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NATA

LumCAT: 1677-A
Luminaire: 92.70.064.00+92.70.147.00
Report No: NATA0100
Test No: GC2019011111
LampCAT: SEOUL SAWx10 LES9.8
Lamp flux(lm): 1526.0
Number of Lamps: 1
Length(mm): 46
Phm Type: C

Voltage(V): 34.7000
Current(A): 0.3100
Power (W): 10.7570
PF: 0.0000
Ballast type: DC
Width(mm): 46
Height(mm): 0

Photometric Results

Lumens(lm): 1278.79
Efficiency(%): 83.80%
Lumens(lm)/Power(W): 120.54
Central intensity(cd): 3189.938
Maximum intensity(cd): 3189.938
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=31.8
 [C90/270]Total=31.8
Field angle(10%Imax): [C0/180]Total=63.0
 [C90/270]Total=63.0
Maximum s/h(1/2): C0_180=0.53 C90_270=0.53
Maximum s/h(1/4): C0_180=0.52 C90_270=0.52
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 84.97%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 96.113%

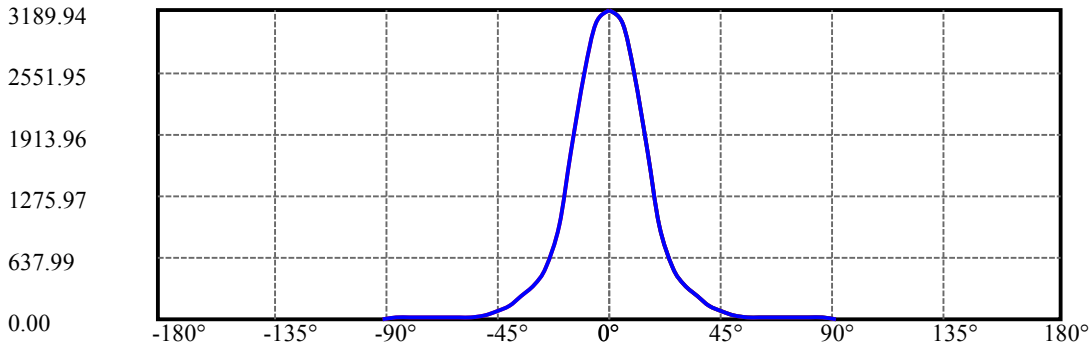
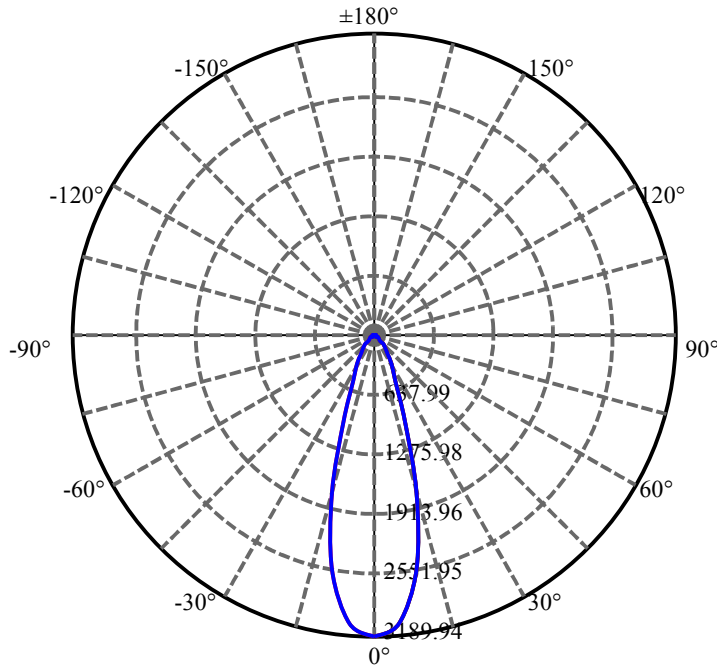
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	3189.938	19.076	19.076	1.250%	1.492%
5.0	3055.781	145.985	165.061	9.567%	12.908%
10.0	2526.398	240.470	405.532	15.758%	31.712%
15.0	1733.273	245.897	651.428	16.114%	50.941%
20.0	970.045	181.858	833.287	11.917%	65.162%
25.0	527.604	122.221	955.508	8.009%	74.720%
30.0	351.330	96.289	1051.796	6.310%	82.250%
35.0	242.986	76.394	1128.191	5.006%	88.224%
40.0	144.577	50.940	1179.13	3.338%	92.207%
45.0	78.743	30.520	1209.65	2.000%	94.594%
50.0	46.005	19.318	1228.968	1.266%	96.104%
55.0	26.044	11.694	1240.662	.766%	97.019%
60.0	11.770	5.587	1246.249	.366%	97.456%
65.0	10.041	4.988	1251.237	.327%	97.846%
70.0	10.125	5.215	1256.452	.342%	98.253%
75.0	11.109	5.882	1262.334	.385%	98.713%
80.0	14.077	7.599	1269.933	.498%	99.308%
85.0	13.570	7.410	1277.343	.486%	99.887%
90.0	5.266	1.443	1278.786	.095%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1051.80	68.93%	82.25%
0-40	1179.13	77.27%	92.21%
0-60	1246.25	81.67%	97.46%
0-90	1277.34	83.71%	99.89%
0-120	1277.34	83.71%	99.89%
0-180	1278.79	83.80%	100.00%
60-90	36.68	2.40%	2.87%
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%
0-28.51	1023.03	67.04%	80.00%

