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Nata

LumCAT: 1689-M	
Luminaire: 92.70.126.00	
Report No: NATA0100	Voltage(V): 35.1000
Test No: GC2018090718	Current(A): 0.4000
LampCAT: LUMINUS CHM-9-XD20	Power (W): 14.0400
Lamp flux(lm): 1969.0	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): 1803.80
Efficiency(%): 91.61%
Lumens(lm)/Power(W): 129.01
Central intensity(cd): 1553.484
Maximum intensity(cd): 1553.484
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=71.6
 [C90/270]Total=71.6
Field angle(10%Imax): [C0/180]Total=95.1
 [C90/270]Total=95.1
Maximum s/h(1/2): C0_180=0.99 C90_270=0.99
Maximum s/h(1/4): C0_180=1.05 C90_270=1.05
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 91.99%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.315%

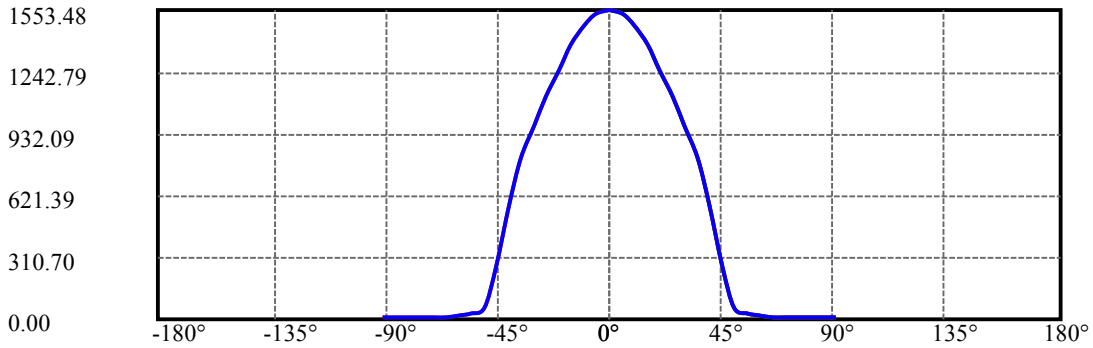
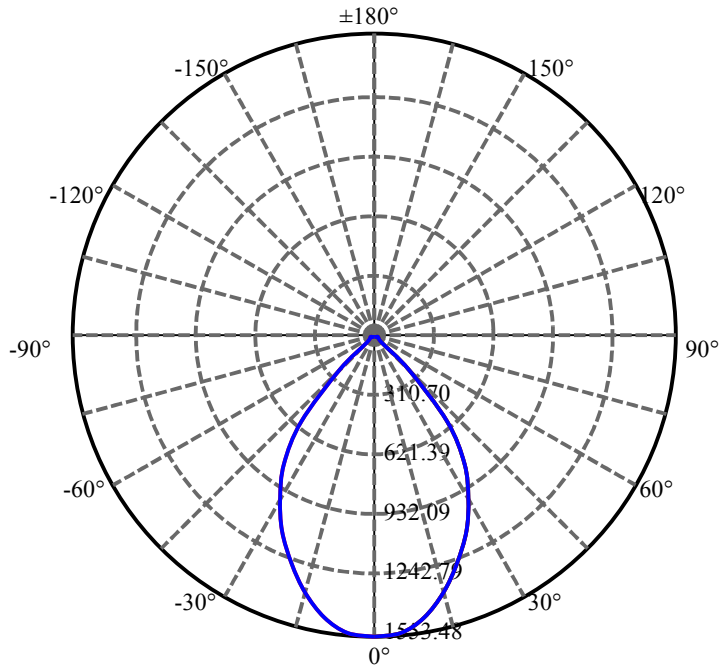
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1553.484	9.290	9.29	.472%	.515%
5.0	1535.344	73.348	82.639	3.725%	4.581%
10.0	1472.414	140.149	222.787	7.118%	12.351%
15.0	1376.648	195.303	418.09	9.919%	23.178%
20.0	1256.203	235.505	653.596	11.961%	36.234%
25.0	1119.038	259.228	912.824	13.165%	50.606%
30.0	971.550	266.271	1179.096	13.523%	65.367%
35.0	813.853	255.874	1434.97	12.995%	79.553%
40.0	581.660	204.940	1639.91	10.408%	90.914%
45.0	255.853	99.167	1739.076	5.036%	96.412%
50.0	56.911	23.897	1762.973	1.214%	97.737%
55.0	24.251	10.889	1773.862	.553%	98.341%
60.0	14.730	6.993	1780.854	.355%	98.728%
65.0	10.371	5.152	1786.006	.262%	99.014%
70.0	8.473	4.364	1790.371	.222%	99.256%
75.0	7.481	3.961	1794.332	.201%	99.475%
80.0	7.073	3.818	1798.15	.194%	99.687%
85.0	6.919	3.778	1801.928	.192%	99.896%
90.0	6.813	1.867	1803.795	.095%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1179.10	59.88%	65.37%
0-40	1639.91	83.29%	90.91%
0-60	1780.85	90.44%	98.73%
0-90	1801.93	91.51%	99.90%
0-120	1801.93	91.51%	99.90%
0-180	1803.80	91.61%	100.00%
60-90	28.07	1.43%	1.56%
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%
0-35.20	1443.04	73.29%	80.00%

