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NATA

LumCAT: 1406-M	
Luminaire: 92.70.064.00	
Report No: NATA0100	Voltage(V): 34.4000
Test No: GC2019022115	Current(A): 0.3000
LampCAT: CREE CMT1420	Power (W): 10.3200
Lamp flux(lm): 1567.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 39	Width(mm): 39
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1332.65
Efficiency(%): 85.04%
Lumens(lm)/Power(W): 130.11
Central intensity(cd): 1893.094
Maximum intensity(cd): 1893.094
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=39.0
 [C90/270]Total=39.0
Field angle(10%Imax): [C0/180]Total=89.6
 [C90/270]Total=89.6
Maximum s/h(1/2): C0_180=0.61 C90_270=0.61
Maximum s/h(1/4): C0_180=0.68 C90_270=0.68
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 85.69%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 95.395%

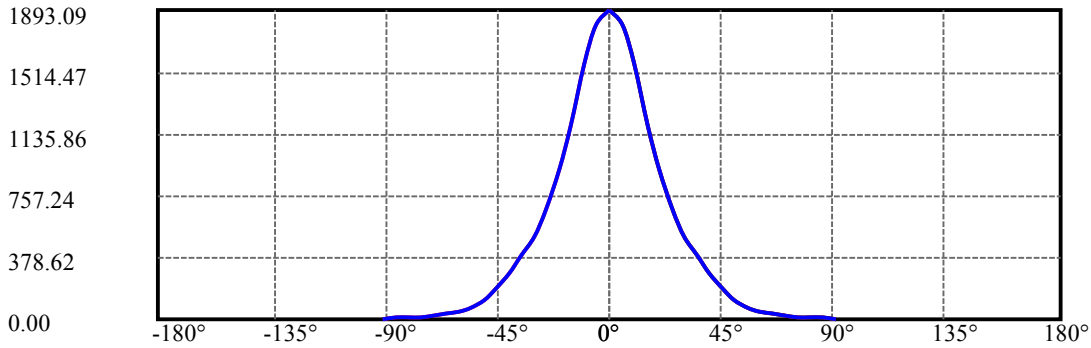
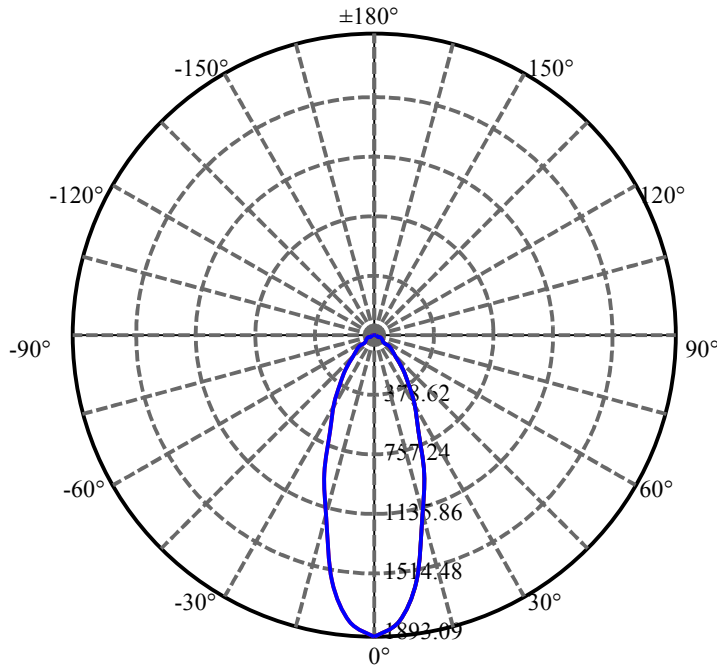
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1893.094	11.321	11.321	.722%	.850%
5.0	1802.953	86.133	97.454	5.497%	7.313%
10.0	1561.430	148.622	246.076	9.484%	18.465%
15.0	1183.634	167.920	413.996	10.716%	31.066%
20.0	919.547	172.391	586.387	11.001%	44.002%
25.0	665.923	154.263	740.65	9.844%	55.577%
30.0	506.391	138.786	879.436	8.857%	65.991%
35.0	384.834	120.991	1000.427	7.721%	75.070%
40.0	283.971	100.053	1100.48	6.385%	82.578%
45.0	185.513	71.903	1172.384	4.589%	87.974%
50.0	118.835	49.899	1222.282	3.184%	91.718%
55.0	75.466	33.885	1256.167	2.162%	94.261%
60.0	52.038	24.703	1280.87	1.576%	96.114%
65.0	35.944	17.856	1298.726	1.140%	97.454%
70.0	25.516	13.143	1311.869	.839%	98.441%
75.0	17.459	9.244	1321.113	.590%	99.134%
80.0	11.510	6.213	1327.326	.397%	99.600%
85.0	7.158	3.909	1331.234	.249%	99.894%
90.0	5.168	1.416	1332.651	.090%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	879.44	56.12%	65.99%
0-40	1100.48	70.23%	82.58%
0-60	1280.87	81.74%	96.11%
0-90	1331.23	84.95%	99.89%
0-120	1331.23	84.95%	99.89%
0-180	1332.65	85.04%	100.00%
60-90	75.07	4.79%	5.63%
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%
0-38.28	1066.12	68.04%	80.00%

