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Light Blue USA-Rayhil

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Client:

LumCAT: LCD-RD-9-5CCT-UNV-120-\*\*

Luminaire: LED lamp

Report No:

Ballast type:

Test No:

Voltage(V): 120.020

LampCAT:

Current(A): 0.108

Lamp flux(lm): 1001.9

Power (W): 12.690

Number of Lamps: 1

PF: 0.983

Length(mm): -60

Width(mm): -60

Phm Type: C

Height(mm): 0

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Photometric Results

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Lumens(lm): 1001.93, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 78.95

Central intensity(cd): 1518.333, Maximum intensity(cd): 1518.333

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

Beam Angle(50%Imax): [C0/180]Total=43.0

[C90/270]Total=42.4

Field angle(10%Imax): [C0/180]Total=75.6

[C90/270]Total=75.2

Maximum s/h(1/2): C0\_180=0.69 C90\_270=0.68

Maximum s/h(1/4): C0\_180=0.69 C90\_270=0.68

Up flux rate of lamp(%): 0.28%

Down flux rate of lamp(%): 99.72%

Up flux rate of LUM(%): 0.28%

Down flux rate of LUM(%): 99.72%

CIE Type : Direct lighting

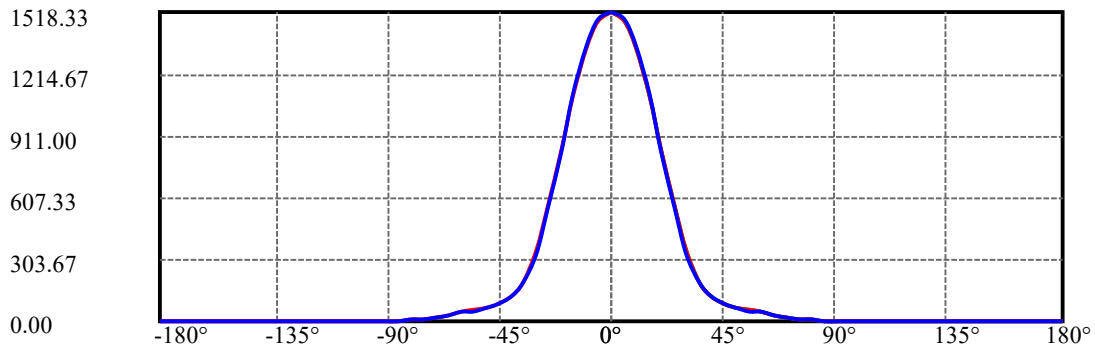
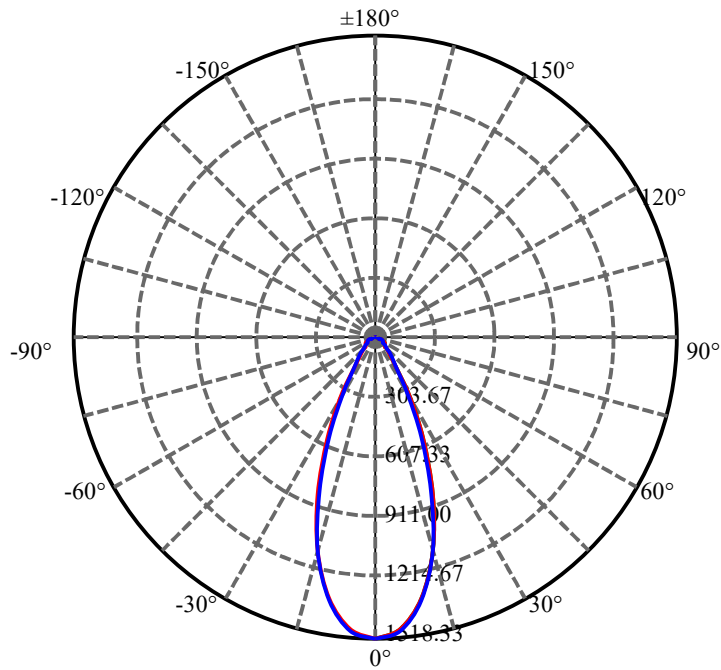
Output flux ratio in  $\pi$  solid angle : 94.600%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	1518.333	0.000	0	0.00%	0.00%
5.0	1476.621	35.804	35.804	3.57%	3.57%