ZONAL LUMEN SUMMARY

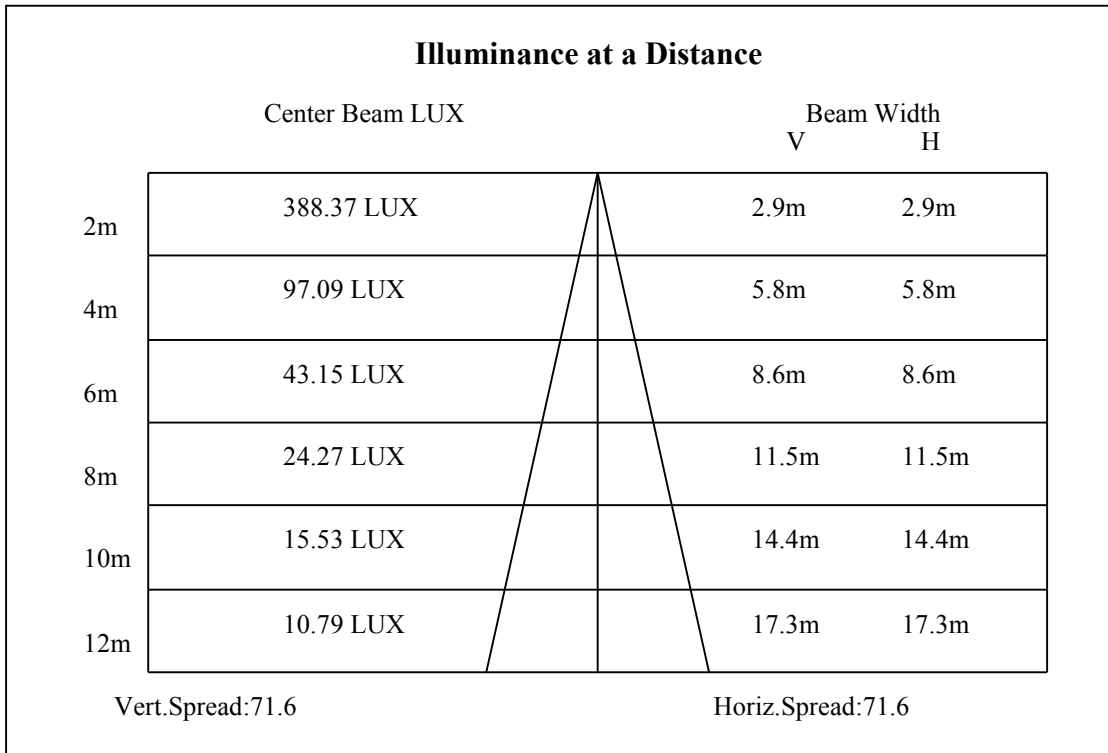
0-10	222.79
10-20	430.81
20-30	525.50
30-40	460.81
40-50	123.06
50-60	17.88
60-70	9.52
70-80	7.78
80-90	3.78
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00

