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Nata

LumCAT: 1681-S	
Luminaire: 92.70.126.00	
Report No: NATA0100	Voltage(V): 34.9000
Test No: GC2018100707	Current(A): 0.4000
LampCAT: LUMINUS CXM-9-XD20	Power (W): 13.9600
Lamp flux(lm): 1948.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 47	Width(mm): 47
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 1682.64
Efficiency(%): 86.38%
Lumens(lm)/Power(W): 121.34
Central intensity(cd): 2152.547
Maximum intensity(cd): 2152.547
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=56.9
[C90/270]Total=56.9
Field angle(10%Imax): [C0/180]Total=76.8
[C90/270]Total=76.8
Maximum s/h(1/2): C0_180=0.89 C90_270=0.89
Maximum s/h(1/4): C0_180=0.86 C90_270=0.86
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 86.96%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 98.054%

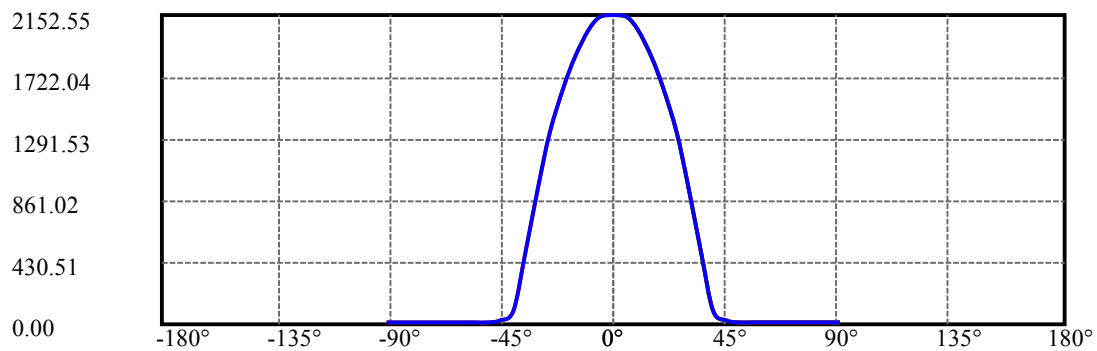
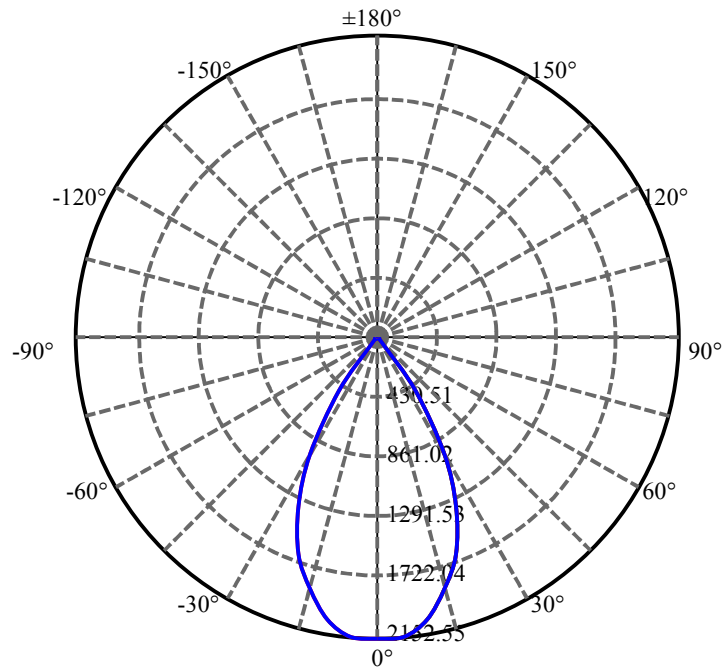
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	2152.547	12.873	12.873	.661%	.765%
5.0	2140.594	102.263	115.136	5.250%	6.843%
10.0	2050.383	195.162	310.298	10.019%	18.441%
15.0	1864.617	264.530	574.828	13.580%	34.162%
20.0	1646.578	308.691	883.519	15.847%	52.508%
25.0	1338.764	310.129	1193.647	15.920%	70.939%
30.0	958.753	262.764	1456.411	13.489%	86.555%
35.0	475.784	149.586	1605.997	7.679%	95.445%
40.0	93.551	32.961	1638.958	1.692%	97.404%
45.0	23.836	9.239	1648.197	.474%	97.953%
50.0	11.595	4.869	1653.065	.250%	98.242%
55.0	8.972	4.028	1657.094	.207%	98.482%
60.0	8.128	3.858	1660.952	.198%	98.711%
65.0	7.608	3.779	1664.732	.194%	98.936%
70.0	7.488	3.857	1668.589	.198%	99.165%
75.0	7.460	3.950	1672.539	.203%	99.399%
80.0	7.453	4.023	1676.562	.207%	99.639%
85.0	7.559	4.127	1680.689	.212%	99.884%
90.0	7.130	1.954	1682.643	.100%	100.000%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	1456.41	74.76%	86.55%
0-40	1638.96	84.14%	97.40%
0-60	1660.95	85.26%	98.71%
0-90	1680.69	86.28%	99.88%
0-120	1680.69	86.28%	99.88%
0-180	1682.64	86.38%	100.00%
60-90	23.60	1.21%	1.40%
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%
0-27.90	1346.12	69.10%	80.00%

