
Nata

Client:

LumCAT: 3-1701-N

Luminaire: 92.70.065.00+92.70.061.00

Report No: nata0100

Test No: GC2018052101

LampCAT: LUMINUS CHM-9 XH20

Lamp flux(lm): 1576.5

Number of Lamps: 1

Length(mm): 86

Phm Type: C

Voltage(V): 35.0000

Current(A): 0.4000

Power (W): 14.0000

PF: 0.0000

Ballast type: DC

Width(mm): 86

Height(mm): 0

Photometric Results

Lumens(lm): 1235.86, Efficiency(%): 78.39% , Luminous Efficacy(lm/W): 88.28

Central intensity(cd): 11050.090, Maximum intensity(cd): 11050.090

Angle of maximum intensity: C=0.0 γ =0.0

Beam Angle(50%Imax): [C0/180]Total=14.8

[C90/270]Total=14.8

Field angle(10%Imax): [C0/180]Total=27.2

[C90/270]Total=27.2

Maximum s/h(1/2): C0_180=0.25 C90_270=0.25

Maximum s/h(1/4): C0_180=0.25 C90_270=0.25

Up flux rate of lamp(%): 0.00%

Down flux rate of lamp(%): 79.05%

Up flux rate of LUM(%): - -

Down flux rate of LUM(%): 100.00%

CIE Type : Direct lighting

Output flux ratio in π solid angle : 97.158%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	11050.095	10.574	10.574	.671%	.856%
2.0	10445.231	79.947	90.522	5.071%	7.325%
4.0	9088.642	139.043	229.564	8.820%	18.575%
6.0	7096.357	162.680	392.245	10.319%	31.739%
8.0	4801.469	146.553	538.798	9.296%	43.597%
10.0	2717.997	103.510	642.308	6.566%	51.973%
12.0	1576.230	71.873	714.181	4.559%	57.788%
14.0	990.850	52.571	766.752	3.335%	62.042%
16.0	812.784	49.134	815.886	3.117%	66.018%
18.0	677.407	45.909	861.795	2.912%	69.733%
20.0	569.386	42.709	904.504	2.709%	73.189%
22.0	477.525	39.232	943.736	2.489%	76.363%
24.0	393.027	35.059	978.795	2.224%	79.200%
26.0	327.427	31.479	1010.274	1.997%	81.747%
28.0	271.992	28.005	1038.279	1.776%	84.013%
30.0	223.907	24.553	1062.832	1.557%	86.000%
32.0	183.744	21.354	1084.186	1.355%	87.728%
34.0	153.511	18.826	1103.012	1.194%	89.251%
36.0	128.240	16.531	1119.544	1.049%	90.589%
38.0	110.271	14.889	1134.433	.944%	91.793%
40.0	93.424	13.170	1147.603	.835%	92.859%
42.0	78.270	11.486	1159.089	.729%	93.788%
44.0	65.077	9.914	1169.003	.629%	94.591%
46.0	53.556	8.449	1177.452	.536%	95.274%
48.0	44.802	7.302	1184.754	.463%	95.865%
50.0	37.714	6.336	1191.09	.402%	96.378%
52.0	31.272	5.404	1196.495	.343%	96.815%
54.0	25.250	4.480	1200.975	.284%	97.178%
56.0	20.956	3.810	1204.785	.242%	97.486%
58.0	17.460	3.247	1208.032	.206%	97.749%
60.0	14.714	2.795	1210.827	.177%	97.975%
62.0	12.876	2.493	1213.32	.158%	98.177%
64.0	11.582	2.283	1215.603	.145%	98.361%
66.0	10.798	2.163	1217.767	.137%	98.536%
68.0	10.144	2.063	1219.83	.131%	98.703%
70.0	9.497	1.957	1221.787	.124%	98.862%
72.0	8.940	1.865	1223.652	.118%	99.013%
74.0	8.520	1.796	1225.448	.114%	99.158%

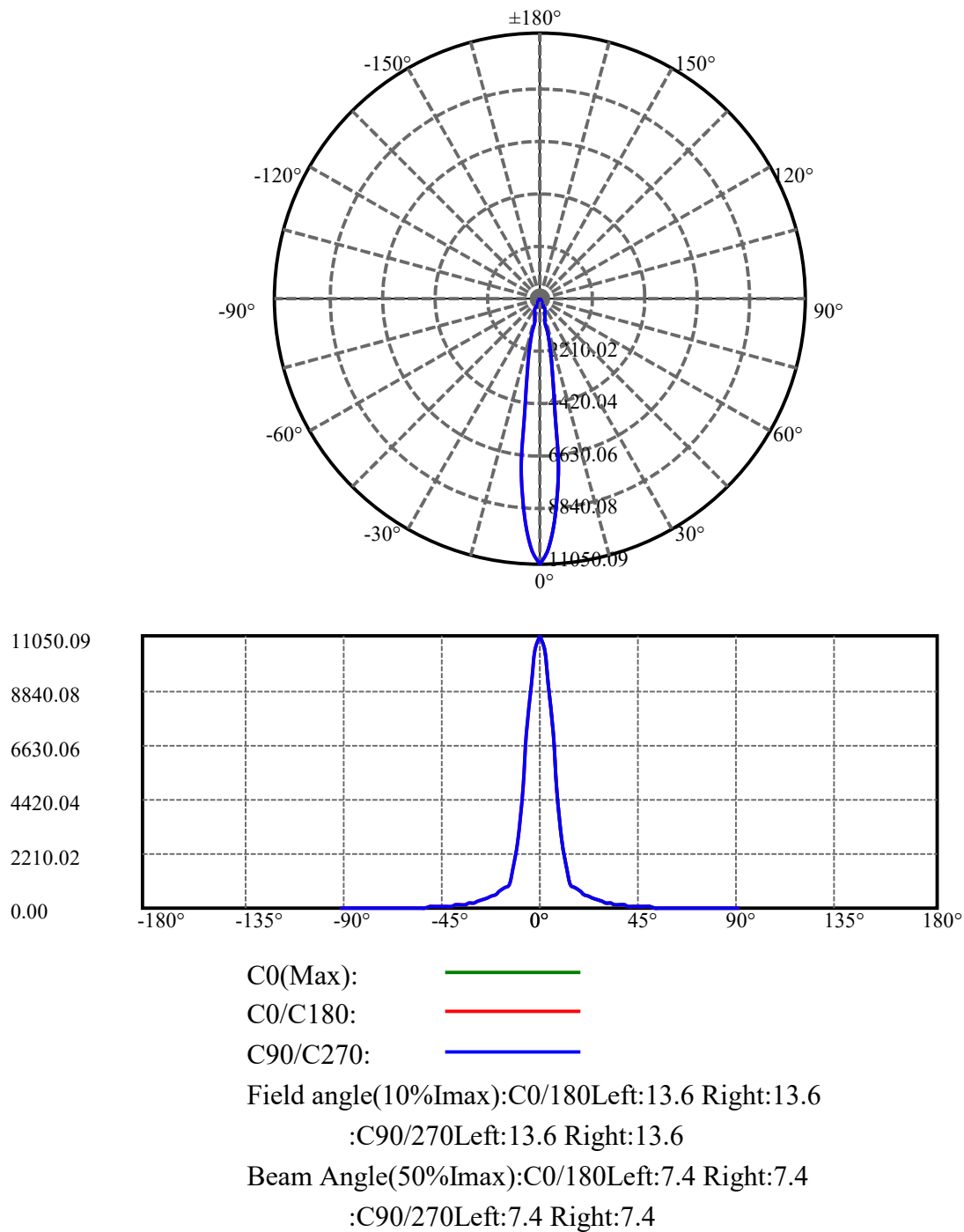
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	8.080	1.719	1227.167	.109%	99.297%
78.0	7.598	1.630	1228.797	.103%	99.429%
80.0	7.061	1.525	1230.322	.097%	99.552%
82.0	6.497	1.411	1231.733	.089%	99.666%
84.0	5.960	1.300	1233.033	.082%	99.772%
86.0	5.451	1.192	1234.225	.076%	99.868%
88.0	5.024	1.101	1235.326	.070%	99.957%
90.0	4.824	0.529	1235.855	.034%	100.000%