ZONAL LUMEN SUMMARY

0-10	246.08
10-20	340.31
20-30	293.05
30-40	221.04
40-50	121.80
50-60	58.59
60-70	31.00
70-80	15.46
80-90	3.91
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: —————

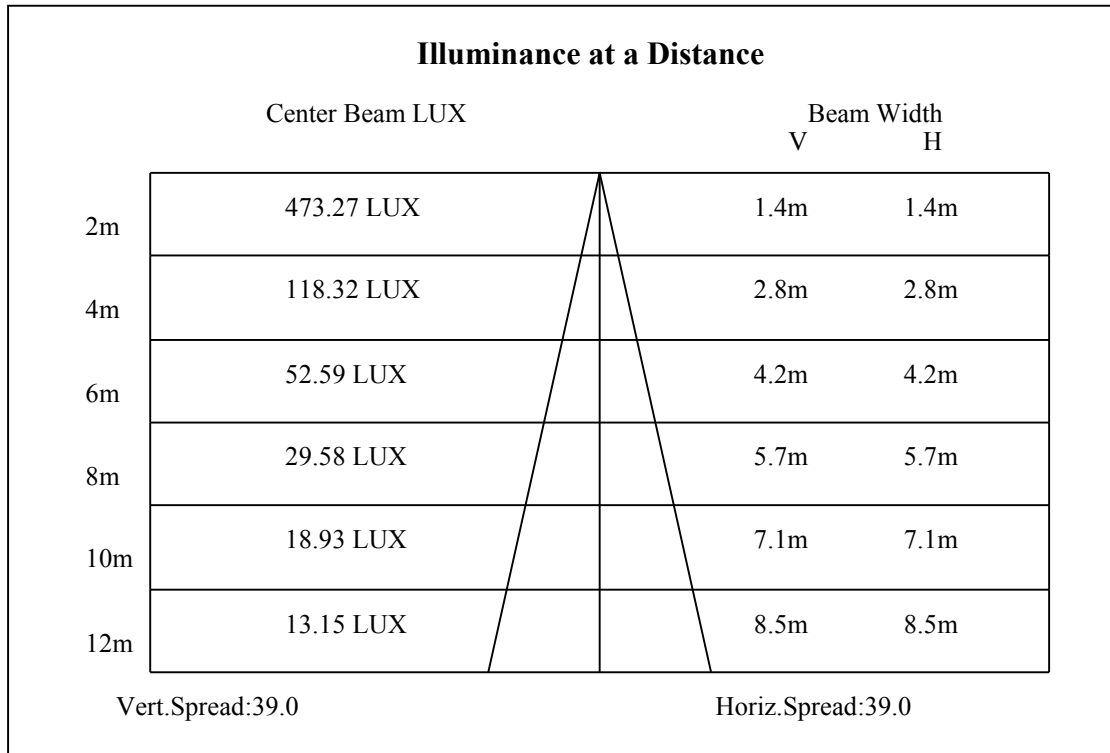
C90/C270: —————

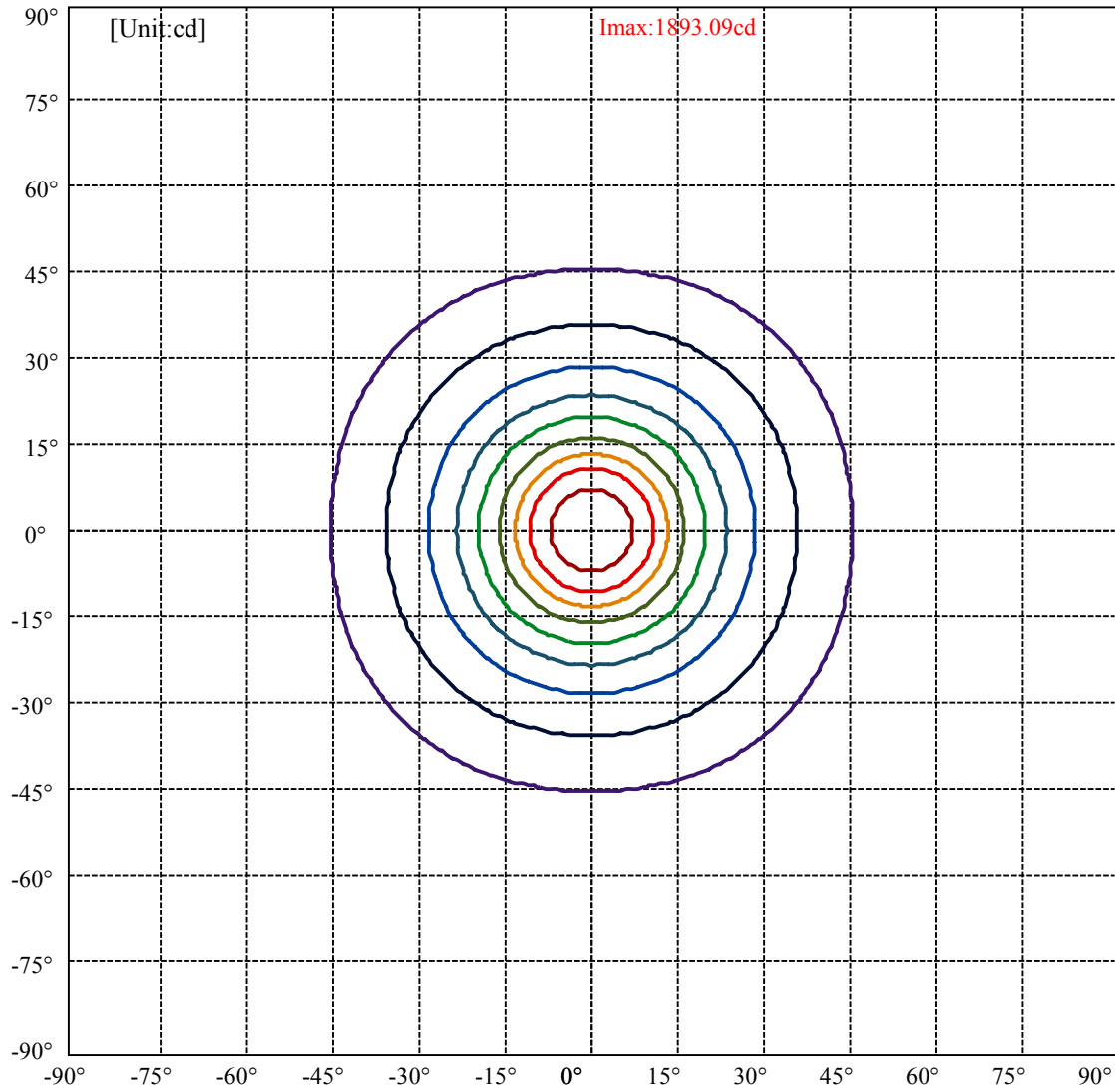
Field angle(10%Imax):C0/180Left:44.8 Right:44.8