ZONAL LUMEN SUMMARY

0-10	310.30
10-20	573.22
20-30	572.89
30-40	182.55
40-50	14.11
50-60	7.89
60-70	7.64
70-80	7.97
80-90	4.13
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:

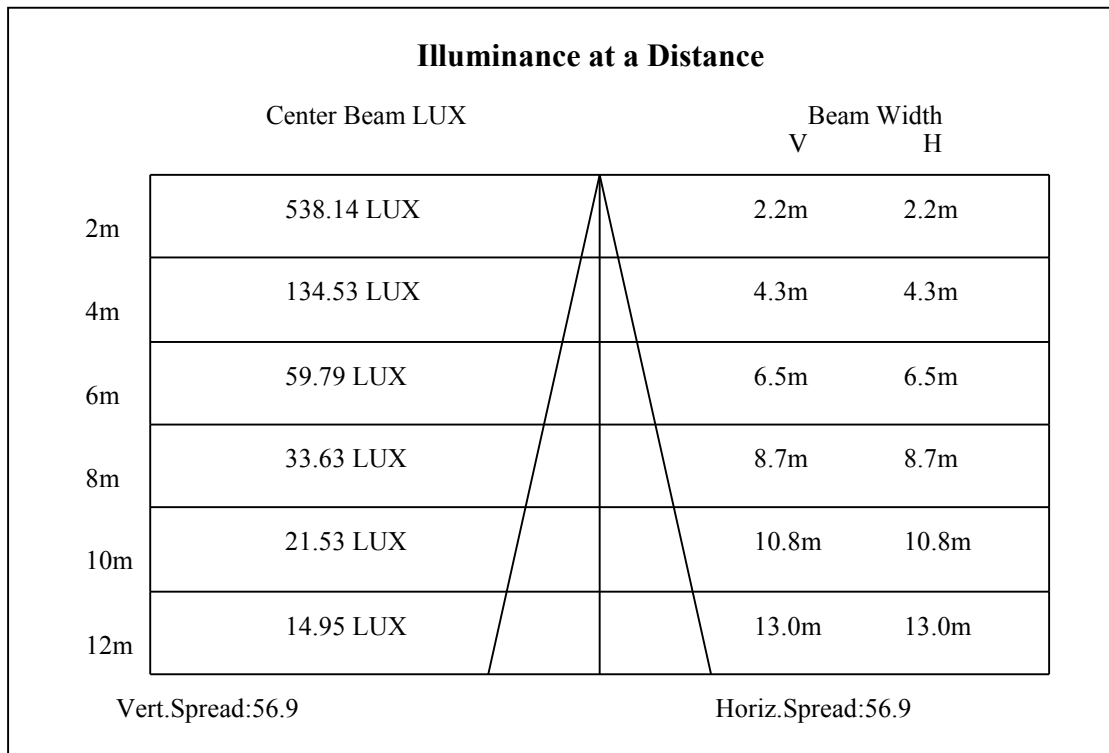
C90/C270:

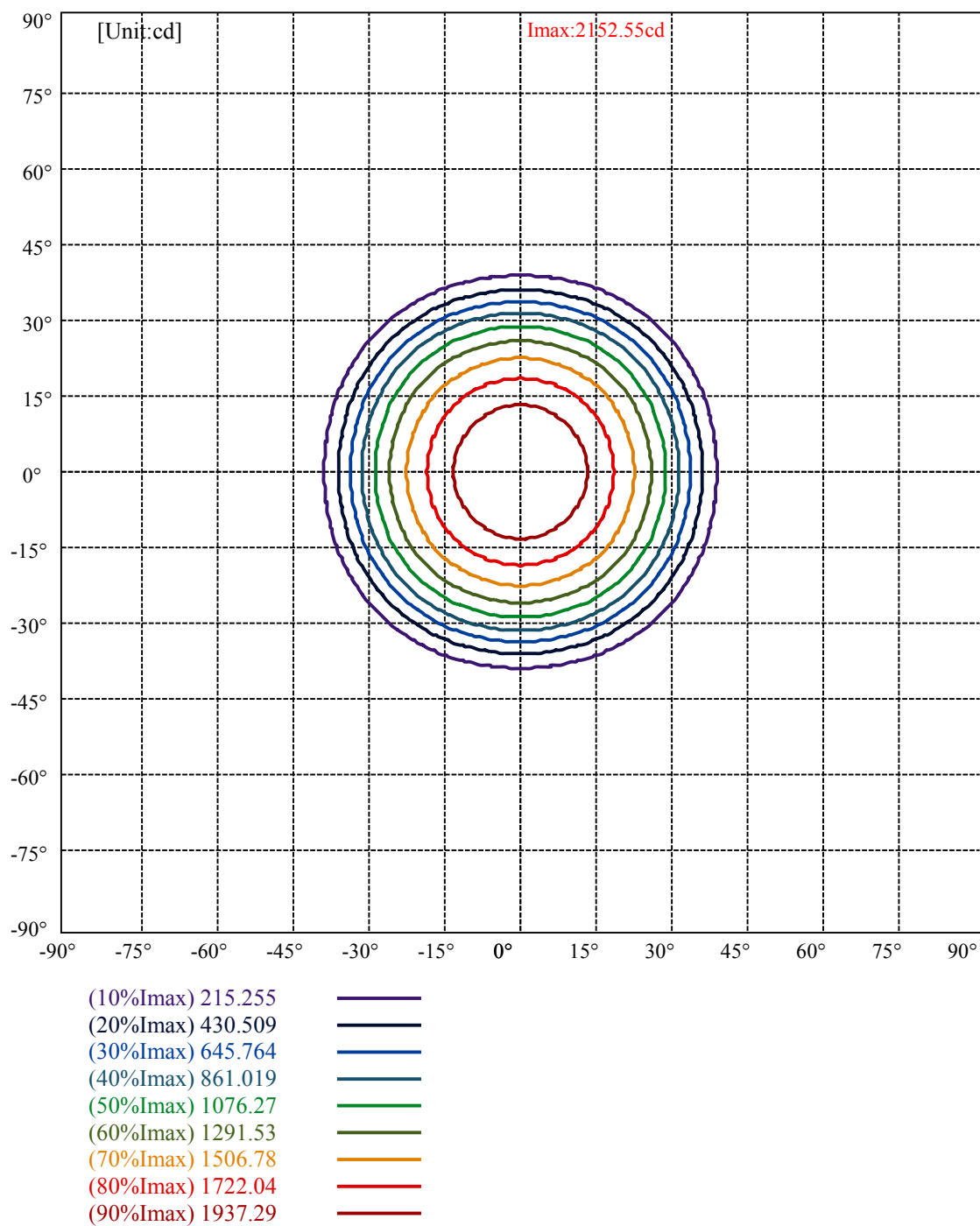
Field angle(10%Imax):C0/180Left:38.4 Right:38.4