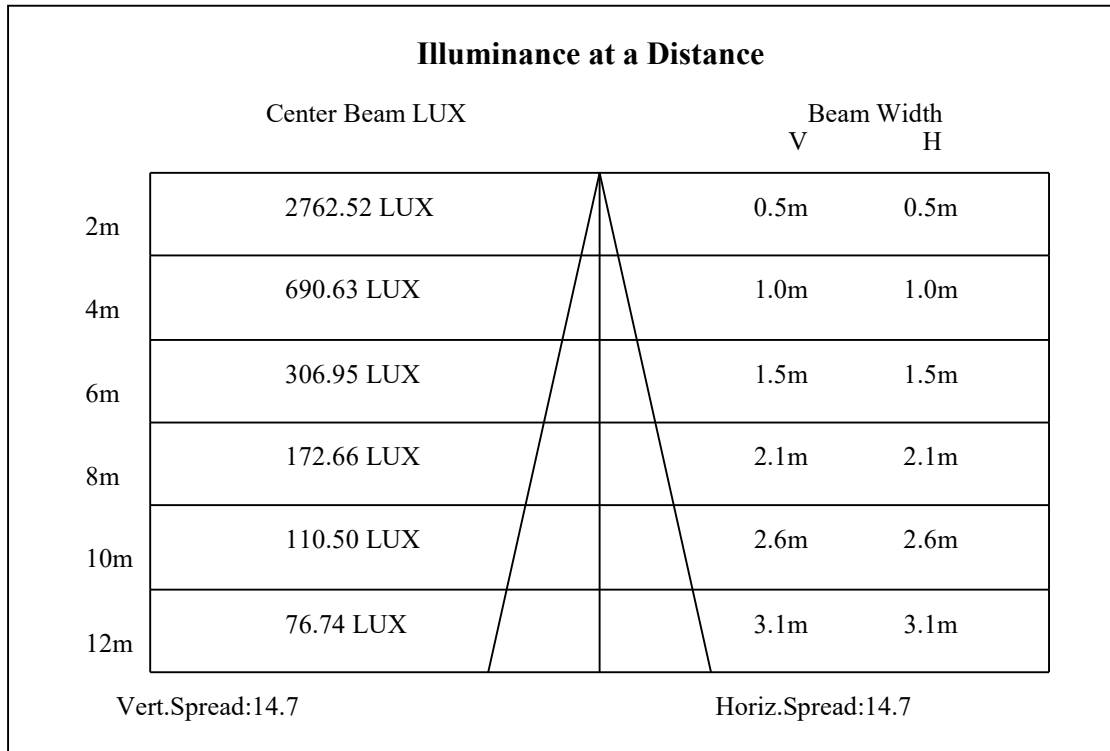
ZONAL LUMEN SUMMARY

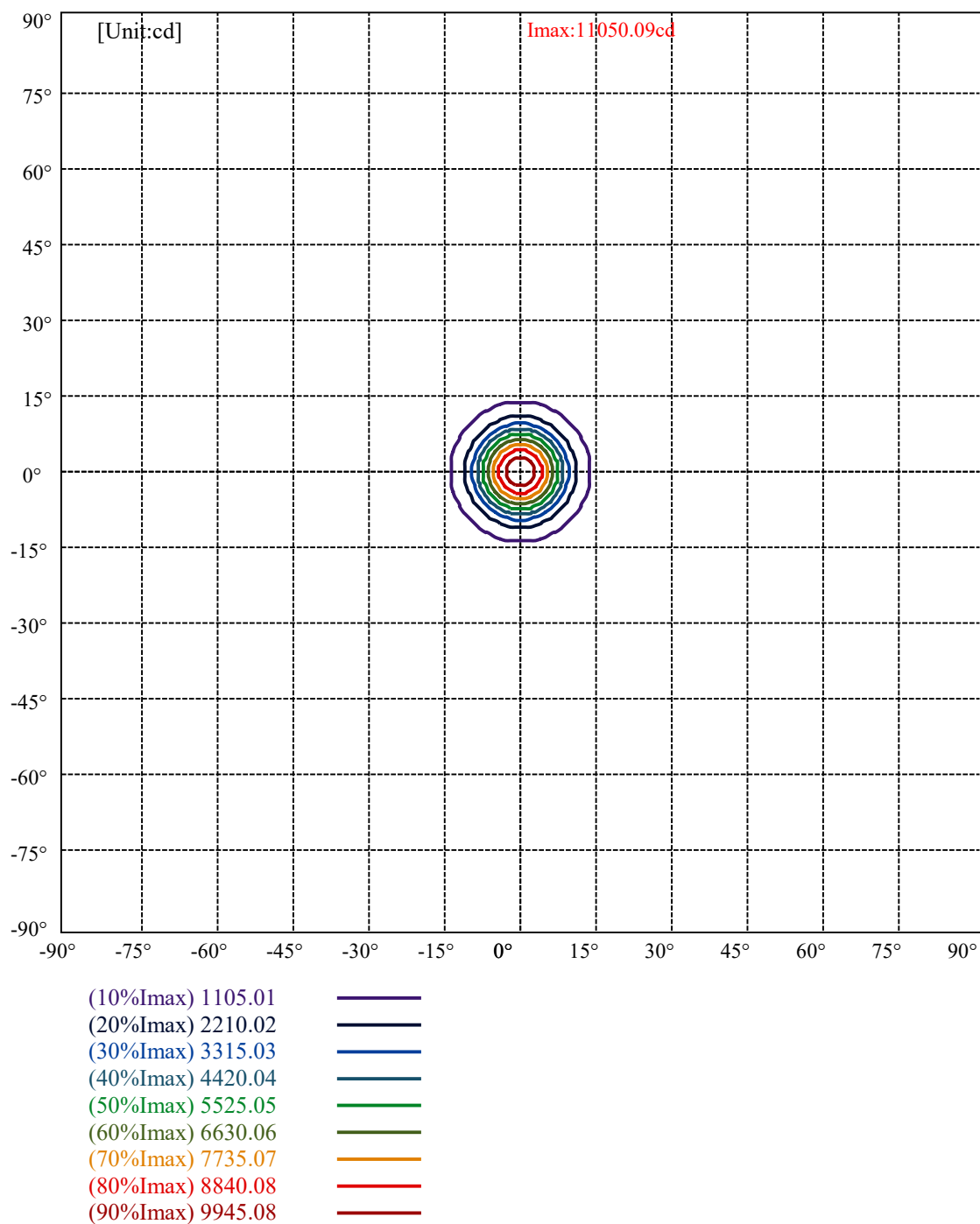
Zone	Lumens	%Lamp	%Fixt
0-30	1062.83	67.42%	86.00%
0-40	1147.60	72.79%	92.86%
0-60	1210.83	76.80%	97.97%
0-90	1235.33	78.36%	99.96%
0-120	1235.33	78.36%	99.96%
0-180	1235.86	78.39%	100.00%
