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## Lotus LED Lights

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Client:

LumCAT: LFR-4R-RB-9W-5CCT-3500K

Luminaire: Fire rated slim panel

Report No:

Ballast type:

Test No: LCZP23080240

Voltage(V): 120.050

LampCAT:

Current(A): 0.091

Lamp flux(lm): 1081.4

Power (W): 9.200

Number of Lamps: 1

PF: 0.844

Length(mm): -80

Width(mm): -80

Phm Type: C

Height(mm): 0

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## Photometric Results

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Lumens(lm): 1081.35, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 117.54

Central intensity(cd): 455.014, Maximum intensity(cd): 455.014

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

Beam Angle(50%Imax): [C0/180]Total=99.0

[C90/270]Total=98.0

Field angle(10%Imax): [C0/180]Total=149.4

[C90/270]Total=148.4

Maximum s/h(1/2): C0\_180=1.20 C90\_270=1.19

Maximum s/h(1/4): C0\_180=1.30 C90\_270=1.29

Up flux rate of lamp(%): 0.24%

Down flux rate of lamp(%): 99.76%

Up flux rate of LUM(%): 0.24%

Down flux rate of LUM(%): 99.76%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 84.717%

Lotus LED Lights LFR-4R-RB-9W-5CCT-3500K

Zonal flux distribution table

Appendix Page: 2 Total:12

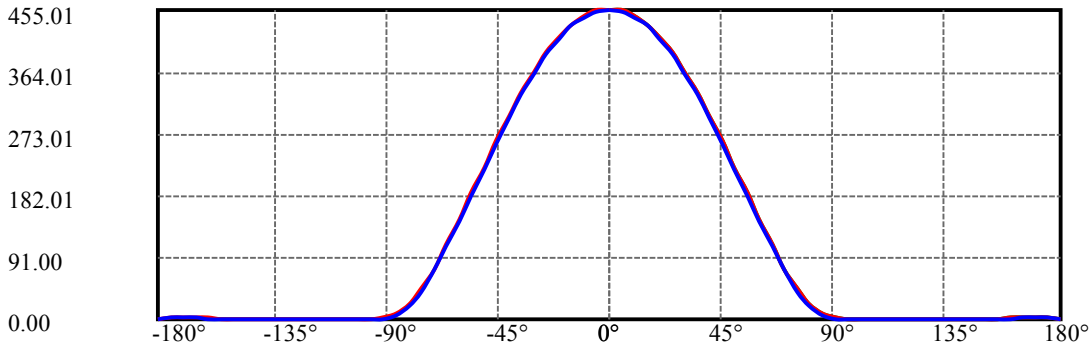
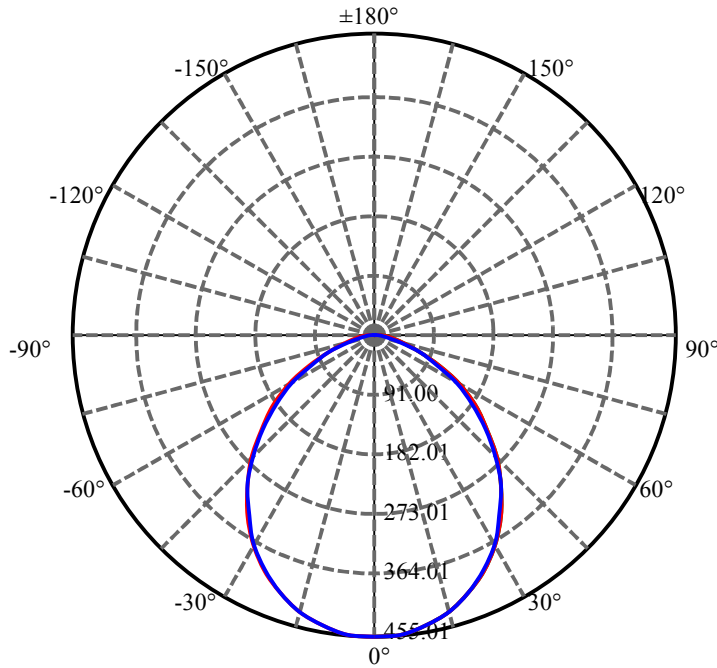
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	455.014	0.000	0	0.00%	0.00%
5.0	452.657	10.851	10.851	1.00%	1.00%
10.0	444.797	32.105	42.956	2.97%	3.97%
15.0	431.548	51.984	94.94	4.81%	8.78%
20.0	413.434	69.638	164.578	6.44%	15.22%
25.0	390.865	84.356	248.934	7.80%	23.02%
30.0	363.958	95.524	344.458	8.83%	31.85%
35.0	331.732	102.445	446.903	9.47%	41.33%
40.0	296.665	104.843	551.746	9.70%	51.02%