10.0	1340.709	100.785	136.589	10.06%	13.63%
15.0	1105.780	145.124	281.713	14.48%	28.12%
20.0	832.553	159.746	441.459	15.94%	44.06%
25.0	558.163	145.860	587.319	14.56%	58.62%
30.0	339.150	113.556	700.875	11.33%	69.95%
35.0	187.964	77.621	778.496	7.75%	77.70%
40.0	121.594	51.647	830.143	5.15%	82.85%
45.0	86.428	38.517	868.66	3.84%	86.70%
50.0	66.190	30.839	899.499	3.08%	89.78%
55.0	53.117	25.941	925.44	2.59%	92.37%
60.0	43.733	22.387	947.827	2.23%	94.60%
65.0	32.083	18.431	966.258	1.84%	96.44%
70.0	20.738	13.375	979.633	1.33%	97.77%
75.0	13.760	9.017	988.65	0.90%	98.67%
80.0	9.084	6.112	994.763	0.61%	99.28%
85.0	3.449	3.405	998.168	0.34%	99.62%
90.0	0.037	0.955	999.123	0.10%	99.72%
95.0	0.000	0.010	999.133	0.00%	99.72%
100.0	0.000	0.000	999.133	0.00%	99.72%
105.0	0.000	0.000	999.133	0.00%	99.72%
110.0	0.000	0.000	999.133	0.00%	99.72%
115.0	0.000	0.000	999.133	0.00%	99.72%
120.0	0.000	0.000	999.133	0.00%	99.72%
125.0	0.000	0.000	999.133	0.00%	99.72%
130.0	0.000	0.000	999.133	0.00%	99.72%
135.0	0.000	0.000	999.133	0.00%	99.72%
140.0	0.000	0.000	999.133	0.00%	99.72%
145.0	0.460	0.077	999.21	0.01%	99.73%
150.0	1.342	0.265	999.475	0.03%	99.75%
155.0	2.300	0.461	999.936	0.05%	99.80%
160.0	3.182	0.575	1000.511	0.06%	99.86%
165.0	3.794	0.575	1001.086	0.06%	99.92%
170.0	4.140	0.471	1001.557	0.05%	99.96%
175.0	4.216	0.299	1001.855	0.03%	99.99%
180.0	2.300	0.078	1001.933	0.01%	100.00%

