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Light Blue USA & Associates LLC

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Client:

LumCAT: LED lamp

Luminaire: POL-2-CCT-BK-P3-R

Report No:

Ballast type:

Test No:

Voltage(V): 120.010

LampCAT:

Current(A): 0.373

Lamp flux(lm): 1410.3

Power (W): 44.280

Number of Lamps: 1

PF: 0.988

Length(mm): 580

Width(mm): 20

Phm Type: C

Height(mm): 120

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Photometric Results

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Lumens(lm): 1410.30, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 31.85

Central intensity(cd): 297.307, Maximum intensity(cd): 320.245

Angle of maximum intensity: C=90.0  $\gamma$ =165.0

Beam Angle(50%Imax): [C0/180]Total=N.A.

[C90/270]Total=N.A.

Field angle(10%Imax): [C0/180]Total=N.A.

[C90/270]Total=N.A.

Maximum s/h(1/2): C0\_180=1.16 C90\_270=1.36

Maximum s/h(1/4): C0\_180=1.27 C90\_270=1.42

Up flux rate of lamp(%): 50.70%

Down flux rate of lamp(%): 49.30%

Up flux rate of LUM(%): 50.70%

Down flux rate of LUM(%): 49.30%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 39.367%

Light Blue USA & Associates LLC LED lamp

Zonal flux distribution table

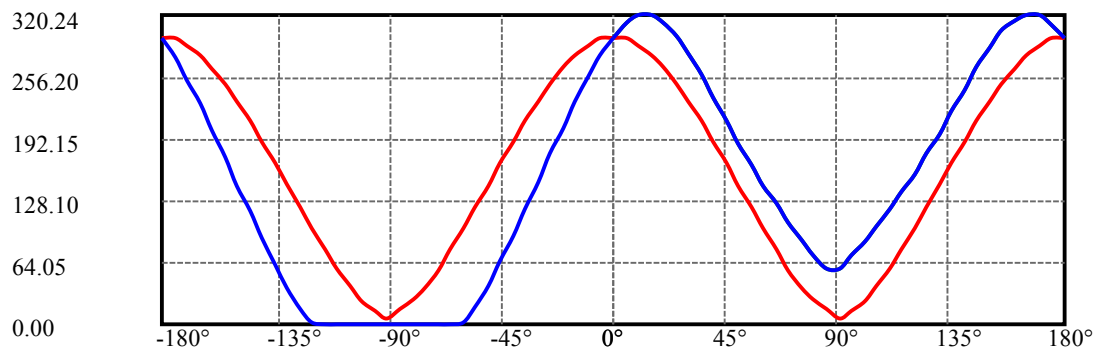
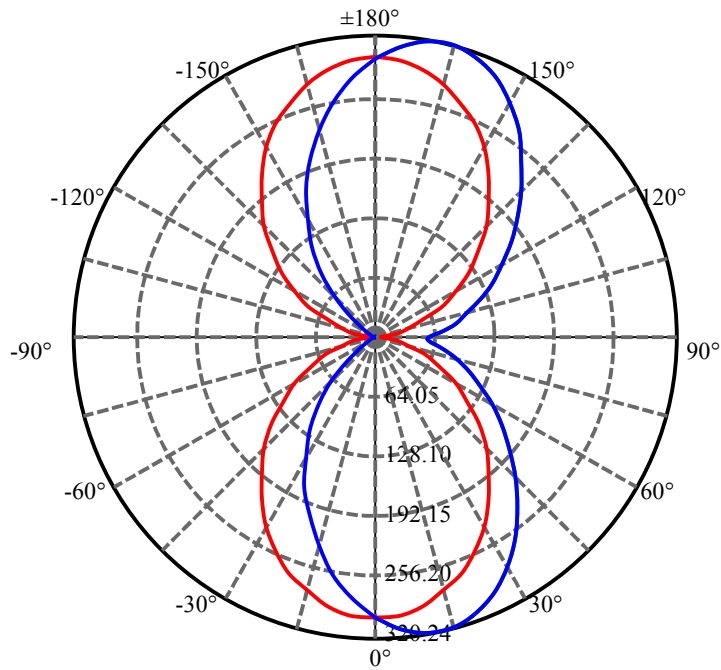
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$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	297.307	0.000	0	0.00%	0.00%
5.0	295.427	7.086	7.086	0.50%	0.50%
10.0	288.235	20.879	27.965	1.48%	1.98%
15.0	276.914	33.524	61.49	2.38%	4.36%
20.0	261.684	44.388	105.878	3.15%	7.51%
25.0	243.245	52.958	158.836	3.76%	11.26%
30.0	222.776	58.975	217.811	4.18%	15.44%
35.0	199.508	62.184	279.995	4.41%	19.85%
40.0	175.980	62.647	342.643	4.44%	24.30%
45.0	152.562	60.832	403.475	4.31%	28.61%
50.0	128.333	56.759	460.234	4.02%	32.63%
55.0	105.542	50.852	511.086	3.61%	36.24%
60.0	85.258	44.103	555.189	3.13%	39.37%
65.0	68.186	37.303	592.491	2.65%	42.01%
70.0	54.286	31.011	623.502	2.20%	44.21%
75.0	42.376	25.266	648.768	1.79%	46.00%
80.0	31.940	19.885	668.653	1.41%	47.41%
85.0	23.053	14.943	683.596	1.06%	48.47%
90.0	19.694	11.704	695.301	0.83%	49.30%
95.0	27.254	12.855	708.155	0.91%	50.21%
100.0	36.104	17.216	725.371	1.22%	51.43%
105.0	46.356	22.064	747.435	1.56%	53.00%
110.0	58.156	27.318	774.753	1.94%	54.94%
115.0	71.946	32.943	807.695	2.34%	57.27%
120.0	88.689	39.051	846.746	2.77%	60.04%
125.0	109.158	45.732	892.478	3.24%	63.28%
130.0	131.617	52.352	944.83	3.71%	67.00%
135.0	155.480	58.012	1002.842	4.11%	71.11%
140.0	178.600	61.858	1064.7	4.39%	75.49%
145.0	201.944	63.491	1128.19	4.50%	80.00%
150.0	225.182	62.897	1191.088	4.46%	84.46%
155.0	245.129	59.518	1250.606	4.22%	88.68%
160.0	263.235	53.318	1303.924	3.78%	92.46%
165.0	278.614	44.656	1348.58	3.17%	95.62%
170.0	289.087	33.676	1382.256	2.39%	98.01%
175.0	296.168	20.936	1403.192	1.48%	99.50%
180.0	298.270	7.106	1410.298	0.50%	100.00%

