

---

Light Blue USA-Rayhil

---

Client:

LumCAT: INV-16-CCT-UNV-\*\*-3000K

Luminaire: LED lamp

Report No:

Ballast type:

Test No:

Voltage(V): 120.020

LampCAT:

Current(A): 0.200

Lamp flux(lm): 1470.9

Power (W): 23.870

Number of Lamps: 1

PF: 0.993

Length(mm): -380

Width(mm): -380

Phm Type: C

Height(mm): 0

---

Photometric Results

---

Lumens(lm): 1470.93, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 61.62

Central intensity(cd): 507.738, Maximum intensity(cd): 507.738

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

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

[C90/270]Total=114.2

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(%): 0.44%

Down flux rate of lamp(%): 99.56%

Up flux rate of LUM(%): 0.44%

Down flux rate of LUM(%): 99.56%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 78.221%

## Light Blue USA-Rayhil INV-16-CCT-UNV-\*\*-3000K

Zonal flux distribution table

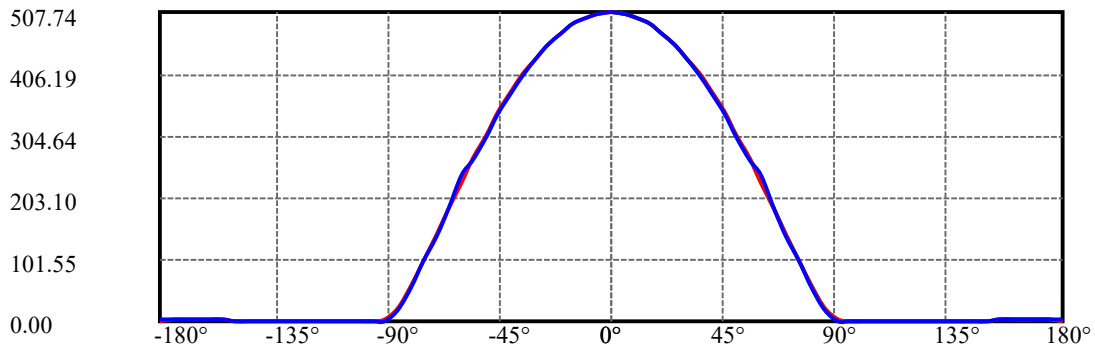
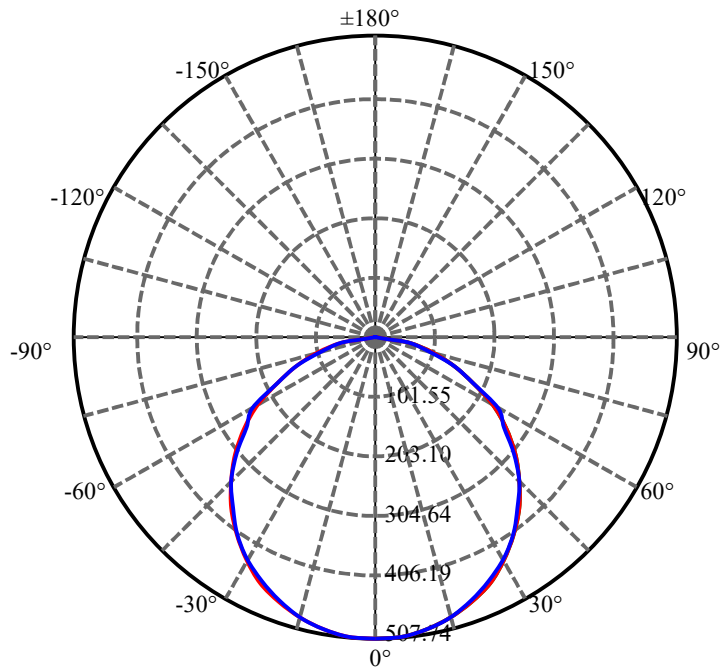
Appendix Page: 2 Total:12