ZONAL LUMEN SUMMARY			
Zone	Lumens	%Lamp	%Fixt
0-30	700.87	69.95%	69.95%
0-40	830.14	82.85%	82.85%
0-60	947.83	94.60%	94.60%
0-90	999.12	99.72%	99.72%
0-120	999.13	99.72%	99.72%
0-180	1001.93	100.00%	100.00%
60-90	51.30	5.12%	5.12%
90-120	0.01	0.00%	0.00%
90-130	0.01	0.00%	0.00%
90-150	0.35	0.04%	0.04%
90-180	2.73	0.27%	0.27%
0-37.23	801.55	80.00%	80.00%

## ZONAL LUMEN SUMMARY

0-10	136.59
10-20	304.87
20-30	259.42
30-40	129.27
40-50	69.36
50-60	48.33
60-70	31.81
70-80	15.13
80-90	4.36
90-100	0.01
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.34
150-160	1.04
160-170	1.05
170-180	0.30



C0(Max): —————

C0/C180: —————

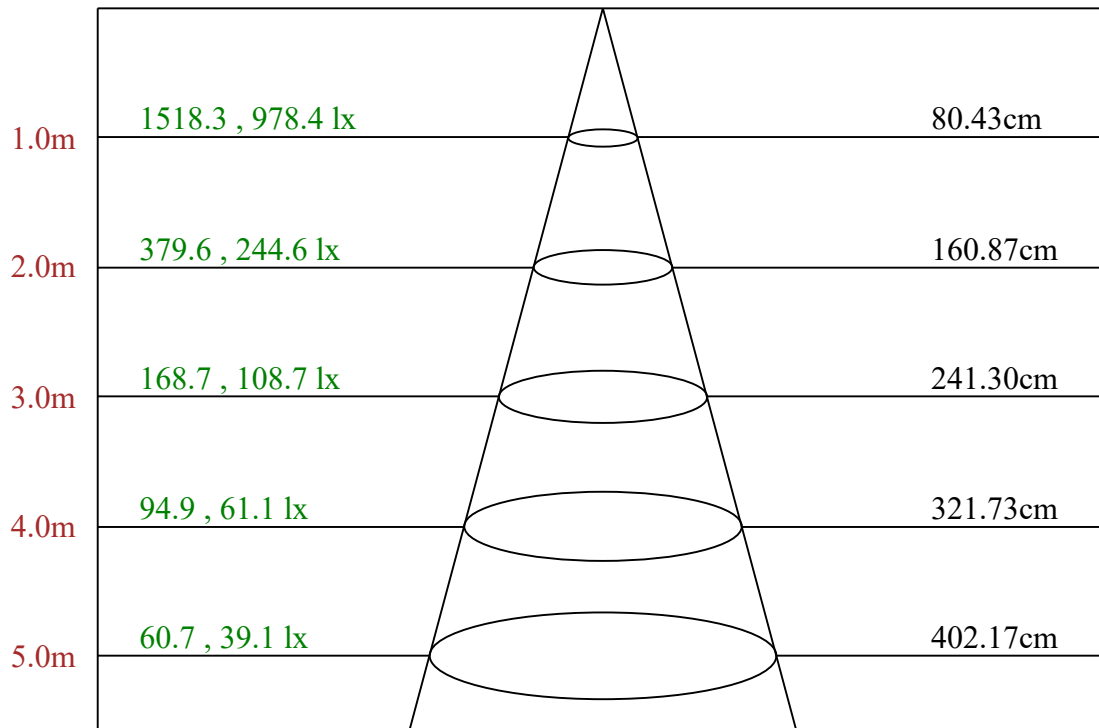
C90/C270: —————

Field angle(10%Imax):C0/180Left:37.8 Right:37.8

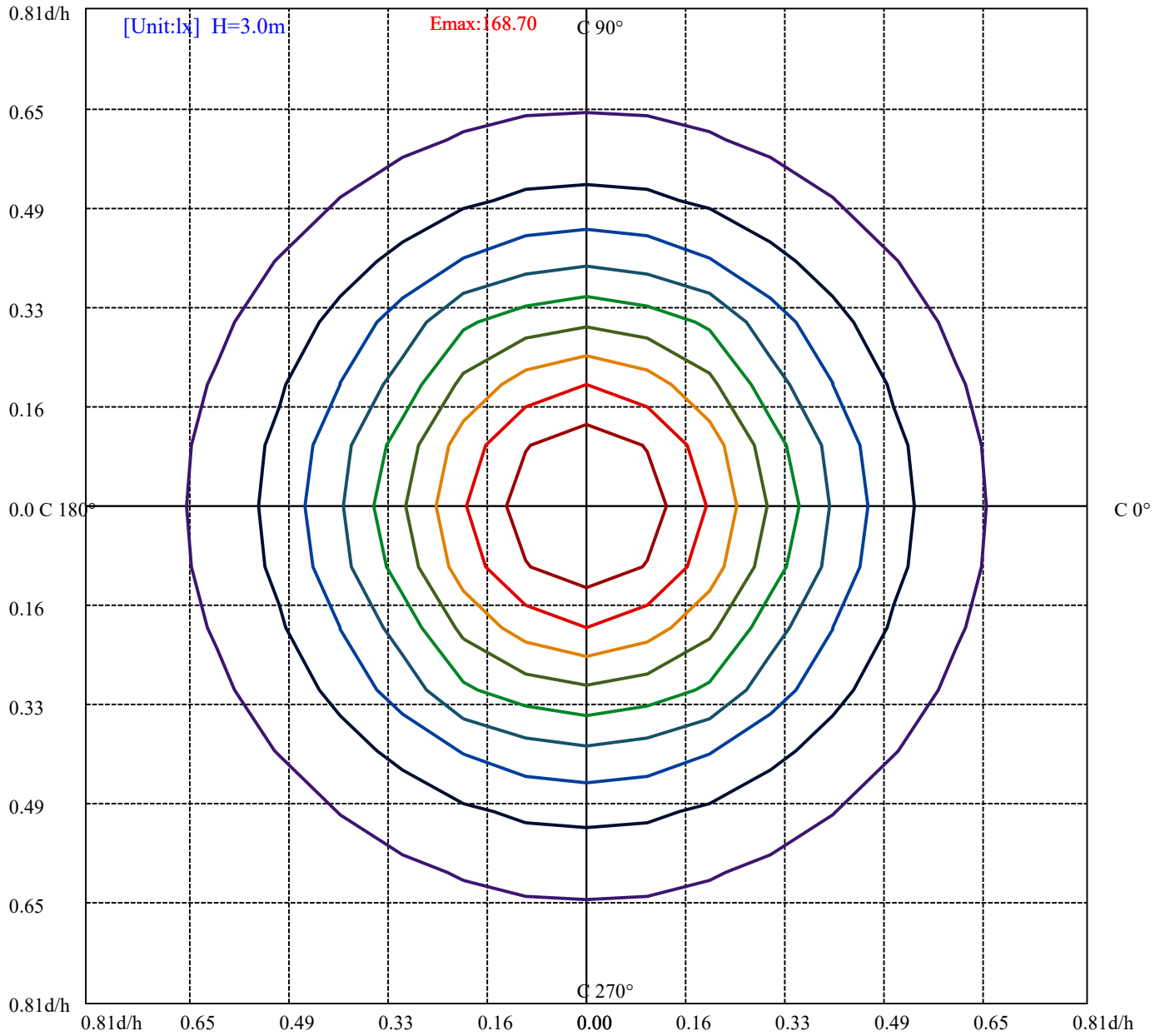