ZONAL LUMEN SUMMARY			
Zone	Lumens	%Lamp	%Fixt
0-30	217.81	15.44%	15.44%
0-40	342.64	24.30%	24.30%
0-60	555.19	39.37%	39.37%
0-90	695.30	49.30%	49.30%
0-120	846.75	60.04%	60.04%
0-180	1410.30	100.00%	100.00%
60-90	140.11	9.93%	9.93%
90-120	151.45	10.74%	10.74%
90-130	249.53	17.69%	17.69%
90-150	495.79	35.15%	35.15%
90-180	707.89	50.19%	50.19%
0-145.00	1128.24	80.00%	80.00%

ZONAL LUMEN SUMMARY

0-10	27.97
10-20	77.91
20-30	111.93
30-40	124.83
40-50	117.59
50-60	94.96
60-70	68.31
70-80	45.15
80-90	26.65
90-100	30.07
100-110	49.38
110-120	71.99
120-130	98.08
130-140	119.87
140-150	126.39
150-160	112.84
160-170	78.33
170-180	20.94



C90(Max): —————

C0/C180: —————

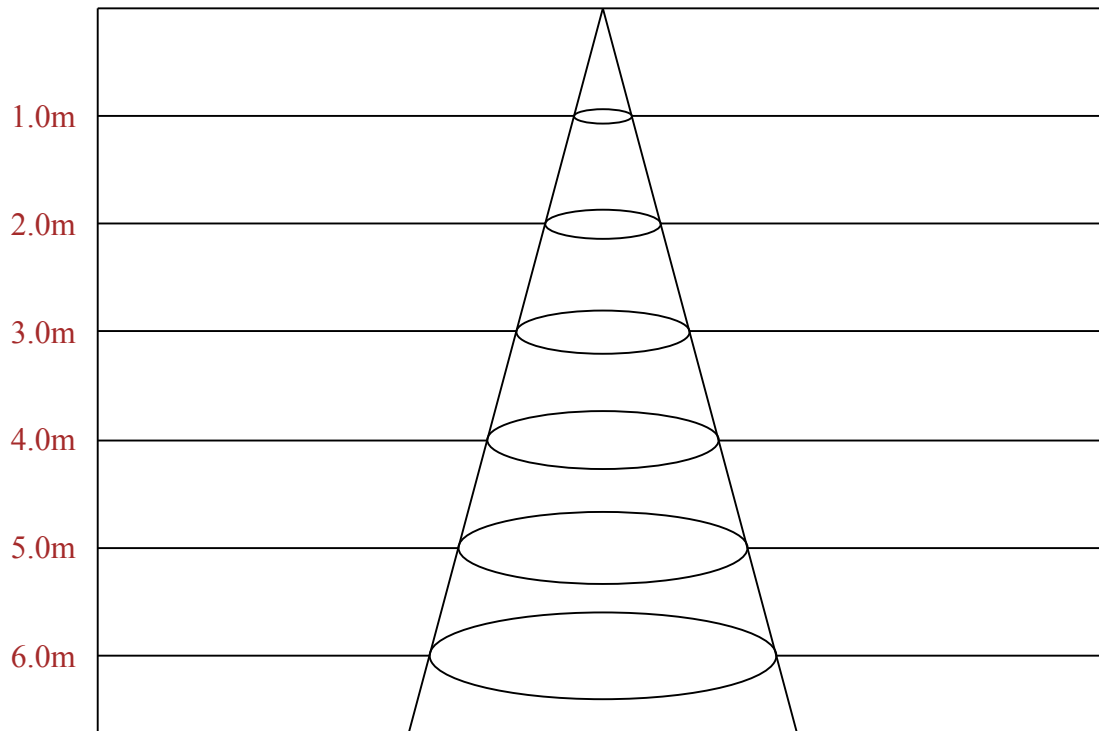
C90/C270: —————

Field angle(10%Imax):C0/180Left:0.0 Right:0.0

:C90/270Left:0.0 Right:0.0

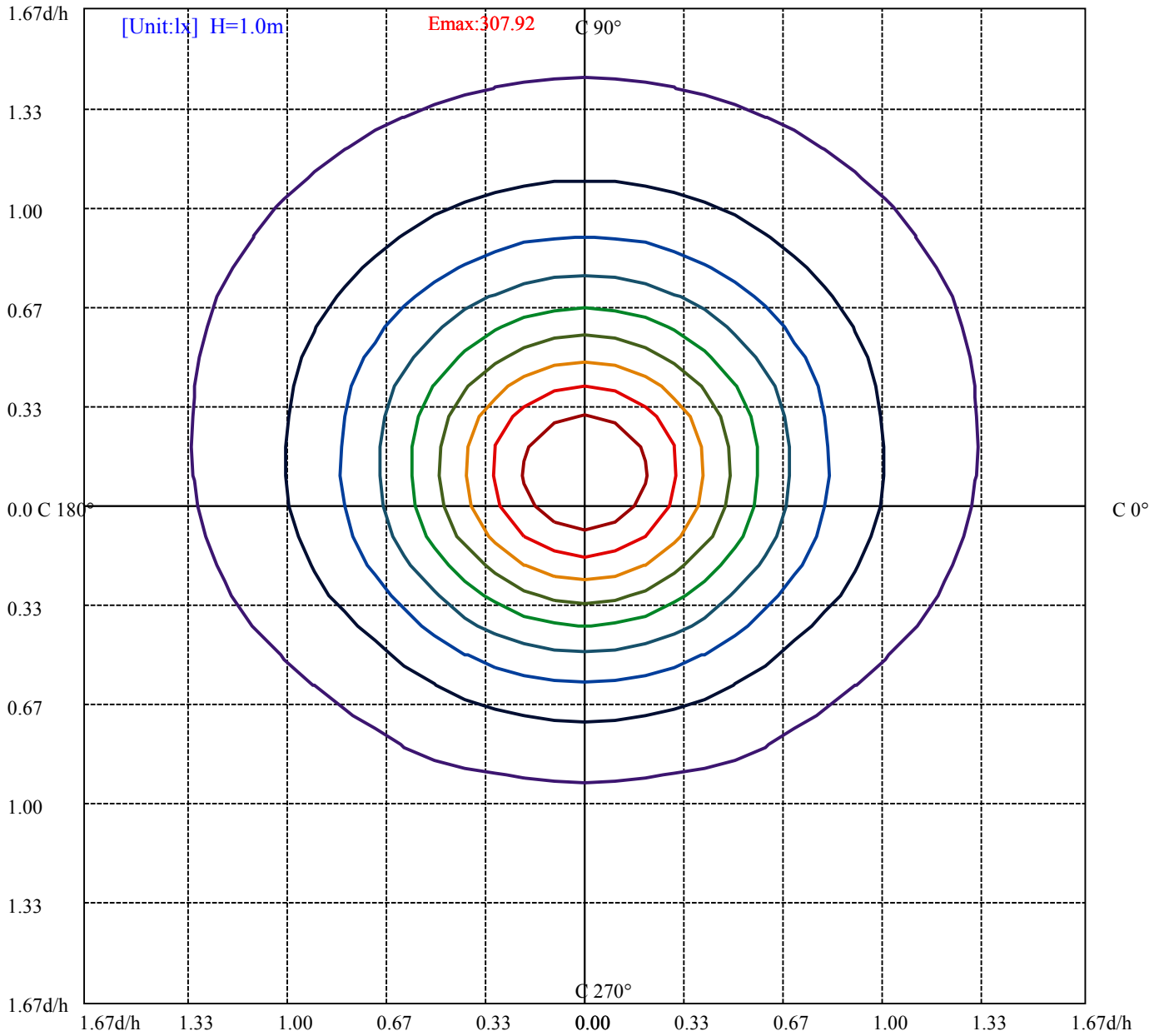
Beam Angle(50%Imax):C0/180Left:0.0 Right:0.0

