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NATA

LumCAT: 3-1703-N
Luminaire: 92.70.045.00+92.70.061.00
Report No: NATA0100
Test No: GC2019011007
LampCAT: OSRAM SOLERIQ S19
Lamp flux(lm): 3479.0
Number of Lamps: 1
Length(mm): 86
Phm Type: C

Voltage(V): 34.7000
Current(A): 0.7000
Power (W): 24.2900
PF: 0.0000
Ballast type: DC
Width(mm): 86
Height(mm): 0

Photometric Results

Lumens(lm): 2631.29
Efficiency(%): 75.63%
Lumens(lm)/Power(W): 109.55
Central intensity(cd): 5371.454
Maximum intensity(cd): 5371.454
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=35.8
[C90/270]Total=35.8
Field angle(10%Imax): [C0/180]Total=68.8
[C90/270]Total=68.8
Maximum s/h(1/2): C0_180=0.58 C90_270=0.58
Maximum s/h(1/4): C0_180=0.60 C90_270=0.60
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 76.48%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.428%

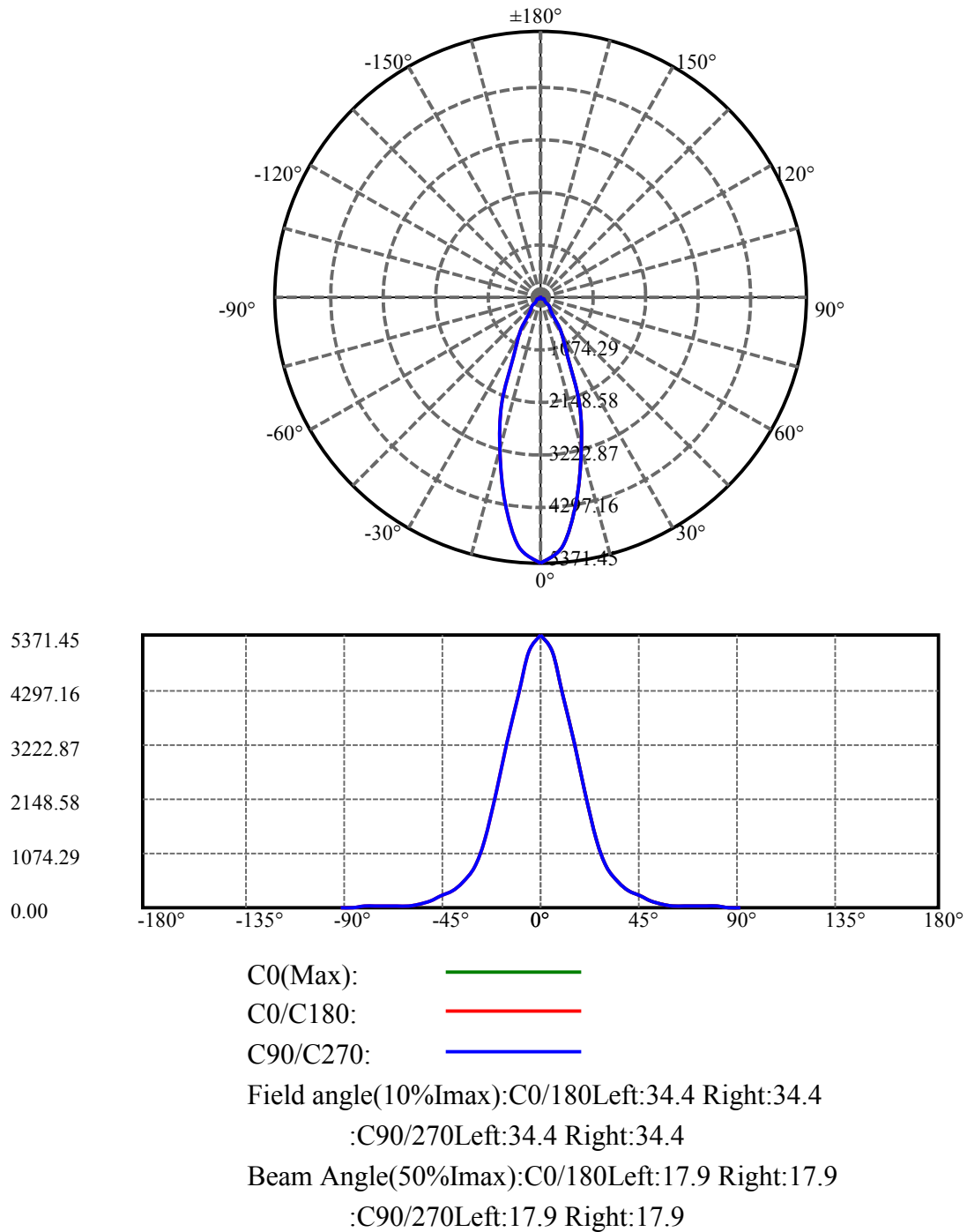
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	5371.453	32.122	32.122	.923%	1.221%
5.0	5033.250	240.455	272.577	6.912%	10.359%
10.0	4197.586	399.539	672.117	11.484%	25.543%
15.0	3223.336	457.289	1129.406	13.144%	42.922%
20.0	2298.234	430.859	1560.265	12.385%	59.297%
25.0	1320.342	305.861	1866.126	8.792%	70.921%
30.0	787.591	215.854	2081.98	6.204%	79.124%
35.0	501.877	157.789	2239.77	4.535%	85.121%
40.0	344.503	121.381	2361.151	3.489%	89.734%
45.0	230.084	89.178	2450.329	2.563%	93.123%
50.0	135.513	56.902	2507.231	1.636%	95.285%
55.0	79.045	35.492	2542.723	1.020%	96.634%
60.0	48.755	23.144	2565.867	.665%	97.514%
65.0	35.227	17.500	2583.367	.503%	98.179%
70.0	28.990	14.932	2598.299	.429%	98.746%
75.0	23.449	12.415	2610.714	.357%	99.218%
80.0	18.506	9.990	2620.704	.287%	99.598%
85.0	13.915	7.598	2628.302	.218%	99.887%
90.0	10.884	2.983	2631.285	.086%	100.000%