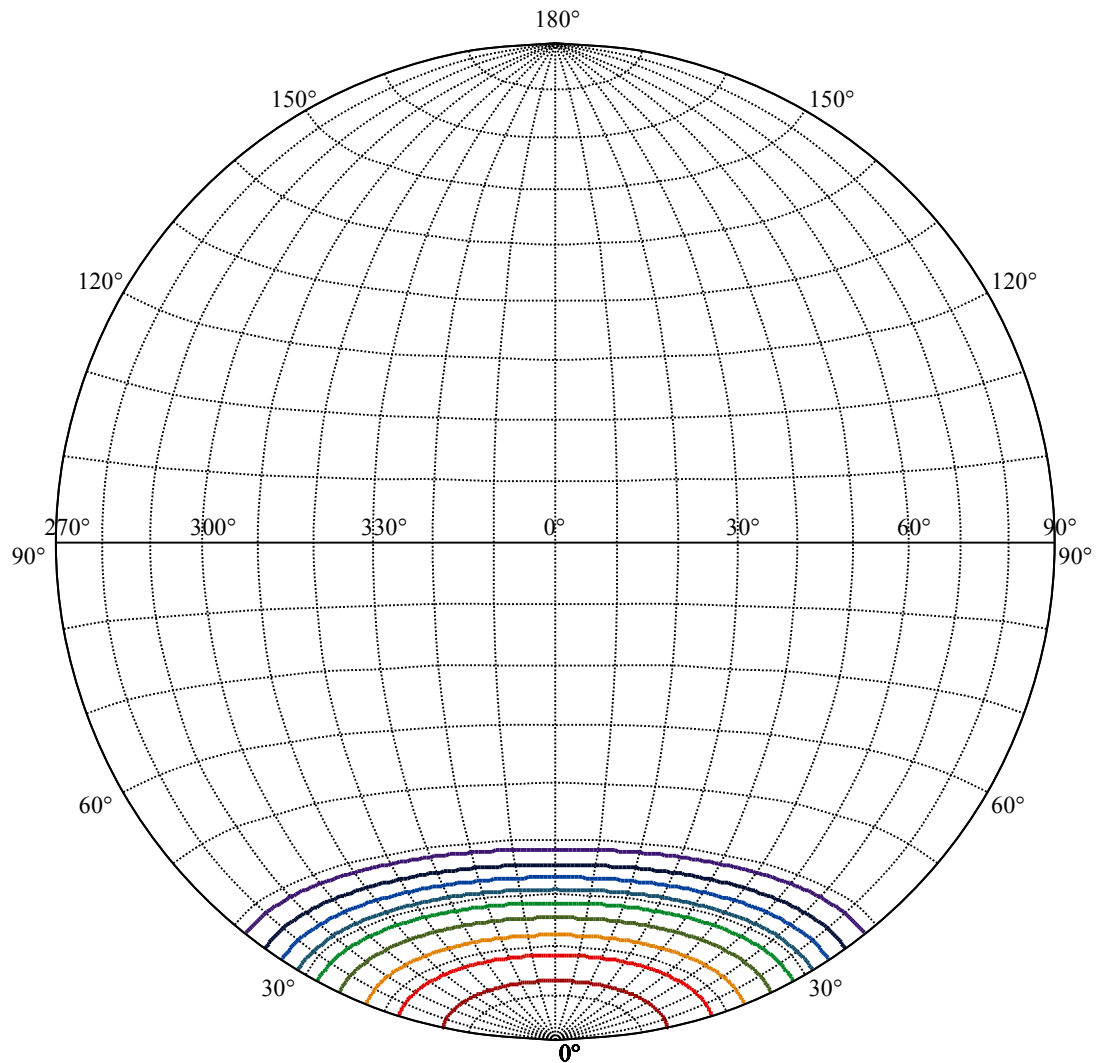
:C90/270Left:38.4 Right:38.4

Beam Angle(50%Imax):C0/180Left:28.5 Right:28.5