45.0	260.322	103.131	654.877	9.54%	60.56%
50.0	221.366	97.332	752.209	9.00%	69.56%
55.0	183.003	87.923	840.132	8.13%	77.69%
60.0	145.582	75.952	916.084	7.02%	84.72%
65.0	107.894	61.620	977.704	5.70%	90.42%
70.0	73.127	45.836	1023.54	4.24%	94.65%
75.0	42.365	30.188	1053.727	2.79%	97.45%
80.0	19.233	16.482	1070.209	1.52%	98.97%
85.0	5.537	6.731	1076.94	0.62%	99.59%
90.0	1.010	1.792	1078.732	0.17%	99.76%
95.0	0.000	0.276	1079.008	0.03%	99.78%
100.0	0.000	0.000	1079.008	0.00%	99.78%
105.0	0.150	0.040	1079.049	0.00%	99.79%
110.0	0.187	0.088	1079.137	0.01%	99.80%
115.0	0.075	0.066	1079.203	0.01%	99.80%
120.0	0.112	0.046	1079.248	0.00%	99.81%
125.0	0.075	0.043	1079.292	0.00%	99.81%
130.0	0.037	0.024	1079.316	0.00%	99.81%
135.0	0.448	0.098	1079.414	0.01%	99.82%
140.0	0.823	0.235	1079.65	0.02%	99.84%
145.0	0.898	0.287	1079.937	0.03%	99.87%
150.0	0.898	0.265	1080.202	0.02%	99.89%
155.0	0.898	0.227	1080.429	0.02%	99.92%
160.0	1.609	0.263	1080.692	0.02%	99.94%
165.0	1.796	0.281	1080.972	0.03%	99.97%
170.0	1.796	0.213	1081.186	0.02%	99.99%
175.0	1.796	0.129	1081.314	0.01%	100.00%
180.0	0.898	0.032	1081.346	0.00%	100.00%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	344.46	31.85%	31.85%
0-40	551.75	51.02%	51.02%
0-60	916.08	84.72%	84.72%
0-90	1078.73	99.76%	99.76%
0-120	1079.25	99.81%	99.81%
0-180	1081.35	100.00%	100.00%
60-90	162.65	15.04%	15.04%
90-120	0.52	0.05%	0.05%
90-130	0.58	0.05%	0.05%
90-150	1.47	0.14%	0.14%
90-180	2.58	0.24%	0.24%
0-56.64	865.08	80.00%	80.00%

ZONAL LUMEN SUMMARY

0-10	42.96
10-20	121.62
20-30	179.88
30-40	207.29
40-50	200.46
50-60	163.87
60-70	107.46
70-80	46.67
80-90	8.52
90-100	0.28
100-110	0.13
110-120	0.11
120-130	0.07
130-140	0.33
140-150	0.55
150-160	0.49
160-170	0.49
170-180	0.13