:C90/270Left:44.8 Right:44.8

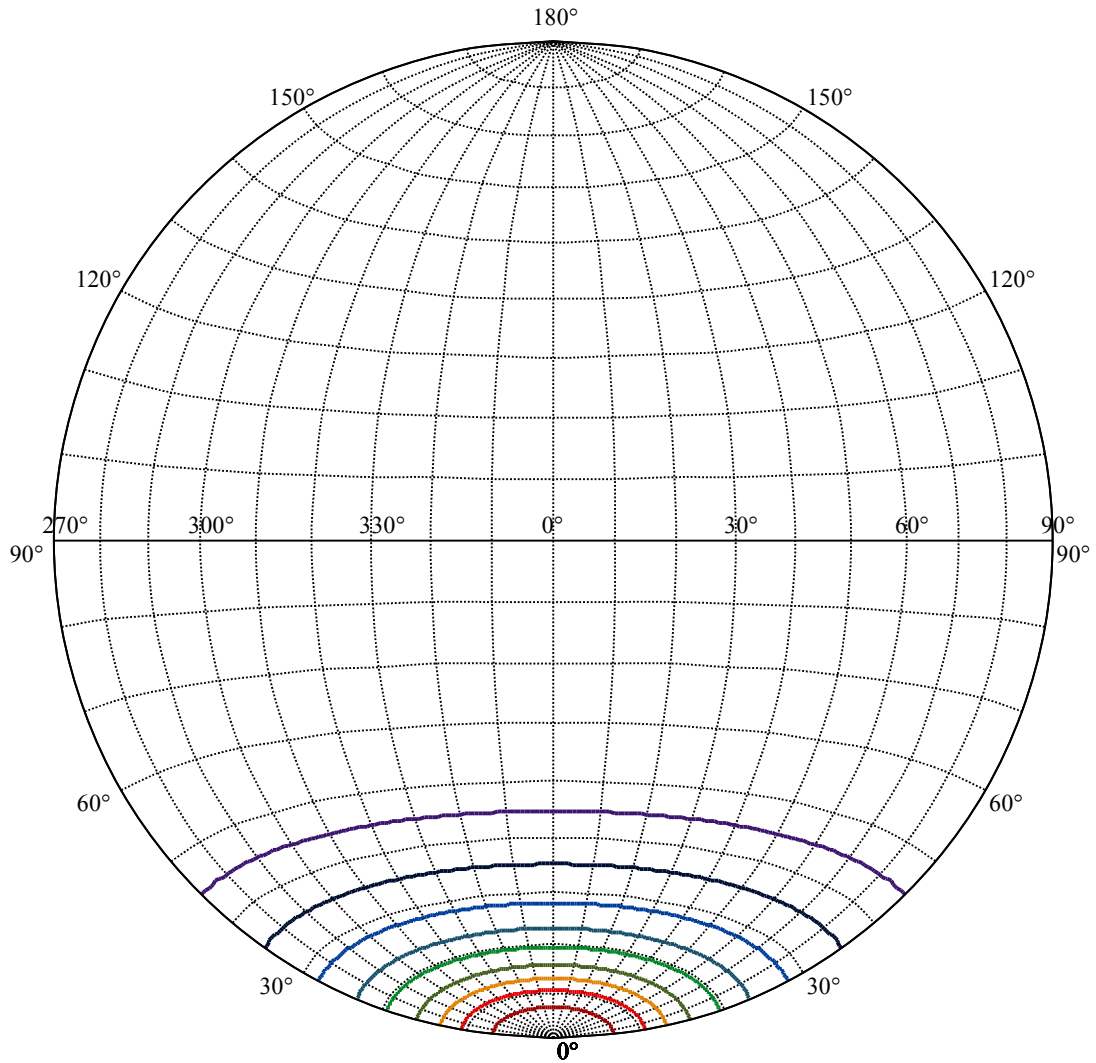
Beam Angle(50%Imax):C0/180Left:19.5 Right:19.5