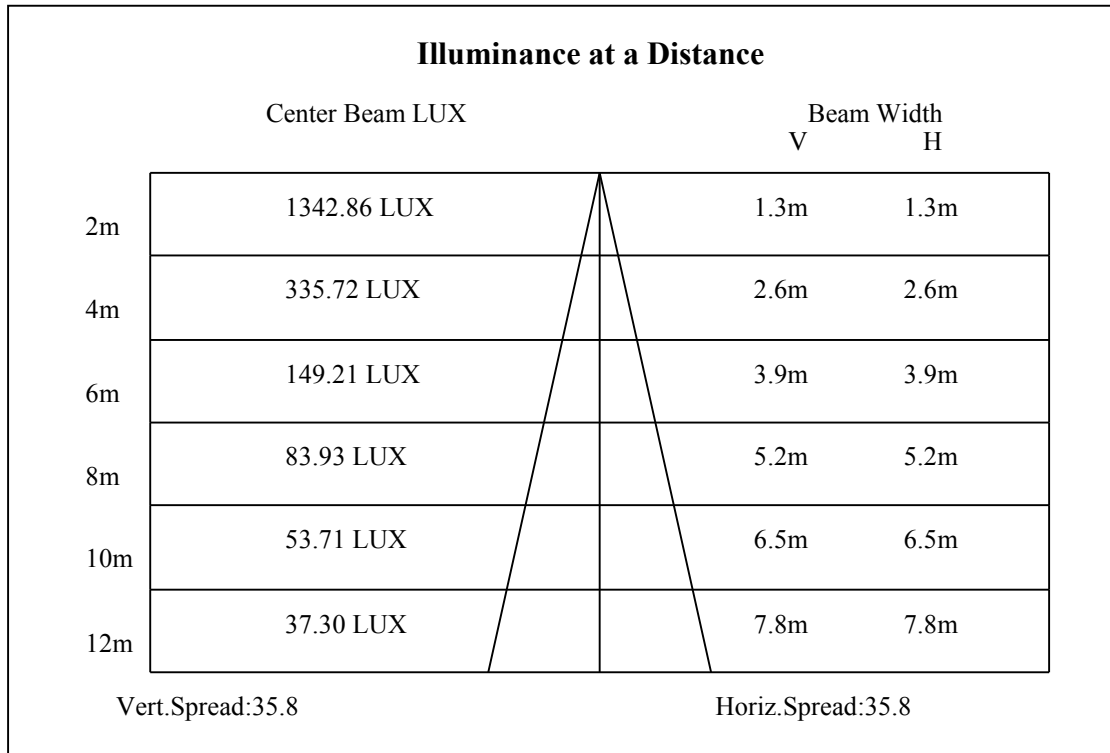
ZONAL LUMEN SUMMARY

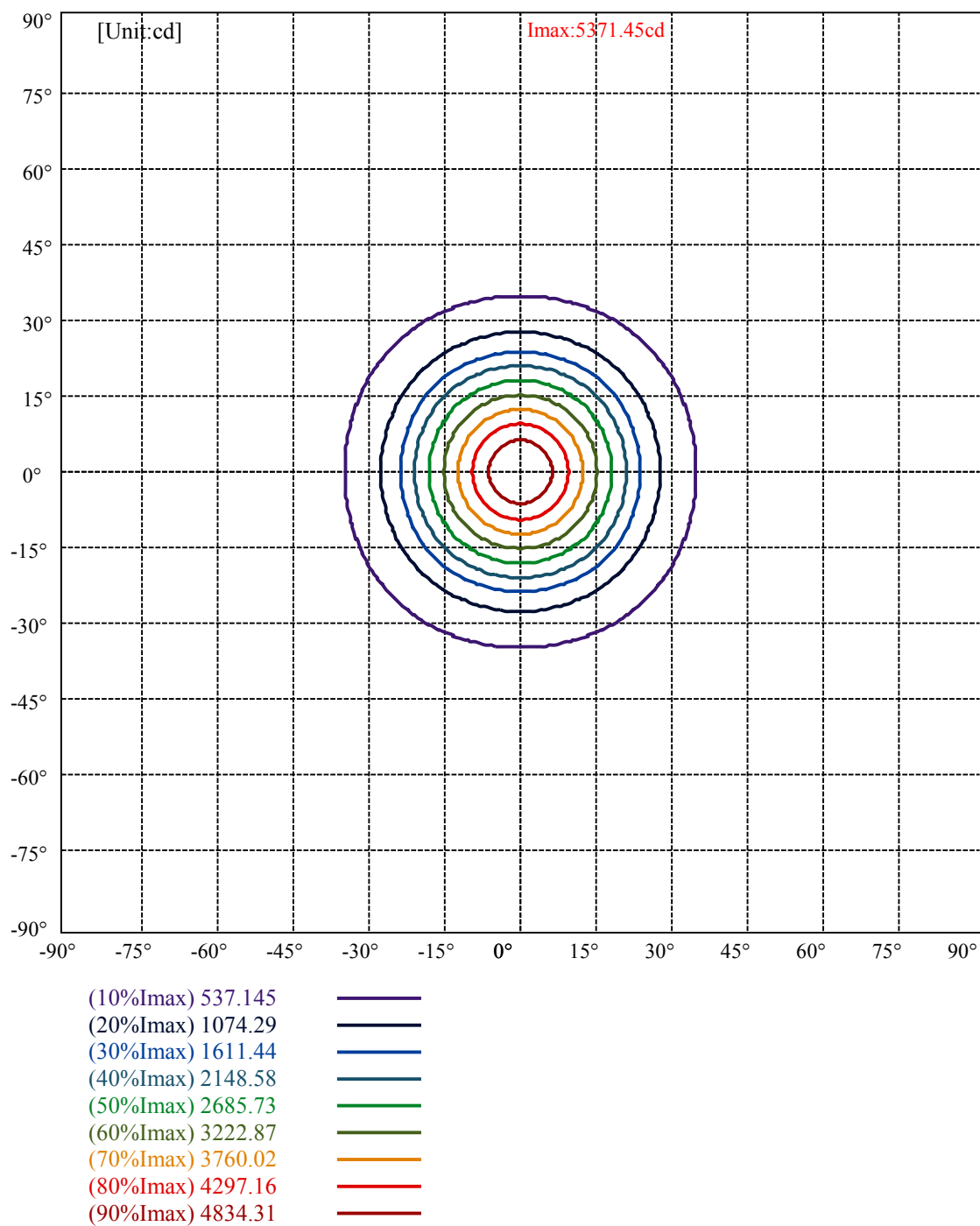
Zone	Lumens	%Lamp	%Fixt
0-30	2081.98	59.84%	79.12%
0-40	2361.15	67.87%	89.73%
0-60	2565.87	73.75%	97.51%
0-90	2628.30	75.55%	99.89%
0-120	2628.30	75.55%	99.89%
0-180	2631.29	75.63%	100.00%
60-90	85.58	2.46%	3.25%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-30.73	2105.03	60.51%	80.00%

