73.41	41.23	22.95	10.97	8.44	8.16	8.10	8.44	9.39		
315.0	69.92	40.39	21.54	10.58	8.94	8.83	9.11	9.39	7.37		
360.0	85.89	46.07	24.30	11.25	8.44	8.49	8.89	9.23	9.45		
C/ γ (°)	90.0										
0.0	4.22										
45.0	4.22										
90.0	4.11										
135.0	4.22										
180.0	4.28										
225.0	4.28										
270.0	4.11										
315.0	4.16										
360.0	4.22										