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Light Blue USA-Rayhil

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Client:

LumCAT: INV-16-CCT-UNV-\*\*-4000K-F

Luminaire: LED lamp

Report No:

Ballast type:

Test No:

Voltage(V): 120.020

LampCAT:

Current(A): 0.200

Lamp flux(lm): 1994.0

Power (W): 23.810

Number of Lamps: 1

PF: 0.993

Length(mm): -380

Width(mm): -380

Phm Type: C

Height(mm): 0

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Photometric Results

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Lumens(lm): 1994.00, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 83.75

Central intensity(cd): 688.735, Maximum intensity(cd): 688.735

Angle of maximum intensity: C=75.0  $\gamma$ =0.0

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

[C90/270]Total=114.4

Field angle(10%Imax): [C0/180]Total=162.4

[C90/270]Total=161.8

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(%): 0.39%

Down flux rate of lamp(%): 99.61%

Up flux rate of LUM(%): 0.39%

Down flux rate of LUM(%): 99.61%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 78.268%

## Light Blue USA-Rayhil INV-16-CCT-UNV-\*\*-4000K-F

Zonal flux distribution table

Appendix Page: 2 Total:12

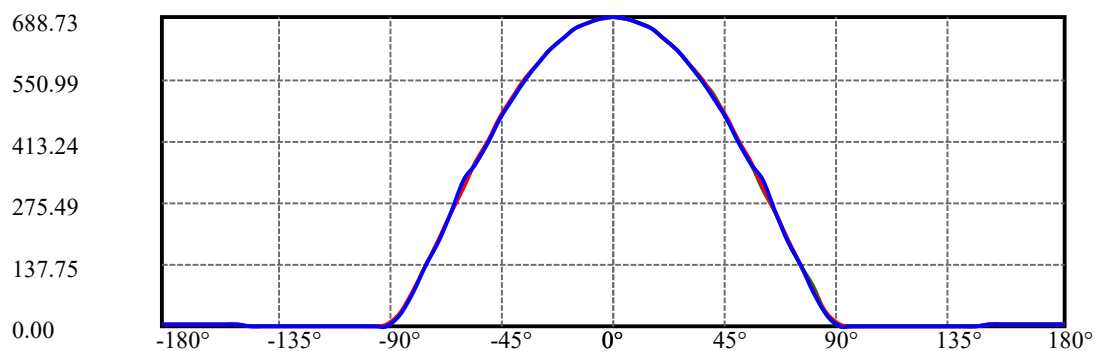
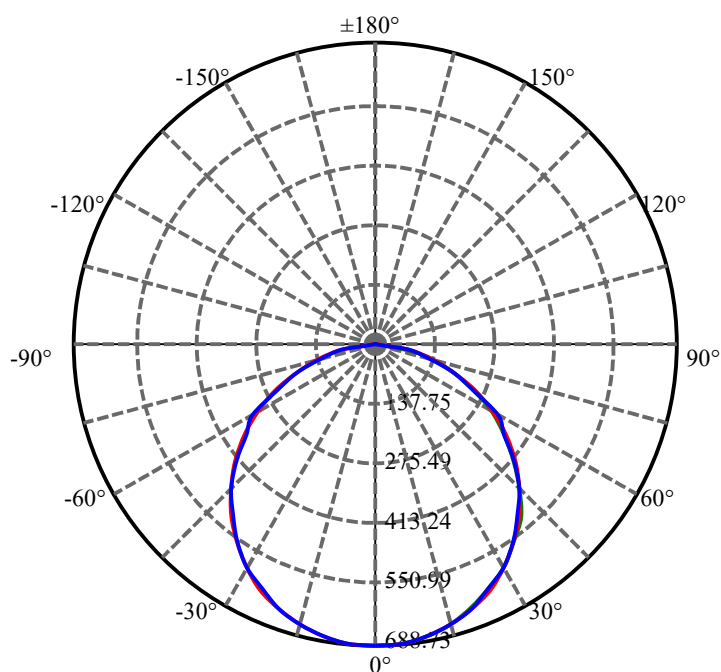
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	688.735	0.000	0	0.00%	0.00%
5.0	685.950	16.434	16.434	0.82%	0.82%