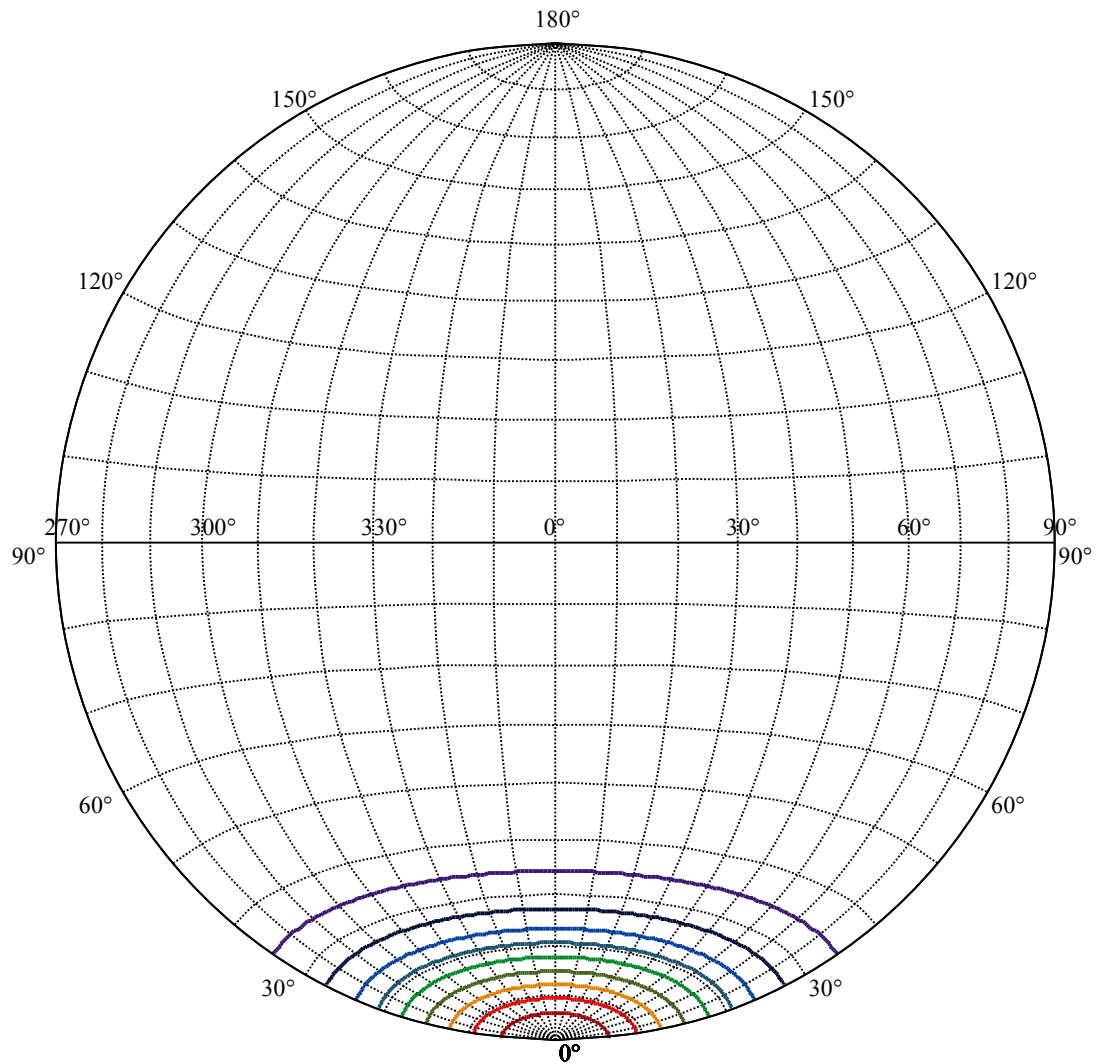
ZONAL LUMEN SUMMARY

0-10	672.12
10-20	888.15
20-30	521.72
30-40	279.17
40-50	146.08
50-60	58.64
60-70	32.43
70-80	22.41
80-90	7.60
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:5371.45