C0(Max): ———

C0/C180: ———

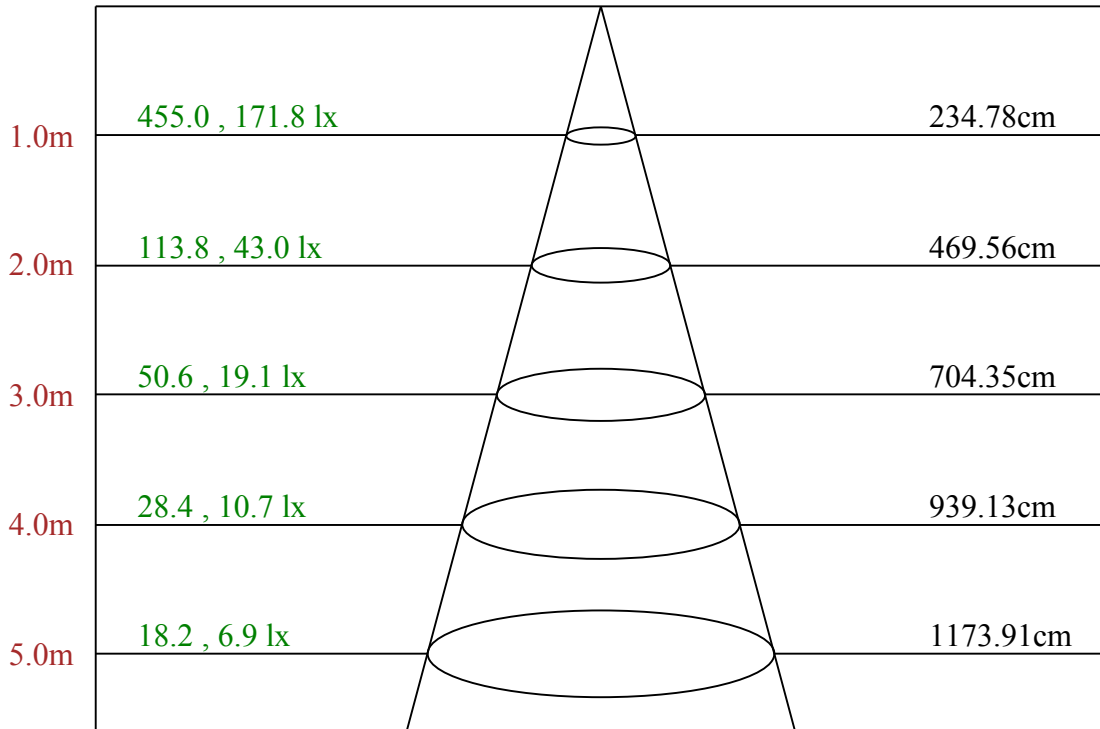
C90/C270: ———

Field angle(10%Imax):C0/180Left:74.7 Right:74.7

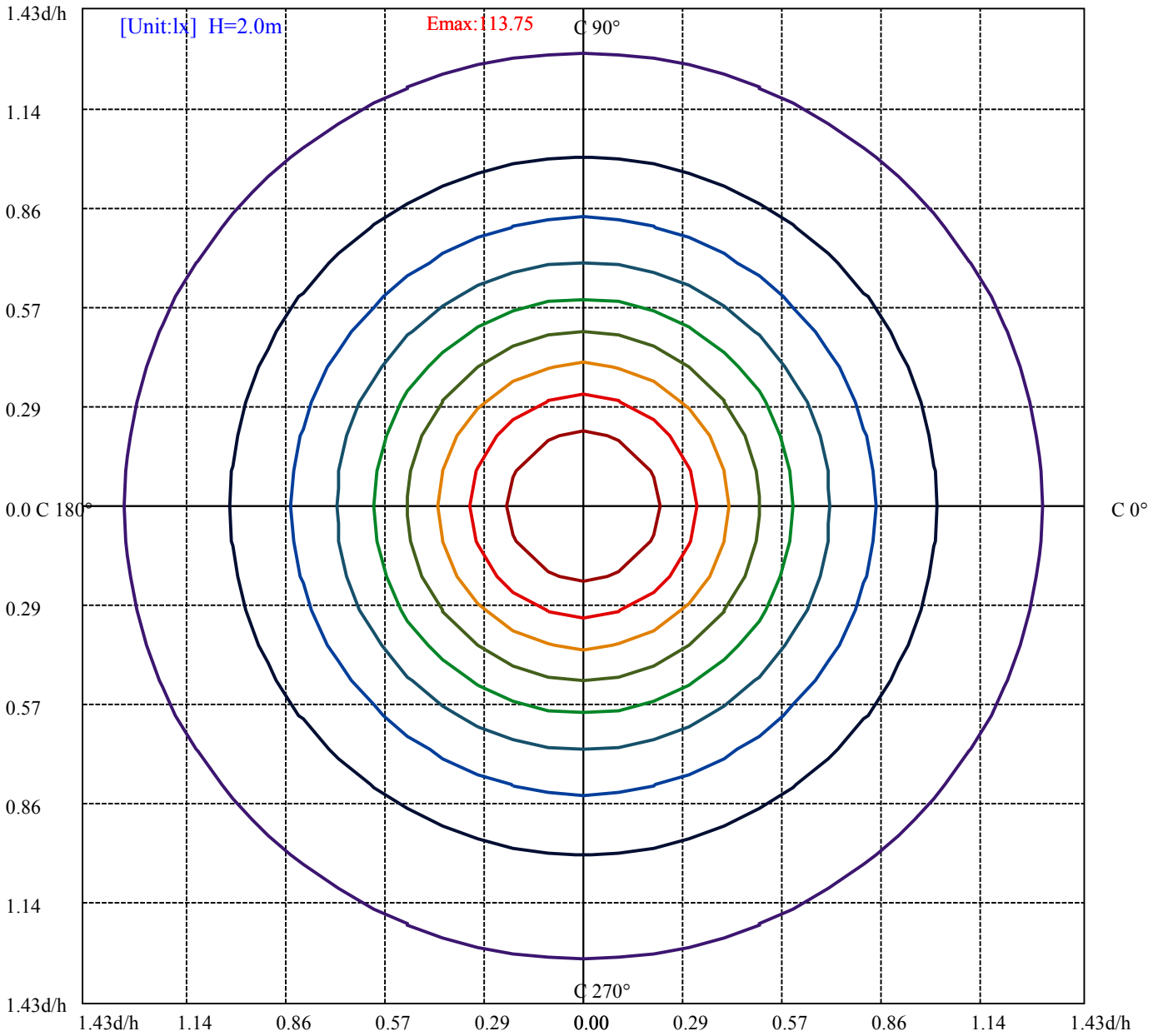
:C90/270Left:74.2 Right:74.2

Beam Angle(50%Imax):C0/180Left:49.5 Right:49.5

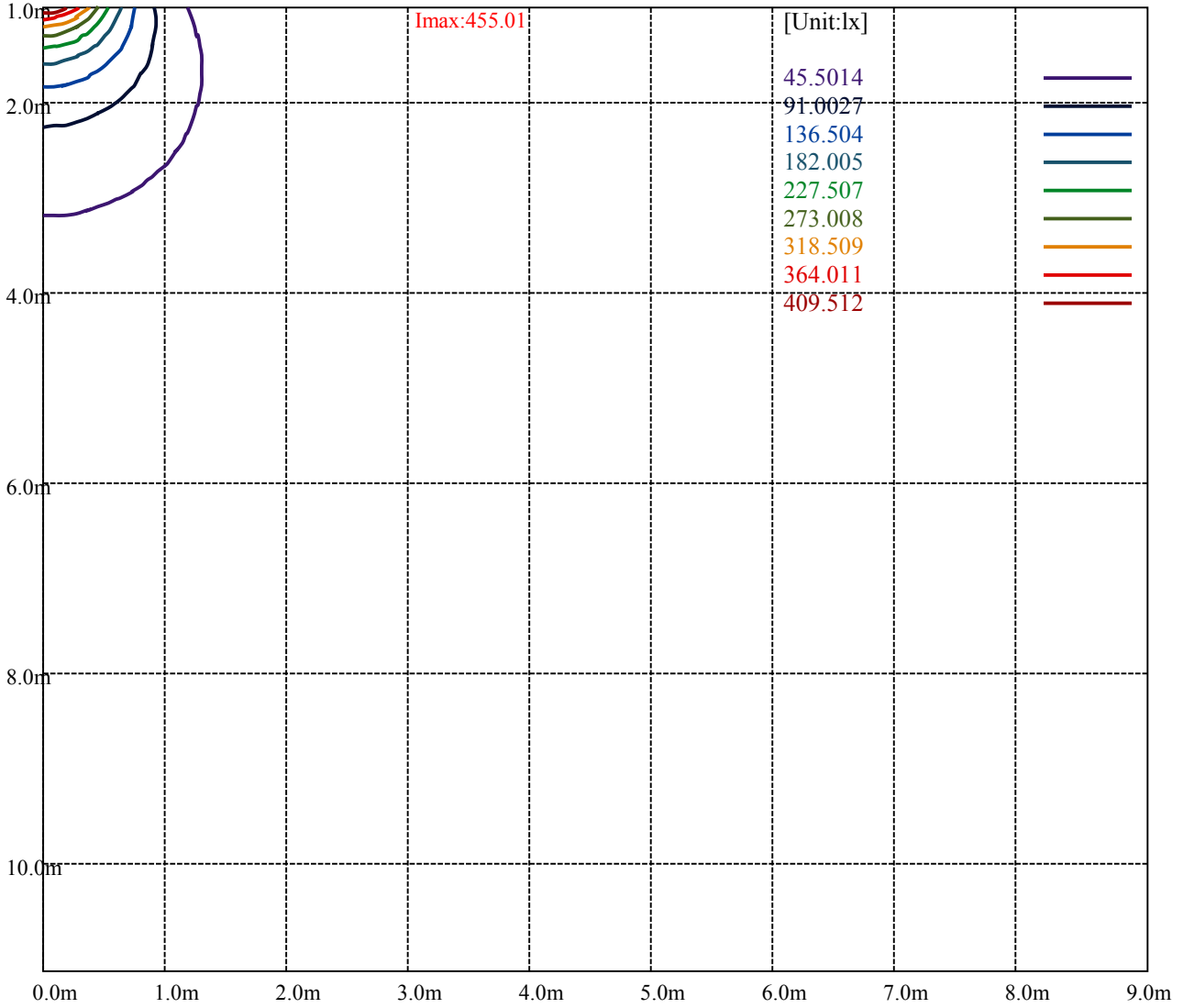