10.0	677.060	48.759	65.193	2.45%	3.27%
15.0	662.638	79.470	144.663	3.99%	7.25%
20.0	642.187	107.536	252.199	5.39%	12.65%
25.0	616.968	132.062	384.261	6.62%	19.27%
30.0	586.371	152.284	536.545	7.64%	26.91%
35.0	550.659	167.436	703.98	8.40%	35.30%
40.0	510.637	177.069	881.049	8.88%	44.18%
45.0	463.175	180.309	1061.359	9.04%	53.23%
50.0	413.498	177.145	1238.503	8.88%	62.11%
55.0	360.009	168.186	1406.69	8.43%	70.55%
60.0	306.101	153.969	1560.659	7.72%	78.27%
65.0	248.296	134.775	1695.434	6.76%	85.03%
70.0	190.726	111.163	1806.597	5.57%	90.60%
75.0	134.566	85.026	1891.623	4.26%	94.87%
80.0	81.075	57.699	1949.323	2.89%	97.76%
85.0	26.666	29.276	1978.599	1.47%	99.23%
90.0	1.486	7.708	1986.307	0.39%	99.61%
95.0	0.763	0.616	1986.922	0.03%	99.64%
100.0	0.686	0.394	1987.316	0.02%	99.66%
105.0	0.534	0.326	1987.643	0.02%	99.68%
110.0	0.496	0.269	1987.912	0.01%	99.69%
115.0	0.648	0.290	1988.201	0.01%	99.71%
120.0	1.069	0.417	1988.618	0.02%	99.73%
125.0	0.916	0.459	1989.077	0.02%	99.75%
130.0	0.916	0.398	1989.475	0.02%	99.77%
135.0	0.916	0.370	1989.845	0.02%	99.79%
140.0	0.916	0.339	1990.184	0.02%	99.81%
145.0	1.831	0.458	1990.643	0.02%	99.83%
150.0	2.365	0.618	1991.261	0.03%	99.86%
155.0	3.205	0.705	1991.966	0.04%	99.90%
160.0	3.243	0.676	1992.642	0.03%	99.93%
165.0	3.395	0.547	1993.189	0.03%	99.96%
170.0	4.044	0.441	1993.63	0.02%	99.98%
175.0	4.197	0.295	1993.925	0.01%	100.00%
180.0	2.289	0.078	1994.002	0.00%	100.00%