:C90/270Left:19.5 Right:19.5





(10%Imax) 189.309	—
(20%Imax) 378.619	—
(30%Imax) 567.928	—
(40%Imax) 757.237	—
(50%Imax) 946.547	—
(60%Imax) 1135.86	—
(70%Imax) 1325.17	—
(80%Imax) 1514.47	—
(90%Imax) 1703.78	—



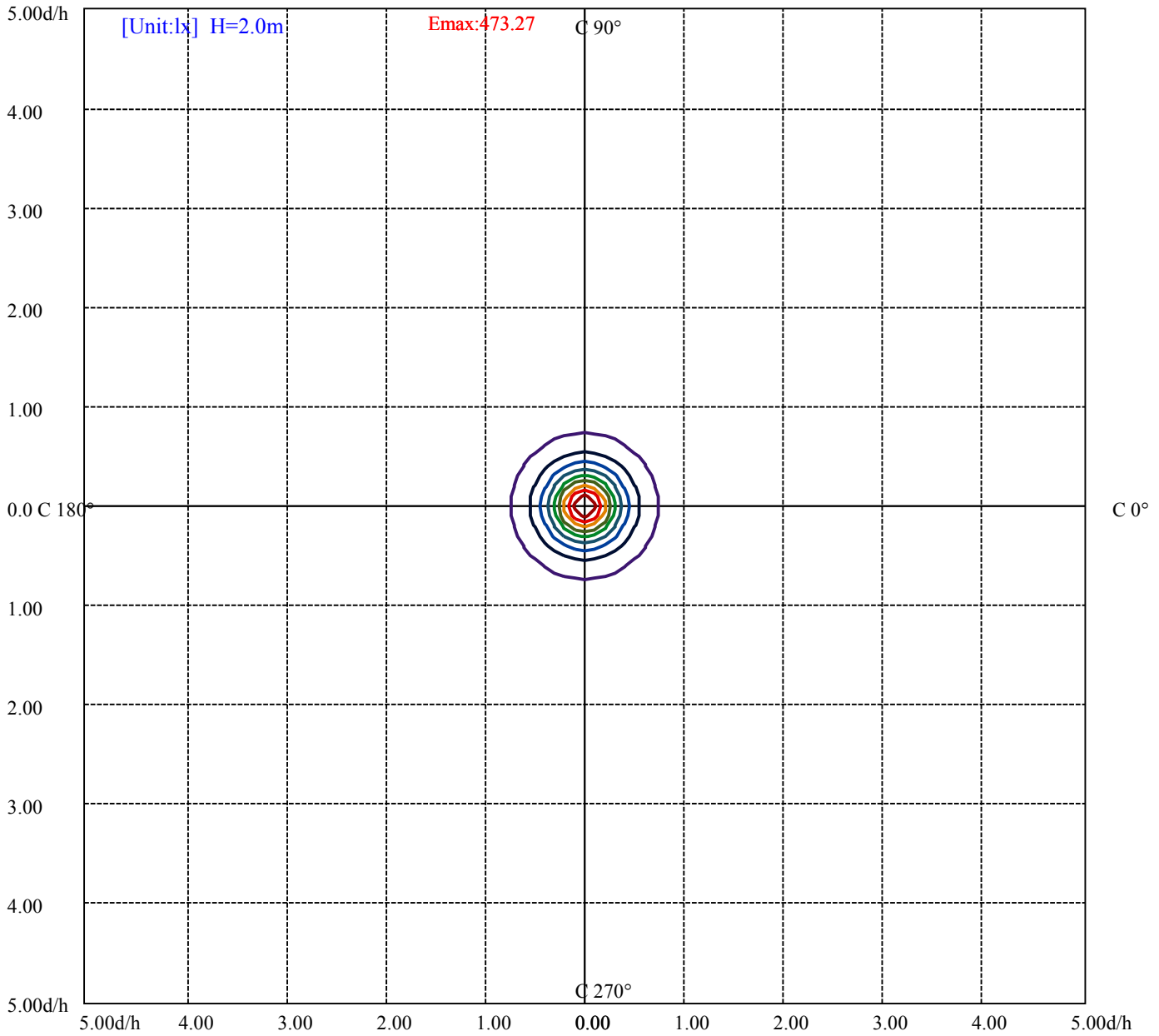
House

[Unit:cd]