:C90/270Left:37.6 Right:37.6

Beam Angle(50%Imax):C0/180Left:21.5 Right:21.5

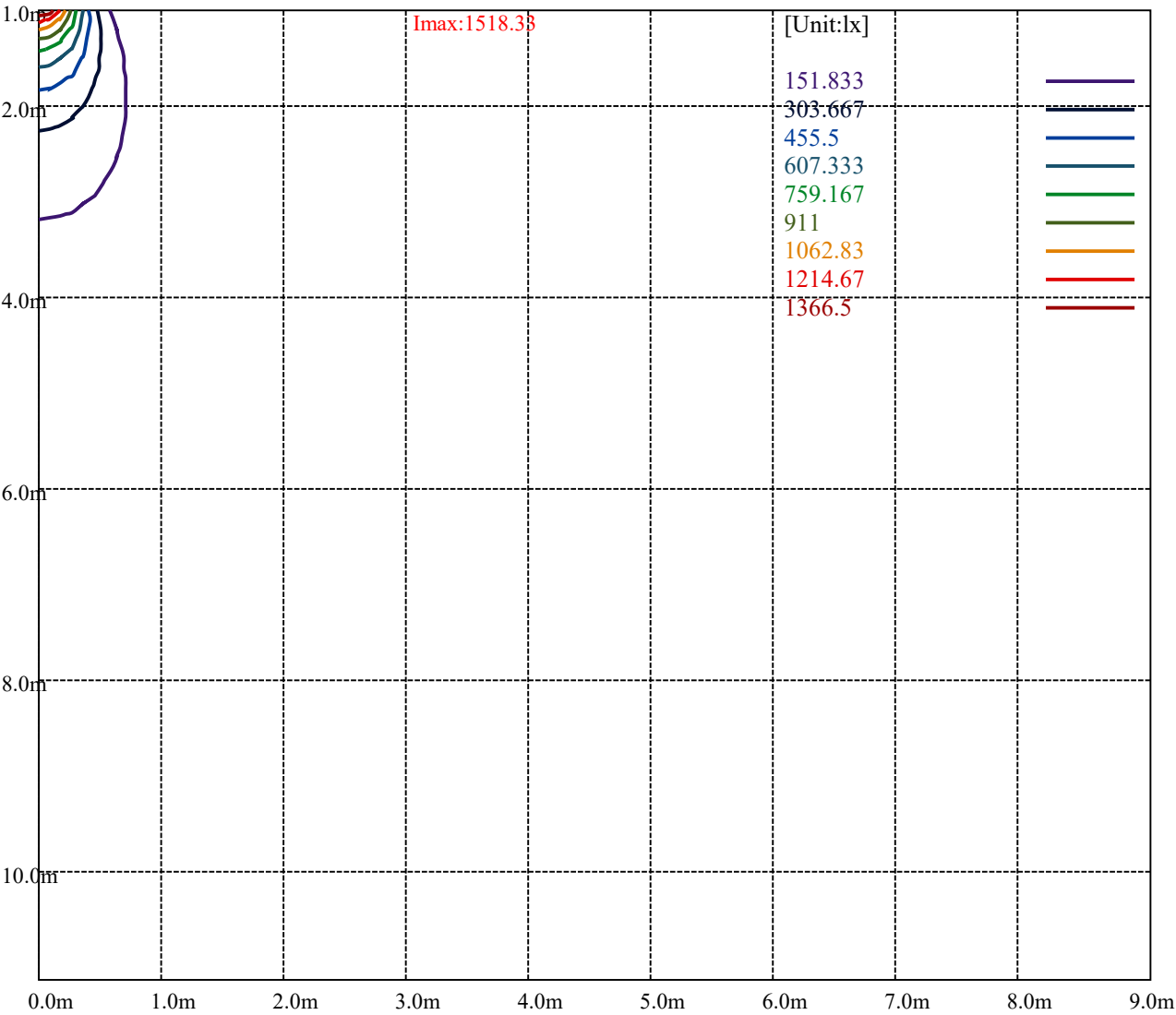
:C90/270Left:21.2 Right:21.2



Max , Ave      Beam angle of C0 plane 43.82



(10%Emax)	16.87033	
(20%Emax)	33.74067	
(30%Emax)	50.61111	
(40%Emax)	67.48145	
(50%Emax)	84.35178	
(60%Emax)	101.2221	
(70%Emax)	118.0922	
(80%Emax)	134.9633	
(90%Emax)	151.8333	



