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Light Blue USA-Rayhil

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Client:

LumCAT: INV-20-CCT-UNV-\*\*-4000K

Luminaire: LED lamp

Report No:

Ballast type:

Test No:

Voltage(V): 120.000

LampCAT:

Current(A): 0.264

Lamp flux(lm): 2331.0

Power (W): 31.440

Number of Lamps: 1

PF: 0.993

Length(mm): -480

Width(mm): -480

Phm Type: C

Height(mm): 0

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Photometric Results

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Lumens(lm): 2331.00, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 74.14

Central intensity(cd): 798.004, Maximum intensity(cd): 798.004

Angle of maximum intensity: C=0.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=113.2

[C90/270]Total=115.4

Field angle(10%Imax): [C0/180]Total=162.8

[C90/270]Total=162.8

Maximum s/h(1/2): C0\_180=1.27 C90\_270=1.26

Maximum s/h(1/4): C0\_180=1.38 C90\_270=1.38

Up flux rate of lamp(%): 0.56%

Down flux rate of lamp(%): 99.44%

Up flux rate of LUM(%): 0.56%

Down flux rate of LUM(%): 99.44%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 77.672%

## Light Blue USA-Rayhil INV-20-CCT-UNV-\*\*-4000K

Zonal flux distribution table

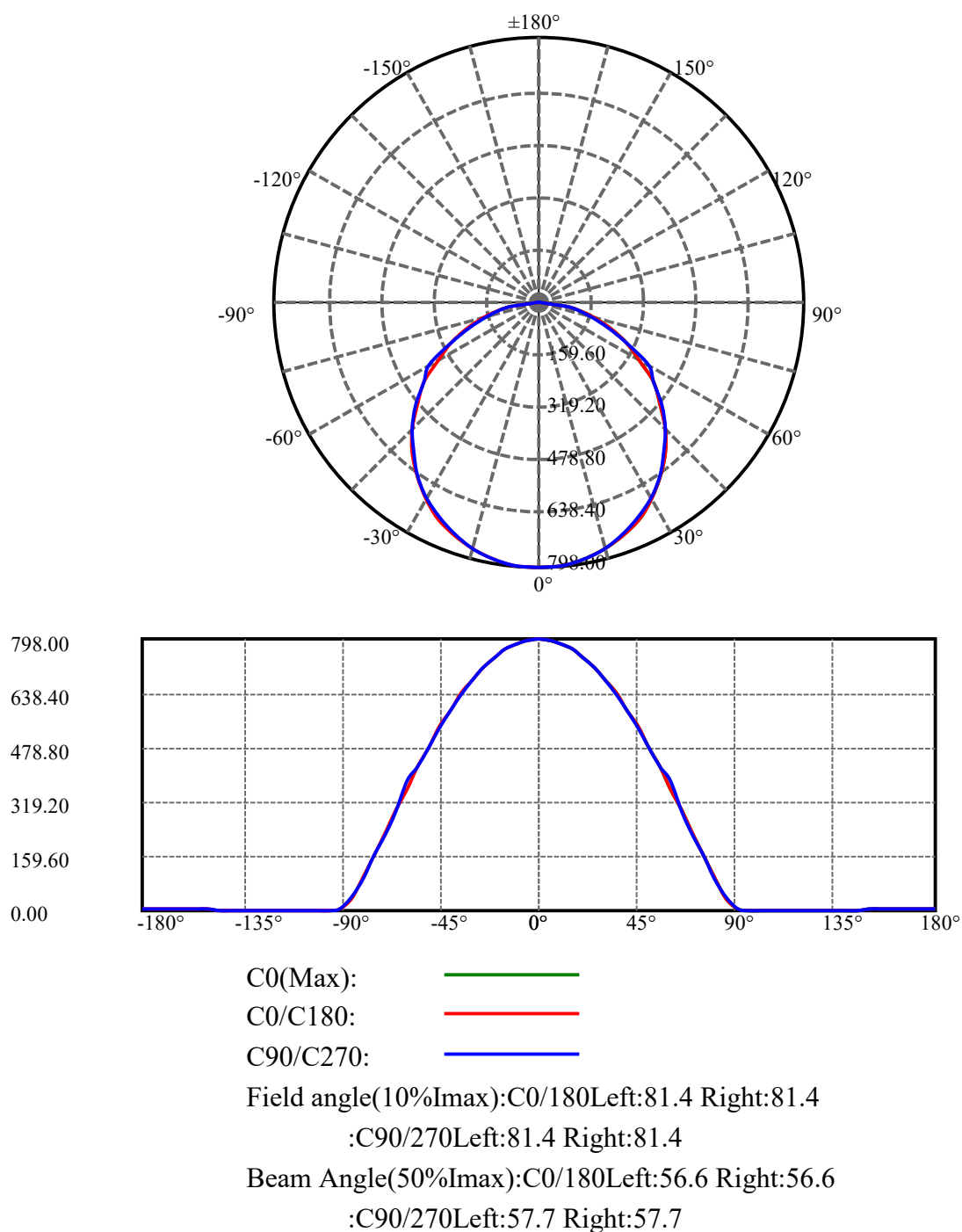
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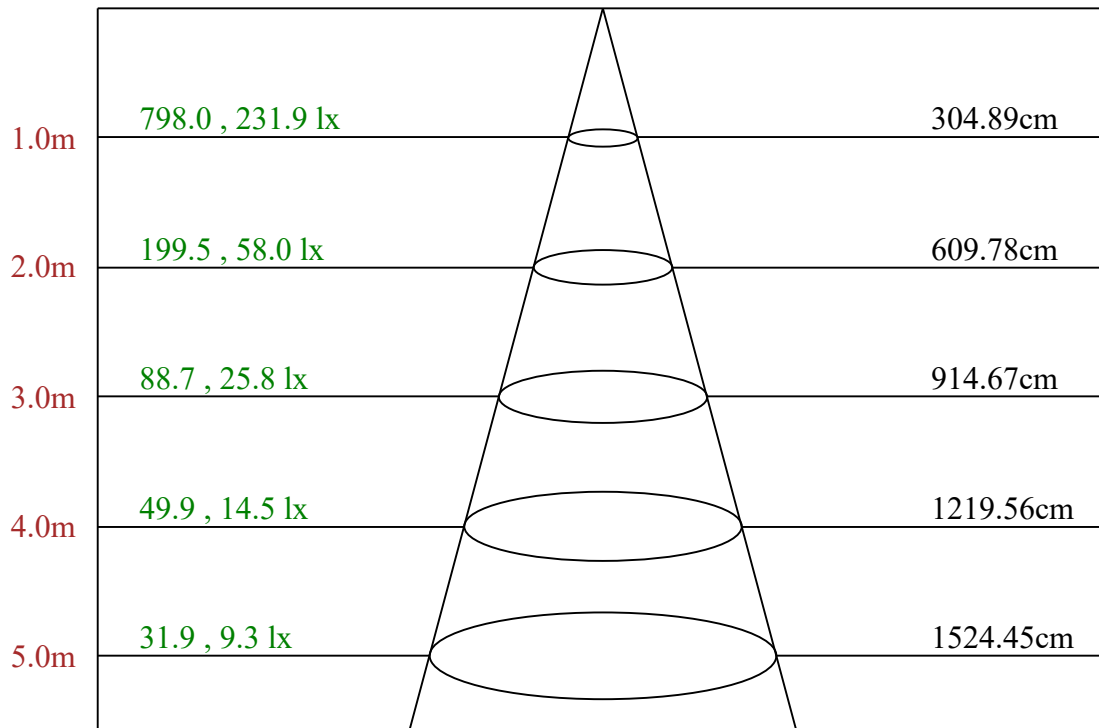
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	798.004	0.000	0	0.00%	0.00%