:C90/270Left:0.0 Right:0.0

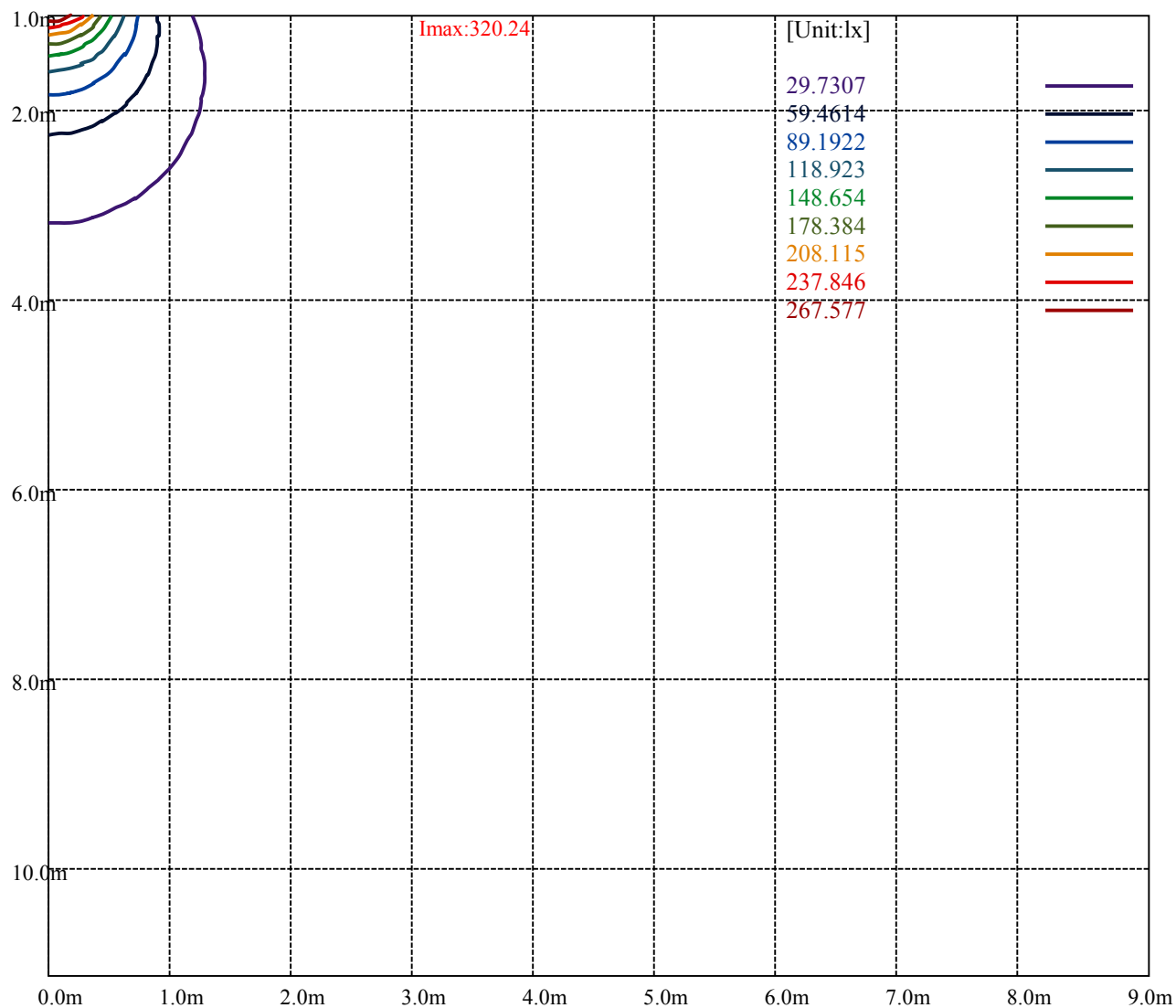


Max , Ave

Beam angle of C90 plane 475.54



(10%Emax) 30.792	—
(20%Emax) 61.5841	—
(30%Emax) 92.3762	—
(40%Emax) 123.168	—
(50%Emax) 153.96	—
(60%Emax) 184.752	—
(70%Emax) 215.544	—
(80%Emax) 246.336	—
(90%Emax) 277.128	—