(10%Imax) 537.145

(20%Imax) 1074.29

(30%Imax) 1611.44

(40%Imax) 2148.58

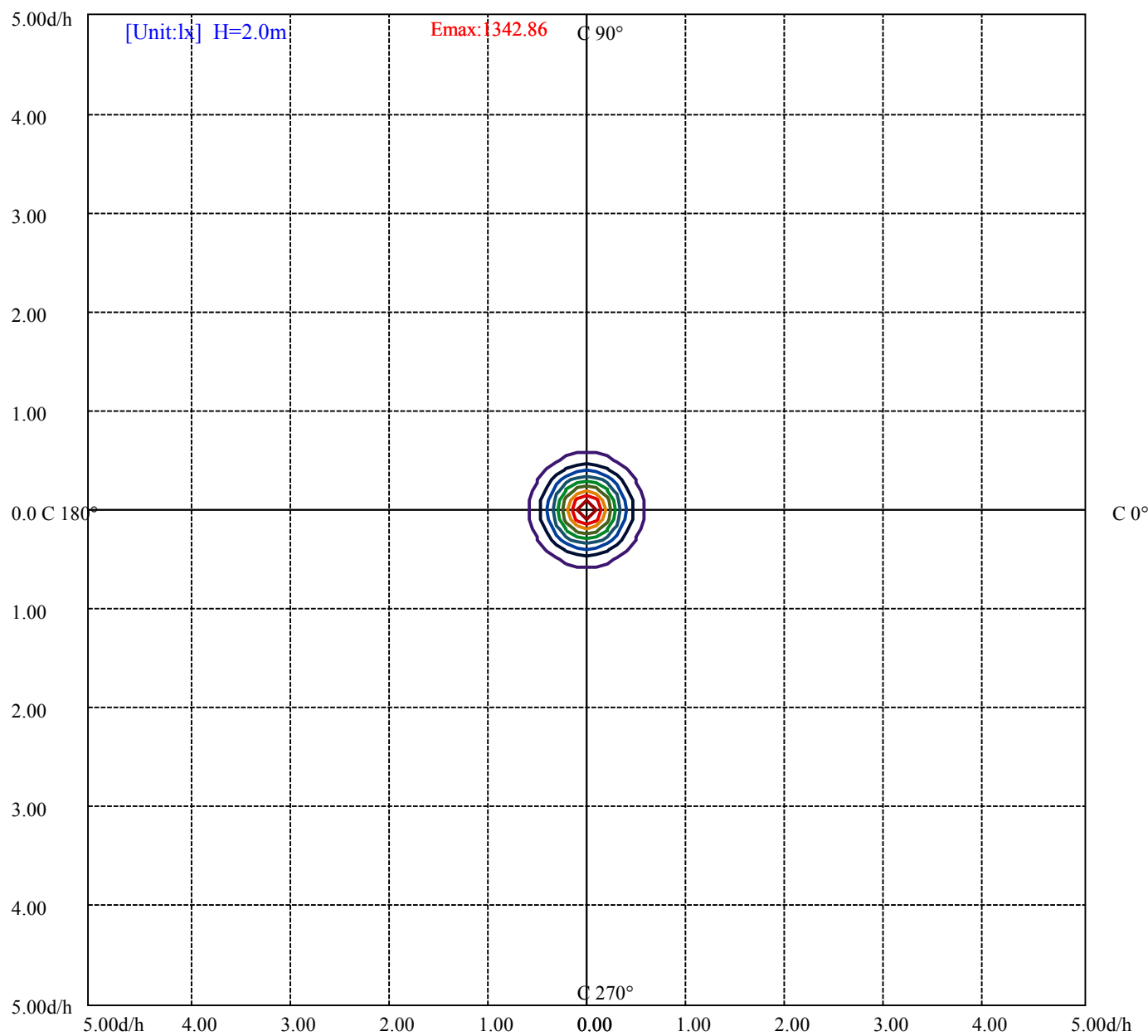
(50%Imax) 2685.73

(60%Imax) 3222.87

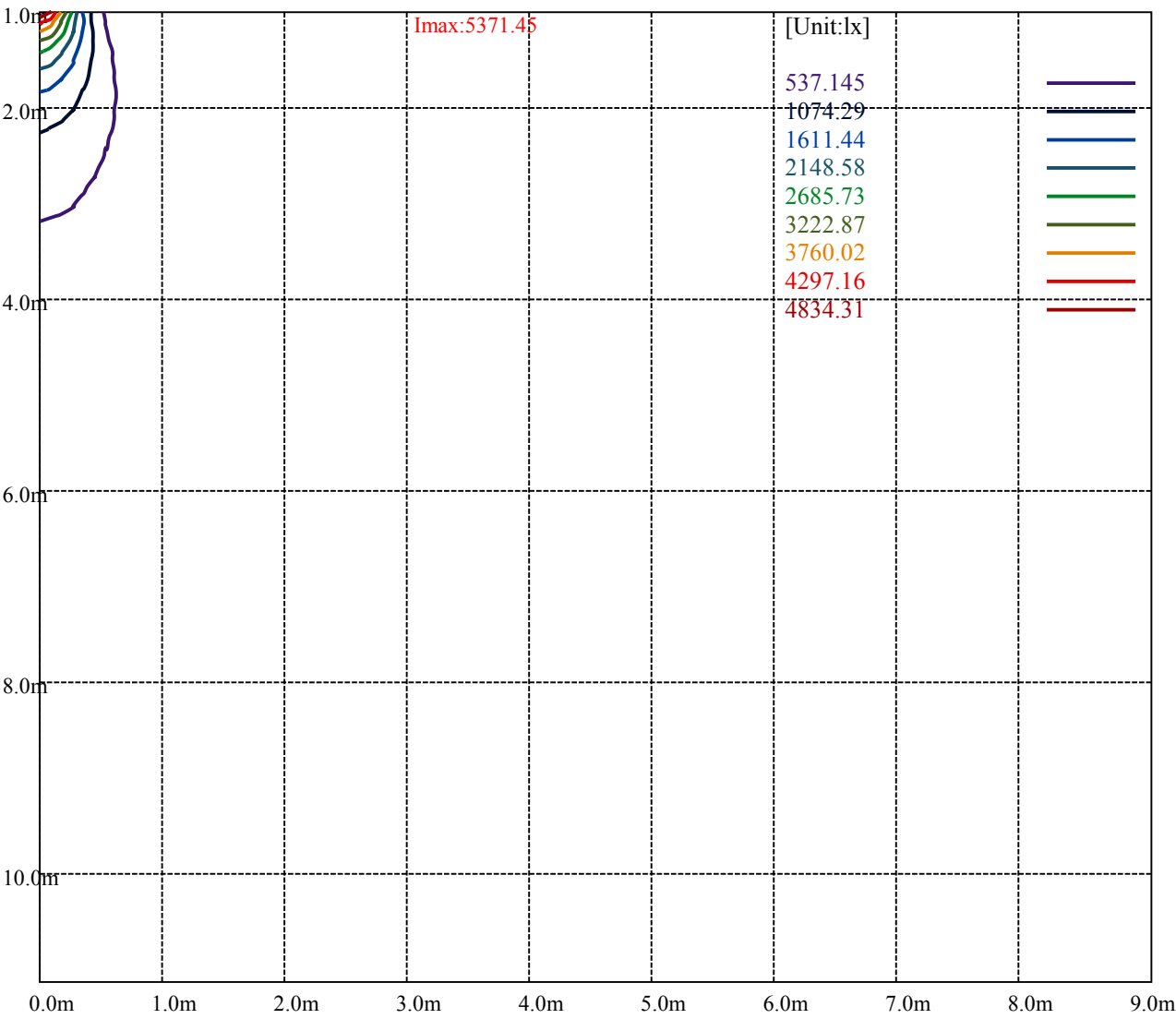
(70%Imax) 3760.02

(80%Imax) 4297.16

(90%Imax) 4834.31



(10%E _{max}) 134.286	—
(20%E _{max}) 268.5725	—
(30%E _{max}) 402.8575	—
(40%E _{max}) 537.145	—
(50%E _{max}) 671.43	—
(60%E _{max}) 805.7175	—
(70%E _{max}) 940.0025	—
(80%E _{max}) 1074.287	—
(90%E _{max}) 1208.575	—