5.0	794.571	19.039	19.039	0.82%	0.82%
10.0	784.574	56.491	75.53	2.42%	3.24%
15.0	767.368	92.060	167.59	3.95%	7.19%
20.0	744.052	124.562	292.152	5.34%	12.53%
25.0	714.598	152.985	445.138	6.56%	19.10%
30.0	679.231	176.390	621.528	7.57%	26.66%
35.0	637.835	193.947	815.475	8.32%	34.98%
40.0	592.132	205.211	1020.686	8.80%	43.79%
45.0	537.720	209.201	1229.887	8.97%	52.76%
50.0	479.996	205.644	1435.531	8.82%	61.58%
55.0	419.066	195.486	1631.017	8.39%	69.97%
60.0	357.568	179.517	1810.534	7.70%	77.67%
65.0	291.176	157.711	1968.245	6.77%	84.44%
70.0	225.133	130.733	2098.977	5.61%	90.05%
75.0	160.504	100.799	2199.777	4.32%	94.37%
80.0	98.624	69.336	2269.112	2.97%	97.34%
85.0	37.579	37.010	2306.122	1.59%	98.93%
90.0	5.264	11.731	2317.853	0.50%	99.44%
95.0	1.374	1.817	2319.67	0.08%	99.51%
100.0	1.374	0.746	2320.417	0.03%	99.55%
105.0	1.374	0.735	2321.152	0.03%	99.58%
110.0	1.450	0.738	2321.89	0.03%	99.61%
115.0	1.526	0.753	2322.643	0.03%	99.64%
120.0	1.374	0.705	2323.348	0.03%	99.67%
125.0	1.564	0.679	2324.027	0.03%	99.70%
130.0	1.831	0.738	2324.765	0.03%	99.73%
135.0	1.831	0.740	2325.505	0.03%	99.76%
140.0	1.908	0.692	2326.198	0.03%	99.79%
145.0	2.289	0.700	2326.898	0.03%	99.82%
150.0	3.205	0.809	2327.707	0.03%	99.86%
155.0	3.433	0.840	2328.547	0.04%	99.89%
160.0	4.083	0.788	2329.335	0.03%	99.93%
165.0	4.121	0.676	2330.011	0.03%	99.96%
170.0	4.807	0.530	2330.541	0.02%	99.98%
175.0	5.341	0.363	2330.904	0.02%	100.00%
180.0	2.747	0.097	2331.001	0.00%	100.00%