# Light Blue USA & Associates LLC LED lamp

## Luminance Limiting Curve(no luminous side)

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Luminance Table

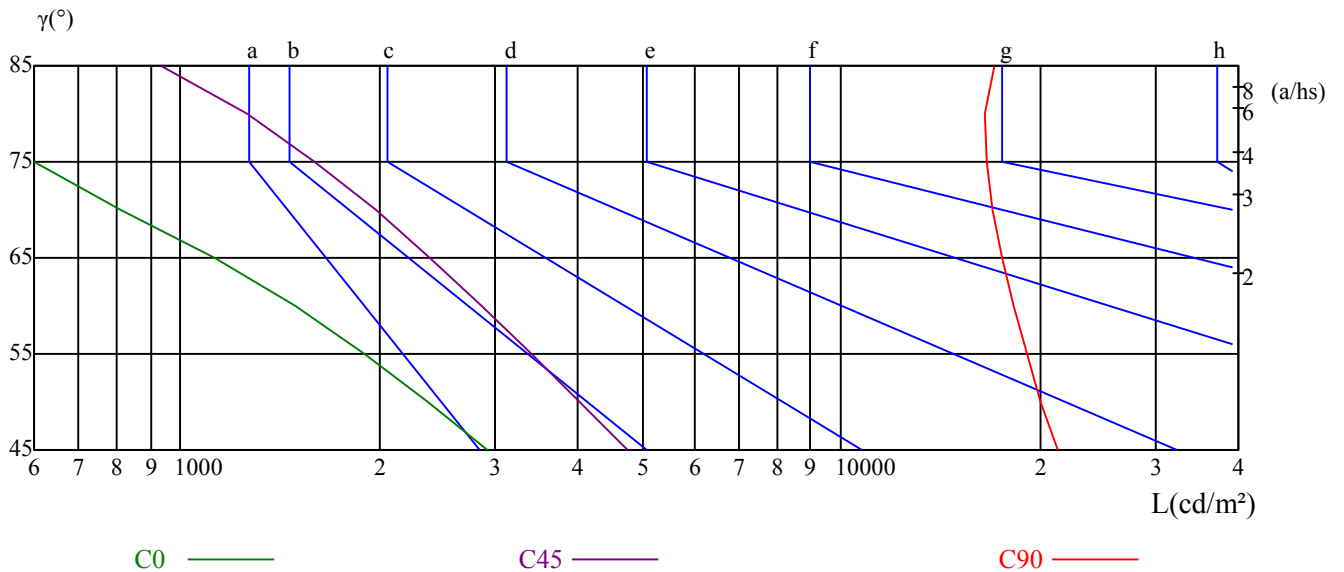
$\gamma$	45	50	55	60	65	70	75	80	85
C0	2906	2366	1896	1491	1129	812	550	358	227
C45	4739	4022	3405	2856	2391	1971	1600	1260	936
C90	21299	20122	19140	18252	17576	17013	16581	16524	17116