Luminance Table

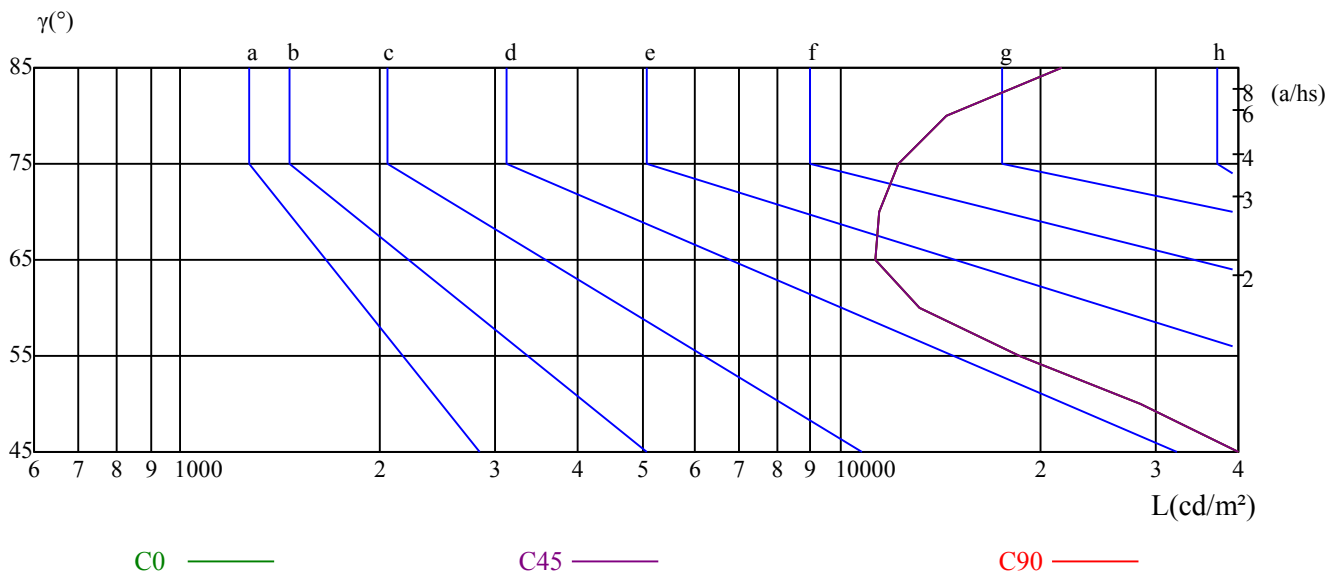
γ	45	50	55	60	65	70	75	80	85
C0	43995	28505	18633	13184	11270	11460	12250	14410	21587
C45	43995	28505	18633	13184	11270	11460	12250	14410	21587
C90	43995	28505	18633	13184	11270	11460	12250	14410	21587

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
11270	11270	11270	12250	12250	12250	21587	21587	21587