60-90	27.29	1.73%	2.21%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-24.63	988.68	62.71%	80.00%

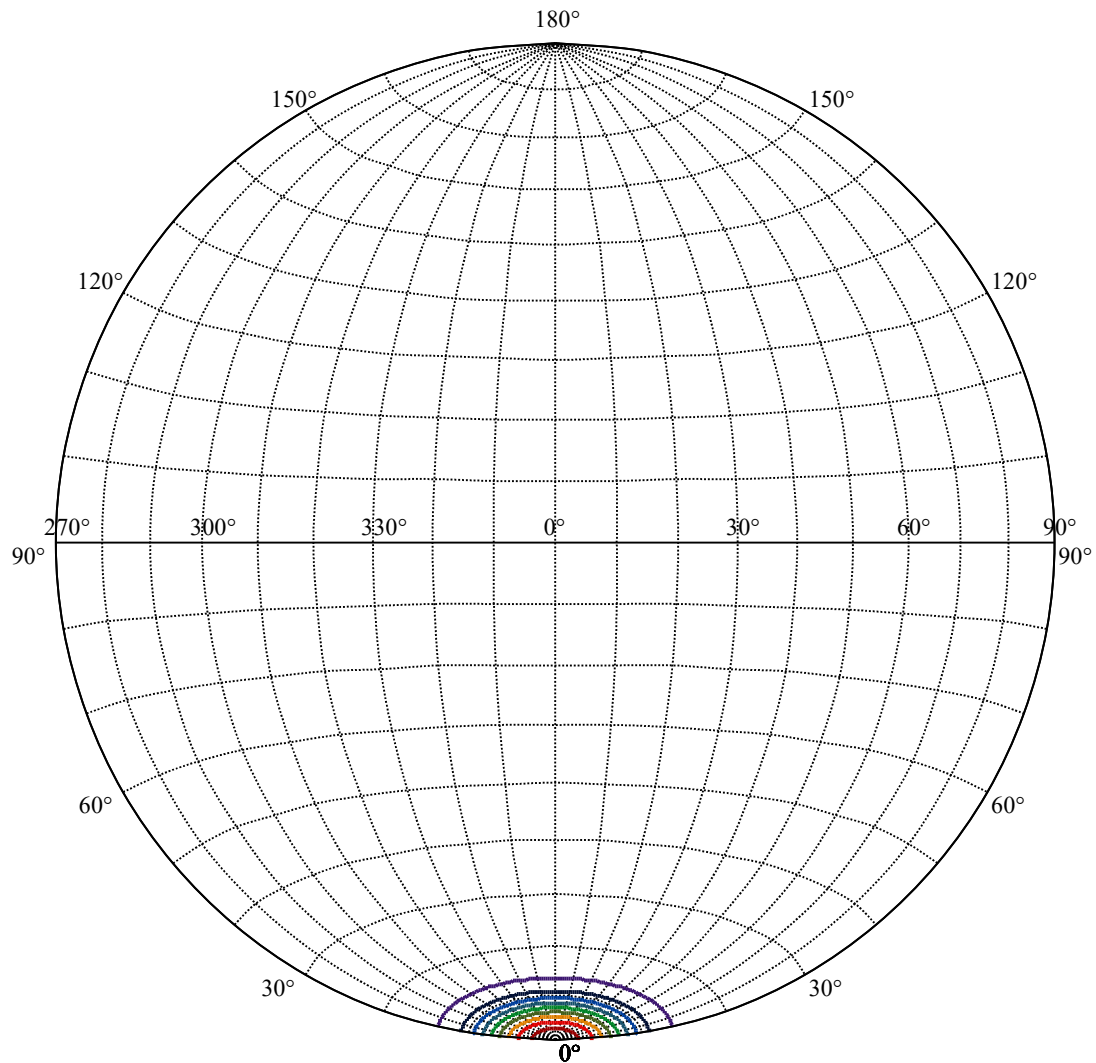
ZONAL LUMEN SUMMARY

0-10	642.31
10-20	262.20
20-30	158.33
30-40	84.77
40-50	43.49
50-60	19.74
60-70	10.96
70-80	8.54
80-90	5.00
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