:C90/270Left:28.5 Right:28.5







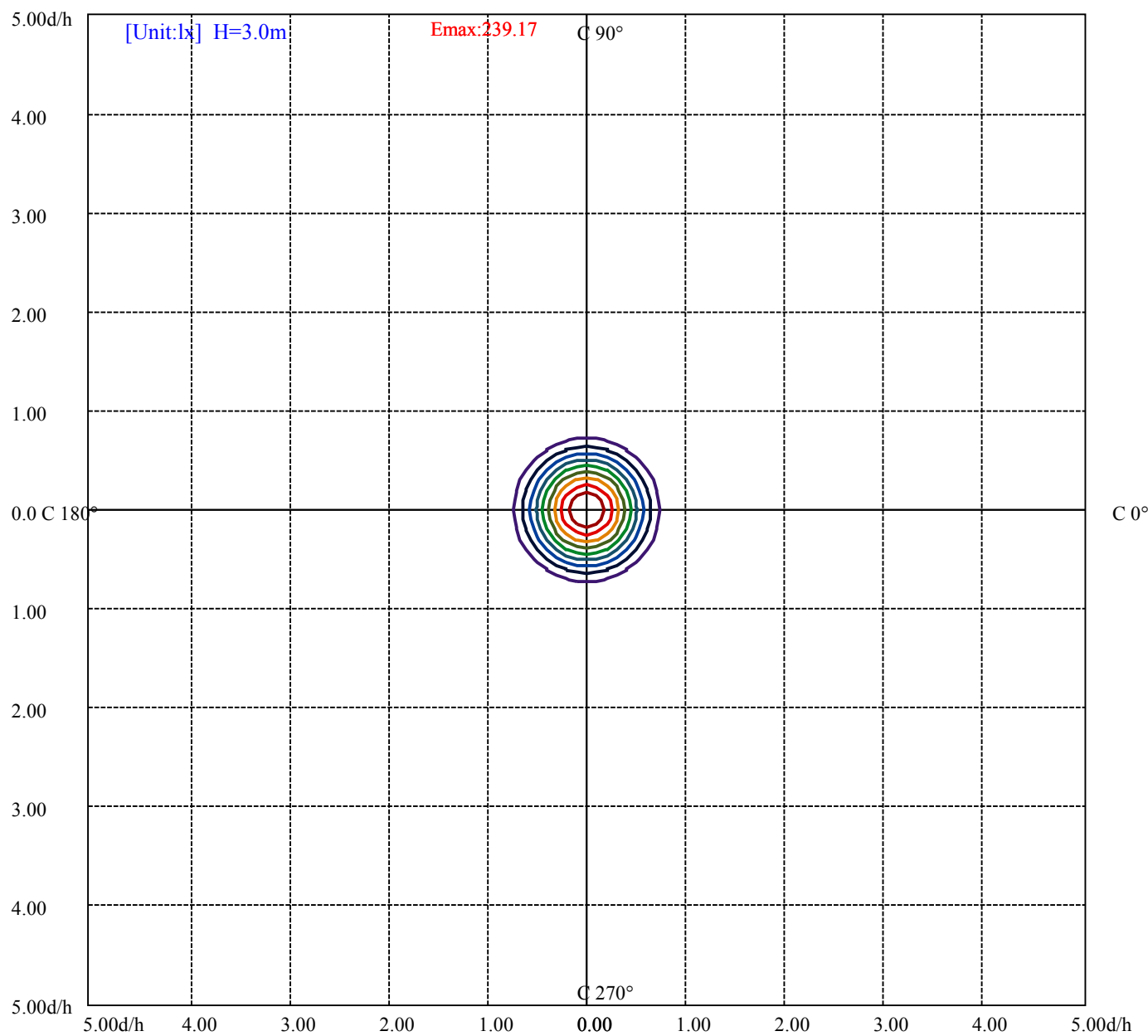
House

[Unit:cd]