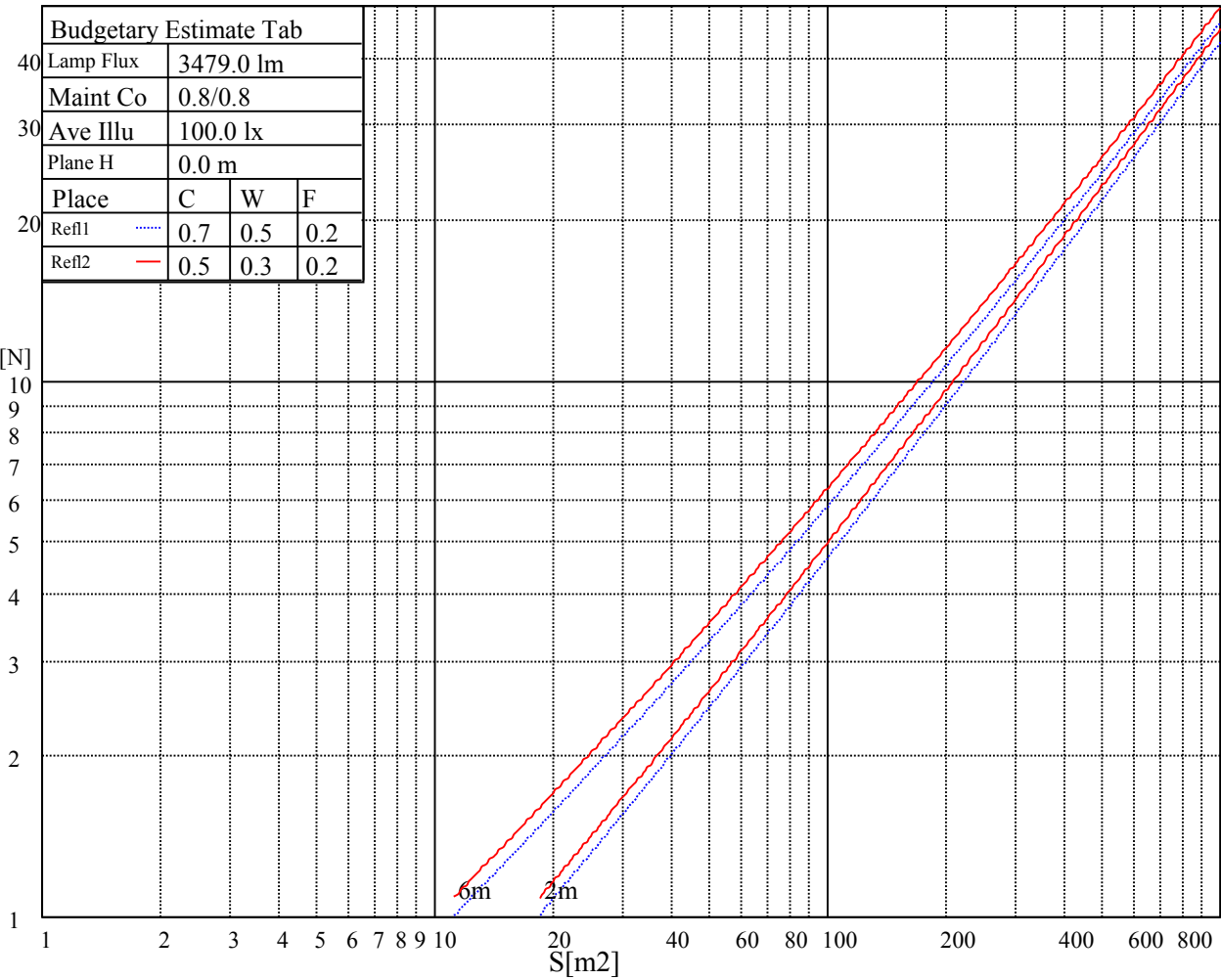
Glare Table

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

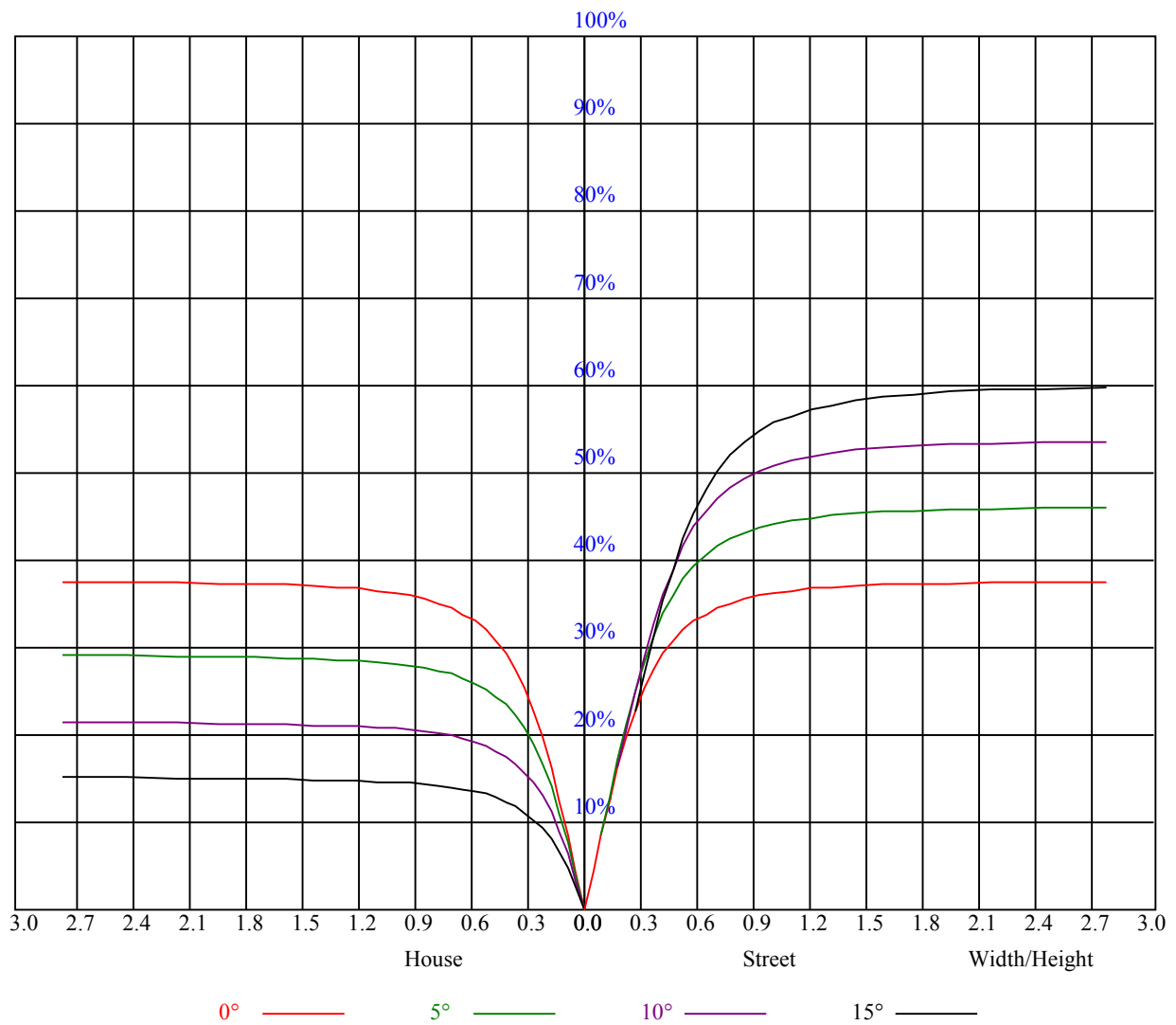
Luminance Limiting Curve



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	12.48	13.53	12.84	13.84	14.16	12.44	13.50	12.81	13.81	14.13
	3H	13.59	14.52	13.97	14.85	15.22	13.58	14.51	13.96	14.84	15.21
	4H	14.21	15.07	14.62	15.43	15.82	14.21	15.07	14.61	15.42	15.81
	6H	14.90	15.69	15.31	16.06	16.46	14.88	15.67	15.30	16.05	16.44
	8H	15.26	16.01	15.69	16.40	16.81	15.24	15.98	15.67	16.37	16.78
	12H	15.90	16.61	16.33	16.99	17.42	15.86	16.58	16.30	16.96	17.39
4H	2H	12.68	13.55	13.09	13.90	14.29	12.65	13.52	13.06	13.87	14.26
	3H	14.10	14.81	14.51	15.21	15.62	14.09	14.80	14.51	15.21	15.61
	4H	14.91	15.54	15.35	15.96	16.41	14.91	15.54	15.34	15.96	16.41
	6H	15.70	16.24	16.17	16.69	17.16	15.68	16.23	16.15	16.68	17.15
	8H	16.19	16.69	16.66	17.14	17.62	16.16	16.67	16.64	17.12	17.59
	12H	16.89	17.33	17.38	17.82	18.30	16.86	17.30	17.35	17.79	18.26
8H	4H	15.20	15.71	15.67	16.16	16.63	15.20	15.70	15.67	16.15	16.63
	6H	16.23	16.64	16.74	17.14	17.63	16.22	16.62	16.73	17.13	17.61
	8H	16.88	17.25	17.41	17.77	18.26	16.86	17.22	17.39	17.74	18.24
	12H	17.94	18.26	18.46	18.76	19.33	17.91	18.23	18.43	18.73	19.30
12H	4H	15.24	15.68	15.73	16.17	16.65	15.24	15.68	15.73	16.17	16.65
	6H	16.70	16.73	16.90	17.20	17.74	16.69	16.71	16.88	17.18	17.73
	8H	17.12	17.43	17.64	17.93	18.51	17.09	17.41	17.61	17.91	18.48
Variation with the observer position at spacings:											
S = 1.0H		1.8/-2.4					1.8/-2.4				
S = 1.5H		3.2/-2.7					3.2/-2.7				
S = 2.0H		4.7/-2.4					4.7/-2.4				
Standard tables:		BK3					BK3				