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	507.738	0.000	0	0.00%	0.00%
5.0	505.678	12.115	12.115	0.82%	0.82%
10.0	499.230	35.949	48.064	2.44%	3.27%
15.0	488.508	58.592	106.656	3.98%	7.25%
20.0	473.399	79.275	185.93	5.39%	12.64%
25.0	454.896	97.361	283.291	6.62%	19.26%
30.0	432.462	112.296	395.587	7.63%	26.89%
35.0	405.870	123.450	519.037	8.39%	35.29%
40.0	376.567	130.544	649.581	8.87%	44.16%
45.0	341.658	132.985	782.566	9.04%	53.20%
50.0	304.610	130.588	913.154	8.88%	62.08%
55.0	265.313	123.920	1037.075	8.42%	70.50%
60.0	225.712	113.499	1150.574	7.72%	78.22%
65.0	183.056	99.372	1249.946	6.76%	84.98%
70.0	140.593	81.950	1331.896	5.57%	90.55%
75.0	99.198	62.677	1394.574	4.26%	94.81%
80.0	59.862	42.560	1437.133	2.89%	97.70%
85.0	19.723	21.625	1458.759	1.47%	99.17%
90.0	1.220	5.734	1464.493	0.39%	99.56%
95.0	0.763	0.543	1465.036	0.04%	99.60%
100.0	0.686	0.394	1465.429	0.03%	99.63%
105.0	0.534	0.326	1465.756	0.02%	99.65%
110.0	0.496	0.269	1466.025	0.02%	99.67%
115.0	0.648	0.290	1466.315	0.02%	99.69%
120.0	0.992	0.399	1466.713	0.03%	99.71%
125.0	0.916	0.441	1467.154	0.03%	99.74%
130.0	0.916	0.398	1467.552	0.03%	99.77%
135.0	0.916	0.370	1467.923	0.03%	99.80%
140.0	0.916	0.339	1468.262	0.02%	99.82%
145.0	1.374	0.382	1468.644	0.03%	99.84%
150.0	1.374	0.405	1469.048	0.03%	99.87%
155.0	2.289	0.464	1469.512	0.03%	99.90%
160.0	2.289	0.480	1469.992	0.03%	99.94%
165.0	2.289	0.377	1470.369	0.03%	99.96%
170.0	2.747	0.299	1470.668	0.02%	99.98%
175.0	2.976	0.205	1470.873	0.01%	100.00%
180.0	1.717	0.056	1470.929	0.00%	100.00%

ZONAL LUMEN SUMMARY			
Zone	Lumens	%Lamp	%Fixt
0-30	395.59	26.89%	26.89%
0-40	649.58	44.16%	44.16%
0-60	1150.57	78.22%	78.22%
0-90	1464.49	99.56%	99.56%
0-120	1466.71	99.71%	99.71%
0-180	1470.93	100.00%	100.00%
60-90	313.92	21.34%	21.34%
90-120	2.22	0.15%	0.15%
90-130	3.06	0.21%	0.21%
90-150	4.56	0.31%	0.31%
90-180	6.38	0.43%	0.43%
0-61.32	1176.74	80.00%	80.00%

ZONAL LUMEN SUMMARY

0-10	48.06
10-20	137.87
20-30	209.66
30-40	253.99
40-50	263.57
50-60	237.42
60-70	181.32
70-80	105.24
80-90	27.36
90-100	0.94
100-110	0.60
110-120	0.69
120-130	0.84
130-140	0.71
140-150	0.79
150-160	0.94
160-170	0.68
170-180	0.20