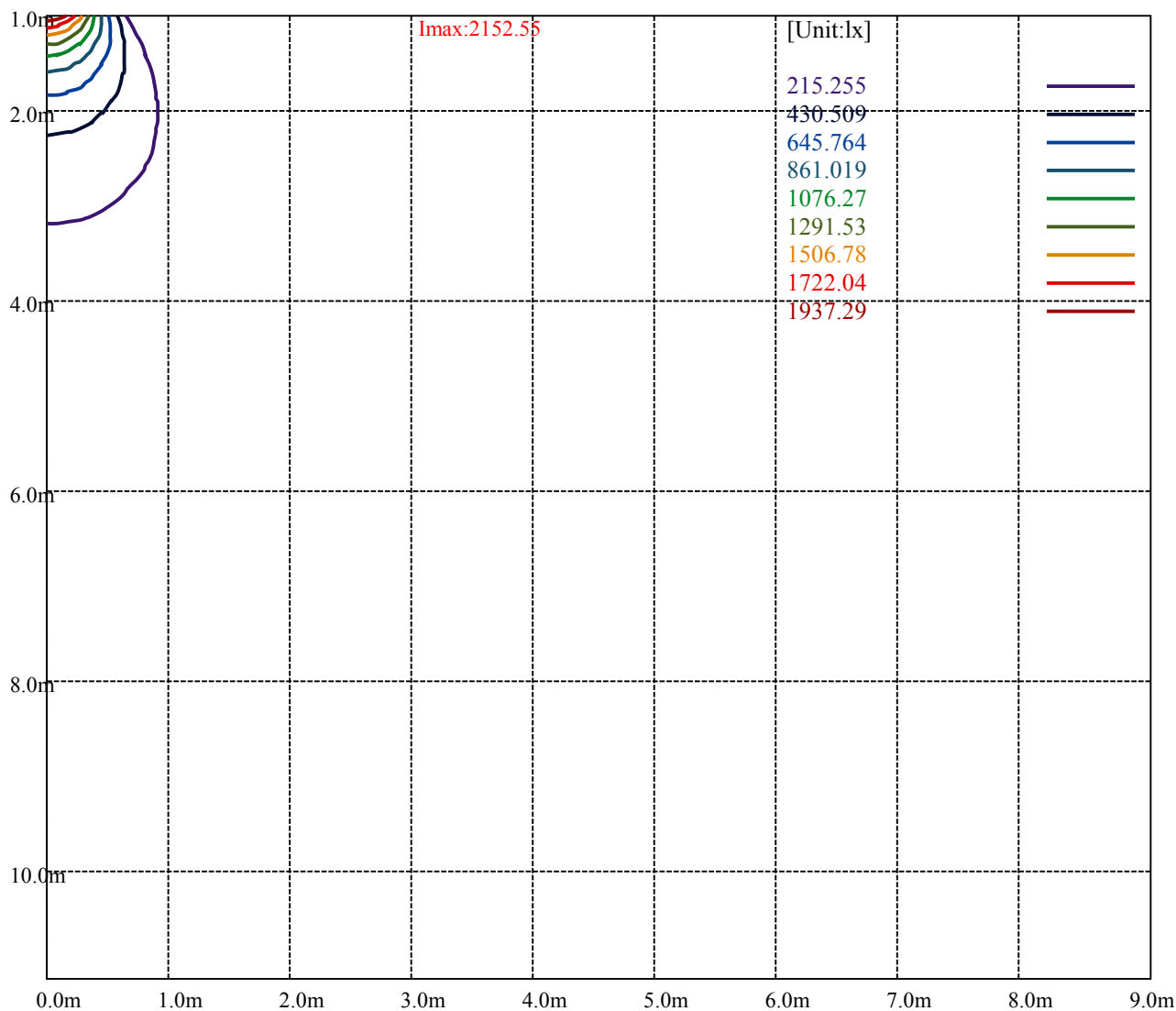
Road

Imax:2152.55

(10%Imax)	215.255	—
(20%Imax)	430.509	—
(30%Imax)	645.764	—
(40%Imax)	861.019	—
(50%Imax)	1076.27	—
(60%Imax)	1291.53	—
(70%Imax)	1506.78	—
(80%Imax)	1722.04	—
(90%Imax)	1937.29	—



(10%E _{max}) 23.91722	—
(20%E _{max}) 47.83434	—
(30%E _{max}) 71.75156	—
(40%E _{max}) 95.66878	—
(50%E _{max}) 119.5856	—
(60%E _{max}) 143.5033	—
(70%E _{max}) 167.42	—
(80%E _{max}) 191.3378	—
(90%E _{max}) 215.2545	—