ZONAL LUMEN SUMMARY			
Zone	Lumens	%Lamp	%Fixt
0-30	621.53	26.66%	26.66%
0-40	1020.69	43.79%	43.79%
0-60	1810.53	77.67%	77.67%
0-90	2317.85	99.44%	99.44%
0-120	2323.35	99.67%	99.67%
0-180	2331.00	100.00%	100.00%
60-90	507.32	21.76%	21.76%
90-120	5.50	0.24%	0.24%
90-130	6.91	0.30%	0.30%
90-150	9.85	0.42%	0.42%
90-180	13.05	0.56%	0.56%
0-61.72	1864.80	80.00%	80.00%

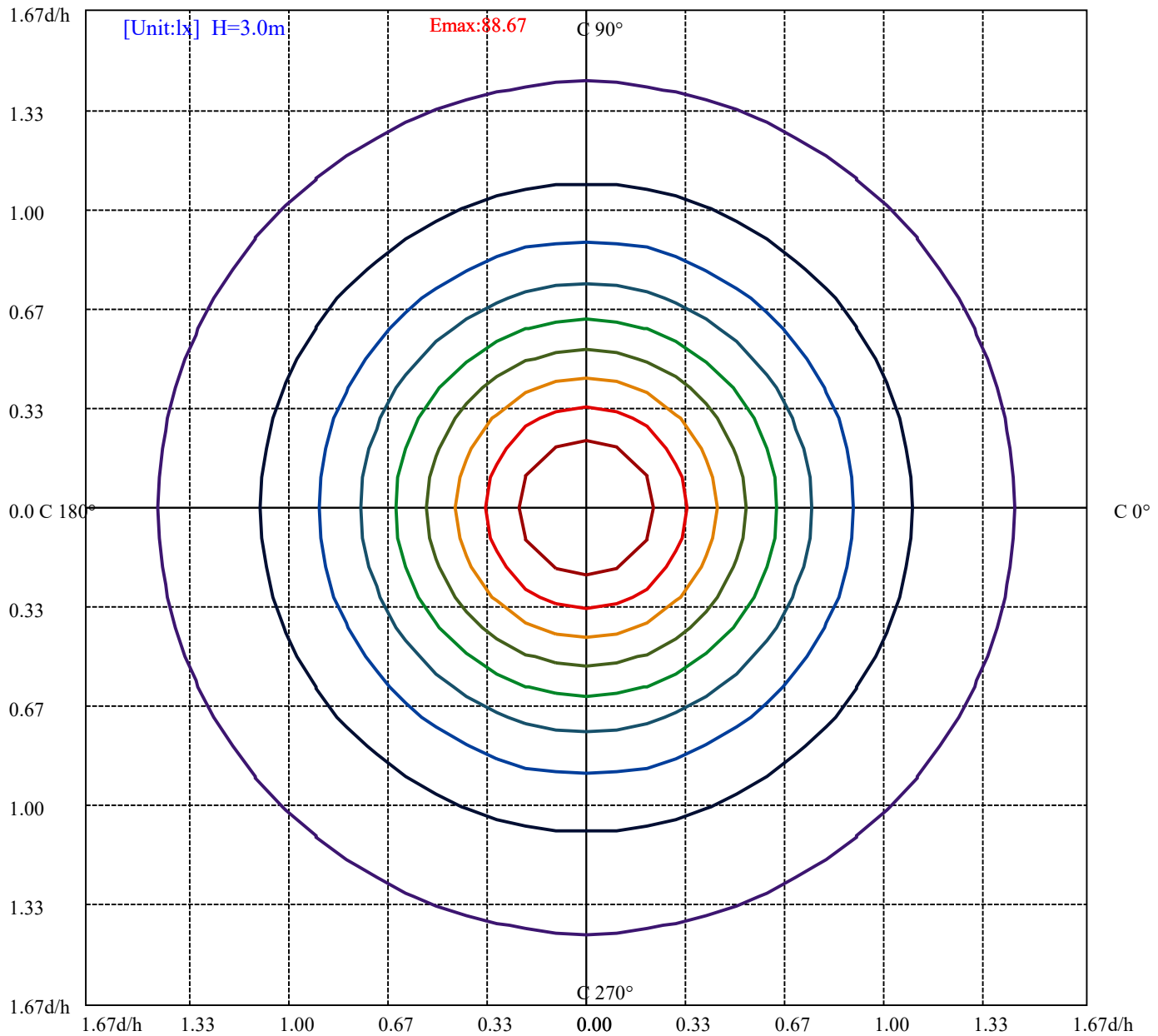
ZONAL LUMEN SUMMARY

0-10	75.53
10-20	216.62
20-30	329.38
30-40	399.16
40-50	414.85
50-60	375.00
60-70	288.44
70-80	170.13
80-90	48.74
90-100	2.56
100-110	1.47
110-120	1.46
120-130	1.42
130-140	1.43
140-150	1.51
150-160	1.63
160-170	1.21
170-180	0.36