Zonal flux distribution table

ZONAL LUMEN SUMMARY			
Zone	Lumens	%Lamp	%Fixt
0-30	536.54	26.91%	26.91%
0-40	881.05	44.19%	44.18%
0-60	1560.66	78.27%	78.27%
0-90	1986.31	99.61%	99.61%
0-120	1988.62	99.73%	99.73%
0-180	1994.00	100.00%	100.00%
60-90	425.65	21.35%	21.35%
90-120	2.31	0.12%	0.12%
90-130	3.17	0.16%	0.16%
90-150	4.95	0.25%	0.25%
90-180	7.62	0.38%	0.38%
0-61.28	1595.20	80.00%	80.00%

ZONAL LUMEN SUMMARY

0-10	65.19
10-20	187.01
20-30	284.35
30-40	344.50
40-50	357.45
50-60	322.16
60-70	245.94
70-80	142.73
80-90	36.98
90-100	1.01
100-110	0.60
110-120	0.71
120-130	0.86
130-140	0.71
140-150	1.08
150-160	1.38
160-170	0.99
170-180	0.29

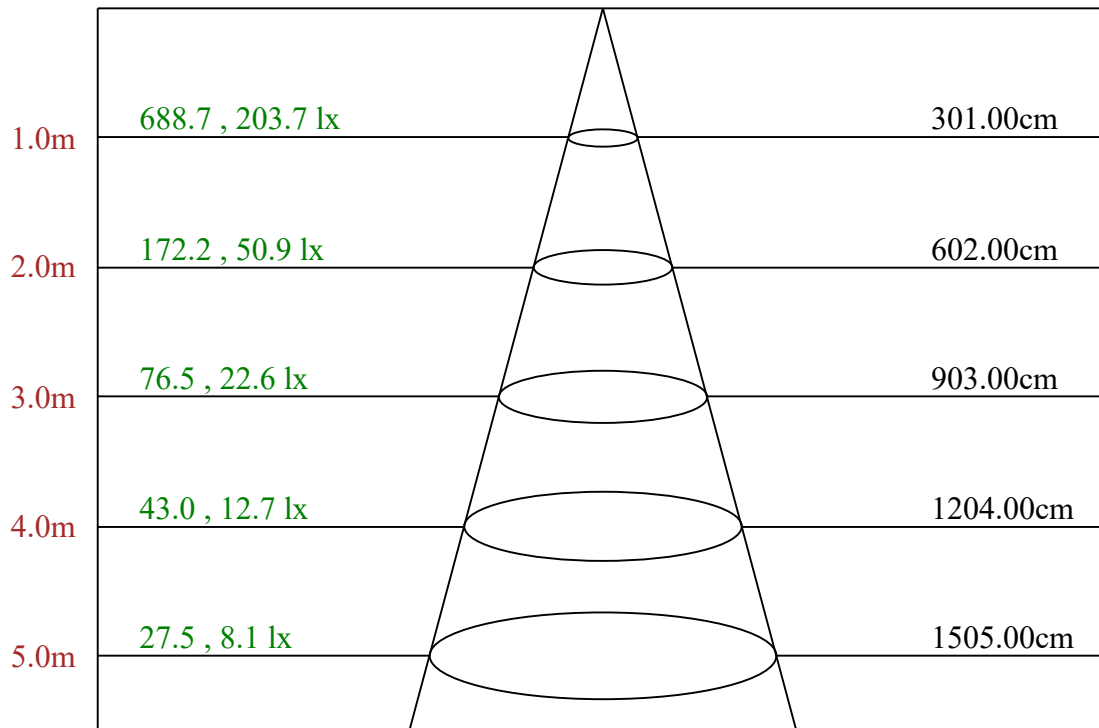
C75(Max): —————C0/C180: —————C90/C270: —————