Luminance Table

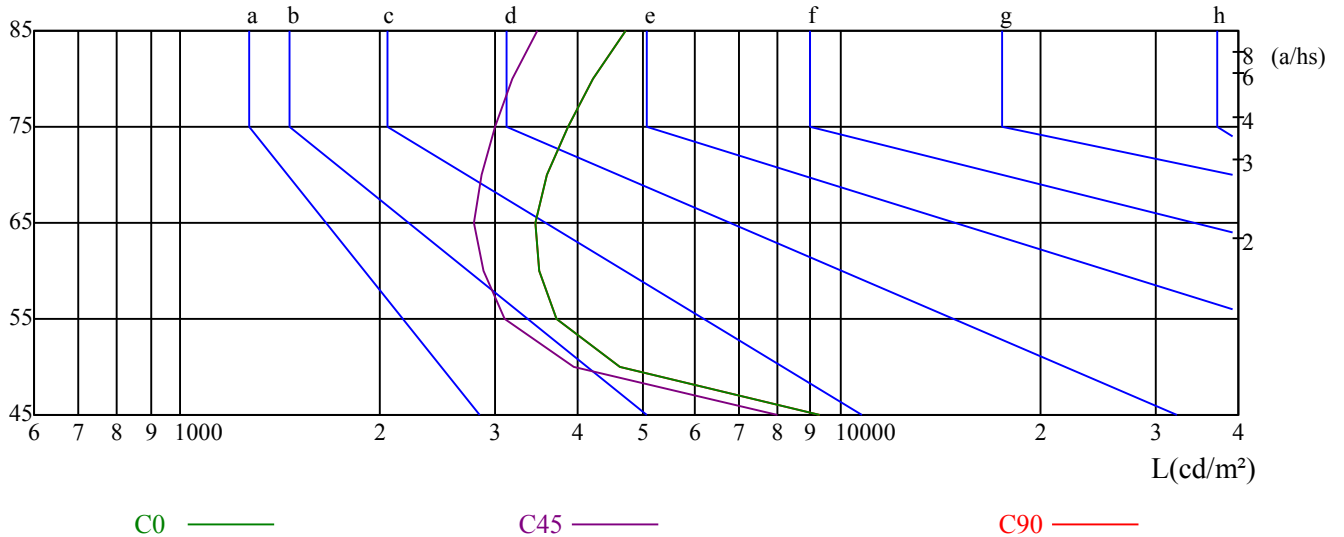
γ	45	50	55	60	65	70	75	80	85
C0	9314	4638	3704	3495	3440	3599	3858	4206	4733
C45	8020	3934	3093	2871	2776	2848	2987	3175	3469
C90	9314	4638	3704	3495	3440	3599	3858	4206	4733

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
8149	8149	8149	13048	13048	13048	39260	39260	39260