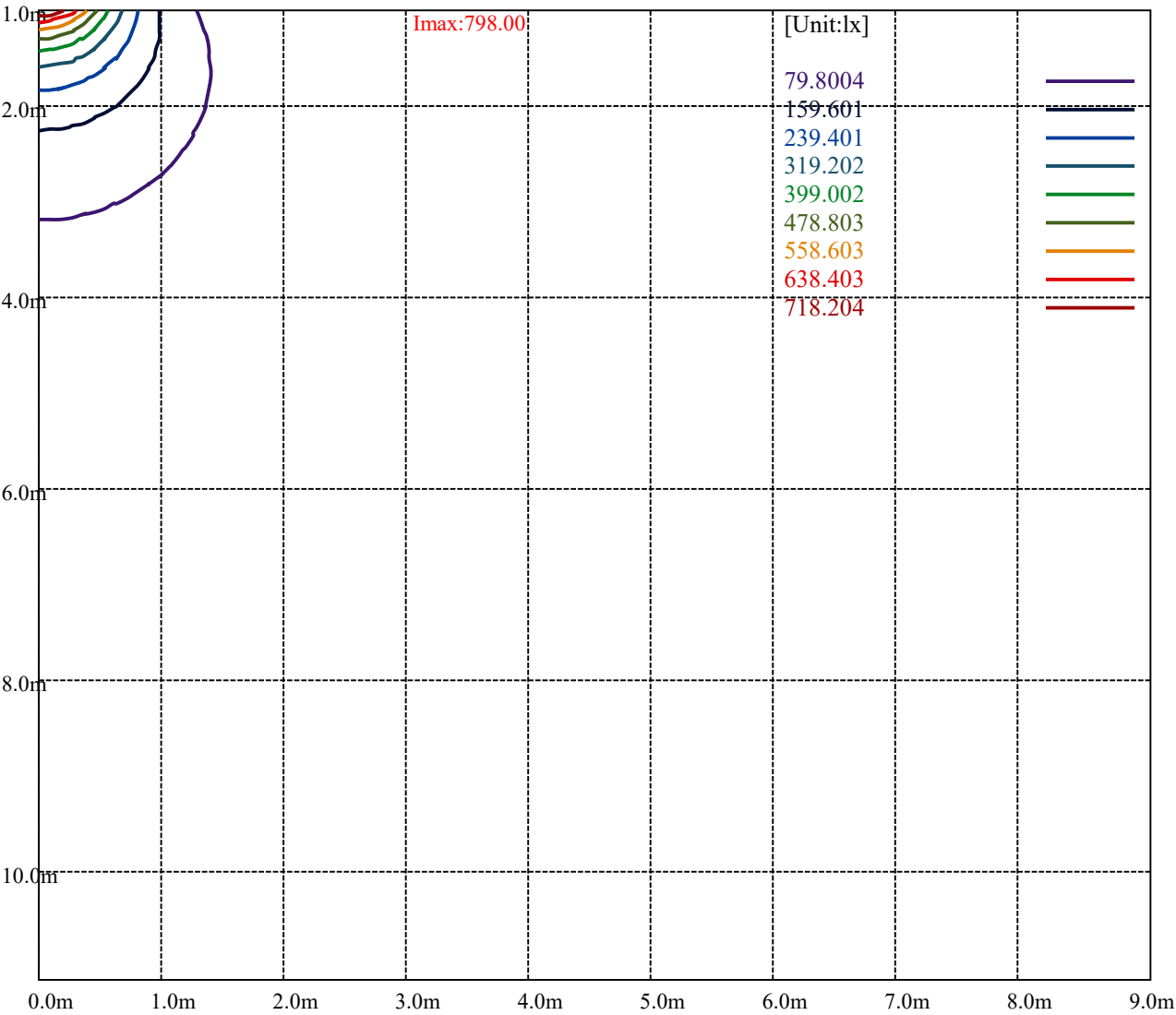




Max , Ave      Beam angle of C0 plane 113.47



(10%Emax) 8.866711	—
(20%Emax) 17.73344	—
(30%Emax) 26.60011	—
(40%Emax) 35.46689	—
(50%Emax) 44.33356	—
(60%Emax) 53.20033	—
(70%Emax) 62.067	—
(80%Emax) 70.93367	—