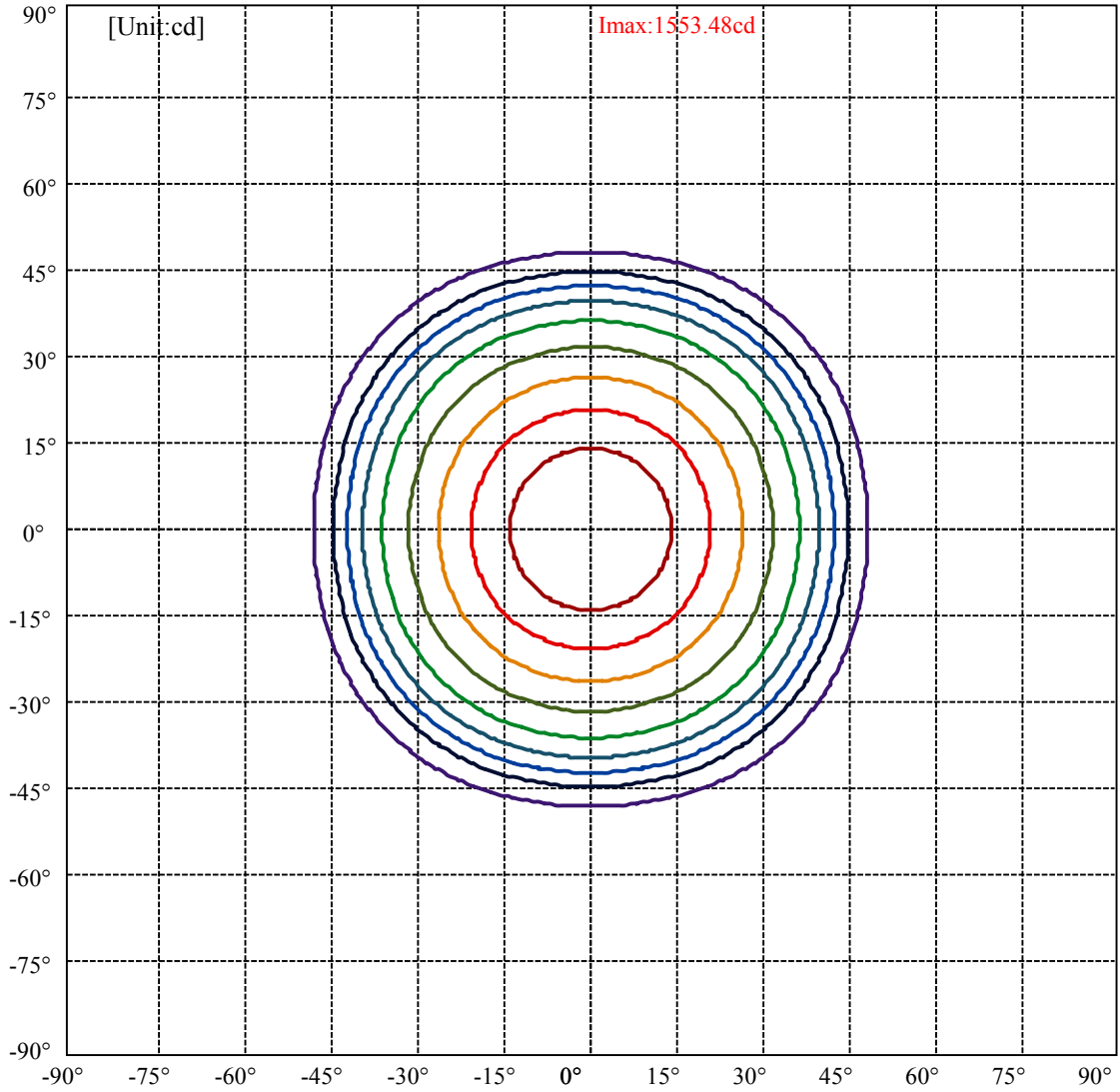


C0(Max): —
C0/C180: —
C90/C270: —

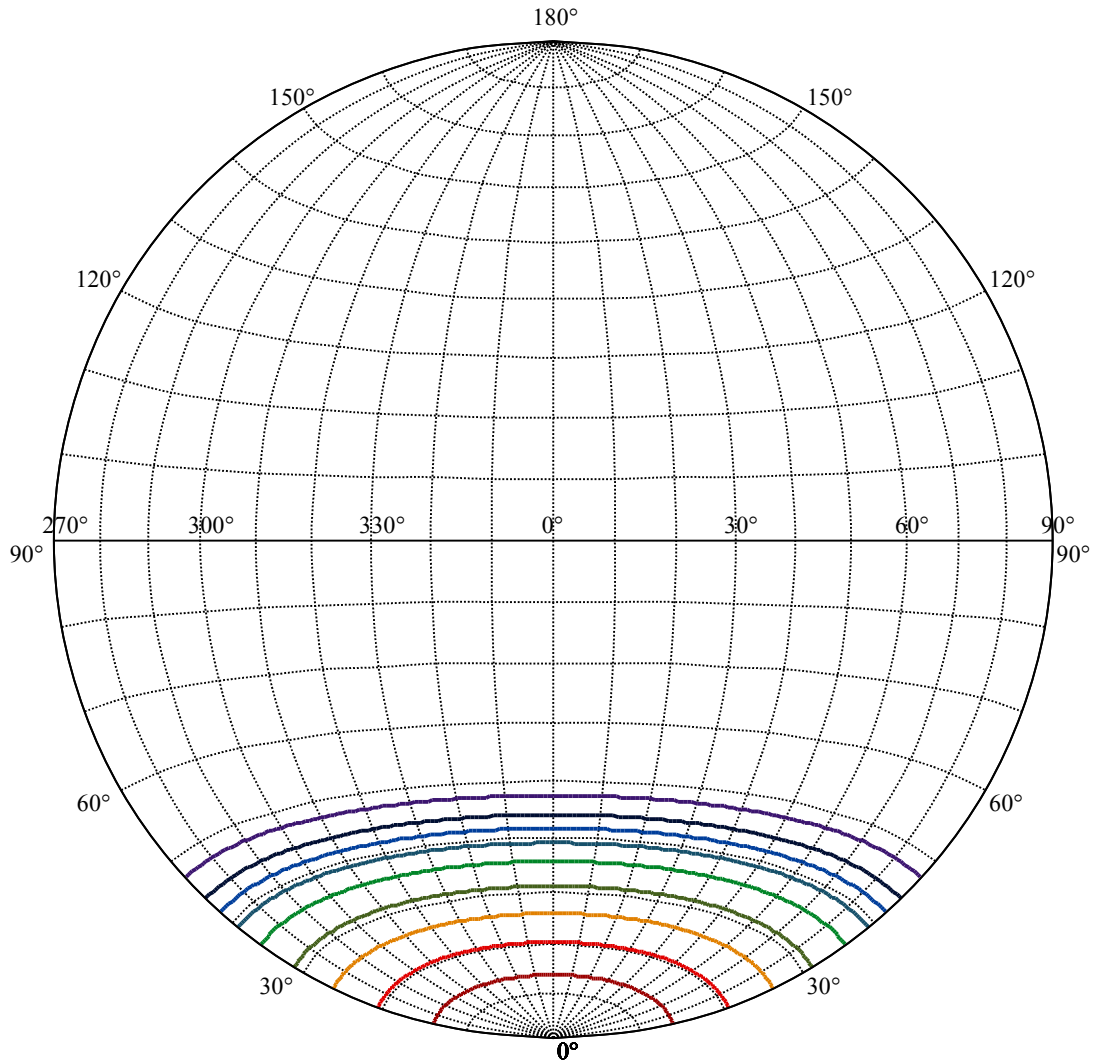
Field angle(10%Imax):C0/180Left:47.5 Right:47.5
:C90/270Left:47.5 Right:47.5