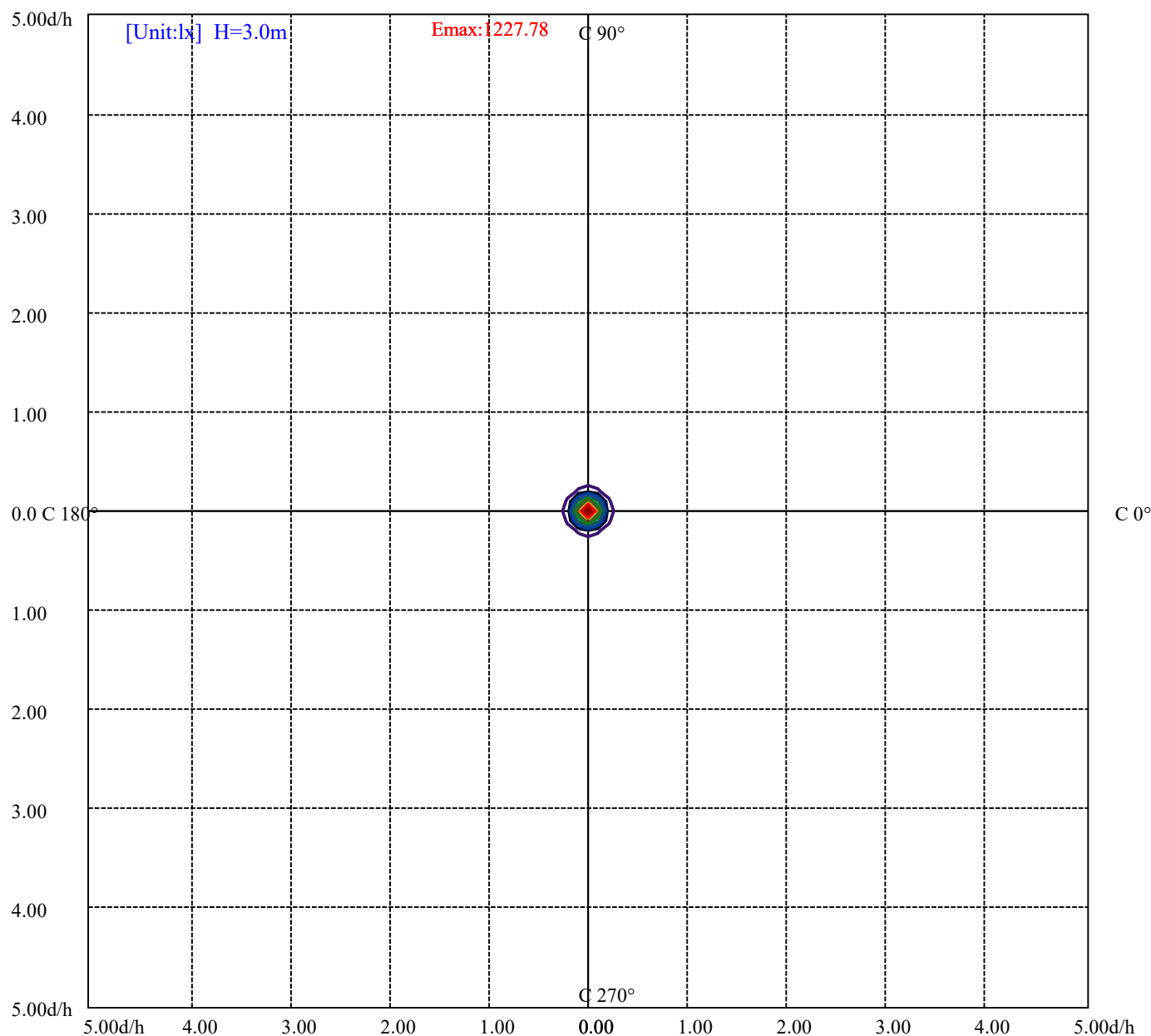
House

[Unit:cd]