ZONAL LUMEN SUMMARY

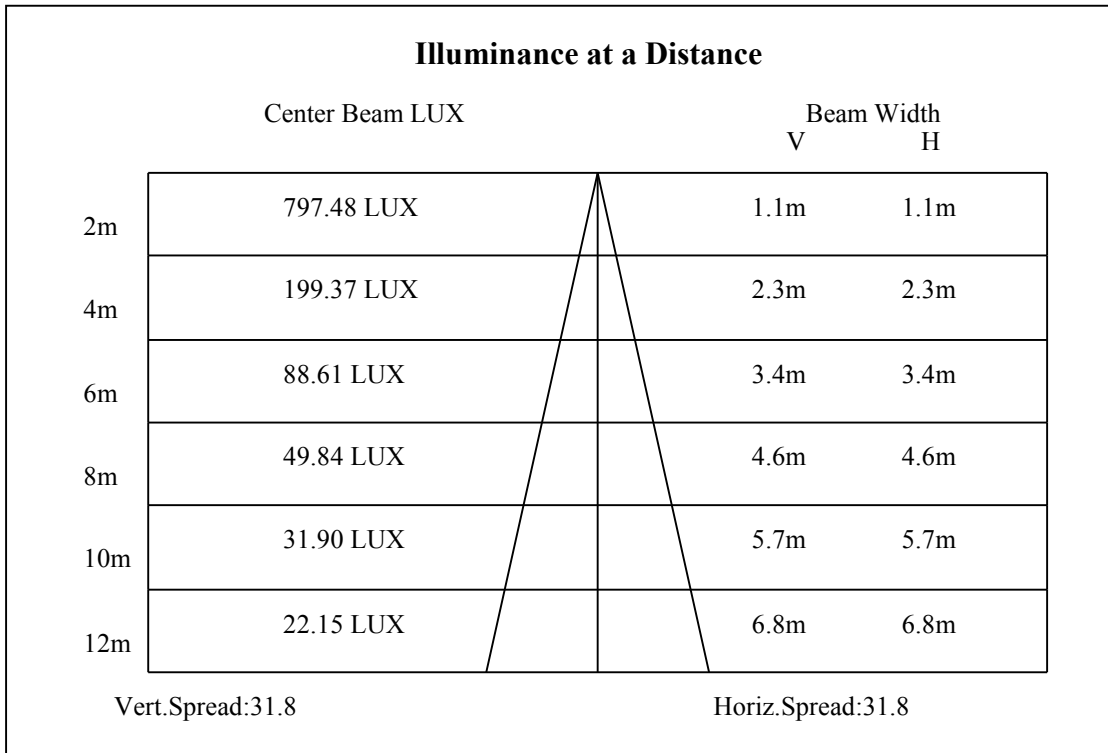
0-10	405.53
10-20	427.76
20-30	218.51
30-40	127.33
40-50	49.84
50-60	17.28
60-70	10.20
70-80	13.48
80-90	7.41
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