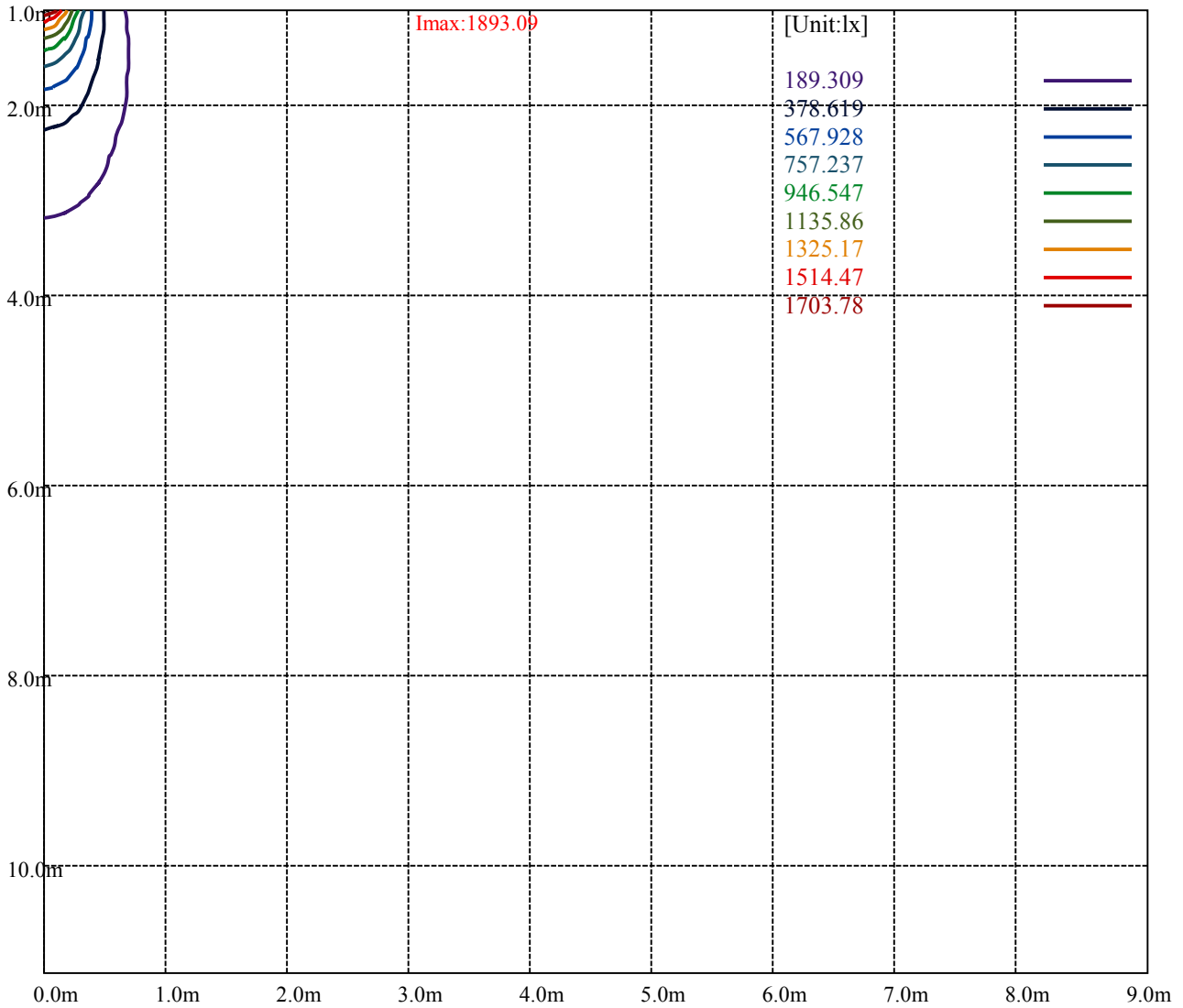
Road

Imax:1893.09

(10%Imax)	189.309	—
(20%Imax)	378.619	—
(30%Imax)	567.928	—
(40%Imax)	757.237	—
(50%Imax)	946.547	—
(60%Imax)	1135.86	—
(70%Imax)	1325.17	—
(80%Imax)	1514.47	—
(90%Imax)	1703.78	—



- (10%Emax) 47.32725
- (20%Emax) 94.6545
- (30%Emax) 141.9818
- (40%Emax) 189.309
- (50%Emax) 236.6362
- (60%Emax) 283.9625
- (70%Emax) 331.29
- (80%Emax) 378.6175
- (90%Emax) 425.945