Uncorrected UGR		3.8					3.8				



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



NATA 3-1703-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	5386.50	5007.38	4229.44	3252.38	2277.56	1407.94	781.88	506.81	339.75		
45.0	5375.25	4937.63	4058.44	3101.63	2235.38	1328.63	753.75	493.88	340.88		
90.0	5361.75	4857.75	3986.44	3009.38	2088.56	1104.86	720.23	474.98	339.13		
135.0	5362.31	5128.31	4401.56	3412.13	2466.56	1561.50	862.88	532.13	375.75		
180.0	5386.50	5133.94	4305.94	3312.56	2374.31	1119.43	778.28	496.46	338.46		
225.0	5375.25	5159.25	4321.69	3320.44	2415.38	1464.75	820.18	519.92	349.54		
270.0	5361.75	5124.38	4287.94	3325.50	2381.63	1476.00	853.31	528.19	356.63		
315.0	5362.31	4917.38	3989.25	3052.69	2146.50	1099.63	730.24	462.66	315.90		
360.0	5386.50	5007.38	4229.44	3252.38	2277.56	1407.94	781.88	506.81	339.75		
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	226.97	134.38	79.82	48.54	35.21	28.86	23.68	18.28	13.56		
45.0	214.59	133.88	75.04	45.96	35.33	28.74	23.12	18.06	13.16		
90.0	212.23	127.97	74.25	45.68	34.31	28.01	22.89	17.94	13.61		
135.0	284.06	145.07	85.56	51.98	36.56	30.04	24.53	19.52	14.91		
180.0	217.01	136.74	79.09	48.71	35.44	29.14	23.34	18.34	13.89		
225.0	226.13	137.98	82.86	50.01	35.21	29.42	23.79	18.79	14.34		
270.0	255.99	144.28	84.15	53.72	35.83	29.64	24.02	19.24	14.18		
315.0	203.68	123.81	71.61	45.45	33.92	28.07	22.22	17.89	13.67		
360.0	226.97	134.38	79.82	48.54	35.21	28.86	23.68	18.28	13.56		
C/ γ (°)	90.0										
0.0	10.80										
45.0	10.91										
90.0	10.91										
135.0	10.86										
180.0	10.80										
225.0	11.03										
270.0	10.91										
315.0	10.86										
360.0	10.80										