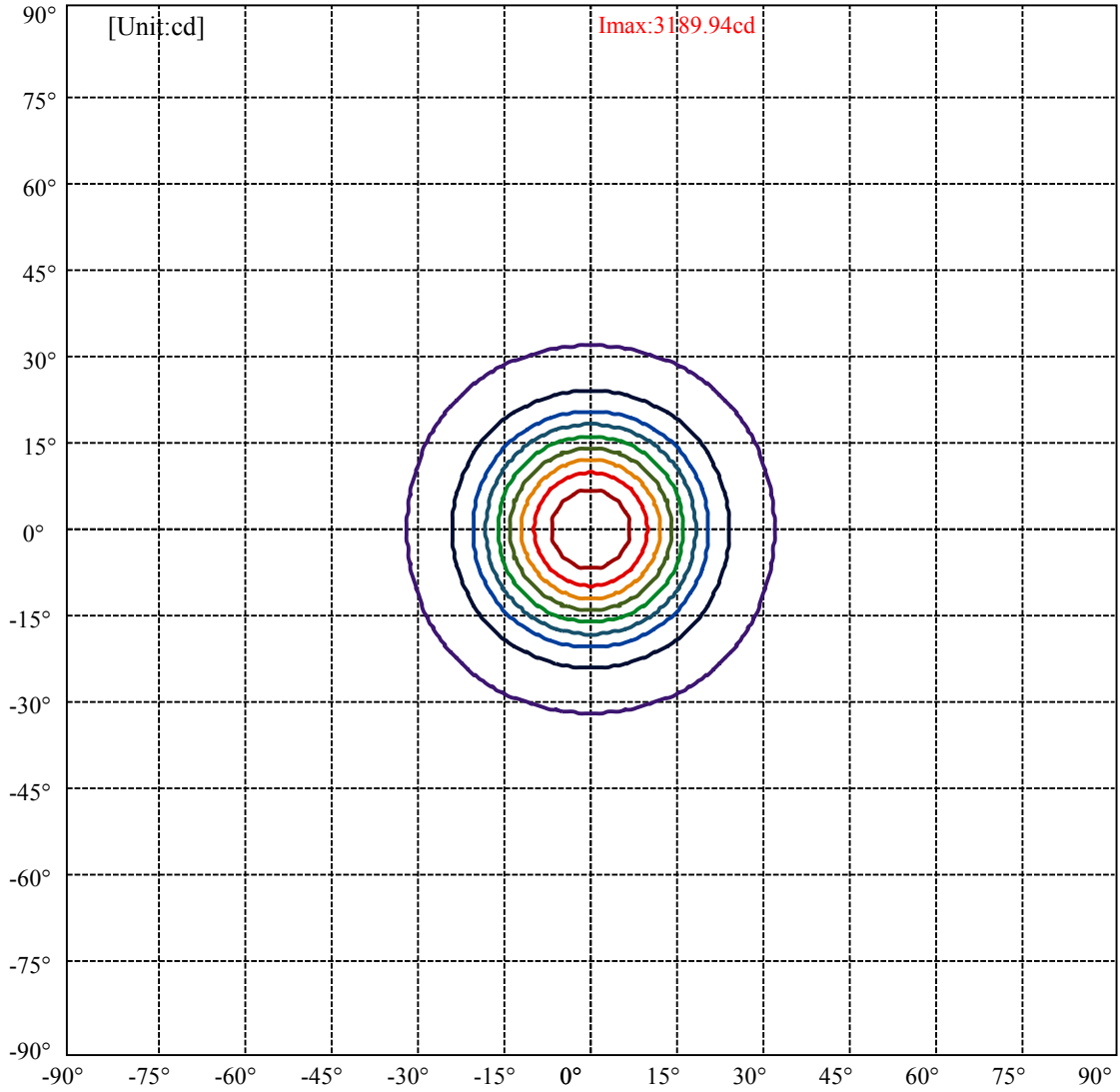


C0(Max): —————
C0/C180: —————
C90/C270: —————

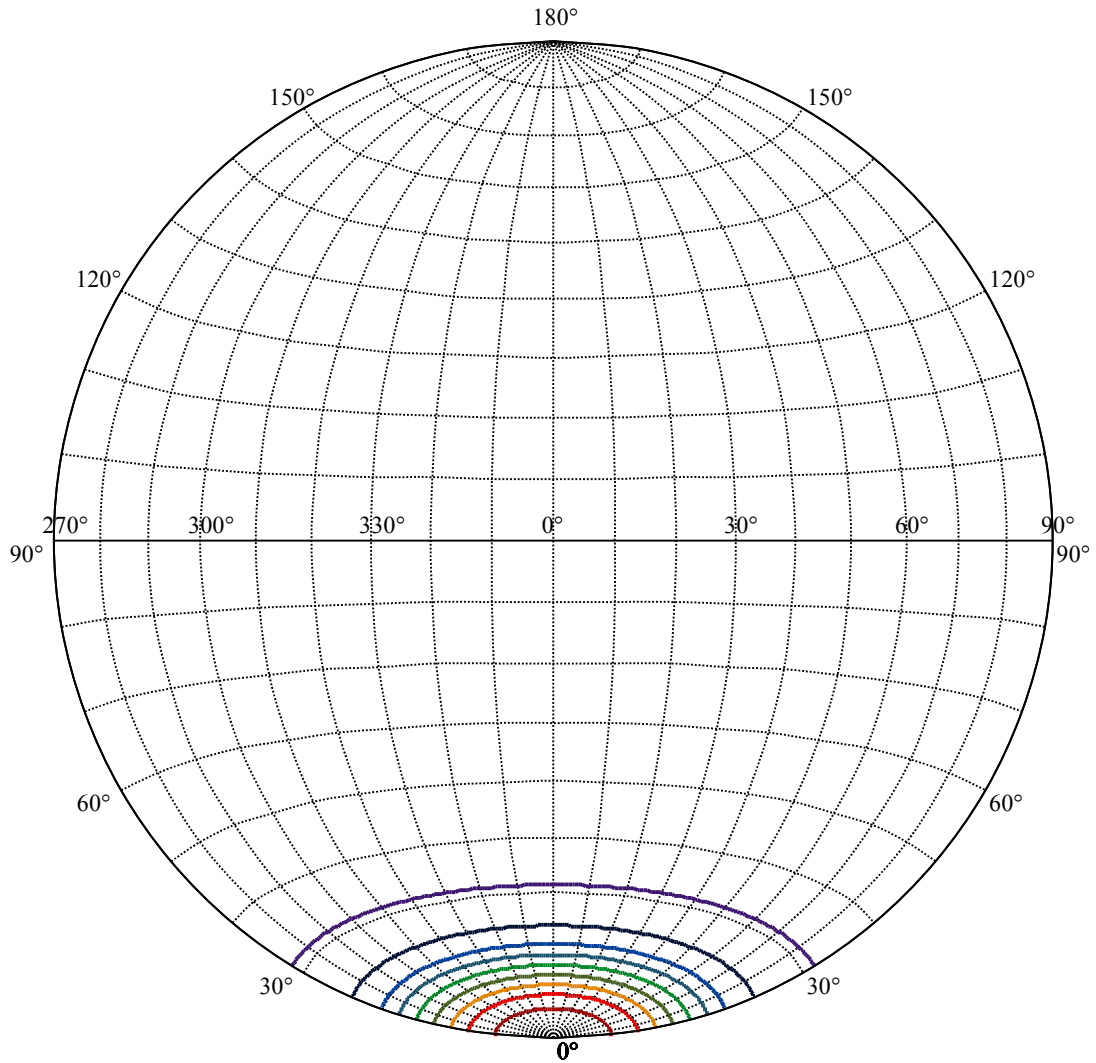
Field angle(10%Imax):C0/180Left:31.5 Right:31.5
:C90/270Left:31.5 Right:31.5