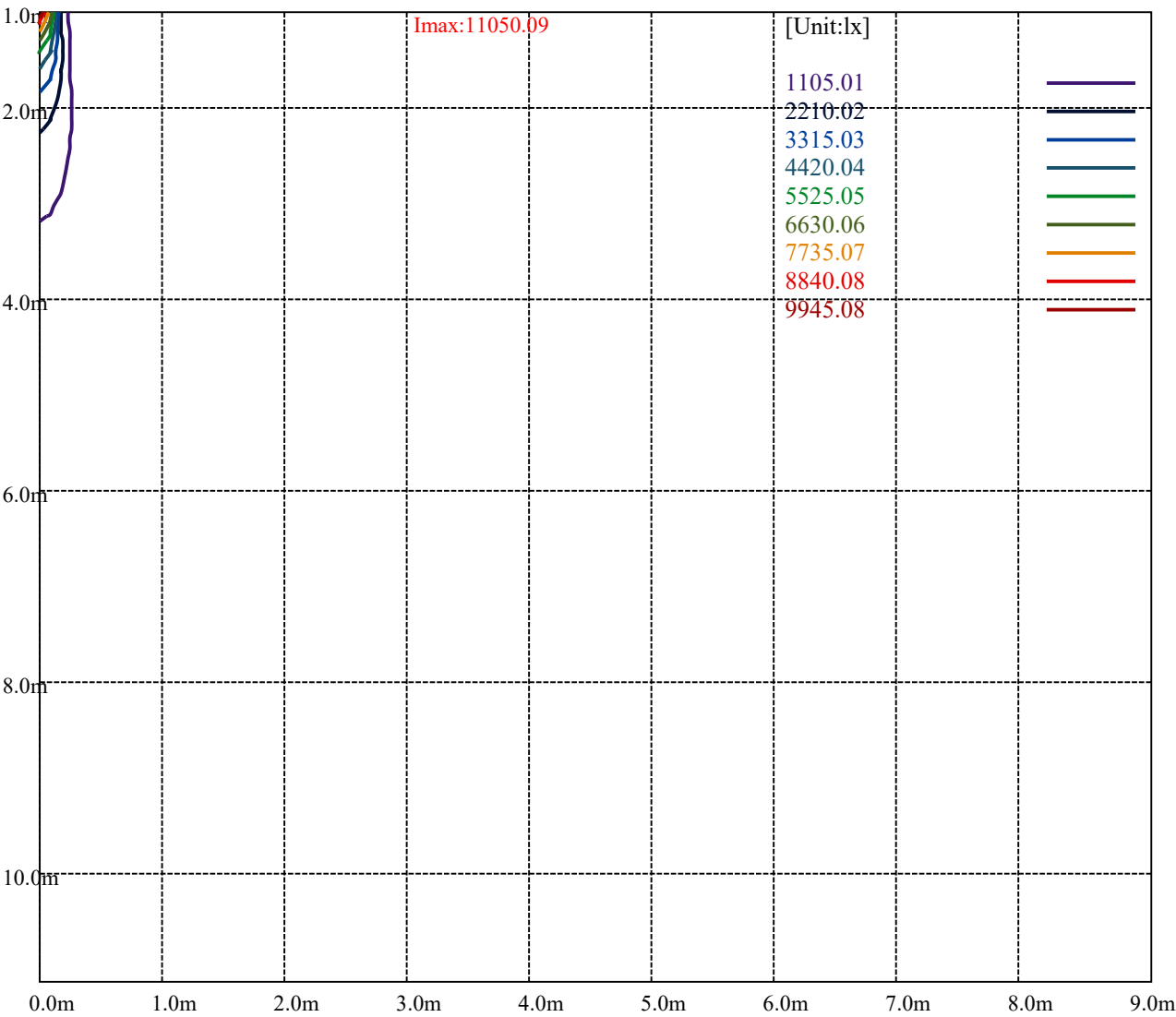
Road

Imax:11050.09

(10%Imax)	1105.01	—
(20%Imax)	2210.02	—
(30%Imax)	3315.03	—
(40%Imax)	4420.04	—
(50%Imax)	5525.05	—
(60%Imax)	6630.06	—
(70%Imax)	7735.07	—
(80%Imax)	8840.08	—
(90%Imax)	9945.08	—



(10%Emax)	122.7778	—
(20%Emax)	245.5567	—
(30%Emax)	368.3344	—
(40%Emax)	491.1133	—
(50%Emax)	613.8911	—
(60%Emax)	736.67	—
(70%Emax)	859.4478	—
(80%Emax)	982.2267	—
(90%Emax)	1105.004	—



Luminance Table

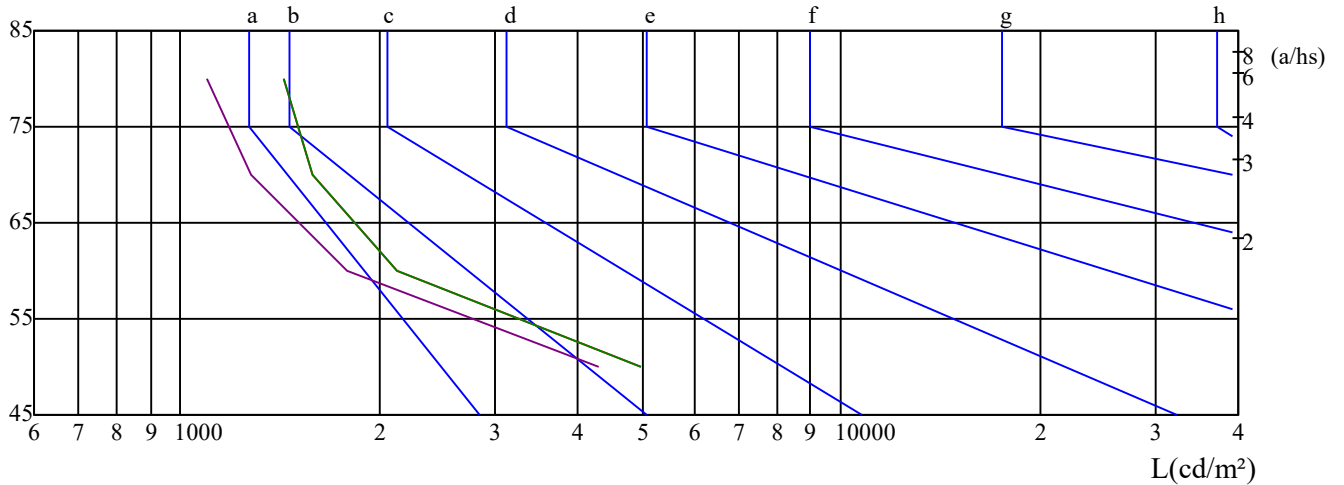
γ	45	50	55	60	65	70	75	80	85
C0	0	4971	0	2132	0	1582	0	1433	0
C45	0	4305	0	1788	0	1276	0	1097	0
C90	0	4971	0	2132	0	1582	0	1433	0

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3415	3415	3415	3983	3983	3983	8723	8723	8723