Field angle(10%Imax):C0/180Left:81.2 Right:81.2

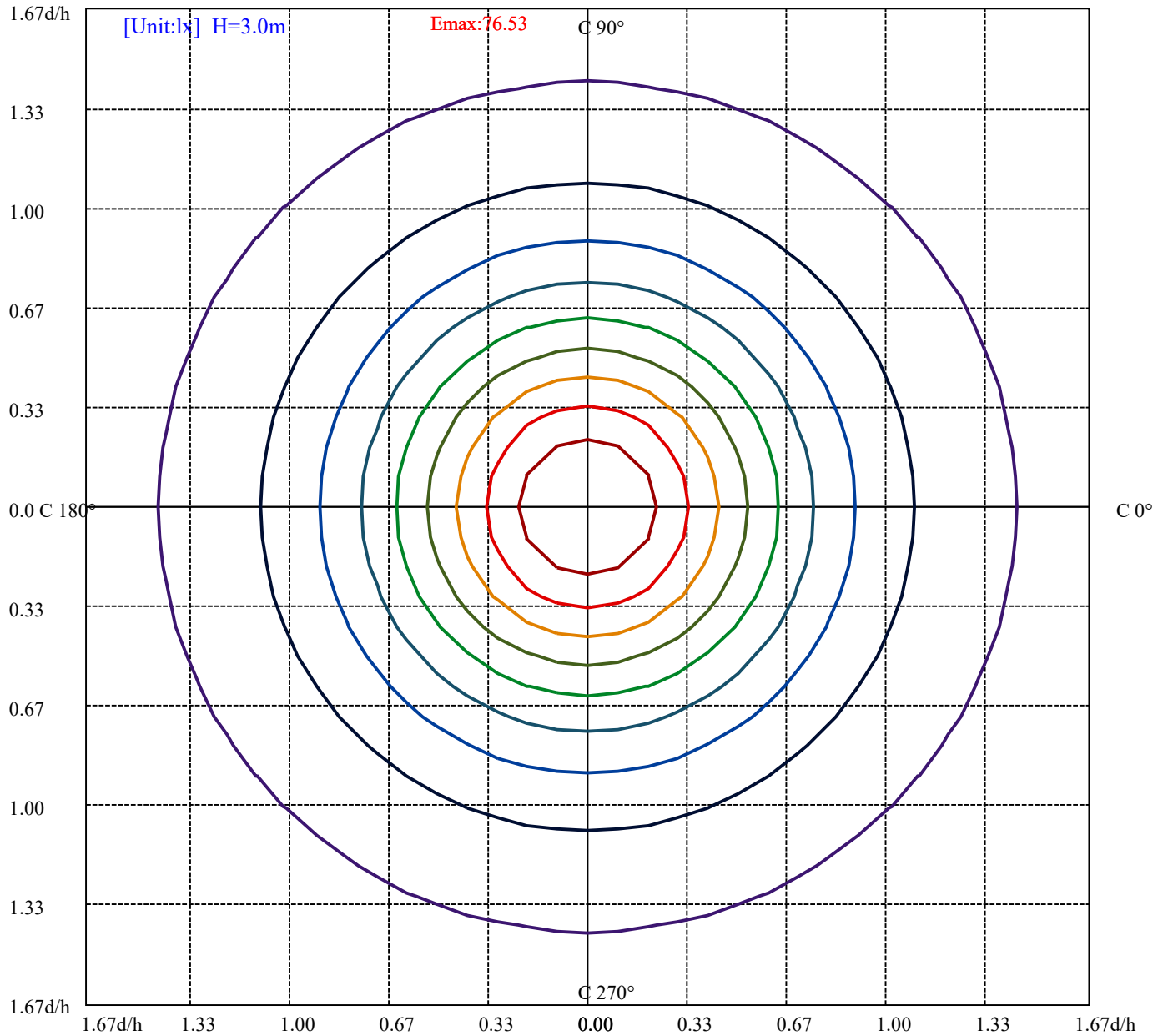
:C90/270Left:80.9 Right:80.9

Beam Angle(50%Imax):C0/180Left:56.6 Right:56.6

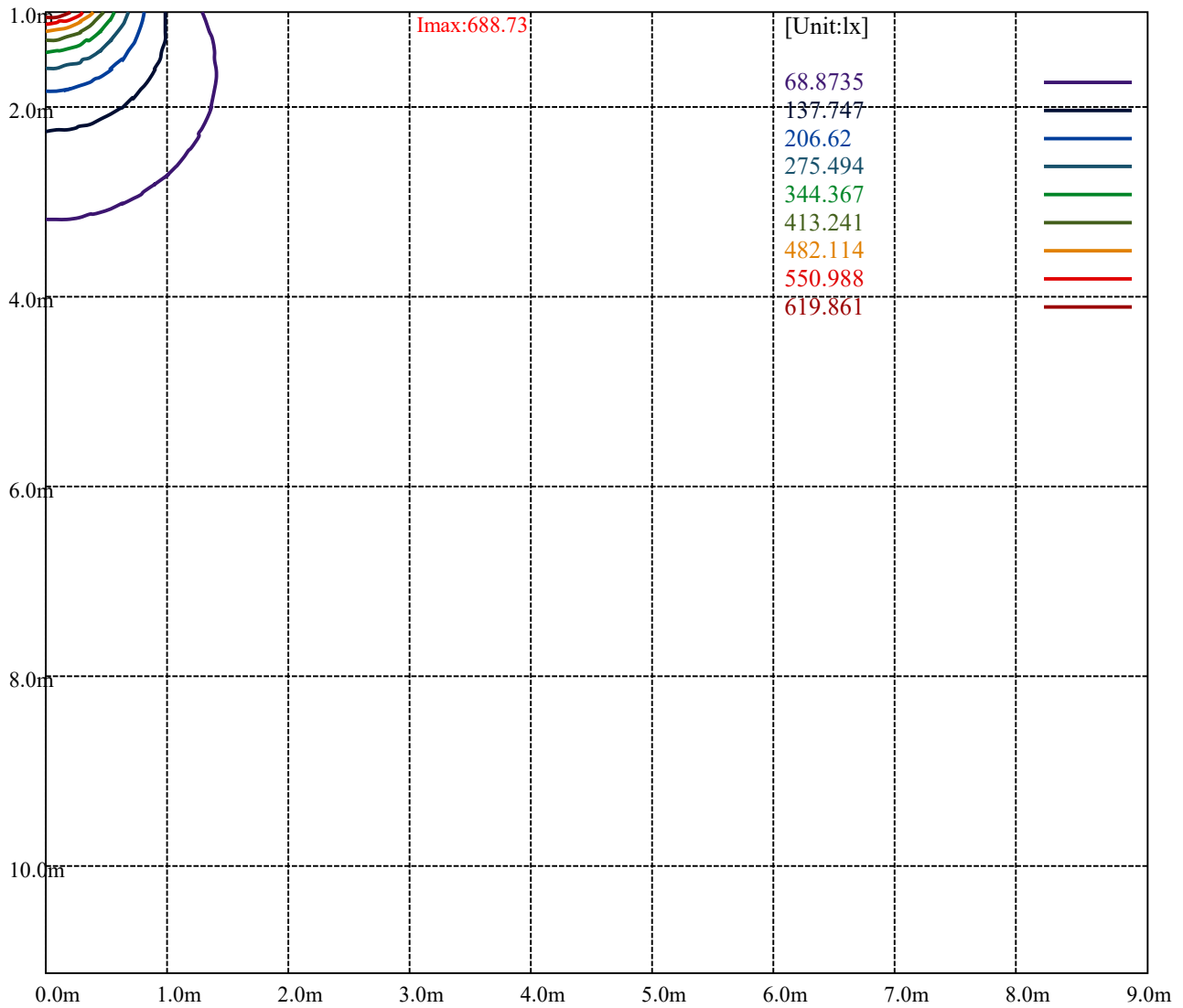
:C90/270Left:57.2 Right:57.2



Max , Ave      Beam angle of C75 plane 112.80



(10%Emax)	7.652611	
(20%Emax)	15.30522	
(30%Emax)	22.95778	
(40%Emax)	30.61044	
(50%Emax)	38.263	
(60%Emax)	45.91566	
(70%Emax)	53.56822	
(80%Emax)	61.22089	
(90%Emax)	68.87344	



## Appendix Page: 8 Total:12

$\gamma$	45	50	55	60	65	70	75	80	85
C0	5793	5713	5566	5409	5206	4948	4575	4147	2892
C45	5768	5664	5530	5346	5172	4915	4613	4014	2689
C90	5769	5642	5519	5733	5147	4882	4530	4005	2598

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
5206	5147	5172	4575	4530	4613	2892	2598	2689

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