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
15659	12777	13755	12859	14839	14049	15801	29233	24388

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	1.07	1.07	1.07	0.99	0.99	0.99	0.83	0.83	0.83	0.69	0.69	0.69	0.55	0.55	0.55	0.49
1	0.93	0.89	0.85	0.86	0.82	0.79	0.72	0.70	0.68	0.60	0.58	0.57	0.49	0.47	0.46	0.41
2	0.81	0.75	0.70	0.75	0.70	0.65	0.64	0.60	0.56	0.53	0.50	0.47	0.43	0.41	0.39	0.35
3	0.72	0.64	0.58	0.66	0.60	0.55	0.56	0.51	0.47	0.47	0.43	0.40	0.38	0.36	0.34	0.29
4	0.64	0.56	0.50	0.59	0.52	0.47	0.50	0.45	0.41	0.42	0.38	0.35	0.34	0.32	0.29	0.26
5	0.57	0.49	0.43	0.53	0.46	0.40	0.45	0.39	0.35	0.38	0.34	0.30	0.31	0.28	0.26	0.22
6	0.51	0.43	0.37	0.47	0.40	0.35	0.41	0.35	0.31	0.34	0.30	0.27	0.28	0.25	0.23	0.20
7	0.46	0.38	0.33	0.43	0.36	0.31	0.37	0.31	0.27	0.31	0.27	0.24	0.26	0.23	0.20	0.18
8	0.42	0.34	0.29	0.39	0.32	0.27	0.34	0.28	0.24	0.29	0.24	0.21	0.24	0.21	0.18	0.16
9	0.38	0.31	0.26	0.36	0.29	0.25	0.31	0.26	0.22	0.26	0.22	0.19	0.22	0.19	0.17	0.14
10	0.35	0.28	0.23	0.33	0.26	0.22	0.29	0.23	0.20	0.24	0.20	0.17	0.21	0.17	0.15	0.13