Beam Angle(50%Imax):C0/180Left:15.9 Right:15.9
:C90/270Left:15.9 Right:15.9





(10%Imax) 318.994	—
(20%Imax) 637.987	—
(30%Imax) 956.981	—
(40%Imax) 1275.97	—
(50%Imax) 1594.97	—
(60%Imax) 1913.96	—
(70%Imax) 2232.96	—
(80%Imax) 2551.95	—
(90%Imax) 2870.94	—



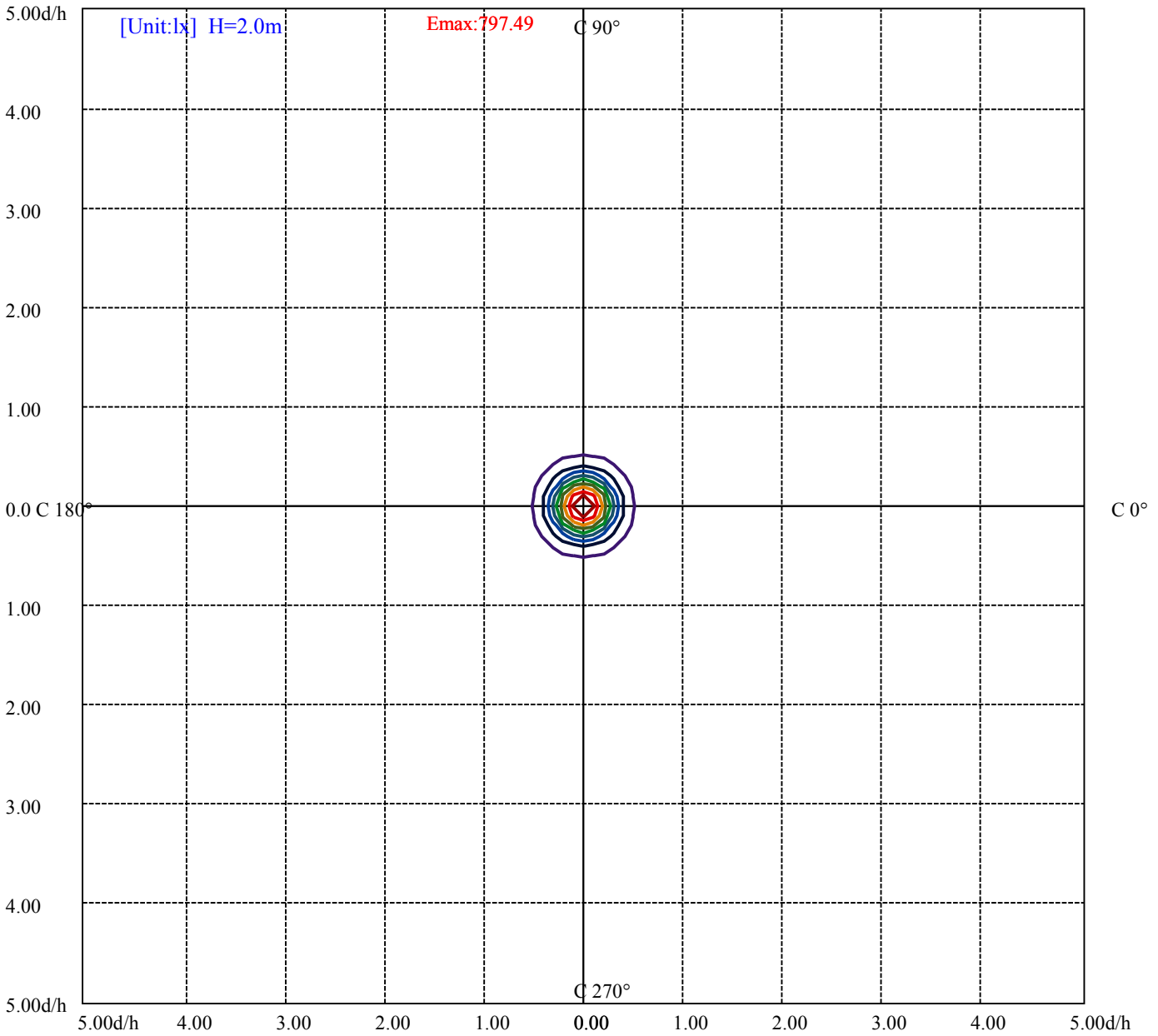
House

[Unit:cd]