Beam Angle(50%Imax):C0/180Left:35.8 Right:35.8
:C90/270Left:35.8 Right:35.8





(10%Imax) 155.348	—
(20%Imax) 310.697	—
(30%Imax) 466.045	—
(40%Imax) 621.394	—
(50%Imax) 776.742	—
(60%Imax) 932.091	—
(70%Imax) 1087.44	—
(80%Imax) 1242.79	—
(90%Imax) 1398.14	—



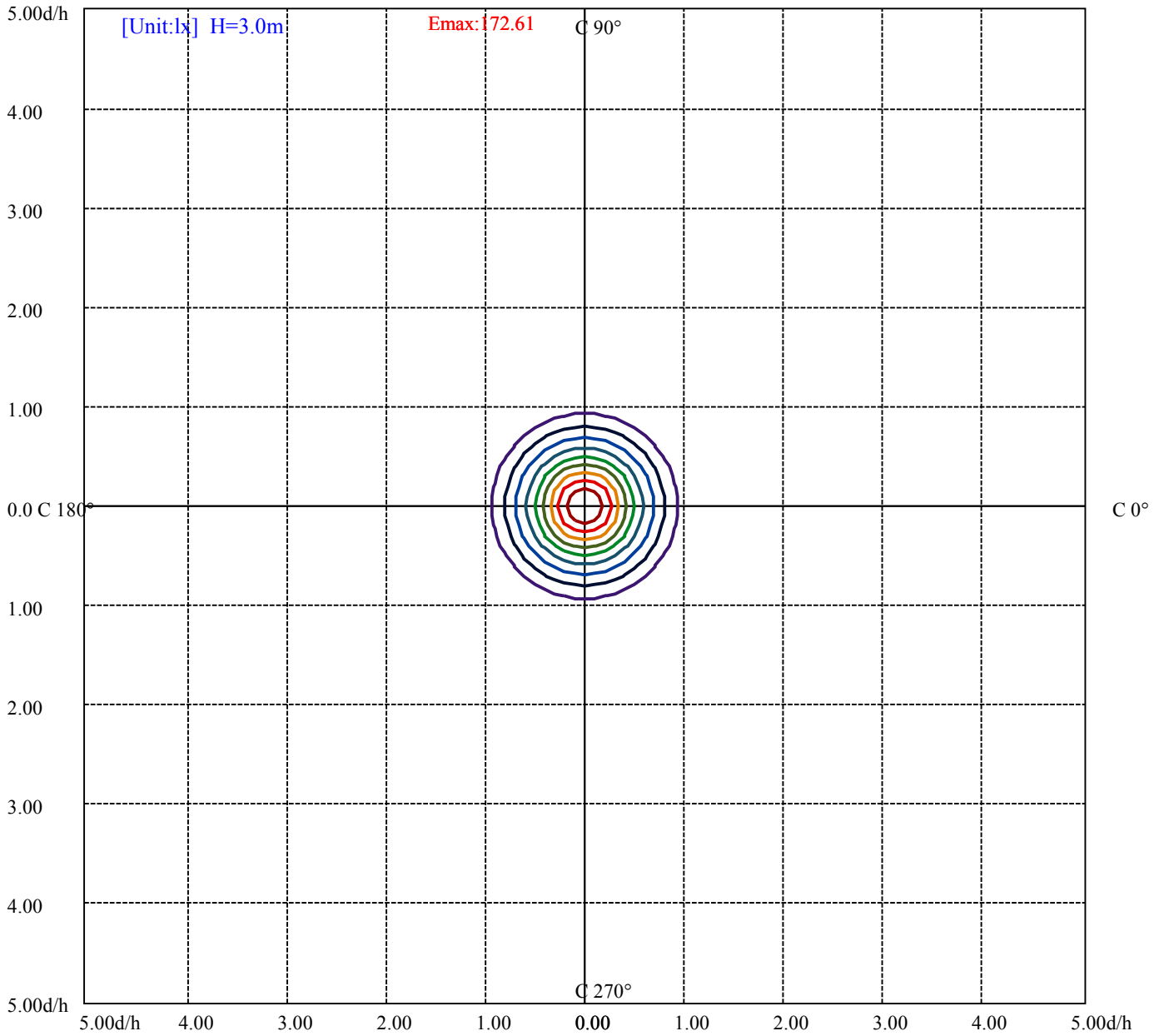
House

[Unit:cd]