:C90/270Left:49.0 Right:49.0



Max , Ave      Beam angle of C0 plane 99.15



(10%Emax) 11.37533	—
(20%Emax) 22.75068	—
(30%Emax) 34.126	—
(40%Emax) 45.50125	—
(50%Emax) 56.87675	—
(60%Emax) 68.252	—
(70%Emax) 79.62725	—
(80%Emax) 91.00275	—
(90%Emax) 102.378	—



Lotus LED Lights LFR-4R-RB-9W-5CCT-3500K

Luminance Limiting Curve(no luminous side)

Luminance Table

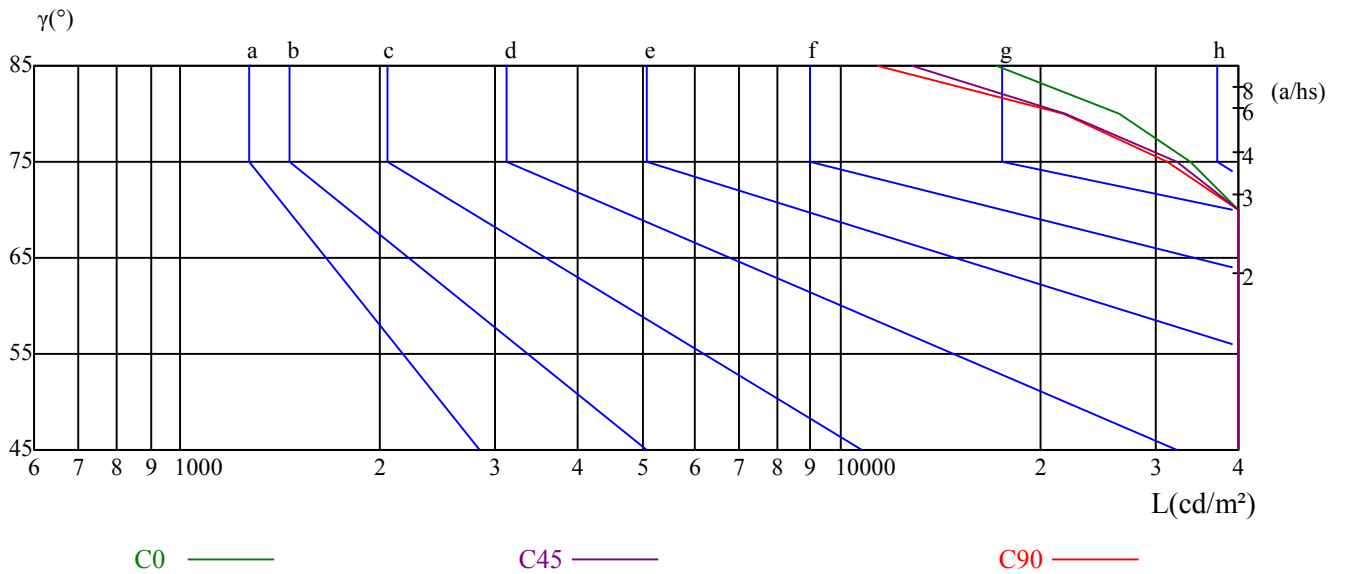
$\gamma$	45	50	55	60	65	70	75	80	85
C0	73866	69178	64451	58407	51356	43080	33748	26420	17209
C45	74117	68399	63332	57371	50537	42458	32286	21884	12830
C90	72645	67899	62940	56936	50361	42274	31228	21721	11334