Luminance Table

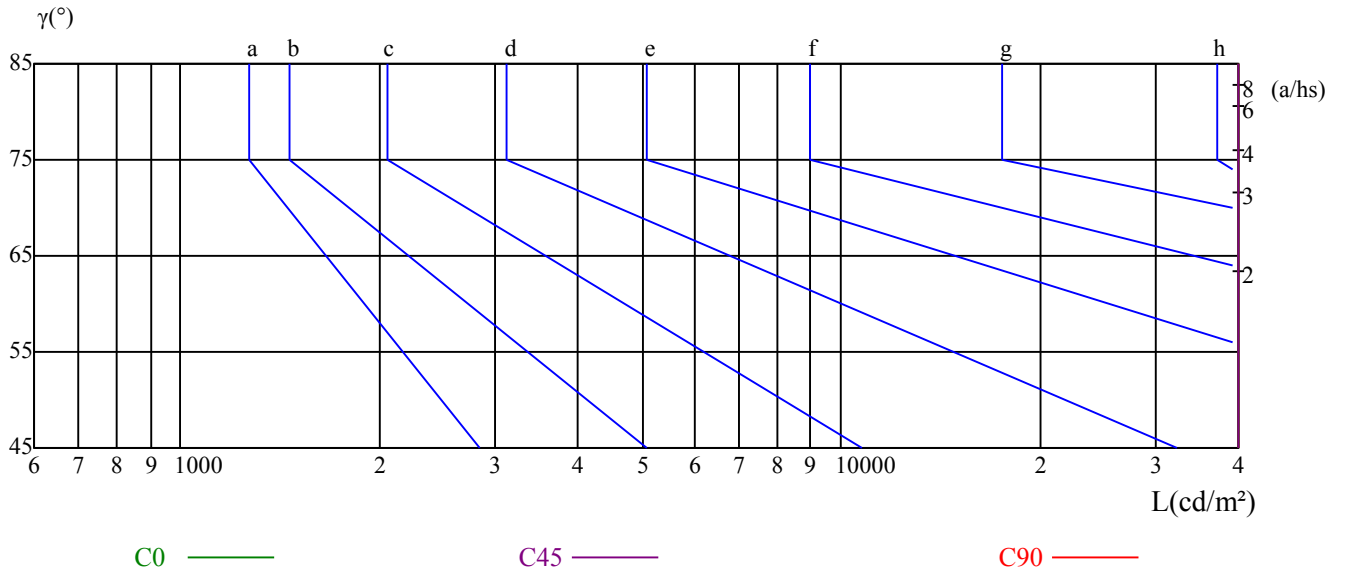
γ	45	50	55	60	65	70	75	80	85
C0	172488	121548	86503	68426	55917	49050	44349	43579	53995
C45	172488	121548	86503	68426	55917	49050	44349	43579	53995
C90	172488	121548	86503	68426	55917	49050	44349	43579	53995

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
55917	55917	55917	44349	44349	44349	53995	53995	53995