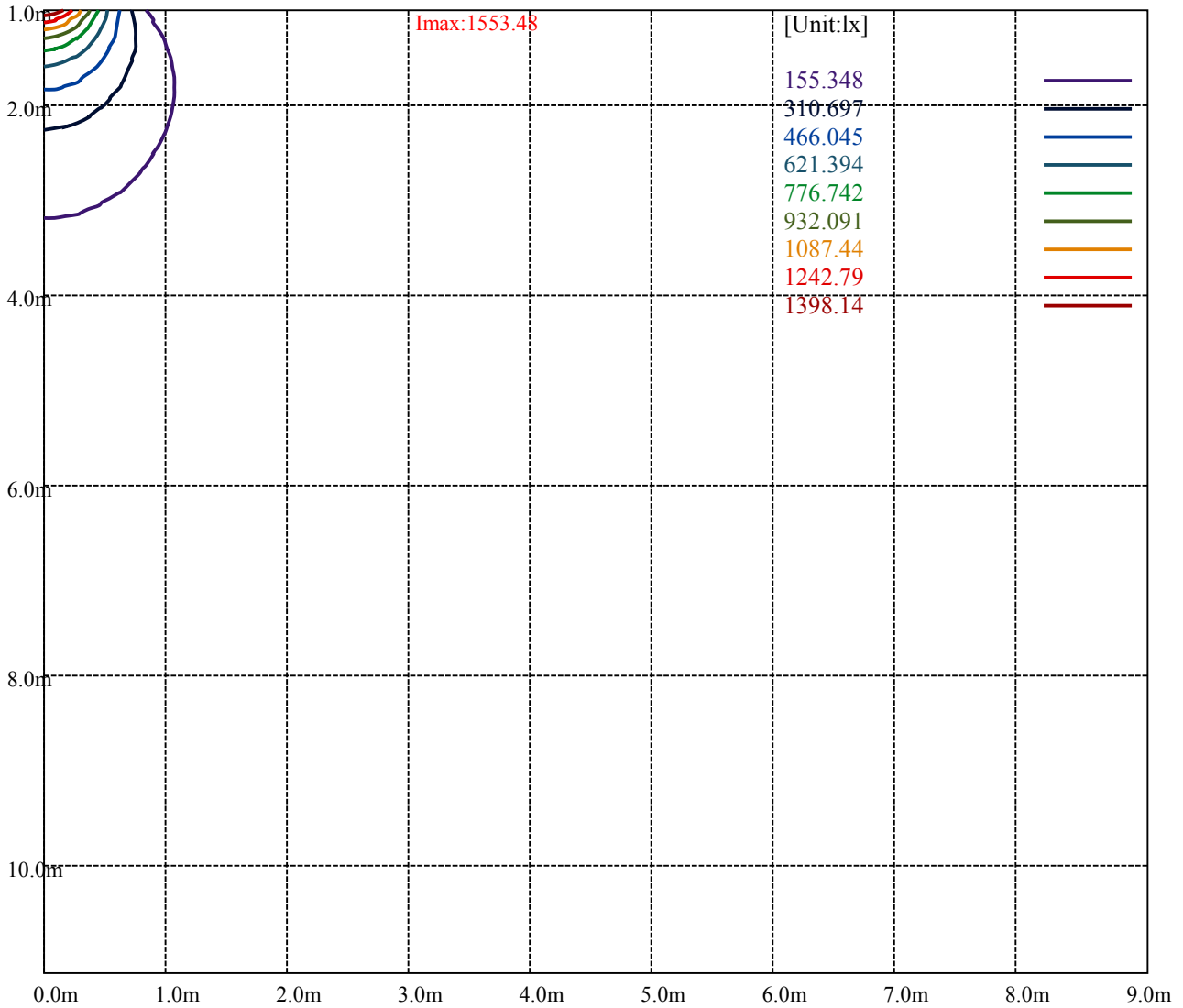
Road

Imax:1553.48

(10%Imax)	155.348	—
(20%Imax)	310.697	—
(30%Imax)	466.045	—
(40%Imax)	621.394	—
(50%Imax)	776.742	—
(60%Imax)	932.091	—
(70%Imax)	1087.44	—
(80%Imax)	1242.79	—
(90%Imax)	1398.14	—



(10%Emax) 17.26089	—
(20%Emax) 34.52189	—
(30%Emax) 51.78278	—
(40%Emax) 69.04378	—
(50%Emax) 86.30466	—
(60%Emax) 103.5656	—
(70%Emax) 120.8267	—
(80%Emax) 138.0878	—
(90%Emax) 155.3489	—