(90%Emax) 79.80045	—



Luminance Table

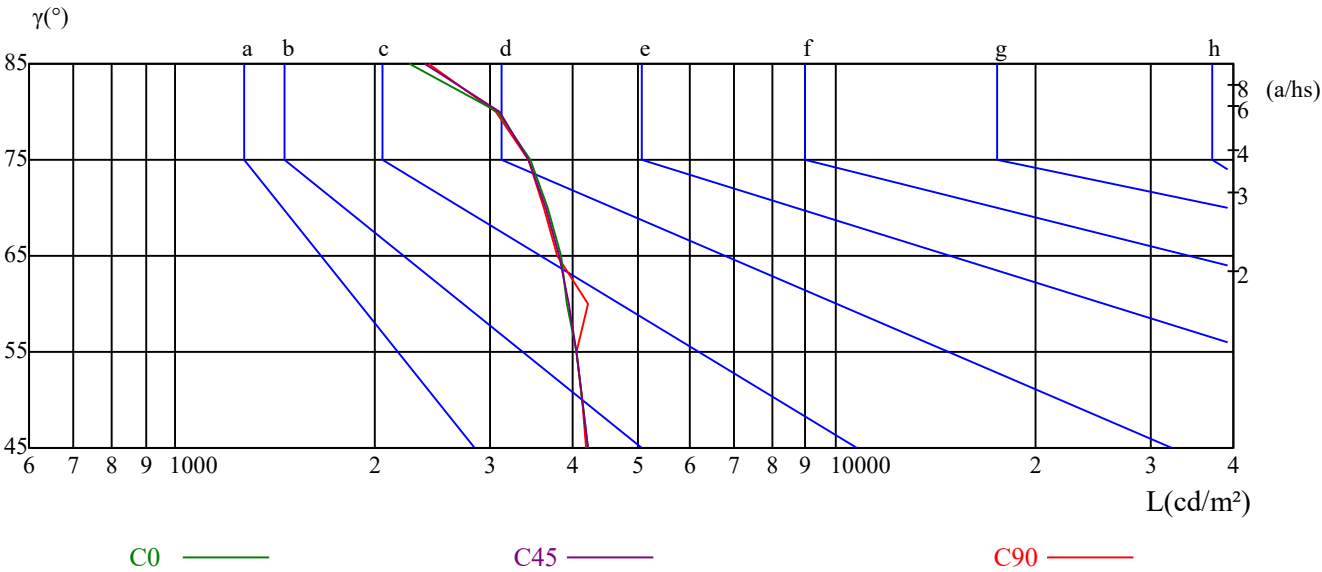
$\gamma$	45	50	55	60	65	70	75	80	85
C0	4207	4127	4045	3920	3827	3662	3439	3081	2266
C45	4205	4132	4036	3934	3812	3629	3435	3100	2383
C90	4194	4136	4048	4212	3784	3624	3418	3065	2414