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

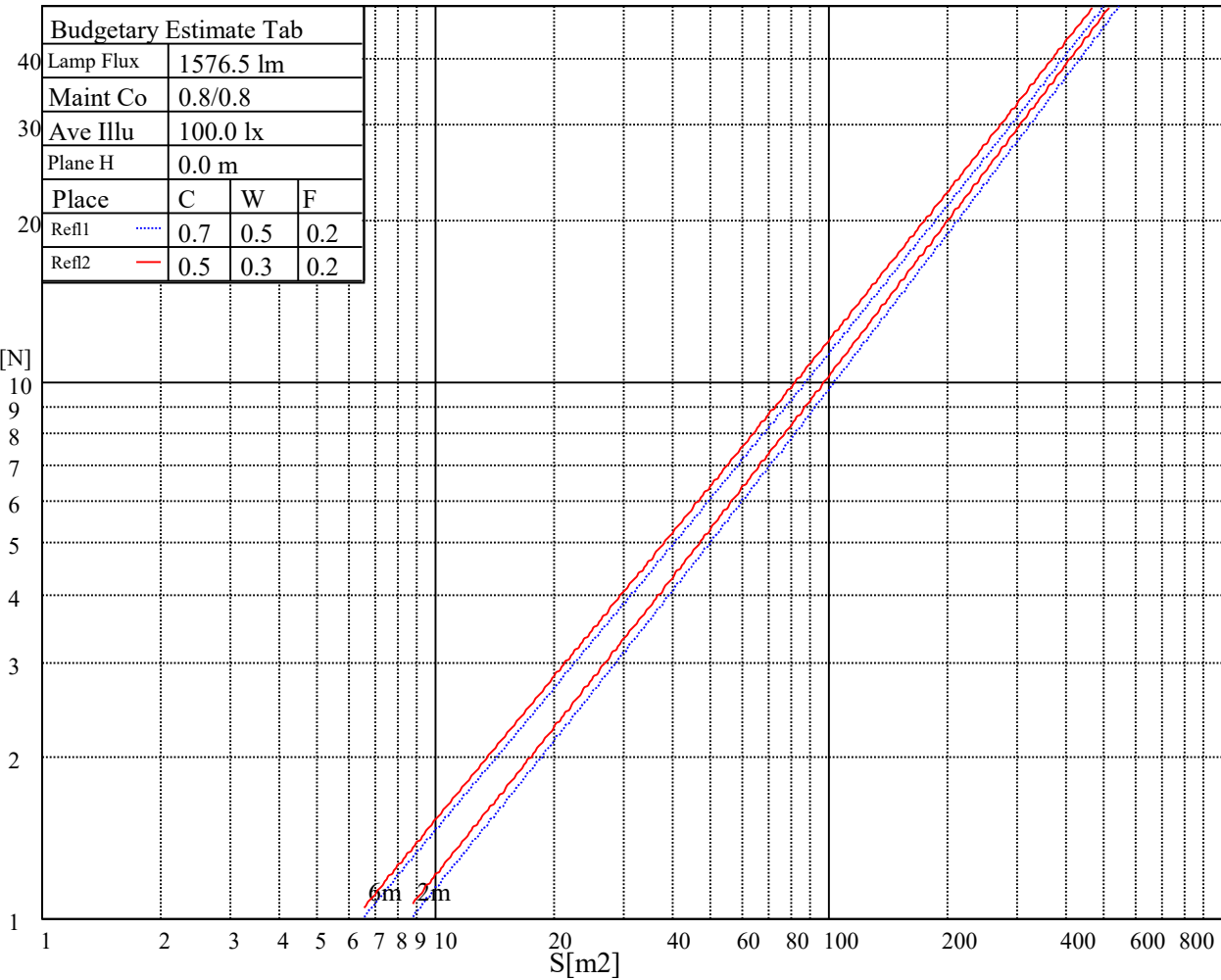
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