Luminance Table

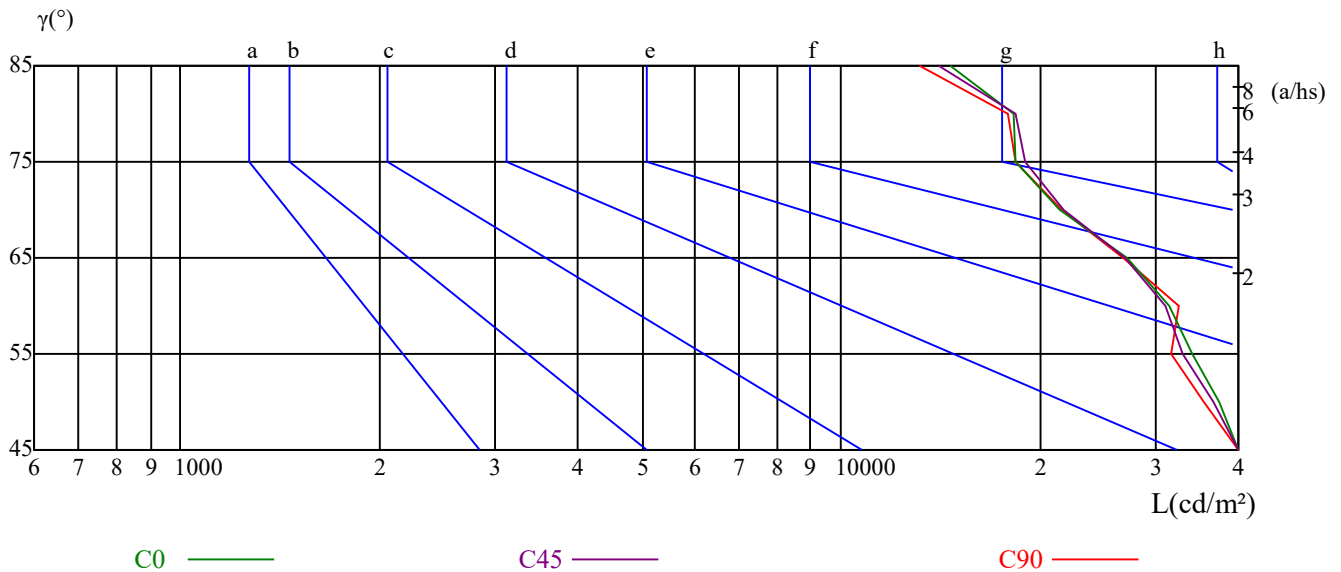
$\gamma$	45	50	55	60	65	70	75	80	85
C0	44315	37366	34110	31495	27099	21393	18437	18320	14600
C45	43192	36558	32975	30951	26935	21790	18979	18388	14087
C90	42602	35404	31683	32416	26730	21541	18344	17914	13149

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
27099	26730	26935	18437	18344	18979	14600	13149	14087

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	1.10	1.07	1.04	1.07	1.05	1.03	1.03	1.01	1.00	1.00	0.98	0.97	0.96	0.95	0.94	0.92
2	1.01	0.97	0.93	1.00	0.96	0.92	0.96	0.93	0.90	0.93	0.90	0.88	0.90	0.88	0.86	0.84
3	0.94	0.89	0.84	0.93	0.88	0.84	0.90	0.86	0.82	0.87	0.84	0.81	0.85	0.82	0.80	0.78
4	0.88	0.82	0.77	0.87	0.81	0.77	0.84	0.80	0.76	0.82	0.78	0.75	0.80	0.77	0.74	0.73
5	0.82	0.76	0.72	0.81	0.75	0.71	0.79	0.74	0.71	0.78	0.73	0.70	0.76	0.72	0.69	0.68
6	0.77	0.71	0.67	0.76	0.71	0.66	0.75	0.70	0.66	0.73	0.69	0.65	0.72	0.68	0.65	0.63
7	0.73	0.67	0.62	0.72	0.66	0.62	0.71	0.66	0.62	0.70	0.65	0.61	0.68	0.64	0.61	0.60
8	0.69	0.63	0.59	0.68	0.63	0.59	0.67	0.62	0.58	0.66	0.61	0.58	0.65	0.61	0.58	0.56
9	0.65	0.59	0.55	0.65	0.59	0.55	0.64	0.59	0.55	0.63	0.58	0.55	0.62	0.58	0.55	0.53
10	0.62	0.56	0.52	0.62	0.56	0.52	0.61	0.56	0.52	0.60	0.55	0.52	0.59	0.55	0.52	0.51