C0(Max): —————

C0/C180: —————

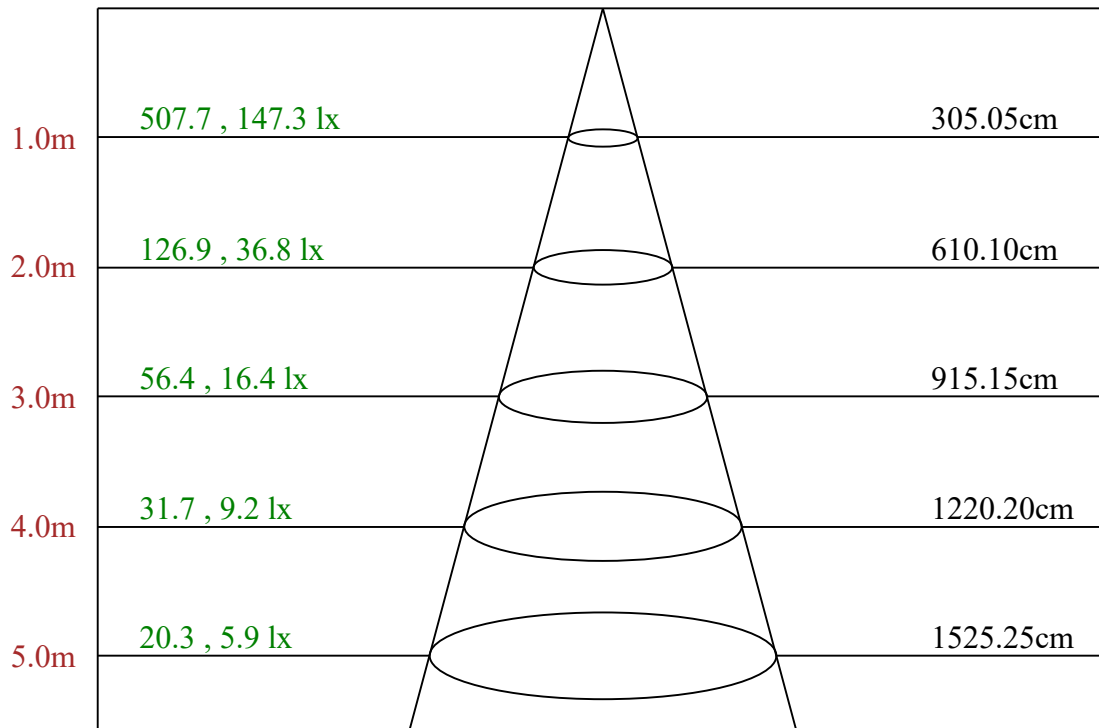
C90/C270: —————

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

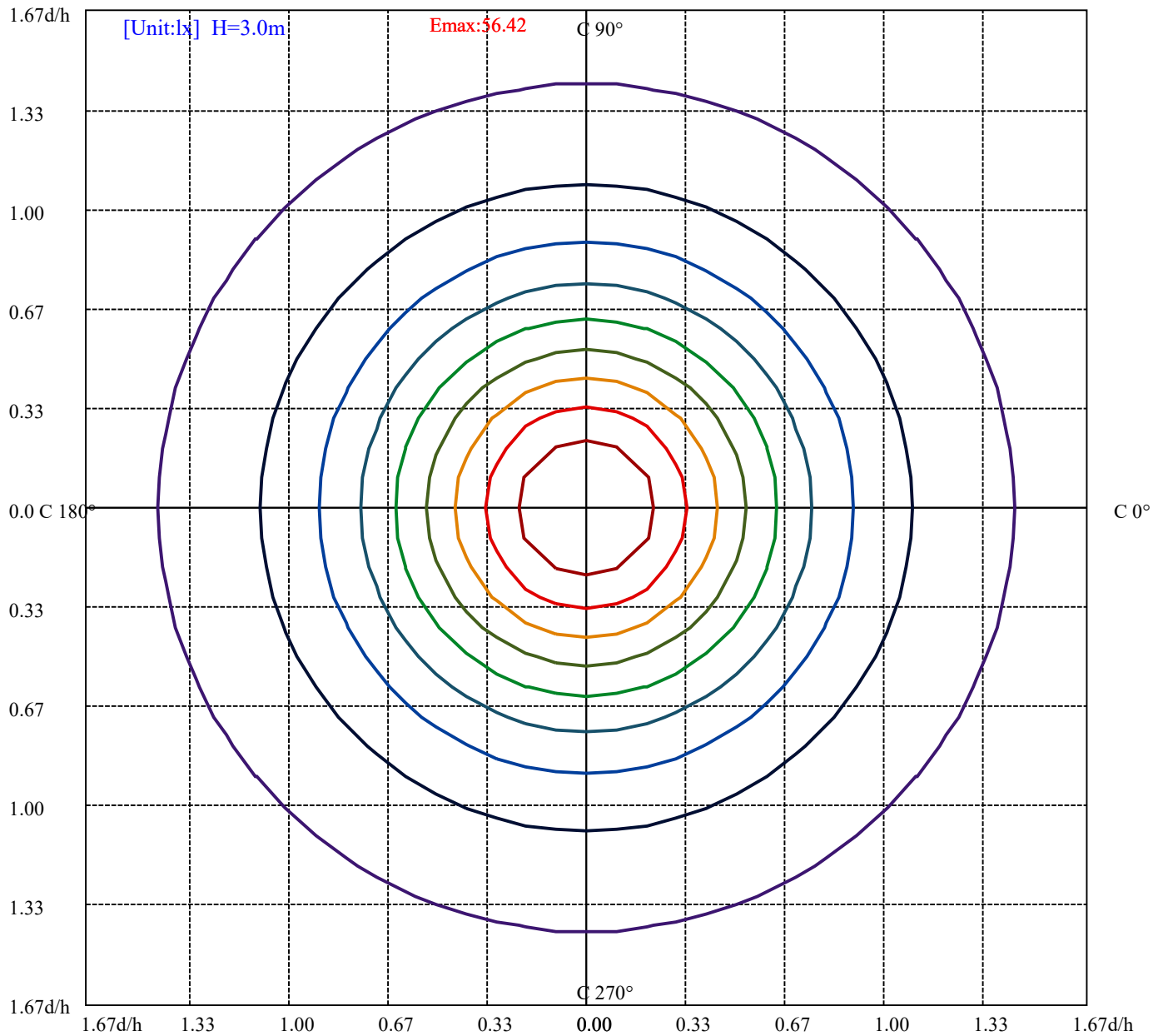
:C90/270Left:80.9 Right:80.9

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

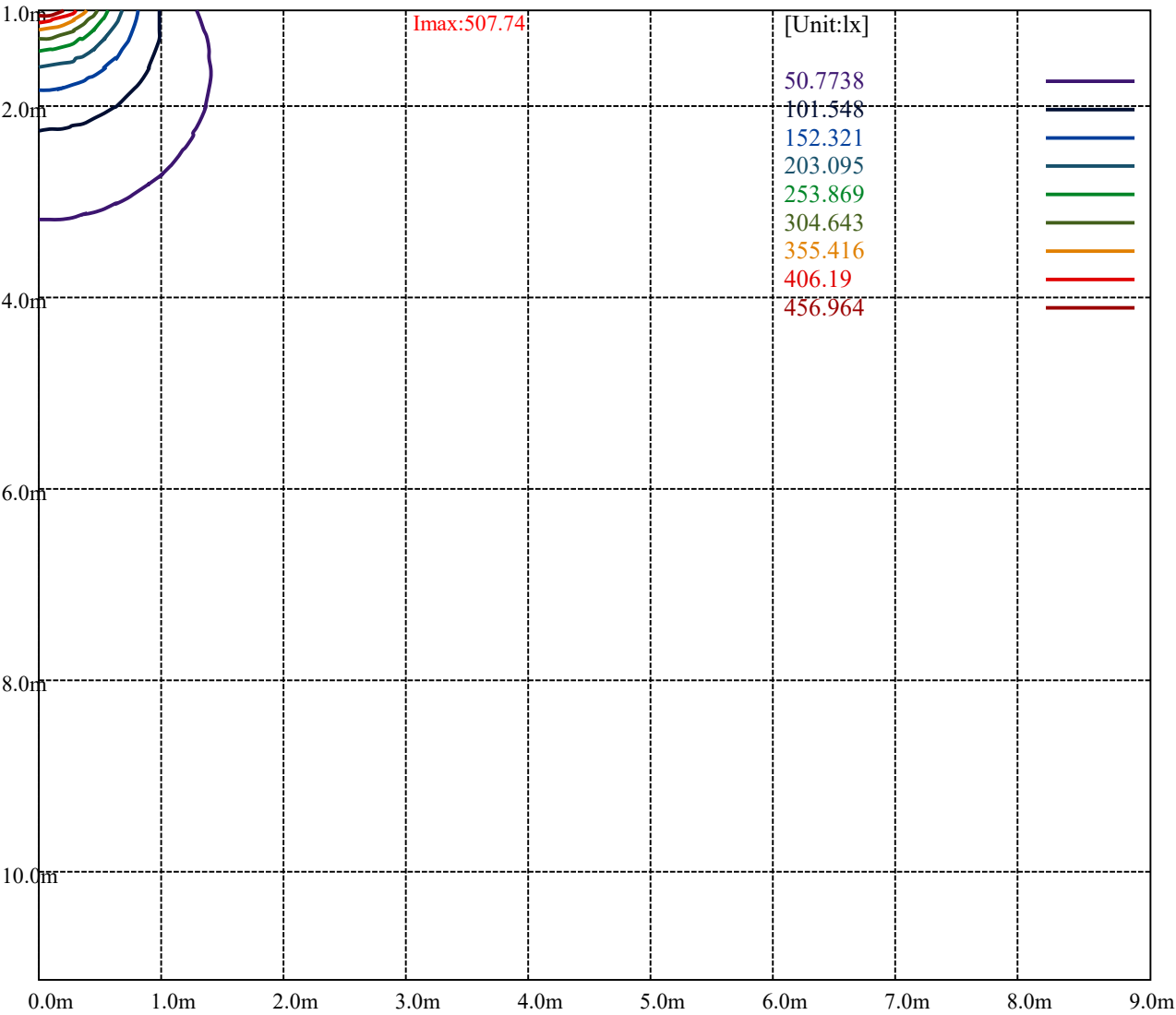
:C90/270Left:57.1 Right:57.1



Max , Ave      Beam angle of C0 plane 113.50