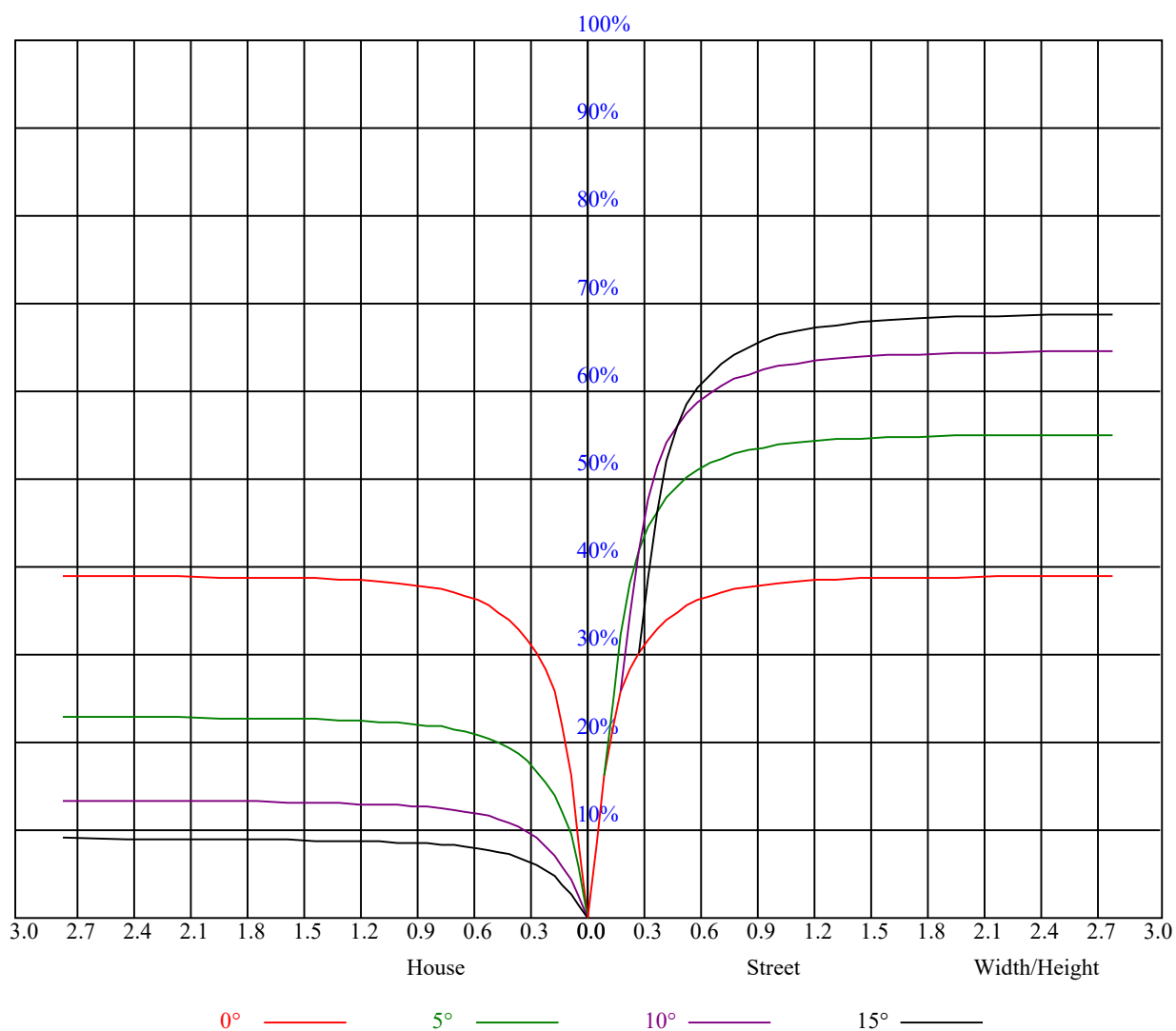
C0 ———

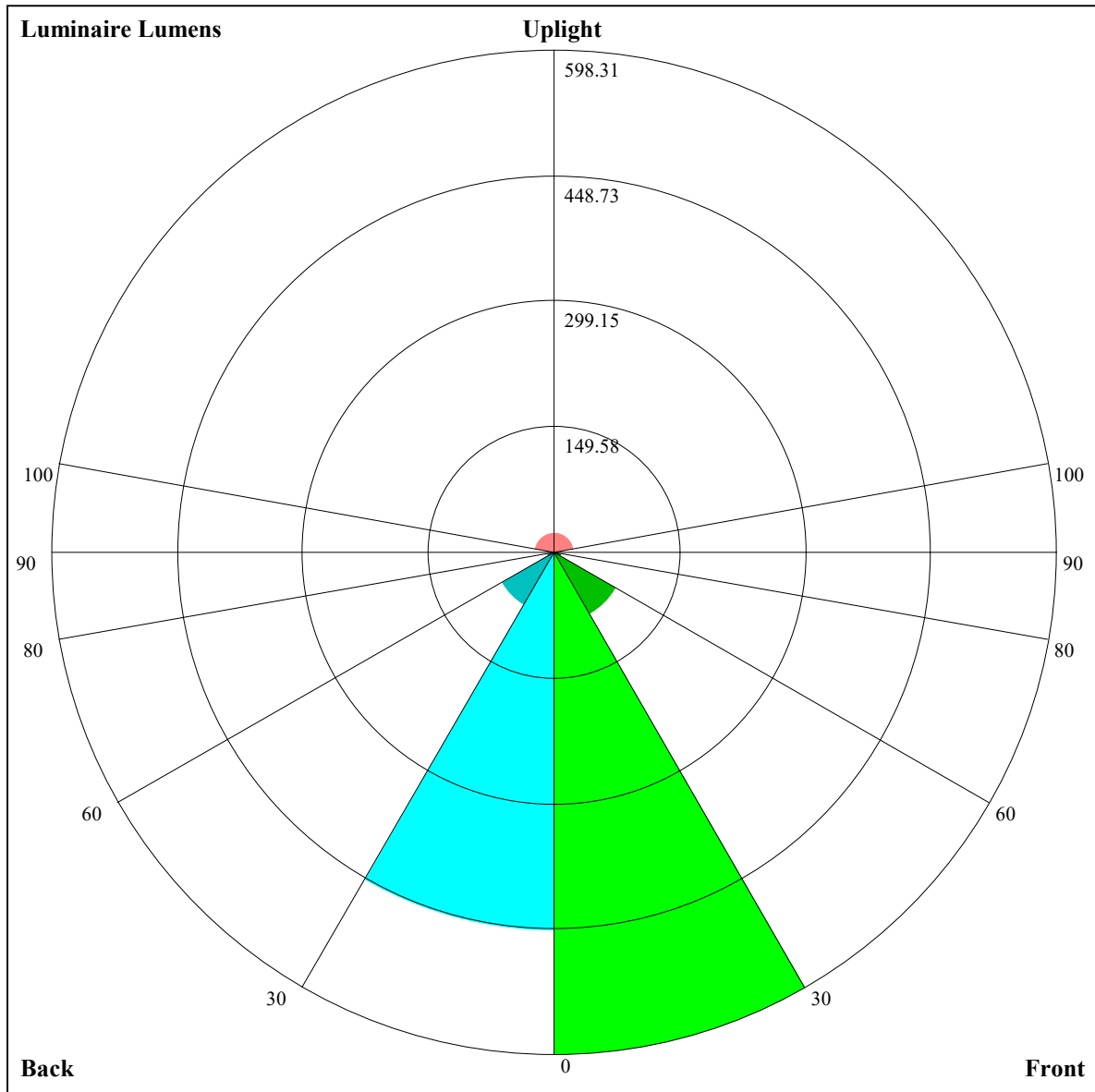
C45 ———

C90 ———



RHOC	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	0.94	0.94	0.94	0.92	0.92	0.92	0.88	0.88	0.88	0.84	0.84	0.84	0.81	0.81	0.81	0.79
1	0.88	0.86	0.84	0.86	0.85	0.83	0.83	0.82	0.81	0.80	0.79	0.78	0.77	0.77	0.76	0.75
2	0.84	0.81	0.79	0.82	0.80	0.78	0.80	0.78	0.76	0.77	0.76	0.74	0.75	0.74	0.73	0.72
3	0.80	0.77	0.74	0.79	0.76	0.74	0.77	0.74	0.72	0.75	0.73	0.71	0.73	0.72	0.70	0.69
4	0.77	0.73	0.71	0.76	0.73	0.70	0.74	0.72	0.70	0.73	0.71	0.69	0.71	0.70	0.68	0.67
5	0.74	0.70	0.68	0.73	0.70	0.68	0.72	0.69	0.67	0.71	0.68	0.67	0.70	0.68	0.66	0.65
6	0.72	0.68	0.66	0.71	0.68	0.65	0.70	0.67	0.65	0.69	0.66	0.65	0.68	0.66	0.64	0.63
7	0.69	0.66	0.64	0.69	0.66	0.63	0.68	0.65	0.63	0.67	0.65	0.63	0.66	0.64	0.63	0.62
8	0.67	0.64	0.62	0.67	0.64	0.62	0.66	0.64	0.61	0.66	0.63	0.61	0.65	0.63	0.61	0.60
9	0.66	0.63	0.60	0.65	0.62	0.60	0.65	0.62	0.60	0.64	0.62	0.60	0.64	0.61	0.60	0.59
10	0.64	0.61	0.59	0.64	0.61	0.59	0.63	0.61	0.59	0.63	0.60	0.59	0.62	0.60	0.58	0.58