Light Blue USA & Associates LLC LED lamp

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	297.31	302.63	300.86	295.53	287.54	274.23	258.26	239.62	220.10		
15.0	297.31	304.39	307.04	303.50	296.42	285.80	269.88	252.18	230.94		
30.0	297.31	307.96	313.28	311.51	306.18	293.76	277.78	258.26	237.85		
45.0	297.31	310.70	316.95	317.84	311.59	299.09	283.02	261.59	239.27		
60.0	297.31	312.44	319.56	320.45	314.22	301.76	283.96	262.59	238.56		
75.0	297.31	312.26	320.18	321.06	314.02	300.83	282.35	260.36	235.73		
90.0	297.31	311.42	319.36	319.36	312.30	299.07	281.43	258.49	235.55		
105.0	297.31	309.66	315.83	314.95	308.78	296.42	277.90	258.49	236.43		
120.0	297.31	307.04	310.58	308.81	303.50	290.23	273.42	254.83	233.60		
135.0	297.31	304.36	305.25	301.72	293.78	281.43	265.55	246.14	224.97		
150.0	297.31	299.95	297.31	291.13	281.43	267.31	251.43	232.91	212.61		
165.0	297.31	293.77	285.80	273.42	258.37	240.68	222.10	199.97	178.74		
180.0	297.31	289.32	277.78	262.70	244.95	224.53	203.23	180.16	157.08		
195.0	297.31	285.80	269.88	251.30	230.06	207.05	183.16	158.39	134.50		
210.0	297.31	283.11	262.70	241.40	217.43	192.58	167.73	141.11	114.49		
225.0	297.31	280.34	258.02	234.81	208.03	181.24	152.67	126.78	98.21		
240.0	297.31	278.61	255.47	229.66	202.06	174.47	145.98	117.50	90.79		
255.0	297.31	277.96	253.33	226.94	199.67	170.64	143.38	114.35	86.20		
270.0	297.31	278.78	256.73	231.14	202.91	176.44	147.33	119.98	91.75		
285.0	297.31	281.43	260.25	236.43	210.85	183.50	157.03	129.69	102.34		
300.0	297.31	284.03	266.34	245.10	221.21	196.44	170.77	145.11	120.34		
315.0	297.31	286.72	272.61	254.96	232.91	211.73	199.38	163.21	140.27		
330.0	297.31	290.25	279.66	266.43	248.79	229.38	208.20	185.27	162.33		
345.0	297.31	297.31	292.88	285.80	273.42	259.26	240.68	221.21	200.86		
360.0	297.31	302.63	300.86	295.53	287.54	274.23	258.26	239.62	220.10		
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0		
0.0	199.68	177.50	154.42	132.24	110.94	89.64	69.22	49.70	31.06		
15.0	210.59	187.59	165.47	144.23	122.99	101.76	82.29	61.94	44.24		
30.0	214.77	191.70	168.62	148.21	126.91	107.39	88.75	71.00	53.25		
45.0	216.06	191.96	169.63	147.31	127.67	108.92	91.07	74.10	58.03		
60.0	213.63	189.60	166.46	145.98	125.51	107.71	90.79	73.88	58.75		
75.0	211.99	186.48	163.61	141.62	123.15	105.55	88.84	73.89	58.05		
90.0	210.85	187.03	164.97	143.80	124.39	105.87	88.22	72.34	58.23		
105.0	211.73	187.91	165.86	144.68	124.39	105.87	88.22	70.58	54.70		
120.0	211.48	187.59	165.47	143.34	122.99	104.41	85.83	67.25	49.55		
135.0	202.91	181.74	159.68	137.63	116.45	95.28	75.87	57.34	38.82		
150.0	190.56	168.50	147.33	124.39	104.10	82.93	61.76	42.35	23.82		
165.0	156.62	134.50	111.49	88.48	67.25	46.90	27.43	11.50	1.77		
180.0	134.01	110.05	86.97	64.79	42.60	23.07	7.99	0.89	0.89		
195.0	109.72	85.83	61.05	39.82	18.58	4.42	0.88	0.88	0.88		
210.0	88.75	64.79	39.94	18.64	3.55	0.89	0.89	0.89	0.89		
225.0	73.21	48.21	24.11	6.25	0.89	0.89	0.89	0.89	0.89		
240.0	62.31	38.28	15.13	1.78	0.89	0.89	0.89	0.89	0.89		
255.0	59.81	35.18	13.19	0.88	0.88	0.88	0.88	0.88	0.88		
270.0	65.28	39.70	17.64	1.76	0.88	0.88	0.88	0.88	0.88		
285.0	75.87	51.17	29.11	16.76	0.88	0.88	0.88	0.88	0.88		
300.0	106.18	69.02	46.01	23.89	6.19	0.88	0.88	0.88	0.88		
315.0	115.57	91.75	68.81	45.88	24.70	7.94	0.88	0.88	0.88		
330.0	140.27	117.33	93.52	71.46	49.40	30.00	13.23	2.65	0.88		
345.0	179.62	156.62	134.50	112.38	90.25	69.02	49.55	29.20	13.27		
360.0	199.68	177.50	154.42	132.24	110.94	89.64	69.22	49.70	31.06		