(10%Emax) 5.641533	—
(20%Emax) 11.28311	—
(30%Emax) 16.92455	—
(40%Emax) 22.56611	—
(50%Emax) 28.20767	—
(60%Emax) 33.84922	—
(70%Emax) 39.49067	—
(80%Emax) 45.13222	—
(90%Emax) 50.77378	—



Luminance Table

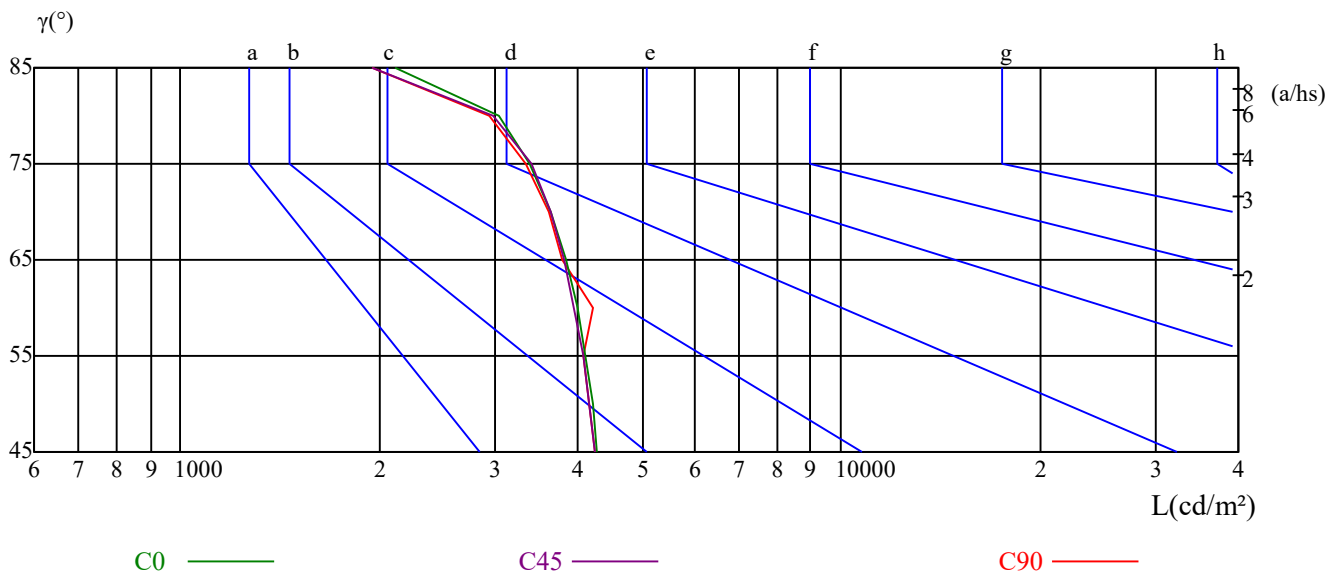
$\gamma$	45	50	55	60	65	70	75	80	85
C0	4268	4204	4105	3989	3831	3646	3382	3039	2110
C45	4254	4171	4075	3944	3805	3627	3396	2979	1947
C90	4251	4149	4065	4218	3796	3603	3341	2932	1947

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
3831	3796	3805	3382	3341	3396	2110	1947	1947

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





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	0.61	0.56	0.52	0.49
5	0.63	0.53	0.47	0.61	0.53	0.46	0.59	0.52	0.46	0.57	0.51	0.45	0.55	0.49	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-\*\*-3000K