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	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	1.00
1	1.04	0.99	0.96	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	0.78	0.88	0.82	0.77	0.85	0.79	0.75	0.81	0.77	0.73	0.78	0.75	0.71	0.69
3	0.79	0.71	0.64	0.78	0.70	0.64	0.74	0.68	0.63	0.72	0.66	0.61	0.69	0.64	0.60	0.58
4	0.70	0.61	0.54	0.69	0.60	0.54	0.66	0.59	0.53	0.64	0.57	0.52	0.62	0.56	0.52	0.49
5	0.63	0.53	0.47	0.61	0.53	0.47	0.59	0.52	0.46	0.57	0.51	0.45	0.55	0.50	0.45	0.43
6	0.56	0.47	0.41	0.55	0.47	0.41	0.53	0.46	0.40	0.52	0.45	0.40	0.50	0.44	0.39	0.37
7	0.51	0.42	0.36	0.50	0.42	0.36	0.49	0.41	0.36	0.47	0.40	0.35	0.46	0.40	0.35	0.33
8	0.46	0.38	0.32	0.46	0.38	0.32	0.44	0.37	0.32	0.43	0.36	0.31	0.42	0.36	0.31	0.29
9	0.43	0.34	0.29	0.42	0.34	0.29	0.41	0.34	0.29	0.40	0.33	0.28	0.39	0.33	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	0.26	0.24