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3827	3784	3812	3439	3418	3435	2266	2414	2383

Glare Table

Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	$\leq 300$				
1.5	B		2000	1000	500	$\leq 300$			
1.85	C			2000	1000	500	$\leq 300$		
2.2	D				2000	1000	500	$\leq 300$	
2.55	E					2000	1000	500	$\leq 300$
		a	b	c	d	e	f	g	h

Luminance Limiting Curve





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	COEFFCIENTS OF UTILIZATION RHOFC=20 CU															
0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	0.99
1	1.04	0.99	0.95	1.01	0.97	0.94	0.97	0.94	0.91	0.93	0.90	0.88	0.89	0.87	0.85	0.83
2	0.90	0.83	0.77	0.88	0.82	0.76	0.84	0.79	0.74	0.81	0.77	0.73	0.78	0.74	0.71	0.69
3	0.79	0.71	0.64	0.77	0.70	0.63	0.74	0.68	0.62	0.71	0.66	0.61	0.69	0.64	0.60	0.58
4	0.70	0.61	0.54	0.68	0.60	0.54	0.66	0.59	0.53	0.63	0.57	0.52	0.61	0.56	0.51	0.49
5	0.62	0.53	0.47	0.61	0.53	0.46	0.59	0.51	0.46	0.57	0.50	0.45	0.55	0.49	0.45	0.42
6	0.56	0.47	0.41	0.55	0.47	0.40	0.53	0.46	0.40	0.51	0.45	0.39	0.50	0.44	0.39	0.37
7	0.51	0.42	0.36	0.50	0.42	0.36	0.48	0.41	0.35	0.47	0.40	0.35	0.45	0.39	0.35	0.33
8	0.46	0.38	0.32	0.46	0.37	0.32	0.44	0.37	0.31	0.43	0.36	0.31	0.42	0.36	0.31	0.29
9	0.42	0.34	0.29	0.42	0.34	0.29	0.41	0.33	0.28	0.40	0.33	0.28	0.38	0.32	0.28	0.26
10	0.39	0.31	0.26	0.39	0.31	0.26	0.38	0.31	0.26	0.37	0.30	0.26	0.36	0.30	0.25	0.24