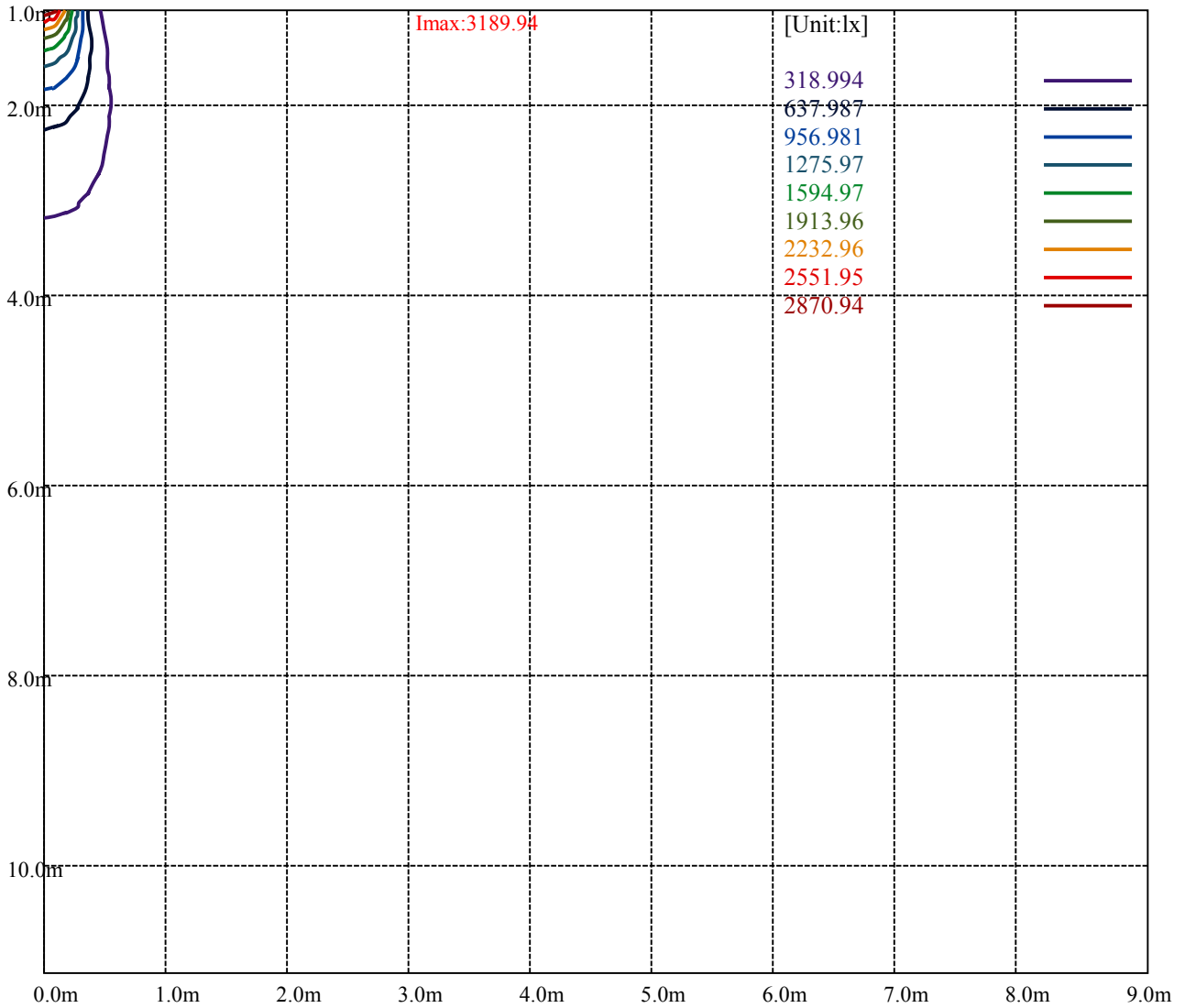
Road

Imax:3189.94

(10%Imax) 318.994	—
(20%Imax) 637.987	—
(30%Imax) 956.981	—
(40%Imax) 1275.97	—
(50%Imax) 1594.97	—
(60%Imax) 1913.96	—
(70%Imax) 2232.96	—
(80%Imax) 2551.95	—
(90%Imax) 2870.94	—



- (10%Emax) 79.74825
- (20%Emax) 159.4967
- (30%Emax) 239.245
- (40%Emax) 318.9925
- (50%Emax) 398.7425
- (60%Emax) 478.49
- (70%Emax) 558.2375
- (80%Emax) 637.9875
- (90%Emax) 717.735