Light Blue USA-Rayhil LCD-RD-9-5CCT-UNV-120-\*\*

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	1518.33	1526.43	1444.58	1238.59	969.65	676.41	413.76	225.77	134.92		
15.0	1518.33	1525.59	1441.19	1240.62	958.37	664.33	414.75	225.07	134.32		
30.0	1518.33	1519.25	1431.44	1237.53	955.82	661.30	400.62	215.86	131.71		
45.0	1518.33	1521.09	1430.05	1217.61	947.23	637.31	395.45	213.36	130.59		
60.0	1518.33	1521.09	1412.57	1205.65	921.48	629.04	377.05	203.24	128.75		
75.0	1518.33	1518.33	1410.34	1186.05	911.00	610.10	374.74	203.06	125.53		
90.0	1518.33	1510.93	1406.31	1180.41	894.34	606.41	366.62	207.38	124.98		
105.0	1518.33	1506.30	1390.65	1175.07	890.09	607.89	371.95	208.18	128.61		
120.0	1518.33	1496.19	1382.73	1153.05	871.70	596.82	378.20	207.55	130.99		
135.0	1518.33	1509.94	1390.56	1162.07	893.47	618.34	384.25	217.30	133.37		
150.0	1518.33	1488.69	1369.19	1164.46	690.15	617.89	383.52	218.63	135.25		
165.0	1518.33	1485.06	1366.78	1151.46	891.78	627.48	405.69	221.79	132.15		
180.0	1518.33	1420.29	1230.50	976.84	709.69	463.24	277.94	158.31	107.94		
195.0	1518.33	1416.69	1238.81	977.43	727.86	481.91	284.97	160.64	108.91		
210.0	1518.33	1426.87	1248.51	993.32	729.90	472.88	300.01	161.89	108.84		
225.0	1518.33	1430.05	1269.11	1005.17	751.35	500.29	299.80	166.46	110.36		
240.0	1518.33	1434.65	1266.35	1023.56	751.35	499.37	297.05	166.46	111.28		
255.0	1518.33	1439.88	1281.12	1022.68	765.17	507.65	301.82	169.83	110.76		
270.0	1518.33	1453.53	1286.88	1035.98	758.24	498.09	295.33	166.65	112.02		
285.0	1518.33	1449.86	1287.95	1029.80	746.68	499.63	295.15	165.62	148.97		
300.0	1518.33	1446.38	1296.03	1037.74	996.23	478.75	289.65	162.35	107.93		
315.0	1518.33	1473.57	1296.37	1048.28	757.30	489.63	283.52	160.41	110.05		
330.0	1518.33	1459.97	1296.00	1035.69	742.95	475.23	278.84	153.78	106.53		
345.0	1518.33	1458.27	1303.01	1039.64	749.46	475.92	268.92	151.56	103.50		
360.0	1518.33	1526.43	1444.58	1238.59	969.65	676.41	413.76	225.77	134.92		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	98.04	73.76	59.37	48.57	36.88	24.29	15.29	10.79	5.40		
15.0	96.20	73.51	58.99	48.10	36.30	23.60	15.43	10.89	5.45		
30.0	96.04	73.17	58.54	47.56	34.76	22.87	15.55	10.98	4.57		
45.0	93.80	71.73	57.02	46.90	34.03	22.07	14.71	10.12	4.60		
60.0	92.88	70.81	55.18	45.98	33.11	22.07	14.71	10.12	4.60		
75.0	90.45	68.30	54.46	44.30	33.23	22.15	13.84	9.23	3.69		
90.0	90.73	67.58	53.70	44.44	33.33	22.22	13.89	9.26	3.70		
105.0	90.67	68.47	53.66	44.41	34.23	22.21	13.88	9.25	3.70		
120.0	92.24	69.18	54.42	44.28	35.05	23.06	14.76	10.15	4.61		
135.0	93.26	69.95	55.96	45.70	35.44	24.25	14.92	10.26	4.66		
150.0	94.49	70.40	55.58	46.32	36.13	24.09	14.82	10.19	4.63		
165.0	94.26	72.08	56.37	47.13	36.96	24.03	15.71	11.09	5.54		
180.0	79.15	62.06	51.27	40.48	27.88	17.09	11.69	7.20	1.80		
195.0	81.68	62.62	51.73	40.84	29.04	18.15	12.71	8.17	1.82		
210.0	80.49	63.11	51.22	41.16	29.27	18.29	13.72	7.32	2.74		
225.0	80.01	62.54	51.50	41.38	29.43	19.31	13.79	8.28	2.76		
240.0	79.09	61.62	50.58	41.38	29.43	18.39	13.79	8.28	2.76		
255.0	79.38	60.92	49.84	41.53	29.54	19.38	12.92	12.00	2.77		
270.0	79.62	61.10	49.07	47.22	30.55	19.44	12.96	8.33	2.78		
285.0	79.57	61.07	49.04	40.71	29.61	18.50	12.95	7.40	2.78		
300.0	79.33	60.88	48.89	40.59	29.52	18.45	11.99	7.38	1.84		
315.0	78.34	61.55	49.43	41.04	29.84	18.65	12.12	7.46	1.87		
330.0	77.82	61.14	49.10	39.83	28.72	17.60	12.04	7.41	1.85		
345.0	76.70	60.99	49.90	39.74	27.72	17.56	12.01	6.47	1.85		
360.0	98.04	73.76	59.37	48.57	36.88	24.29	15.29	10.79	5.40		