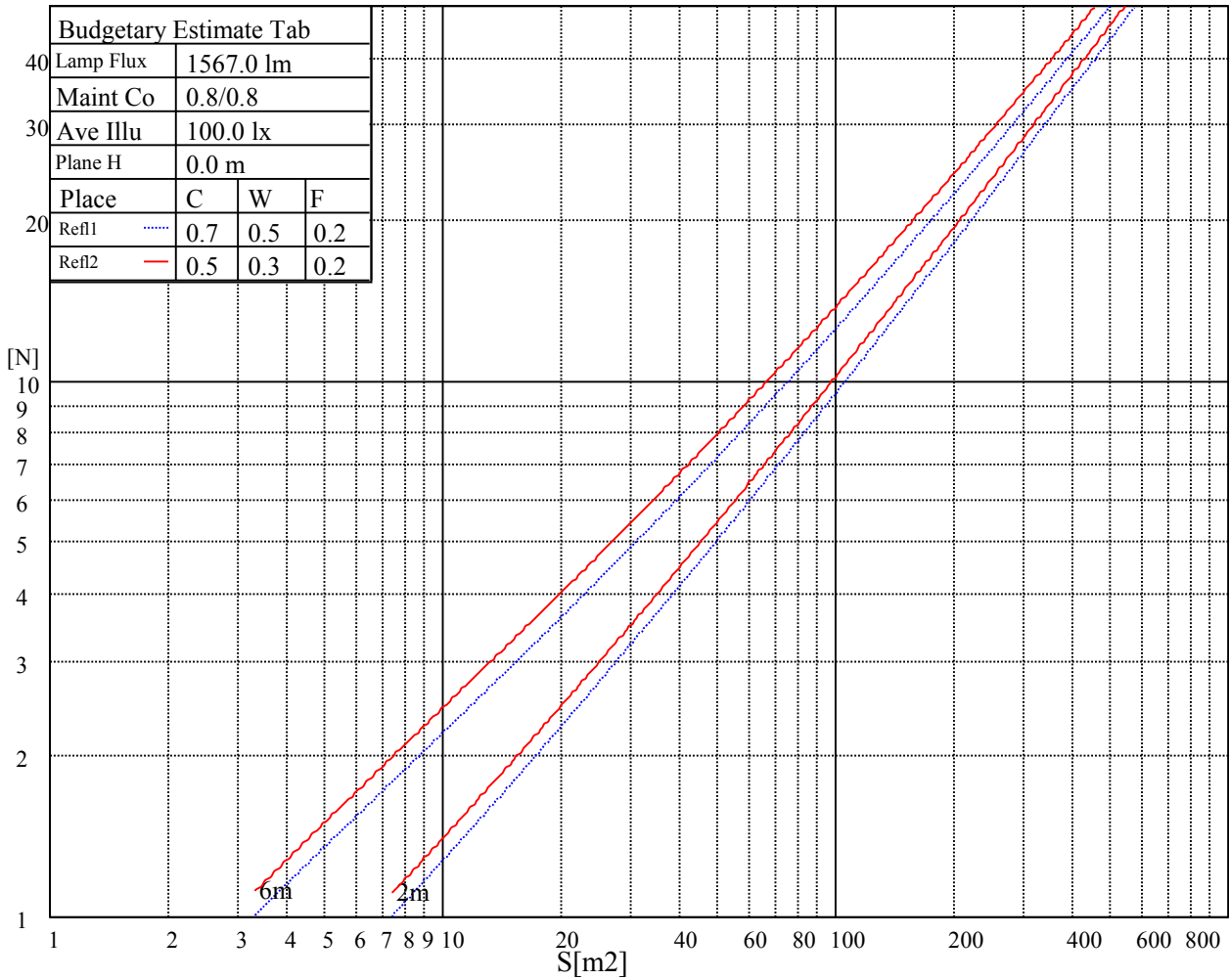
Glare Table

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

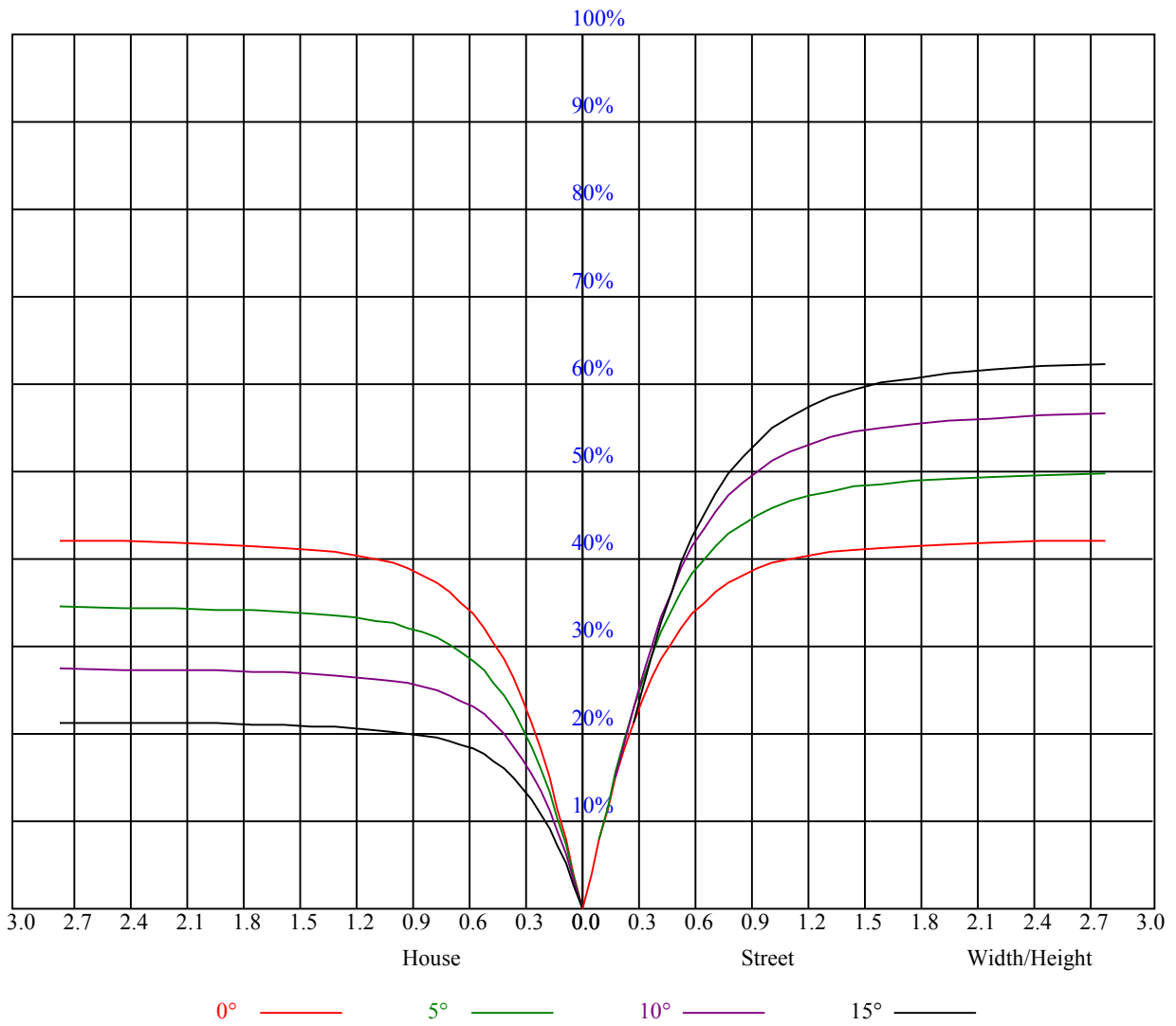
Luminance Limiting Curve



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	22.39	23.56	22.75	23.87	24.19	22.68	23.86	23.05	24.17	24.48
	3H	23.36	24.40	23.74	24.73	25.09	23.67	24.71	24.05	25.04	25.41
	4H	23.72	24.68	24.12	25.03	25.42	24.06	25.03	24.47	25.38	25.77
	6H	24.01	24.90	24.43	25.27	25.66	24.40	25.29	24.82	25.66	26.05
	8H	24.13	24.97	24.57	25.36	25.77	24.55	25.38	24.98	25.78	26.18
	12H	24.35	25.15	24.78	25.53	25.96	24.81	25.61	25.24	25.99	26.42
4H	2H	22.67	23.63	23.07	23.98	24.37	22.92	23.89	23.32	24.24	24.62
	3H	23.85	24.64	24.27	25.05	25.45	24.12	24.91	24.53	25.32	25.72
	4H	24.33	25.03	24.76	25.45	25.90	24.63	25.34	25.07	25.76	26.20
	6H	24.68	25.29	25.15	25.74	26.21	25.03	25.64	25.50	26.09	26.56
	8H	24.87	25.43	25.34	25.88	26.35	25.25	25.81	25.72	26.26	26.74
	12H	25.13	25.62	25.61	26.11	26.58	25.56	26.06	26.05	26.54	27.02
8H	4H	24.48	25.05	24.96	25.50	25.97	24.76	25.33	25.24	25.78	26.25
	6H	24.99	25.44	25.49	25.94	26.43	25.31	25.76	25.81	26.26	26.75
	8H	25.27	25.68	25.79	26.20	26.69	25.62	26.03	26.15	26.55	27.05
	12H	26.04	26.40	26.56	26.90	27.47	26.45	26.81	26.96	27.30	27.88
12H	4H	24.49	24.98	24.98	25.47	25.94	24.76	25.25	25.25	25.74	26.22
	6H	25.49	25.45	25.57	25.92	26.46	25.80	25.76	25.87	26.22	26.77
	8H	25.38	25.74	25.90	26.24	26.81	25.72	26.08	26.24	26.58	27.16
Variation with the observer position at spacings:											
S = 1.0H	1.1/-1.8					1.1/-1.8					
S = 1.5H	2.3/-2.5					2.3/-2.5					
S = 2.0H	4.2/-2.6					4.2/-2.6					
Standard tables:	BK2					BK2					
Uncorrected UGR	9.8					9.8					



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	1.02	1.02	1.02	1.00	1.00	1.00	0.95	0.95	0.95	0.91	0.91	0.91	0.87	0.87	0.87	0.86
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	0.86	0.82	0.79	0.85	0.81	0.78	0.82	0.79	0.77	0.79	0.77	0.75	0.77	0.75	0.73	0.72
3	0.80	0.76	0.72	0.79	0.75	0.71	0.77	0.73	0.70	0.75	0.71	0.69	0.73	0.70	0.68	0.66