Luminance Table

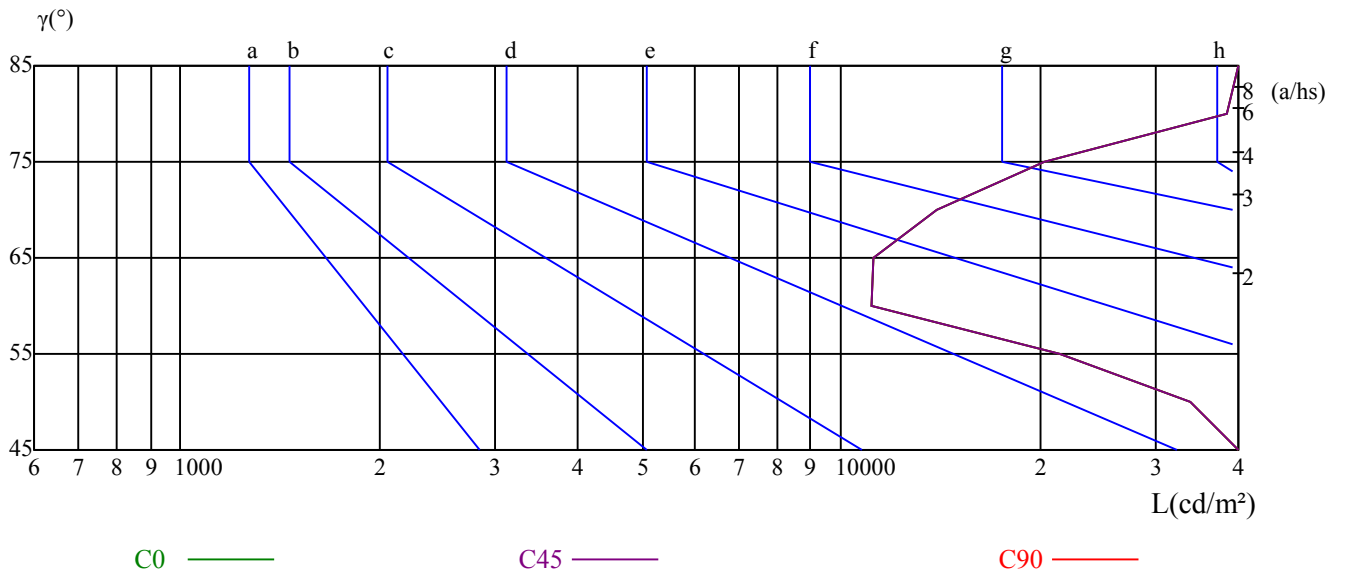
γ	45	50	55	60	65	70	75	80	85
C0	52627	33824	21458	11125	11228	13990	20285	38310	73583
C45	52627	33824	21458	11125	11228	13990	20285	38310	73583
C90	52627	33824	21458	11125	11228	13990	20285	38310	73583

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
11228	11228	11228	20285	20285	20285	73583	73583	73583