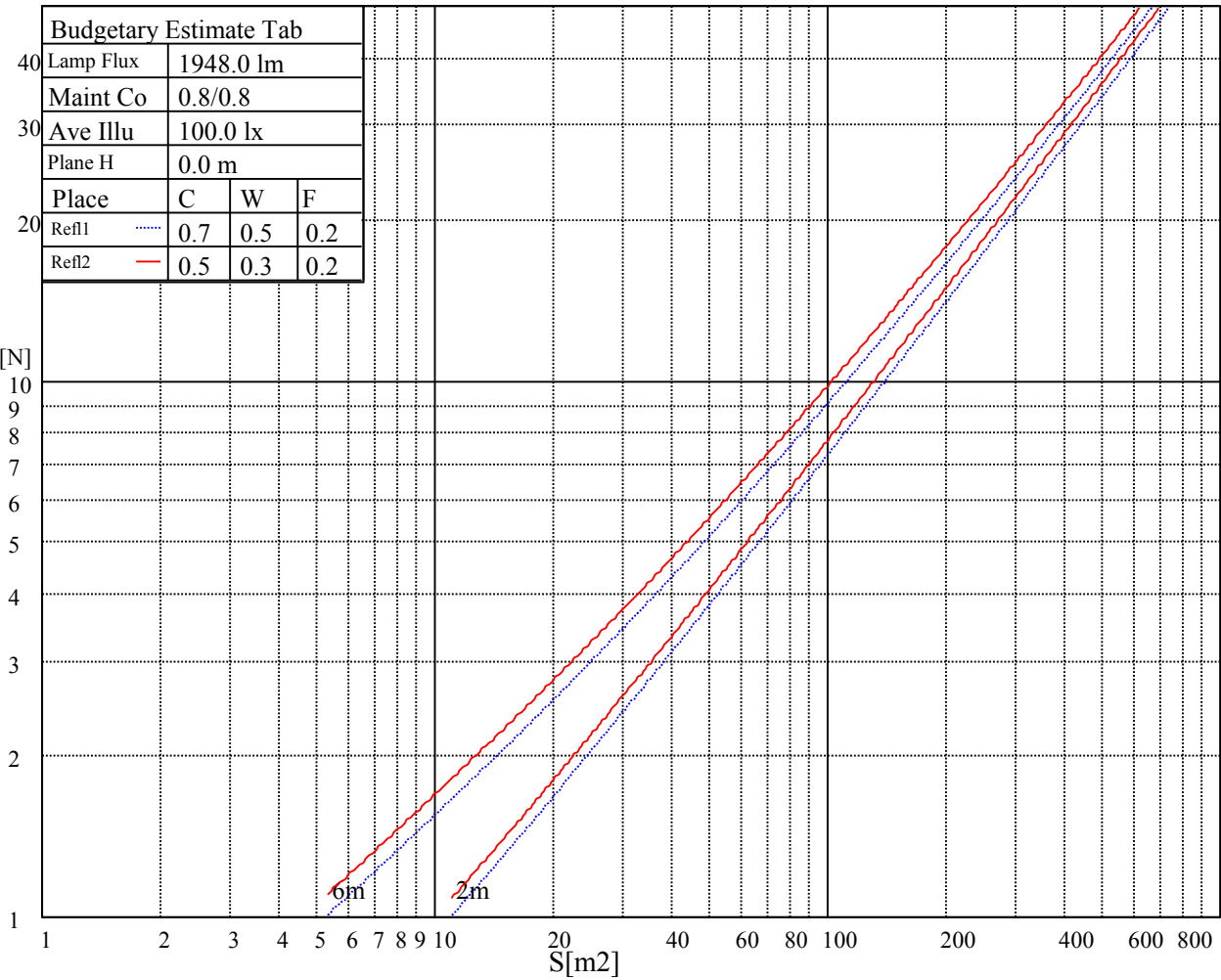
Glare Table

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

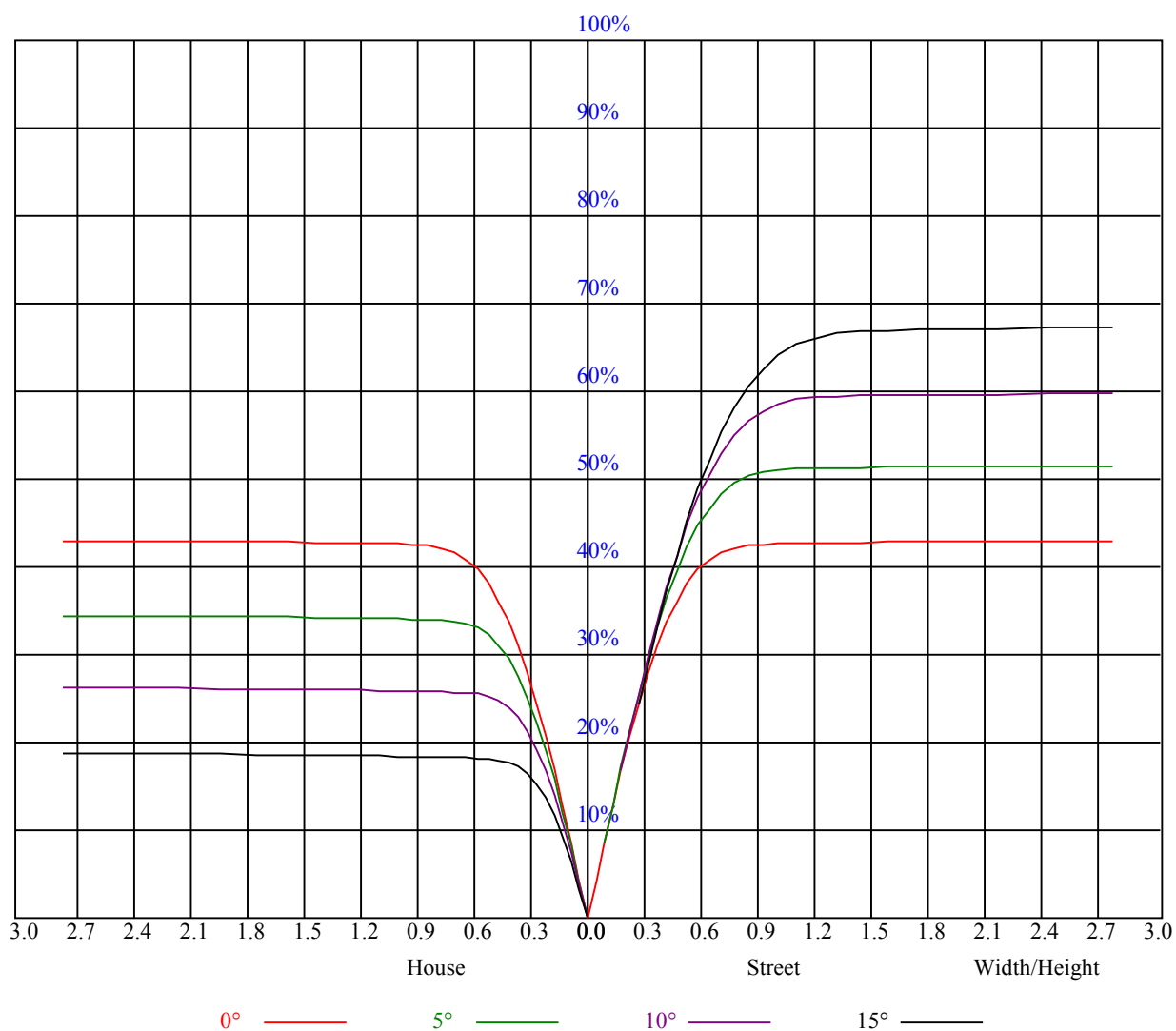
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