Luminaire Lumens:

FL=598.31,FM=86.25,FH=10.39,FVH=3.24

BL=451.22,BM=72.85,BH=9.77,BVH=3.05

UL=5.26,UH=25.05

BUG Rating:B1-U2-G0

Nata 3-1701-N

Intensity data(cd)										Appendix Page: 16 Total:17	
C/γ(°)	0.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0		
0.0	10845.01	11572.86	10846.11	9260.49	7482.16	4624.74	2846.42	1287.22	993.77		
45.0	10903.37	11826.11	11066.34	9436.67	7438.12	4707.32	2890.46	1258.59	1009.73		
90.0	11297.57	10917.68	9841.88	8225.98	5872.32	3250.53	1610.40	1078.50	883.05		
135.0	11154.43	10130.38	8742.96	6799.47	4388.00	2785.85	1221.70	931.00	768.59		
180.0	10845.01	9082.65	7096.22	4557.02	2338.80	1084.83	939.59	778.61	658.97		
225.0	10903.37	9360.69	7196.97	4691.36	2419.18	1095.40	932.05	777.89	653.85		
270.0	11297.57	10053.30	8511.72	6226.88	3644.73	1773.37	1071.40	859.98	726.19		
315.0	11154.43	10618.18	9406.94	7573.01	4828.45	2421.93	1097.82	955.01	808.12		
360.0	10845.01	11572.86	10846.11	9260.49	7482.16	4624.74	2846.42	1287.22	993.77		
C/γ(°)	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0		
0.0	829.70	706.92	590.20	488.35	406.87	334.19	280.24	234.54	197.76		
45.0	851.17	710.23	601.77	492.75	403.56	332.54	279.69	223.09	185.37		
90.0	727.90	615.42	512.80	422.12	354.12	290.15	239.77	197.16	162.47		
135.0	643.61	538.45	457.52	375.48	320.43	279.69	216.04	176.57	145.90		
180.0	547.81	452.51	378.84	313.22	264.11	222.48	187.30	155.48	132.80		
225.0	544.84	457.35	372.46	307.77	255.63	210.92	172.99	144.14	121.34		
270.0	601.77	505.97	427.79	349.06	286.84	234.49	194.40	160.10	133.73		
315.0	672.46	568.24	478.83	395.47	327.86	271.48	220.83	178.88	148.71		
360.0	829.70	706.92	590.20	488.35	406.87	334.19	280.24	234.54	197.76		
C/γ(°)	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0		
0.0	164.01	139.07	114.24	94.20	79.78	64.97	53.79	45.09	38.26		
45.0	154.93	131.97	114.08	97.17	79.72	65.30	53.96	45.04	38.10		
90.0	135.55	117.10	100.26	85.61	71.19	58.08	48.17	40.85	34.02		
135.0	124.37	105.93	91.45	76.36	64.20	52.63	44.27	37.55	31.22		
180.0	107.80	92.11	77.90	64.14	51.81	43.44	37.16	30.61	24.89		
225.0	103.34	90.07	75.21	62.32	51.31	42.89	36.28	30.28	24.50		
270.0	112.43	98.77	82.97	68.88	58.08	47.46	40.30	34.47	27.80		
315.0	123.49	107.14	91.28	77.46	64.53	53.68	44.49	37.82	31.38		
360.0	164.01	139.07	114.24	94.20	79.78	64.97	53.79	45.09	38.26		
C/γ(°)	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0		
0.0	31.16	25.38	20.76	17.23	14.65	12.50	11.56	10.85	10.13		
45.0	30.72	24.94	20.65	17.12	14.87	12.50	11.56	10.85	10.08		
90.0	27.53	22.74	18.83	15.91	13.49	11.95	11.12	10.41	9.74		
135.0	24.94	20.59	17.34	14.53	12.61	11.45	10.74	10.08	9.41		
180.0	20.21	17.18	14.53	12.55	11.56	10.79	10.13	9.47	8.97		
225.0	20.10	17.12	14.48	12.44	11.56	10.85	10.13	9.58	8.97		
270.0	22.24	18.83	15.80	13.32	11.89	11.18	10.46	9.86	9.25		
315.0	25.11	20.87	17.29	14.59	12.39	11.45	10.68	10.08	9.41		
360.0	31.16	25.38	20.76	17.23	14.65	12.50	11.56	10.85	10.13		
C/γ(°)	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0		
0.0	9.47	8.97	8.53	8.20	7.71	7.16	6.50	6.00	5.45		
45.0	9.47	8.92	8.48	8.09	7.60	6.99	6.44	5.89	5.34		
90.0	9.08	8.64	8.20	7.71	7.21	6.66	6.11	5.56	5.07		
135.0	8.86	8.42	8.04	7.49	6.94	6.33	5.84	5.34	4.96		
180.0	8.53	8.20	7.71	7.10	6.55	6.00	5.51	5.01	4.79		
225.0	8.53	8.20	7.71	7.16	6.55	6.06	5.56	5.07	4.79		
270.0	8.70	8.31	7.93	7.43	6.88	6.28	5.73	5.23	4.79		
315.0	8.86	8.48	8.04	7.60	7.05	6.50	6.00	5.51	5.01		
360.0	9.47	8.97	8.53	8.20	7.71	7.16	6.50	6.00	5.45		

Intensity data(cd)

Appendix Page: 17 Total:17

C/ $\gamma(^{\circ})$	90.0
0.0	4.96
45.0	4.90
90.0	4.79
135.0	4.79
180.0	4.79
225.0	4.79
270.0	4.79
315.0	4.79
360.0	4.96