Luminance Table

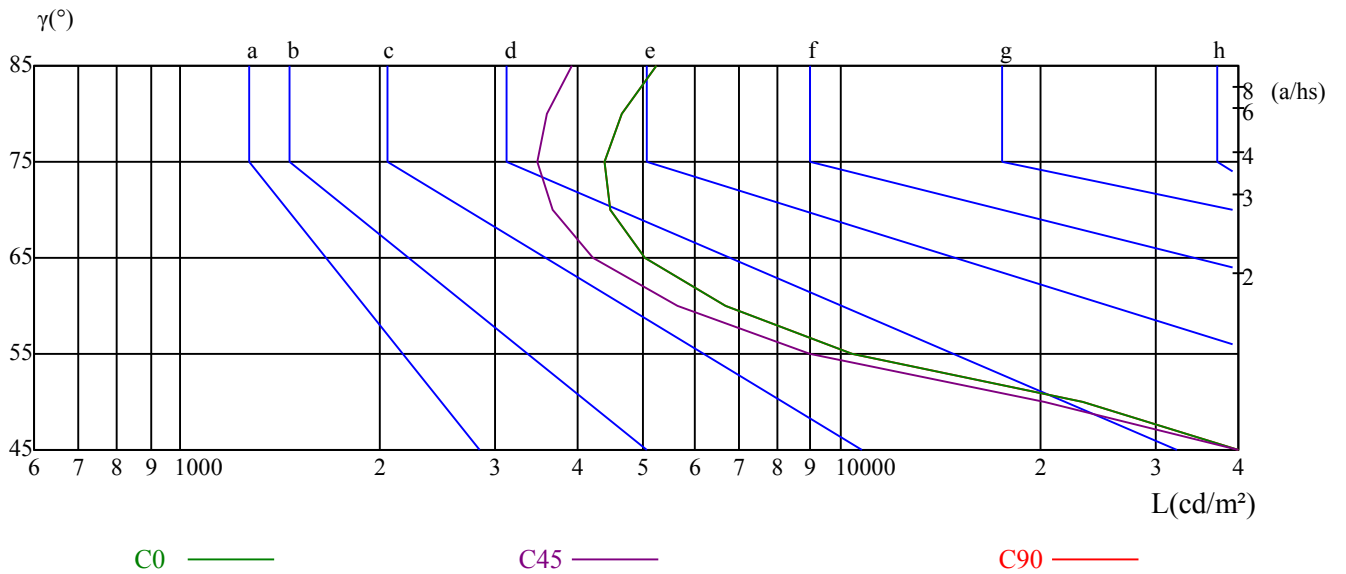
γ	45	50	55	60	65	70	75	80	85
C0	100509	23233	10386	6688	5050	4486	4376	4662	5267
C45	89217	20335	8954	5672	4205	3657	3480	3598	3914
C90	100509	23233	10386	6688	5050	4486	4376	4662	5267

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
9816	9816	9816	11562	11562	11562	31753	31753	31753