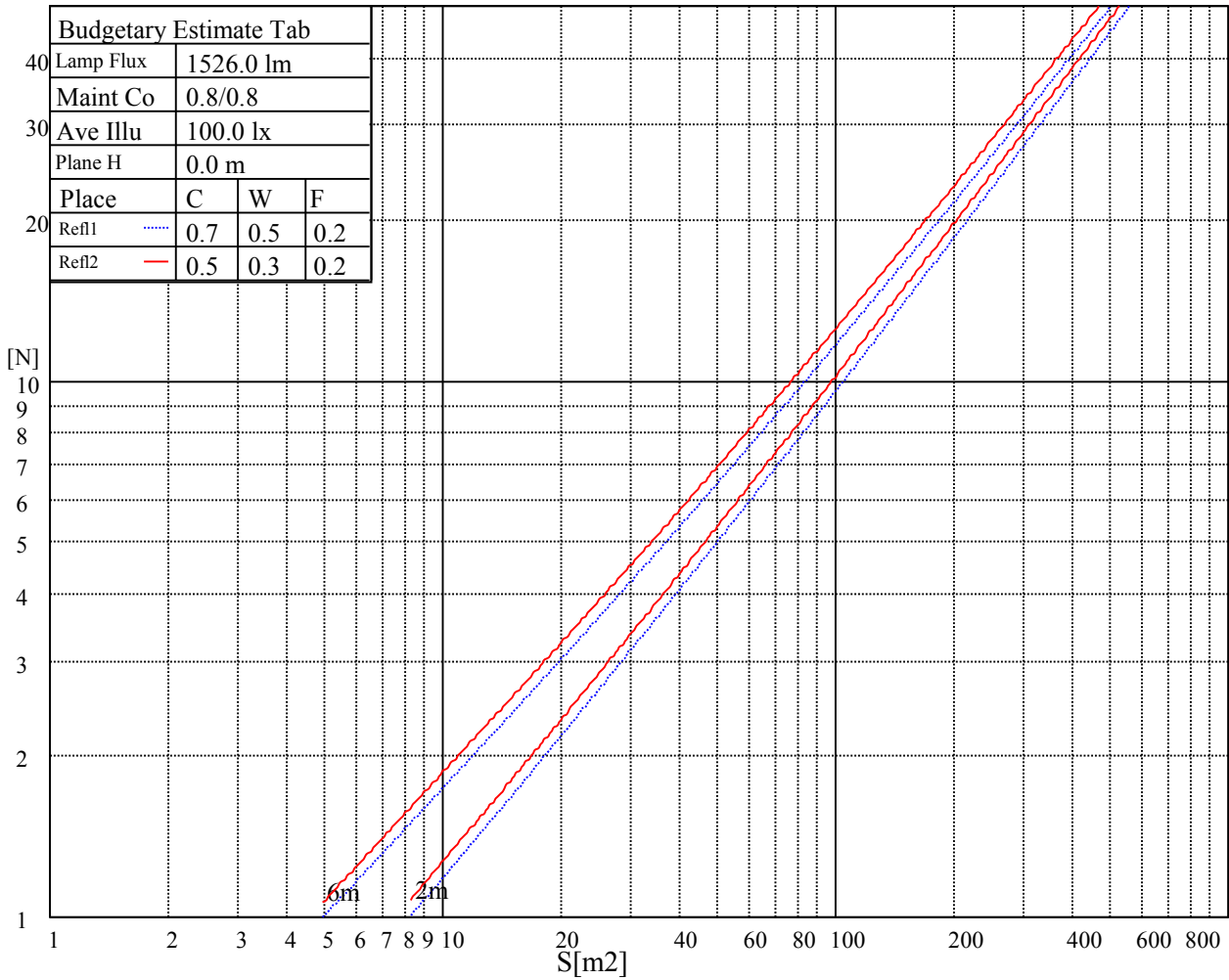
Glare Table

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

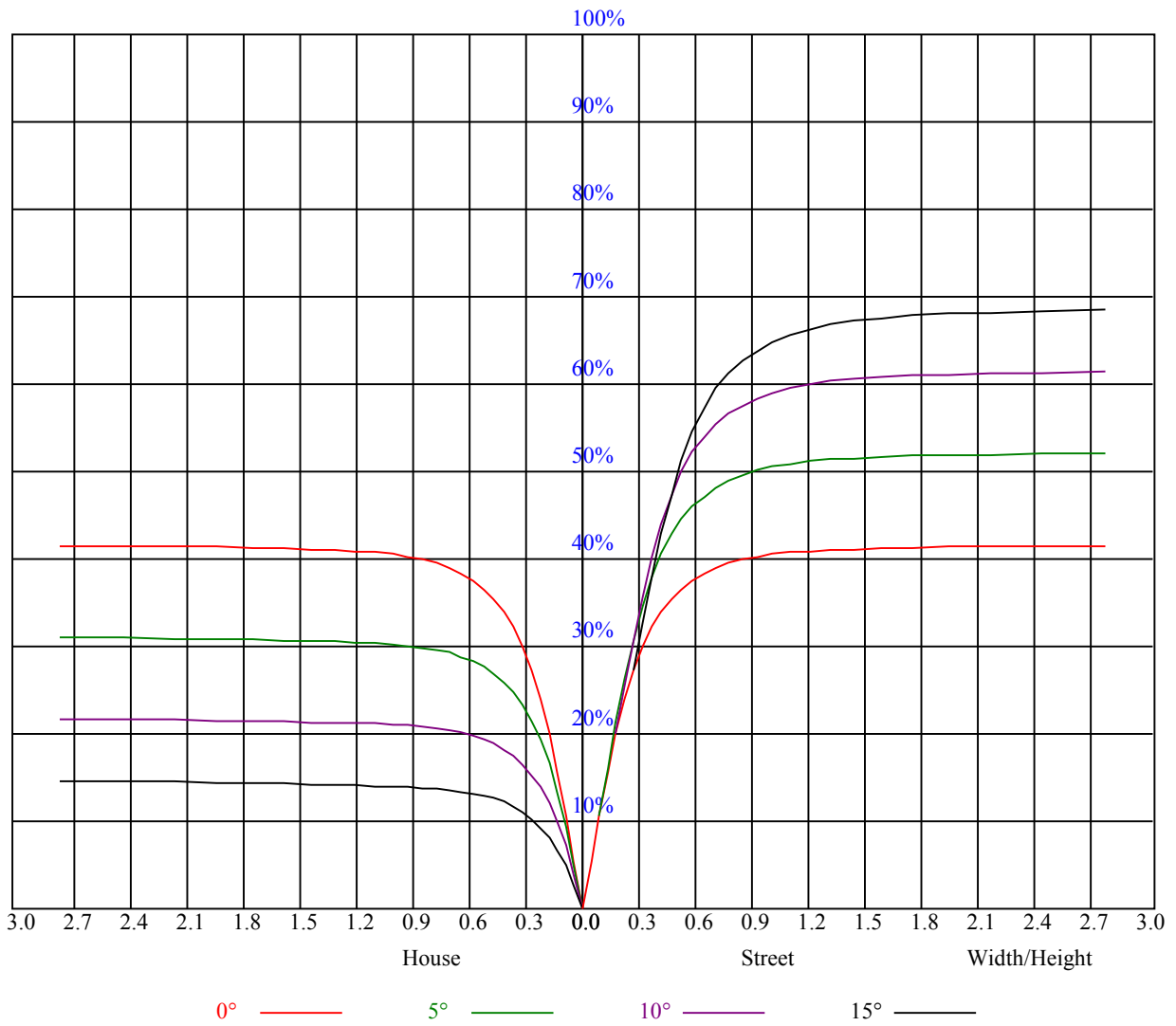
Luminance Limiting Curve



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	13.41	14.43	13.78	14.74	15.06	13.22	14.24	13.59	14.55	14.87
	3H	14.84	15.74	15.22	16.07	16.44	14.56	15.46	14.94	15.79	16.16
	4H	16.16	17.00	16.57	17.35	17.74	15.90	16.73	16.31	17.09	17.48
	6H	18.35	19.11	18.77	19.49	19.88	18.08	18.85	18.50	19.23	19.62
	8H	19.54	20.26	19.98	20.66	21.07	19.34	20.06	19.77	20.45	20.86
	12H	21.29	21.98	21.73	22.36	22.79	21.26	21.94	21.69	22.33	22.76
4H	2H	13.57	14.41	13.98	14.76	15.15	13.40	14.24	13.81	14.59	14.98
	3H	15.49	16.18	15.91	16.59	16.99	15.26	15.95	15.68	16.36	16.76
	4H	17.17	17.79	17.61	18.21	18.66	16.97	17.58	17.40	18.00	18.45
	6H	19.34	19.87	19.81	20.32	20.80	19.13	19.66	19.60	20.11	20.59
	8H	20.84	21.34	21.32	21.79	22.26	20.69	21.19	21.17	21.64	22.11
8H	12H	22.63	23.06	23.12	23.54	24.02	22.63	23.06	23.12	23.54	24.02
	4H	17.98	18.47	18.45	18.92	19.40	17.82	18.32	18.30	18.77	19.24
	6H	20.66	21.06	21.17	21.56	22.05	20.51	20.91	21.02	21.41	21.90
	8H	22.31	22.66	22.84	23.18	23.68	22.20	22.56	22.73	23.08	23.58
12H	12H	24.12	24.43	24.64	24.93	25.51	24.14	24.45	24.66	24.95	25.52
	4H	18.30	18.73	18.79	19.22	19.70	18.17	18.60	18.66	19.09	19.57
	6H	21.46	21.49	21.67	21.96	22.51	21.33	21.36	21.54	21.83	22.38
	8H	22.89	23.20	23.41	23.70	24.28	22.81	23.12	23.33	23.62	24.20
Variation with the observer position at spacings:											
S = 1.0H	2.5/-3.1					2.5/-3.1					
S = 1.5H	3.4/-2.5					3.4/-2.5					
S = 2.0H	3.8/-2.0					3.8/-2.0					
Standard tables:	BKBF					BKBF					
Uncorrected UGR	8.2					8.2					



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	1.01	1.01	1.01	0.99	0.99	0.99	0.94	0.94	0.94	0.90	0.90	0.90	0.87	0.87	0.87	0.85
1	0.93	0.91	0.89	0.91	0.89	0.87	0.88	0.86	0.84	0.85	0.83	0.82	0.82	0.81	0.80	0.78
2	0.88	0.84	0.81	0.86	0.83	0.80	0.83	0.81	0.79	0.81	0.79	0.77	0.79	0.77	0.75	0.74
3	0.83	0.79	0.76	0.82	0.78	0.75	0.80	0.76	0.74	0.77	0.75	0.73	0.76	0.73	0.72	0.70