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	507.74	507.74	503.20	495.04	481.44	465.12	444.27	418.88	391.68		
15.0	507.74	507.74	504.09	494.98	481.30	464.89	443.93	419.32	390.15		
30.0	507.74	507.74	503.17	494.04	480.34	463.90	441.99	417.33	389.94		
45.0	507.74	506.82	501.35	492.21	479.43	460.25	440.16	415.50	386.28		
60.0	507.74	506.82	501.32	493.07	479.33	461.00	439.00	413.34	384.01		
75.0	507.74	506.82	501.32	491.24	476.58	458.25	435.33	411.51	382.18		
90.0	507.74	505.90	500.41	490.32	476.58	457.33	435.33	409.67	379.43		
105.0	507.74	505.90	499.49	489.41	474.74	455.50	434.42	406.92	378.51		
120.0	507.74	505.90	500.39	489.37	474.68	456.32	434.29	408.58	377.36		
135.0	507.74	506.82	500.38	489.34	474.62	456.23	434.15	409.32	377.12		
150.0	507.74	505.90	500.38	489.34	460.83	457.15	435.99	407.48	377.12		
165.0	507.74	505.90	499.46	488.42	474.62	456.23	434.15	407.48	376.20		
180.0	507.74	503.20	495.04	482.35	466.03	446.08	421.60	393.50	362.67		
195.0	507.74	504.09	495.89	484.04	466.72	447.57	423.87	394.70	362.80		
210.0	507.74	504.08	495.87	483.08	466.64	447.47	423.72	396.33	364.37		
225.0	507.74	504.08	494.95	483.08	466.64	447.47	422.81	395.41	363.45		
240.0	507.74	504.99	496.74	484.83	468.33	448.17	424.34	396.84	366.60		
255.0	507.74	504.07	496.74	484.83	469.24	449.08	426.17	398.67	366.60		
270.0	507.74	504.99	497.66	485.74	469.24	450.00	427.09	399.59	369.35		
285.0	507.74	504.07	497.66	486.66	471.08	451.83	428.92	400.51	394.09		
300.0	507.74	504.98	498.56	487.54	483.87	452.65	430.61	403.07	373.69		
315.0	507.74	505.90	499.46	488.42	472.78	455.31	432.31	405.64	374.36		
330.0	507.74	505.90	499.46	488.42	472.78	455.31	432.31	405.64	374.36		
345.0	507.74	505.90	498.54	488.42	473.70	454.39	432.31	405.64	375.28		
360.0	507.74	507.74	503.20	495.04	481.44	465.12	444.27	418.88	391.68		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	357.23	322.78	284.70	243.90	201.28	159.57	116.96	77.07	36.27		
15.0	357.33	320.87	281.67	243.39	201.45	158.61	116.68	75.66	34.64		
30.0	355.23	320.53	281.26	240.17	198.16	156.16	113.24	74.88	34.70		
45.0	353.41	316.88	278.53	237.43	197.25	152.50	112.32	71.23	31.05		
60.0	352.85	316.19	277.70	236.46	194.30	151.22	109.06	69.65	28.41		
75.0	349.18	312.52	273.12	230.96	191.55	149.39	108.15	66.90	27.49		
90.0	347.35	308.86	272.20	230.96	188.80	146.64	104.48	65.07	23.83		
105.0	345.52	308.86	269.45	228.21	188.80	143.89	104.48	63.24	22.91		
120.0	345.22	305.74	269.02	228.62	186.38	144.15	101.91	63.35	22.95		
135.0	344.01	306.30	266.75	226.27	183.96	144.41	103.02	61.63	21.16		
150.0	343.09	308.14	266.75	228.11	186.72	143.49	101.18	59.79	22.08		
165.0	344.01	308.14	268.59	228.11	185.80	143.49	103.02	60.71	21.16		
180.0	327.31	290.14	249.34	208.54	165.92	123.31	81.60	42.61	5.44		
195.0	327.25	288.96	248.86	206.92	167.73	124.88	82.95	42.84	5.47		
210.0	328.75	290.40	250.22	208.21	167.12	125.11	84.93	42.92	7.31		
225.0	327.84	291.31	252.96	210.04	169.85	126.93	85.84	44.75	7.31		
240.0	331.77	294.19	253.87	212.63	170.47	128.31	87.98	45.82	10.08		
255.0	331.77	295.11	253.87	214.46	172.30	130.14	88.90	79.73	11.91		
270.0	334.52	296.03	256.62	247.45	175.05	132.89	91.65	50.41	14.66		
285.0	337.27	299.69	259.37	218.13	177.80	133.81	94.40	54.07	14.66		
300.0	336.96	301.15	262.59	221.27	179.04	136.80	94.57	54.17	17.44		
315.0	339.41	301.70	262.15	220.76	178.44	138.89	97.50	57.03	17.48		
330.0	341.25	302.62	263.99	223.51	182.12	138.89	97.50	56.11	16.56		
345.0	341.25	303.54	263.99	222.60	183.04	140.73	98.42	57.03	18.40		
360.0	357.23	322.78	284.70	243.90	201.28	159.57	116.96	77.07	36.27		