Light Blue USA-Rayhil INV-20-CCT-UNV-\*\*-4000K

Intensity data(cd)										Appendix Page: 10 Total:12	
C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0		
0.0	798.00	797.10	789.86	775.39	754.58	729.24	693.96	658.67	613.43		
15.0	798.00	798.00	791.64	778.01	758.01	731.66	699.84	660.76	616.23		
30.0	798.00	798.00	791.63	777.96	757.92	732.41	702.35	664.09	619.46		
45.0	798.00	798.92	794.35	780.64	762.35	735.85	704.77	666.37	622.50		
60.0	798.00	799.84	794.34	781.51	762.27	735.70	706.39	666.99	624.84		
75.0	798.00	798.92	794.34	781.51	762.27	736.62	703.64	666.99	623.01		
90.0	798.00	799.84	793.42	781.49	761.31	734.71	701.69	664.09	620.98		
105.0	798.00	799.84	793.41	781.46	762.15	735.49	702.39	663.78	621.49		
120.0	798.00	798.92	792.49	778.70	760.31	731.81	699.63	661.02	616.89		
135.0	798.00	798.00	791.57	777.78	757.55	729.97	696.87	658.26	611.37		
150.0	798.00	798.00	791.55	775.89	736.27	727.05	694.80	657.02	610.94		
165.0	798.00	797.08	789.72	774.07	751.98	725.29	691.24	652.58	601.03		
180.0	798.00	791.67	779.91	758.19	734.67	703.00	665.00	621.57	570.91		
195.0	798.00	791.64	778.01	758.01	732.56	700.75	660.76	616.23	568.96		
210.0	798.00	789.81	775.23	756.10	730.59	697.80	659.54	613.99	565.71		
225.0	798.00	790.69	776.07	755.04	727.62	695.63	657.23	611.53	561.25		
240.0	798.00	789.76	776.93	754.03	727.46	695.39	656.91	610.18	558.88		
255.0	798.00	789.76	774.18	752.19	724.71	691.73	653.25	606.52	557.05		
270.0	798.00	789.75	774.16	753.06	723.71	692.52	652.16	606.30	556.77		
285.0	798.00	789.73	775.94	753.88	725.37	692.28	652.75	611.37	597.58		
300.0	798.00	789.73	776.86	755.71	748.36	693.20	656.42	609.54	560.81		
315.0	798.00	789.73	775.94	756.63	727.21	696.87	658.26	613.21	564.49		
330.0	798.00	791.55	778.65	758.38	731.66	700.33	662.55	621.08	571.32		
345.0	798.00	793.40	779.60	761.19	736.34	705.04	669.15	625.89	575.26		
360.0	798.00	797.10	789.86	775.39	754.58	729.24	693.96	658.67	613.43		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	561.86	504.86	444.24	380.91	320.29	254.24	188.19	123.05	59.71		
15.0	568.06	512.61	452.63	389.91	324.47	261.76	192.68	129.97	66.35		
30.0	570.26	515.61	455.48	392.63	330.68	265.09	198.59	133.00	71.97		
45.0	574.05	516.46	458.88	396.72	331.82	266.00	202.93	138.03	74.04		
60.0	574.45	519.48	459.01	395.80	334.41	268.44	203.39	138.35	76.96		
75.0	575.37	517.65	461.76	399.46	334.41	268.44	201.56	138.35	75.13		
90.0	571.44	518.24	459.54	399.92	331.13	266.92	200.88	135.75	71.55		
105.0	569.08	515.76	456.00	392.57	328.21	262.02	195.82	134.23	70.79		
120.0	566.33	510.24	454.16	387.97	326.37	260.18	193.98	128.71	65.27		
135.0	563.57	508.41	448.65	385.21	319.94	253.74	187.55	125.95	62.52		
150.0	558.42	502.21	441.39	381.49	313.30	249.72	184.30	118.87	56.21		
165.0	553.17	495.19	437.20	372.77	307.42	242.07	179.48	115.05	52.46		
180.0	514.81	455.10	395.38	328.43	265.10	199.05	133.91	70.57	11.76		
195.0	513.52	453.54	389.91	325.38	259.03	193.59	130.88	63.62	9.09		
210.0	507.41	447.28	384.43	322.48	256.89	190.39	125.71	61.03	5.47		
225.0	504.58	444.25	381.18	316.28	254.12	184.65	123.40	59.42	4.57		
240.0	501.16	440.69	377.47	315.17	250.12	184.15	119.11	55.89	4.58		
255.0	501.16	441.61	378.39	313.34	251.04	181.41	119.11	101.70	4.58		
270.0	501.73	443.95	380.66	362.31	247.66	181.61	119.24	56.87	4.59		
285.0	503.81	441.29	380.61	316.26	250.07	184.79	120.44	57.92	4.60		
300.0	504.73	444.97	381.53	318.10	256.50	186.63	125.95	62.52	7.35		
315.0	510.24	453.24	387.05	325.45	260.18	193.98	129.63	66.19	9.19		
330.0	516.03	457.06	394.39	329.89	264.47	198.12	133.62	73.72	14.74		
345.0	520.04	460.21	397.62	333.19	270.60	206.17	141.74	78.24	18.41		
360.0	561.86	504.86	444.24	380.91	320.29	254.24	188.19	123.05	59.71		