Light Blue USA-Rayhil INV-16-CCT-UNV-\*\*-4000K-F

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	688.73	688.73	683.29	671.49	653.35	630.66	602.53	568.95	530.84		
15.0	688.73	688.73	682.37	669.63	651.43	629.60	600.48	568.64	528.61		
30.0	688.73	687.82	681.44	669.58	651.33	629.44	598.42	565.58	529.09		
45.0	688.73	687.82	680.51	668.64	650.37	624.79	597.39	562.68	525.23		
60.0	688.73	687.82	680.48	670.39	649.30	625.46	596.11	561.26	520.91		
75.0	688.73	687.82	679.56	666.72	647.47	622.70	591.52	559.43	519.99		
90.0	688.73	686.90	678.65	666.72	646.55	620.87	589.69	555.76	515.40		
105.0	688.73	686.90	678.65	663.97	643.80	619.04	589.69	553.01	513.57		
120.0	688.73	685.98	677.71	663.94	644.66	618.02	589.56	553.74	512.42		
135.0	688.73	686.90	677.70	662.99	642.76	617.93	588.50	554.48	510.34		
150.0	688.73	685.98	677.70	662.99	625.29	618.85	590.34	553.56	511.26		
165.0	688.73	685.98	677.70	662.07	644.60	618.85	588.50	552.64	509.42		
180.0	688.73	684.20	672.40	654.25	633.38	605.25	571.68	534.47	491.82		
195.0	688.73	682.37	670.54	655.07	631.42	606.85	573.19	534.97	490.39		
210.0	688.73	683.26	672.31	654.98	633.09	605.72	573.79	537.30	493.52		
225.0	688.73	684.17	672.29	655.85	633.93	606.52	573.64	537.10	492.34		
240.0	688.73	685.07	674.98	658.47	635.54	608.95	575.93	539.25	497.06		
255.0	688.73	684.15	674.98	658.47	636.46	608.95	577.77	541.08	497.06		
270.0	688.73	685.07	674.98	659.39	637.38	610.78	580.52	542.00	500.73		
285.0	688.73	684.15	674.98	660.30	639.21	612.62	581.44	543.83	533.75		
300.0	688.73	685.06	675.88	661.19	656.59	614.35	584.05	546.40	506.91		
315.0	688.73	685.98	676.78	662.07	640.92	617.01	585.75	549.88	507.59		
330.0	688.73	685.98	676.78	662.07	641.84	617.01	586.67	549.88	507.59		
345.0	688.73	685.98	676.78	662.07	641.84	617.01	585.75	549.88	509.42		
360.0	688.73	688.73	683.29	671.49	653.35	630.66	602.53	568.95	530.84		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	484.56	439.19	385.66	330.30	274.04	215.97	157.89	105.26	49.91		
15.0	484.02	433.98	382.12	330.27	272.95	215.63	158.31	101.90	47.31		
30.0	479.83	434.22	380.40	325.67	268.20	210.73	154.17	100.35	46.52		
45.0	479.56	430.23	377.25	321.53	268.55	206.44	153.46	95.91	42.93		
60.0	477.80	429.20	376.92	320.98	263.20	205.43	147.65	94.46	38.52		
75.0	473.22	424.61	370.50	313.64	259.54	202.68	146.73	90.79	36.68		
90.0	472.30	420.03	369.59	313.64	255.87	199.01	142.15	88.96	32.10		
105.0	468.63	420.03	365.92	309.98	255.87	195.34	142.15	86.21	31.18		
120.0	468.34	415.08	365.49	309.47	253.45	195.60	138.67	86.32	31.22		
135.0	466.21	415.63	362.30	307.13	250.11	195.86	139.77	83.68	28.51		
150.0	465.29	418.39	362.30	309.88	251.95	194.94	137.01	80.92	29.43		
165.0	466.21	418.39	364.14	308.05	251.95	194.94	139.77	82.76	28.51		
180.0	444.64	393.82	338.47	283.12	225.04	167.87	110.71	58.08	7.26		
195.0	442.17	391.22	336.63	280.22	227.46	169.23	111.91	58.23	7.28		
210.0	444.26	394.08	339.35	281.88	226.23	169.68	114.94	58.38	9.12		
225.0	444.85	395.52	343.45	284.99	230.19	171.73	116.01	60.29	10.96		
240.0	450.29	398.93	344.83	288.88	231.11	174.25	120.14	62.36	12.84		
255.0	450.29	400.77	344.83	290.72	233.86	177.92	120.14	108.22	15.59		
270.0	453.04	402.60	348.49	336.57	237.53	179.75	123.81	68.78	19.26		
285.0	457.63	406.27	353.08	295.30	242.11	181.58	127.48	72.45	20.18		
300.0	457.32	409.57	355.39	299.37	243.35	184.58	128.56	72.55	23.88		
315.0	459.77	410.11	355.86	298.85	242.76	188.51	132.41	76.32	23.91		
330.0	463.45	410.11	358.62	303.45	246.44	188.51	131.49	75.40	22.99		
345.0	462.53	411.95	358.62	302.53	247.36	191.26	134.25	77.24	23.91		
360.0	484.56	439.19	385.66	330.30	274.04	215.97	157.89	105.26	49.91		