Light Blue USA-Rayhil INV-16-CCT-UNV-\*\*-3000K

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	2.72	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		
15.0	2.73	0.91	0.00	0.00	0.00	0.91	0.91	0.91	0.91		
30.0	1.83	0.91	0.91	0.91	0.00	0.91	0.91	0.91	0.91		
45.0	1.83	0.91	0.91	0.00	0.00	0.00	0.91	0.91	0.91		
60.0	1.83	0.92	0.00	0.00	0.00	0.00	0.92	0.92	0.92		
75.0	1.83	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	1.83	0.92	0.92		
285.0	0.92	0.92	0.92	0.92	0.92	0.92	1.83	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	2.72	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	1.81	1.81	2.72	2.72	2.72	2.72	2.72		
15.0	0.91	0.91	1.82	1.82	2.73	2.73	2.73	2.73	2.73		
30.0	0.91	0.91	1.83	1.83	2.74	2.74	2.74	2.74	3.65		
45.0	0.91	0.91	1.83	1.83	2.74	2.74	2.74	2.74	3.65		
60.0	0.92	0.92	1.83	1.83	2.75	2.75	2.75	2.75	3.67		
75.0	0.92	0.92	1.83	1.83	2.75	2.75	2.75	2.75	2.75		
90.0	0.92	0.92	1.83	1.83	2.75	2.75	2.75	2.75	3.67		
105.0	0.92	0.92	1.83	1.83	2.75	2.75	2.75	2.75	2.75		
120.0	0.92	0.92	1.84	1.84	2.75	2.75	2.75	2.75	3.67		
135.0	0.92	0.92	1.84	1.84	2.76	2.76	2.76	2.76	2.76		
150.0	0.92	0.92	1.84	1.84	2.76	2.76	2.76	2.76	3.68		
165.0	0.92	0.92	1.84	1.84	2.76	2.76	2.76	2.76	2.76		
180.0	0.91	0.91	0.91	0.91	1.81	1.81	1.81	2.72	2.72		
195.0	0.91	0.91	0.91	0.91	1.82	1.82	1.82	2.73	2.73		
210.0	0.91	0.91	0.91	0.91	1.83	1.83	1.83	2.74	2.74		
225.0	0.91	0.91	0.91	0.91	1.83	1.83	1.83	2.74	2.74		
240.0	0.92	0.92	0.92	0.92	1.83	1.83	1.83	2.75	2.75		
255.0	0.92	0.92	0.92	0.92	1.83	1.83	1.83	2.75	2.75		
270.0	0.92	0.92	0.92	0.92	1.83	1.83	1.83	2.75	2.75		
285.0	0.92	0.92	0.92	0.92	1.83	1.83	1.83	2.75	2.75		
300.0	0.92	0.92	0.92	0.92	1.84	1.84	1.84	2.75	2.75		
315.0	0.92	0.92	0.92	0.92	1.84	1.84	1.84	2.76	2.76		
330.0	0.92	0.92	0.92	0.92	1.84	1.84	1.84	2.76	2.76		
345.0	0.92	0.92	0.92	0.92	1.84	1.84	1.84	2.76	2.76		
360.0	0.91	0.91	1.81	1.81	2.72	2.72	2.72	2.72	2.72		

Intensity data(cd)

C/γ(°)	180.0
0.0	2.72
15.0	3.65
30.0	2.74
45.0	3.65
60.0	3.67
75.0	3.67
90.0	3.67
105.0	3.67
120.0	3.67
135.0	3.68
150.0	2.76
165.0	3.68
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	2.72