Light Blue USA-Rayhil LCD-RD-9-5CCT-UNV-120-\*\*

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	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
15.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
30.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
45.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
60.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
75.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
90.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
105.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
120.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
135.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
150.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
165.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
180.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
195.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
210.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
225.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
240.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
255.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
270.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
285.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
300.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
315.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
330.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
345.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
360.0	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0		
0.0	0.00	0.00	0.90	1.80	2.70	3.60	4.50	4.50	4.50		
15.0	0.00	0.00	0.91	0.91	2.72	3.63	4.54	4.54	4.54		
30.0	0.00	0.00	0.91	1.83	2.74	3.66	4.57	4.57	4.57		
45.0	0.00	0.00	0.92	1.84	2.76	3.68	4.60	4.60	4.60		
60.0	0.00	0.00	0.92	1.84	2.76	3.68	4.60	4.60	4.60		
75.0	0.00	0.00	0.92	1.85	2.77	3.69	4.61	4.61	4.61		
90.0	0.00	0.00	0.93	1.85	2.78	3.70	4.63	4.63	4.63		
105.0	0.00	0.00	0.93	1.85	2.78	3.70	4.63	4.63	4.63		
120.0	0.00	0.00	0.92	1.84	2.77	3.69	4.61	4.61	4.61		
135.0	0.00	0.00	0.93	1.87	2.80	3.73	4.66	4.66	4.66		
150.0	0.00	0.00	0.93	1.85	2.78	3.71	4.63	4.63	4.63		
165.0	0.00	0.00	0.92	1.85	2.77	3.70	4.62	4.62	4.62		
180.0	0.00	0.00	0.00	0.90	1.80	2.70	3.60	3.60	4.50		
195.0	0.00	0.00	0.00	0.91	1.82	1.82	3.63	3.63	4.54		
210.0	0.00	0.00	0.00	0.91	1.83	2.74	3.66	3.66	3.66		
225.0	0.00	0.00	0.00	0.92	1.84	2.76	2.76	3.68	3.68		
240.0	0.00	0.00	0.00	0.92	1.84	2.76	2.76	3.68	3.68		
255.0	0.00	0.00	0.00	0.92	1.85	2.77	2.77	3.69	3.69		
270.0	0.00	0.00	0.00	0.93	1.85	2.78	2.78	3.70	3.70		
285.0	0.00	0.00	0.00	0.93	1.85	2.78	2.78	3.70	3.70		
300.0	0.00	0.00	0.00	0.92	1.84	2.77	2.77	3.69	3.69		
315.0	0.00	0.00	0.00	0.93	1.87	2.80	2.80	3.73	3.73		
330.0	0.00	0.00	0.00	0.93	1.85	2.78	2.78	3.71	3.71		
345.0	0.00	0.00	0.00	0.92	1.85	2.77	2.77	3.70	3.70		
360.0	0.00	0.00	0.90	1.80	2.70	3.60	4.50	4.50	4.50		

## Intensity data(cd)

C/ $\gamma$ (°)	180.0
0.0	4.50
15.0	4.54
30.0	4.57
45.0	4.60
60.0	4.60
75.0	4.61
90.0	4.63
105.0	4.63
120.0	4.61
135.0	4.66
150.0	4.63
165.0	4.62
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	4.50