4	0.79	0.74	0.71	0.78	0.74	0.71	0.76	0.73	0.70	0.74	0.72	0.69	0.73	0.70	0.68	0.67
5	0.75	0.71	0.68	0.74	0.70	0.67	0.73	0.69	0.67	0.72	0.68	0.66	0.70	0.68	0.65	0.64
6	0.72	0.67	0.64	0.71	0.67	0.64	0.70	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.62
7	0.69	0.65	0.62	0.68	0.64	0.61	0.67	0.64	0.61	0.66	0.63	0.61	0.66	0.63	0.60	0.59
8	0.66	0.62	0.59	0.66	0.62	0.59	0.65	0.61	0.59	0.64	0.61	0.59	0.63	0.60	0.58	0.57
9	0.64	0.60	0.57	0.64	0.60	0.57	0.63	0.59	0.57	0.62	0.59	0.56	0.61	0.58	0.56	0.55
10	0.62	0.58	0.55	0.61	0.58	0.55	0.61	0.57	0.55	0.60	0.57	0.55	0.60	0.57	0.54	0.54



NATA 1677-A

Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	3189.38	3136.50	2705.63	1983.94	1169.44	613.13	390.94	289.69	161.10
45.0	3185.44	3086.44	2618.44	1816.31	1012.50	567.56	365.06	257.29	157.73
90.0	3188.25	2998.69	2382.75	1612.13	845.72	476.49	326.31	213.02	128.76
135.0	3196.69	3050.44	2500.31	1737.56	946.69	509.63	341.44	228.54	139.33
180.0	3189.38	2961.00	2333.25	1523.25	822.15	464.91	315.84	204.75	128.03
225.0	3185.44	3018.38	2447.44	1617.19	861.92	482.51	337.89	224.16	134.04
270.0	3188.25	3106.13	2646.00	1866.94	1095.75	572.63	382.50	284.63	160.76
315.0	3196.69	3088.69	2577.38	1708.88	1006.20	533.98	350.66	241.82	146.87
360.0	3189.38	3136.50	2705.63	1983.94	1169.44	613.13	390.94	289.69	161.10

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	93.04	52.03	29.08	11.53	8.89	9.23	10.01	11.48	14.06
45.0	85.05	48.43	27.34	11.93	10.29	10.29	11.19	13.28	17.04
90.0	66.77	40.39	21.66	10.86	9.68	9.73	11.81	14.23	11.81
135.0	74.70	45.62	25.59	10.86	9.39	9.45	10.29	17.33	13.22
180.0	68.46	41.63	22.73	10.58	9.84	10.13	11.93	14.40	11.53
225.0	74.59	43.82	25.37	13.11	11.31	11.42	12.43	14.01	13.39
270.0	87.92	49.33	29.81	14.46	11.42	11.03	10.91	12.88	12.43
315.0	79.43	46.80	26.78	10.86	9.51	9.73	10.29	15.02	15.08
360.0	93.04	52.03	29.08	11.53	8.89	9.23	10.01	11.48	14.06

C/γ(°)	90.0
0.0	5.40
45.0	5.18
90.0	5.12
135.0	5.29
180.0	5.34
225.0	5.29
270.0	5.23
315.0	5.29
360.0	5.40