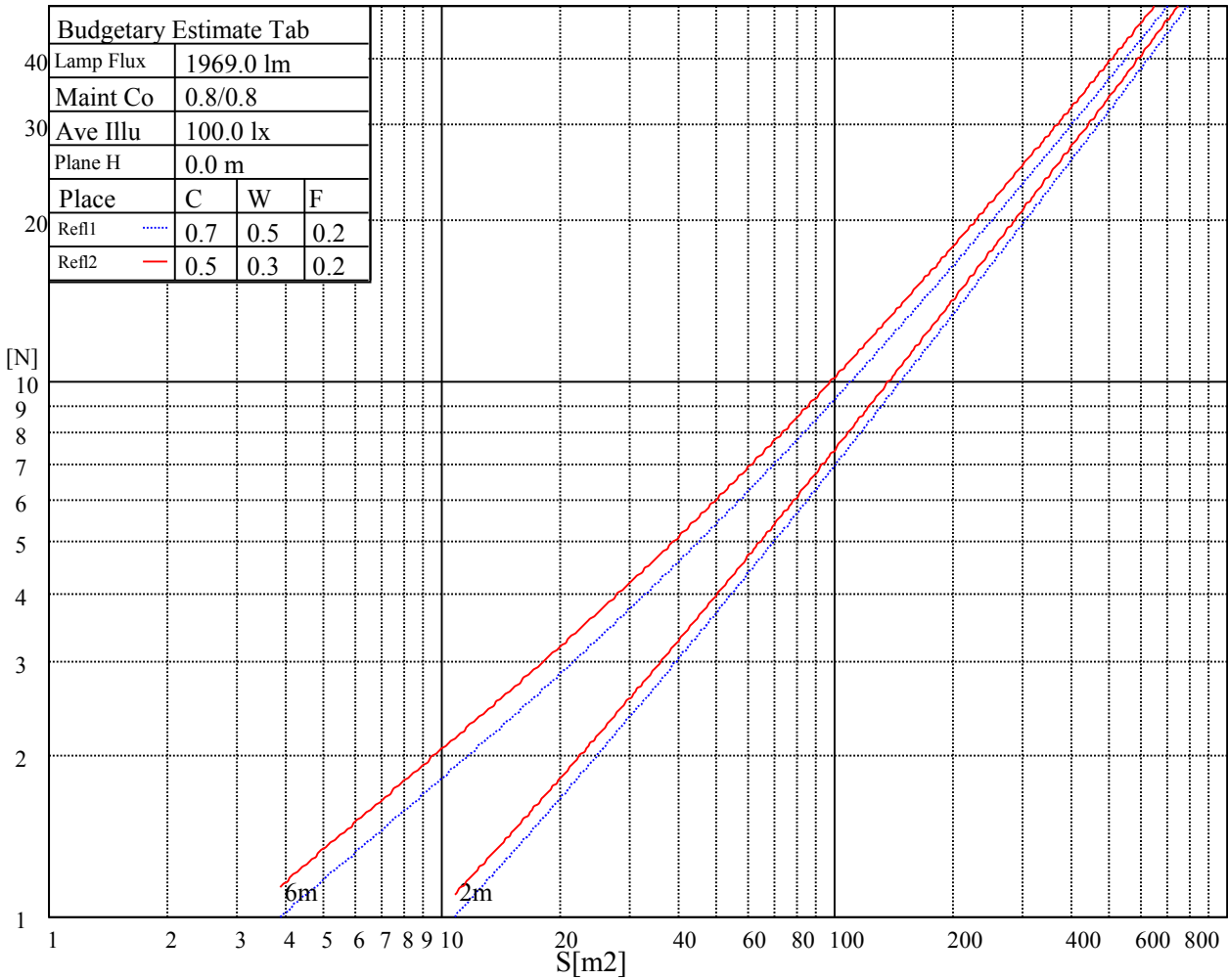
Glare Table

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

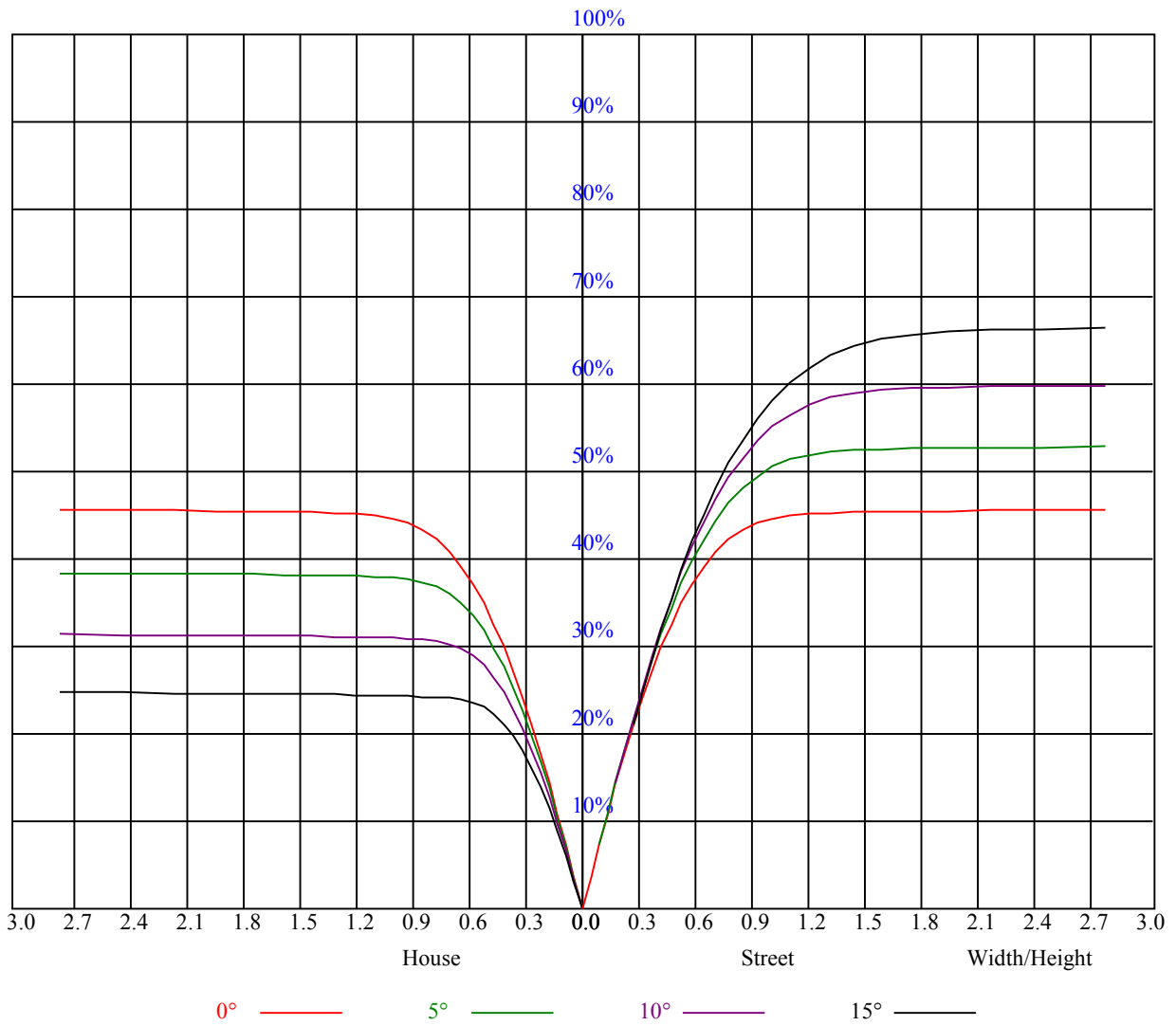
Luminance Limiting Curve



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	8.93	10.00	9.30	10.31	10.63	9.12	10.18	9.48	10.49	10.81
	3H	9.62	10.56	10.01	10.89	11.26	9.78	10.71	10.16	11.04	11.41
	4H	10.05	10.92	10.46	11.27	11.66	10.17	11.04	10.58	11.39	11.78
	6H	10.61	11.40	11.02	11.77	12.17	10.68	11.48	11.10	11.85	12.25
	8H	10.93	11.68	11.37	12.07	12.48	10.98	11.73	11.42	12.12	12.53
	12H	11.52	12.23	11.95	12.61	13.04	11.53	12.24	11.96	12.63	13.06
4H	2H	9.00	9.86	9.41	10.22	10.61	9.17	10.03	9.57	10.38	10.77
	3H	9.91	10.62	10.33	11.02	11.43	10.05	10.75	10.46	11.16	11.56
	4H	10.50	11.12	10.94	11.55	11.99	10.59	11.22	11.03	11.64	12.09
	6H	11.20	11.74	11.67	12.19	12.66	11.26	11.80	11.73	12.25	12.72
	8H	11.65	12.15	12.12	12.60	13.08	11.68	12.18	12.15	12.63	13.10
	12H	12.32	12.76	12.81	13.24	13.72	12.31	12.74	12.80	13.23	13.71
8H	4H	10.65	11.16	11.13	11.61	12.08	10.74	11.24	11.22	11.69	12.17
	6H	11.56	11.97	12.07	12.47	12.95	11.61	12.01	12.12	12.51	13.00
	8H	12.16	12.52	12.69	13.04	13.54	12.17	12.53	12.70	13.05	13.55
	12H	13.03	13.35	13.55	13.85	14.42	13.01	13.32	13.53	13.82	14.40
12H	4H	10.67	11.11	11.16	11.60	12.07	10.76	11.20	11.25	11.68	12.16
	6H	11.98	12.01	12.18	12.48	13.03	12.03	12.05	12.23	12.52	13.07
	8H	12.33	12.65	12.85	13.15	13.72	12.34	12.66	12.86	13.16	13.74
Variation with the observer position at spacings:											
S = 1.0H	3.2/-11.2					3.2/-11.2					
S = 1.5H	5.6/-11.2					5.6/-11.2					
S = 2.0H	7.5/-10.4					7.5/-10.4					
Standard tables:	BK0					BK0					
Uncorrected UGR	5.5					5.5					



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	1.10	1.10	1.10	1.07	1.07	1.07	1.02	1.02	1.02	0.98	0.98	0.98	0.94	0.94	0.94	0.92
1	1.01	0.98	0.96	0.99	0.97	0.95	0.95	0.93	0.92	0.92	0.90	0.89	0.89	0.87	0.86	0.85
2	0.94	0.90	0.86	0.92	0.88	0.85	0.89	0.86	0.84	0.86	0.84	0.82	0.84	0.82	0.80	0.78