# Light Blue USA & Associates LLC LED lamp

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	12.42	26.62	45.26	65.67	85.20	106.50	126.91	149.10	171.28		
15.0	29.20	45.13	62.82	82.29	100.87	122.11	142.46	163.70	185.82		
30.0	42.60	58.57	76.32	93.19	111.82	131.35	151.76	173.95	194.36		
45.0	51.78	67.85	83.03	100.00	116.96	135.71	155.35	176.78	198.20		
60.0	56.97	72.10	86.34	101.48	119.28	136.19	154.88	176.25	198.50		
75.0	58.05	72.13	87.08	102.03	118.75	134.58	153.05	174.16	197.03		
90.0	57.34	71.46	86.46	102.34	119.10	136.74	155.27	176.44	197.62		
105.0	53.82	68.81	84.69	101.45	119.10	136.74	156.15	177.33	198.50		
120.0	46.90	61.94	79.64	97.33	115.91	135.38	155.73	176.97	198.20		
135.0	33.52	51.17	69.70	88.22	107.63	127.92	149.09	170.27	193.21		
150.0	16.76	33.52	52.05	72.34	92.63	113.81	134.98	157.92	179.97		
165.0	2.65	13.27	29.20	49.55	69.90	92.02	114.14	137.15	159.27		
180.0	0.89	0.89	2.66	12.42	29.29	49.70	71.89	94.07	118.04		
195.0	0.88	0.88	0.88	0.88	7.96	23.89	45.13	67.25	91.14		
210.0	0.89	0.89	0.89	0.89	0.89	6.21	23.07	45.26	70.11		
225.0	0.89	0.89	0.89	0.89	0.89	0.89	9.82	28.57	51.78		
240.0	0.89	0.89	0.89	0.89	0.89	0.89	2.67	17.80	40.06		
255.0	0.88	0.88	0.88	0.88	0.88	0.88	4.40	14.07	35.18		
270.0	0.88	0.88	0.88	0.88	0.88	0.88	1.76	15.88	37.05		
285.0	0.88	0.88	0.88	0.88	0.88	0.88	6.18	23.82	47.64		
300.0	0.88	0.88	0.88	0.88	0.88	3.54	18.58	39.82	62.82		
315.0	0.88	0.88	0.88	0.88	4.41	18.53	39.70	61.76	85.58		
330.0	0.88	0.88	0.88	7.94	22.94	42.35	64.40	87.34	110.28		
345.0	0.88	1.77	12.39	28.31	47.78	69.02	91.14	114.14	137.15		
360.0	12.42	26.62	45.26	65.67	85.20	106.50	126.91	149.10	171.28		
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0		
0.0	193.47	213.88	234.30	252.93	268.91	281.33	291.98	298.19	299.97		
15.0	207.05	228.29	248.64	268.11	282.26	294.65	301.73	305.27	303.50		
30.0	216.55	237.85	259.15	277.78	292.87	304.41	310.62	311.51	306.18		
45.0	221.42	244.63	266.95	286.59	303.56	314.27	319.63	319.63	313.38		
60.0	221.65	245.68	267.93	289.30	307.10	318.67	324.01	322.23	314.22		
75.0	219.90	244.53	266.52	287.63	305.22	318.42	323.70	321.06	313.14		
90.0	220.55	242.61	266.43	286.72	303.48	314.95	320.24	319.36	309.66		
105.0	221.44	243.49	265.55	284.96	300.84	312.30	316.72	314.95	307.89		
120.0	219.44	242.45	262.80	283.15	297.31	308.81	314.12	313.23	308.81		
135.0	215.26	236.43	256.73	274.37	288.49	299.07	306.13	307.89	306.13		
150.0	201.15	222.32	242.61	260.25	276.13	289.37	297.31	302.60	303.48		
165.0	182.28	205.28	224.75	245.99	262.80	278.73	289.34	298.19	303.50		
180.0	140.22	163.30	186.37	208.56	229.86	249.38	266.25	279.56	291.09		
195.0	115.03	139.81	163.70	187.59	210.59	233.60	253.95	271.65	287.57		
210.0	94.07	119.81	145.55	170.40	197.02	220.10	253.82	265.36	283.99		
225.0	76.78	103.57	129.46	172.31	184.81	212.49	238.38	261.59	284.81		
240.0	78.33	91.68	120.17	147.76	177.14	204.73	233.22	259.03	281.28		
255.0	59.81	86.20	113.47	142.50	169.76	198.79	226.94	252.45	277.08		
270.0	61.76	89.10	116.45	143.80	172.91	200.26	228.49	253.20	276.13		
285.0	72.34	97.04	125.27	152.62	179.97	205.56	232.91	256.73	277.90		
300.0	88.48	114.14	140.69	167.24	192.90	217.67	240.68	262.80	282.26		
315.0	110.28	134.10	158.80	183.50	207.32	231.14	253.20	270.84	286.72		
330.0	134.10	157.92	180.85	204.67	225.85	246.14	264.67	279.66	291.13		
345.0	160.16	182.28	203.51	225.63	245.99	262.80	278.73	291.11	298.19		
360.0	193.47	213.88	234.30	252.93	268.91	281.33	291.98	298.19	299.97		

# Light Blue USA & Associates LLC LED lamp

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## Intensity data(cd)

Appendix Page: 12 Total:12

C/γ(°)	180.0
0.0	297.31
15.0	299.96
30.0	297.31
45.0	299.99
60.0	299.98
75.0	297.31
90.0	295.54
105.0	294.66
120.0	297.31
135.0	297.31
150.0	299.07
165.0	303.50
180.0	297.31
195.0	299.96
210.0	297.31
225.0	299.99
240.0	299.98
255.0	297.31
270.0	295.54
285.0	294.66
300.0	297.31
315.0	297.31
330.0	299.07
345.0	303.50
360.0	297.31