Light Blue USA-Rayhil INV-16-CCT-UNV-\*\*-4000K-F

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	3.63	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
15.0	3.64	0.91	0.00	0.00	0.00	0.91	0.91	0.91	0.91		
30.0	3.65	0.91	0.91	0.91	0.00	0.91	0.91	0.91	0.91		
45.0	2.74	0.91	0.91	0.00	0.00	0.00	0.91	0.91	0.91		
60.0	2.75	0.92	0.00	0.00	0.00	0.00	0.92	0.92	0.92		
75.0	2.75	0.92	0.92	0.00	0.00	0.00	0.92	0.92	0.92		
90.0	0.92	0.92	0.00	0.00	0.00	0.00	0.92	0.92	0.92		
105.0	0.92	0.00	0.92	0.00	0.00	0.92	0.92	0.92	0.92		
120.0	0.92	0.00	0.00	0.00	0.00	0.92	0.92	0.92	0.92		
135.0	0.92	0.00	0.00	0.00	0.00	0.00	0.92	0.92	0.92		
150.0	0.92	0.92	0.92	0.00	0.00	0.00	0.92	0.92	0.92		
165.0	0.92	0.00	0.00	0.00	0.00	0.00	0.92	0.92	0.92		
180.0	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
195.0	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
210.0	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
225.0	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
240.0	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
255.0	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
270.0	0.92	0.92	0.92	0.92	0.92	0.92	2.75	0.92	0.92		
285.0	0.92	0.92	0.92	0.92	0.92	0.92	2.75	0.92	0.92		
300.0	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
315.0	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
330.0	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
345.0	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
360.0	3.63	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0		
0.0	0.91	0.91	2.72	2.72	3.63	3.63	3.63	4.54	4.54		
15.0	0.91	0.91	2.73	2.73	3.64	3.64	3.64	4.55	4.55		
30.0	0.91	0.91	2.74	2.74	3.65	3.65	3.65	4.56	4.56		
45.0	0.91	0.91	2.74	2.74	3.65	3.65	3.65	4.57	4.57		
60.0	0.92	0.92	2.75	2.75	3.67	3.67	3.67	4.59	4.59		
75.0	0.92	0.92	2.75	2.75	3.67	3.67	3.67	4.59	4.59		
90.0	0.92	0.92	2.75	2.75	3.67	3.67	3.67	3.67	4.59		
105.0	0.92	0.92	2.75	2.75	3.67	3.67	3.67	3.67	4.59		
120.0	0.92	0.92	2.75	2.75	3.67	3.67	3.67	4.59	4.59		
135.0	0.92	0.92	2.76	2.76	3.68	3.68	3.68	4.60	4.60		
150.0	0.92	0.92	2.76	2.76	3.68	3.68	3.68	4.60	4.60		
165.0	0.92	0.92	2.76	2.76	3.68	3.68	3.68	4.60	4.60		
180.0	0.91	0.91	0.91	2.72	2.72	3.63	3.63	3.63	3.63		
195.0	0.91	0.91	0.91	2.73	2.73	2.73	3.64	3.64	3.64		
210.0	0.91	0.91	0.91	2.74	2.74	2.74	3.65	3.65	3.65		
225.0	0.91	0.91	0.91	0.91	2.74	2.74	2.74	3.65	3.65		
240.0	0.92	0.92	0.92	0.92	2.75	2.75	2.75	3.67	3.67		
255.0	0.92	0.92	0.92	2.75	2.75	2.75	3.67	3.67	3.67		
270.0	0.92	0.92	0.92	2.75	2.75	2.75	2.75	3.67	3.67		
285.0	0.92	0.92	0.92	2.75	2.75	2.75	2.75	3.67	3.67		
300.0	0.92	0.92	0.92	0.92	2.75	2.75	2.75	3.67	4.59		
315.0	0.92	0.92	0.92	2.76	2.76	2.76	2.76	3.68	4.60		
330.0	0.92	0.92	0.92	0.92	2.76	2.76	2.76	3.68	3.68		
345.0	0.92	0.92	0.92	0.92	2.76	2.76	3.68	3.68	3.68		
360.0	0.91	0.91	2.72	2.72	3.63	3.63	3.63	4.54	4.54		

Intensity data(cd)

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C/γ(°)	180.0
0.0	4.54
15.0	4.55
30.0	4.56
45.0	4.57
60.0	4.59
75.0	4.59
90.0	4.59
105.0	4.59
120.0	4.59
135.0	4.60
150.0	4.60
165.0	4.60
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	4.54