4	0.75	0.70	0.66	0.74	0.69	0.65	0.72	0.68	0.65	0.70	0.67	0.64	0.69	0.66	0.63	0.62
5	0.70	0.65	0.61	0.69	0.64	0.61	0.68	0.63	0.60	0.66	0.62	0.59	0.65	0.62	0.59	0.58
6	0.66	0.60	0.57	0.65	0.60	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.61	0.58	0.55	0.54
7	0.62	0.57	0.53	0.61	0.56	0.53	0.60	0.56	0.53	0.59	0.55	0.52	0.58	0.55	0.52	0.51
8	0.59	0.54	0.50	0.58	0.53	0.50	0.57	0.53	0.50	0.56	0.52	0.49	0.56	0.52	0.49	0.48
9	0.56	0.51	0.47	0.55	0.50	0.47	0.55	0.50	0.47	0.54	0.50	0.47	0.53	0.49	0.47	0.45
10	0.53	0.48	0.45	0.53	0.48	0.45	0.52	0.48	0.45	0.51	0.47	0.44	0.51	0.47	0.44	0.43



NATA 1406-M

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	1891.13	1786.50	1544.06	1226.25	916.31	667.13	516.94	393.75	285.75
45.0	1905.19	1816.31	1563.19	1237.50	900.00	659.81	499.50	376.88	290.81
90.0	1890.56	1777.50	1521.56	1087.09	882.11	635.68	479.25	365.68	263.87
135.0	1885.50	1838.25	1616.06	1301.63	975.38	704.25	531.00	405.56	299.25
180.0	1891.13	1801.69	1576.13	1107.45	918.11	675.56	510.13	384.86	287.38
225.0	1905.19	1815.75	1576.13	1116.84	928.86	671.79	518.63	394.31	290.08
270.0	1890.56	1826.44	1591.31	1273.50	965.81	681.19	510.75	385.31	286.31
315.0	1885.50	1761.19	1503.00	1118.81	869.79	631.97	484.93	372.32	268.31
360.0	1891.13	1786.50	1544.06	1226.25	916.31	667.13	516.94	393.75	285.75
C/ γ (°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	189.79	119.48	74.64	53.38	36.28	26.04	18.17	11.98	7.54
45.0	182.81	117.84	75.60	51.47	35.38	24.98	17.27	11.42	7.03
90.0	170.66	112.39	71.72	49.22	34.43	24.13	15.98	10.13	6.30
135.0	194.06	128.19	82.52	56.87	39.94	28.18	19.18	12.83	7.54
180.0	191.42	124.82	79.37	55.46	38.08	26.44	18.73	12.26	7.76
225.0	196.03	123.81	76.84	52.82	36.23	25.48	16.99	11.53	7.48
270.0	187.03	117.28	74.14	50.01	34.48	25.09	17.04	11.19	6.64
315.0	172.29	106.88	68.91	47.08	32.74	23.79	16.31	10.74	6.98
360.0	189.79	119.48	74.64	53.38	36.28	26.04	18.17	11.98	7.54
C/ γ (°)	90.0								
0.0	5.29								
45.0	5.12								
90.0	4.89								
135.0	5.23								
180.0	5.46								
225.0	5.29								
270.0	4.89								
315.0	5.18								
360.0	5.29								