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	4.04	4.96	4.40	5.27	5.59	3.96	4.88	4.33	5.19	5.51
	3H	6.12	6.94	6.51	7.27	7.64	6.01	6.83	6.40	7.16	7.53
	4H	7.34	8.09	7.74	8.44	8.83	7.21	7.96	7.61	8.31	8.70
	6H	8.66	9.35	9.08	9.72	10.12	8.50	9.19	8.92	9.56	9.96
	8H	9.34	9.98	9.77	10.38	10.79	9.15	9.80	9.59	10.19	10.60
	12H	10.40	11.02	10.83	11.40	11.83	10.18	10.80	10.62	11.18	11.61
4H	2H	4.43	5.19	4.84	5.54	5.93	4.37	5.12	4.78	5.48	5.87
	3H	6.84	7.46	7.25	7.87	8.27	6.75	7.37	7.17	7.78	8.19
	4H	8.24	8.79	8.68	9.21	9.66	8.13	8.68	8.57	9.11	9.56
	6H	9.65	10.12	10.12	10.57	11.05	9.52	10.00	10.00	10.45	10.92
	8H	10.45	10.89	10.93	11.35	11.82	10.30	10.74	10.78	11.19	11.67
	12H	11.52	11.90	12.02	12.39	12.87	11.33	11.71	11.82	12.20	12.68
8H	4H	8.65	9.09	9.13	9.54	10.02	8.56	9.00	9.04	9.45	9.93
	6H	10.31	10.66	10.82	11.16	11.65	10.20	10.55	10.71	11.05	11.54
	8H	11.27	11.58	11.81	12.10	12.60	11.14	11.44	11.67	11.97	12.46
	12H	12.47	12.73	12.99	13.23	13.81	12.29	12.56	12.82	13.06	13.64
12H	4H	8.74	9.12	9.23	9.61	10.09	8.66	9.04	9.15	9.53	10.00
	6H	10.69	10.79	11.02	11.26	11.81	10.59	10.69	10.92	11.16	11.71
	8H	11.53	11.80	12.06	12.30	12.88	11.41	11.67	11.93	12.17	12.75
Variation with the observer position at spacings:											
S = 1.0H		5.9/-9.8					5.9/-9.8				
S = 1.5H		8.5/-8.0					8.5/-8.0				
S = 2.0H		10.3/-6.8					10.3/-6.8				
Standard tables:		BK1					BK1				
Uncorrected UGR		1.3					1.3				



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	1.04	1.04	1.04	1.01	1.01	1.01	0.97	0.97	0.97	0.93	0.93	0.93	0.89	0.89	0.89	0.87
1	0.96	0.94	0.92	0.94	0.92	0.90	0.91	0.89	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81
2	0.90	0.87	0.84	0.89	0.86	0.83	0.86	0.83	0.81	0.83	0.81	0.80	0.81	0.79	0.78	0.76
3	0.85	0.81	0.78	0.84	0.80	0.77	0.82	0.79	0.76	0.80	0.77	0.75	0.78	0.75	0.74	0.72
4	0.80	0.76	0.73	0.79	0.75	0.72	0.78	0.74	0.71	0.76	0.73	0.71	0.74	0.72	0.70	0.69
5	0.76	0.72	0.68	0.75	0.71	0.68	0.74	0.70	0.67	0.73	0.69	0.67	0.71	0.68	0.66	0.65
6	0.72	0.68	0.64	0.72	0.67	0.64	0.71	0.67	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.62
7	0.69	0.64	0.61	0.68	0.64	0.61	0.67	0.63	0.61	0.66	0.63	0.60	0.65	0.62	0.60	0.59
8	0.66	0.61	0.58	0.65	0.61	0.58	0.64	0.60	0.58	0.64	0.60	0.57	0.63	0.60	0.57	0.56
9	0.63	0.58	0.55	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
10	0.60	0.56	0.53	0.60	0.55	0.53	0.59	0.55	0.52	0.58	0.55	0.52	0.58	0.55	0.52	0.51



Nata 1681-S

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	2154.38	2142.56	2047.50	1843.31	1617.19	1351.13	962.44	488.81	103.44		
45.0	2152.13	2127.94	2032.88	1837.13	1614.38	1336.50	942.19	513.00	107.55		
90.0	2151.00	2119.50	2006.44	1793.81	1569.38	1120.05	866.25	390.26	76.50		
135.0	2152.69	2134.13	2045.81	1873.69	1638.00	1370.81	1003.50	517.50	103.22		
180.0	2154.38	2140.88	2045.25	1869.75	1663.31	1377.00	987.58	469.01	86.74		
225.0	2152.13	2156.06	2077.88	1886.63	1703.81	1385.44	919.52	448.03	77.85		
270.0	2151.00	2162.81	2101.50	1968.75	1746.00	1451.25	1058.06	551.81	113.74		
315.0	2152.69	2140.88	2045.81	1843.88	1620.56	1317.94	930.49	427.84	79.37		
360.0	2154.38	2142.56	2047.50	1843.31	1617.19	1351.13	962.44	488.81	103.44		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	25.26	11.36	9.00	8.10	7.54	7.43	7.37	7.31	7.37		
45.0	24.58	11.81	9.17	8.27	7.65	7.54	7.48	7.48	7.65		
90.0	20.70	10.97	9.00	8.21	7.76	7.76	7.76	7.82	8.21		
135.0	27.00	12.54	9.17	8.33	7.71	7.54	7.43	7.37	7.48		
180.0	24.24	11.81	8.83	7.93	7.54	7.43	7.43	7.43	7.54		
225.0	21.38	11.08	8.72	7.88	7.48	7.37	7.31	7.31	7.37		
270.0	25.20	12.15	9.06	8.21	7.71	7.48	7.54	7.54	7.48		
315.0	22.33	11.03	8.83	8.10	7.48	7.37	7.37	7.37	7.37		
360.0	25.26	11.36	9.00	8.10	7.54	7.43	7.37	7.31	7.37		
C/γ(°)	90.0										
0.0	7.14										
45.0	7.09										
90.0	7.14										
135.0	7.14										
180.0	7.14										
225.0	7.09										
270.0	7.14										
315.0	7.14										
360.0	7.14										