Light Blue USA-Rayhil INV-20-CCT-UNV-\*\*-4000K

Intensity data(cd)									Appendix Page: 11 Total:12		
C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0		
0.0	5.43	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	1.81	
15.0	8.18	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	1.82	
30.0	9.11	0.91	0.91	0.91	0.91	0.91	3.64	0.91	1.82	1.82	
45.0	12.80	0.91	0.91	0.91	0.91	0.91	0.91	0.91	1.83	1.83	
60.0	12.83	0.92	0.92	0.92	0.92	0.92	0.92	0.92	1.83	1.83	
75.0	13.74	0.92	0.92	0.92	0.92	0.92	1.83	0.92	0.92	1.83	
90.0	11.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	1.83	1.83	
105.0	11.03	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	1.84	
120.0	7.35	0.92	0.92	0.92	0.92	0.92	0.92	0.92	1.84	1.84	
135.0	5.52	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	1.84	
150.0	3.69	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	1.84	
165.0	2.76	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	1.84	
180.0	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	
195.0	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	
210.0	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	
225.0	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	
240.0	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	
255.0	1.83	1.83	1.83	1.83	1.83	2.75	1.83	1.83	1.83	1.83	
270.0	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83	
285.0	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	
300.0	1.84	1.84	1.84	1.84	1.84	2.76	1.84	1.84	1.84	1.84	
315.0	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	
330.0	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	
345.0	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	
360.0	5.43	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	1.81	
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0		
0.0	1.81	1.81	2.71	3.62	4.52	4.52	4.52	5.43	5.43		
15.0	1.82	1.82	2.73	3.64	4.54	4.54	4.54	4.54	5.45		
30.0	1.82	2.73	2.73	3.64	4.55	4.55	4.55	4.55	5.47		
45.0	1.83	1.83	2.74	3.66	4.57	4.57	4.57	5.48	5.48		
60.0	1.83	1.83	2.75	3.66	3.66	4.58	4.58	4.58	5.50		
75.0	1.83	1.83	2.75	3.66	3.66	4.58	4.58	4.58	5.50		
90.0	1.83	1.83	2.75	3.67	3.67	4.59	4.59	5.50	4.59		
105.0	1.84	2.76	2.76	3.68	3.68	4.60	4.60	5.52	5.52		
120.0	1.84	1.84	2.76	3.68	4.60	4.60	4.60	5.52	5.52		
135.0	1.84	1.84	2.76	3.68	3.68	4.60	4.60	4.60	5.52		
150.0	1.84	1.84	2.76	3.69	3.69	4.61	4.61	4.61	5.53		
165.0	1.84	1.84	2.76	3.68	4.60	4.60	4.60	5.52	5.52		
180.0	1.81	1.81	1.81	2.71	2.71	3.62	3.62	4.52	5.43		
195.0	1.82	1.82	1.82	2.73	2.73	2.73	3.64	4.54	4.54		
210.0	1.82	1.82	1.82	2.73	2.73	3.64	3.64	4.55	5.47		
225.0	1.83	1.83	1.83	2.74	2.74	3.66	3.66	4.57	5.48		
240.0	1.83	1.83	1.83	2.75	2.75	3.66	3.66	4.58	5.50		
255.0	1.83	1.83	1.83	2.75	2.75	3.66	3.66	4.58	5.50		
270.0	1.83	1.83	1.83	2.75	2.75	3.67	3.67	4.59	5.50		
285.0	1.84	1.84	1.84	2.76	2.76	3.68	3.68	4.60	5.52		
300.0	1.84	1.84	1.84	2.76	2.76	3.68	3.68	4.60	4.60		
315.0	1.84	1.84	1.84	2.76	2.76	3.68	3.68	4.60	4.60		
330.0	1.84	1.84	1.84	2.76	2.76	3.69	3.69	4.61	5.53		
345.0	1.84	1.84	1.84	2.76	2.76	3.68	3.68	4.60	5.52		
360.0	1.81	1.81	2.71	3.62	4.52	4.52	4.52	5.43	5.43		

Intensity data(cd)

C/γ(°)	180.0
0.0	5.43
15.0	5.45
30.0	5.47
45.0	5.48
60.0	5.50
75.0	5.50
90.0	5.50
105.0	5.52
120.0	5.52
135.0	5.52
150.0	5.53
165.0	5.52
180.0	0.00
195.0	0.00
210.0	0.00
225.0	0.00
240.0	0.00
255.0	0.00
270.0	0.00
285.0	0.00
300.0	0.00
315.0	0.00
330.0	0.00
345.0	0.00
360.0	5.43