3	0.87	0.82	0.78	0.86	0.81	0.78	0.83	0.80	0.77	0.81	0.78	0.75	0.79	0.76	0.74	0.73
4	0.81	0.76	0.72	0.80	0.75	0.71	0.78	0.74	0.71	0.76	0.73	0.70	0.75	0.71	0.69	0.67
5	0.76	0.70	0.66	0.75	0.70	0.66	0.73	0.69	0.65	0.72	0.68	0.65	0.70	0.67	0.64	0.63
6	0.71	0.65	0.61	0.70	0.65	0.61	0.69	0.64	0.61	0.68	0.63	0.60	0.66	0.63	0.60	0.58
7	0.67	0.61	0.57	0.66	0.61	0.57	0.65	0.60	0.56	0.64	0.59	0.56	0.63	0.59	0.56	0.54
8	0.63	0.57	0.53	0.62	0.57	0.53	0.61	0.56	0.53	0.60	0.56	0.53	0.59	0.55	0.52	0.51
9	0.59	0.53	0.50	0.59	0.53	0.50	0.58	0.53	0.49	0.57	0.52	0.49	0.56	0.52	0.49	0.48
10	0.56	0.50	0.47	0.55	0.50	0.47	0.55	0.50	0.46	0.54	0.49	0.46	0.53	0.49	0.46	0.45



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	1553.06	1539.56	1476.00	1380.38	1271.25	1138.50	990.56	838.13	621.00
45.0	1554.75	1531.13	1456.31	1360.69	1240.31	1107.00	967.50	811.69	569.25
90.0	1553.06	1523.25	1456.88	1350.00	1226.81	1091.81	943.65	786.83	517.16
135.0	1553.06	1542.38	1483.31	1383.75	1258.31	1126.13	976.50	816.19	604.13
180.0	1553.06	1531.69	1472.06	1370.25	1252.13	1099.69	944.44	797.01	555.98
225.0	1554.75	1545.19	1483.31	1393.88	1258.88	1114.71	970.03	810.39	591.92
270.0	1553.06	1542.38	1487.25	1401.19	1282.50	1154.25	1004.06	842.63	631.13
315.0	1553.06	1527.19	1464.19	1373.06	1259.44	1120.22	975.66	807.98	562.73
360.0	1553.06	1539.56	1476.00	1380.38	1271.25	1138.50	990.56	838.13	621.00

C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	285.19	60.19	22.33	13.16	9.68	8.21	7.37	7.03	6.81
45.0	311.06	52.76	20.64	12.83	9.51	8.04	7.43	7.03	6.92
90.0	189.90	48.60	20.53	12.77	9.39	7.99	7.43	7.14	7.09
135.0	284.06	58.78	27.68	17.21	11.64	9.17	7.65	7.09	6.86
180.0	203.23	57.94	26.55	15.98	10.63	8.49	7.43	6.98	6.86
225.0	251.83	59.12	27.11	16.43	11.31	8.94	7.54	7.09	6.92
270.0	307.13	65.08	25.76	15.47	10.69	8.66	7.65	7.20	7.03
315.0	214.43	52.82	23.40	14.01	10.13	8.27	7.37	7.03	6.86
360.0	285.19	60.19	22.33	13.16	9.68	8.21	7.37	7.03	6.81

C/γ(°)	90.0
0.0	6.81
45.0	6.81
90.0	6.81
135.0	6.81
180.0	6.81
225.0	6.86
270.0	6.81
315.0	6.81
360.0	6.81