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
51356	50361	50537	33748	31228	32286	17209	11334	12830

Glare Table

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

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	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	1.06	1.02	0.98	1.03	1.00	0.97	0.99	0.96	0.94	0.95	0.93	0.91	0.92	0.90	0.88	0.86
2	0.93	0.87	0.82	0.91	0.86	0.81	0.88	0.83	0.79	0.84	0.80	0.77	0.81	0.78	0.75	0.73
3	0.83	0.75	0.69	0.81	0.74	0.68	0.78	0.72	0.67	0.75	0.70	0.66	0.73	0.68	0.65	0.63
4	0.74	0.65	0.59	0.72	0.65	0.59	0.70	0.63	0.58	0.68	0.62	0.57	0.65	0.60	0.56	0.54
5	0.66	0.58	0.51	0.65	0.57	0.51	0.63	0.56	0.50	0.61	0.55	0.50	0.59	0.54	0.49	0.47
6	0.60	0.51	0.45	0.59	0.51	0.45	0.57	0.50	0.45	0.55	0.49	0.44	0.54	0.48	0.44	0.42
7	0.54	0.46	0.40	0.54	0.46	0.40	0.52	0.45	0.40	0.51	0.44	0.39	0.49	0.44	0.39	0.37
8	0.50	0.42	0.36	0.49	0.41	0.36	0.48	0.41	0.36	0.47	0.40	0.35	0.45	0.40	0.35	0.33
9	0.46	0.38	0.33	0.45	0.38	0.32	0.44	0.37	0.32	0.43	0.37	0.32	0.42	0.36	0.32	0.30
10	0.42	0.35	0.30	0.42	0.35	0.30	0.41	0.34	0.29	0.40	0.34	0.29	0.39	0.33	0.29	0.27

Lotus LED Lights LFR-4R-RB-9W-5CCT-3500K

Intensity data(cd)

C/γ(°)	0.0	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0
0.0	455.01	459.45	456.79	449.69	436.39	417.76	395.59	368.98	338.82
15.0	455.01	457.70	457.70	448.76	438.92	420.15	396.01	370.98	338.80
30.0	455.01	460.42	458.62	449.61	439.70	419.87	399.15	371.22	340.58
45.0	455.01	457.72	456.82	449.61	436.09	418.97	399.15	369.42	338.78
60.0	455.01	456.81	454.11	446.92	434.33	417.25	392.97	365.99	333.62
75.0	455.01	456.81	452.32	443.32	431.63	412.75	389.37	363.29	329.12
90.0	455.01	456.82	452.31	445.08	430.64	411.68	387.30	359.32	325.91
105.0	455.01	457.72	451.40	442.37	427.03	408.07	383.69	352.09	321.40
120.0	455.01	457.72	450.51	439.70	425.28	403.66	380.23	349.59	316.26
135.0	455.01	453.22	446.95	436.20	420.08	399.48	372.61	343.05	308.12
150.0	455.01	453.22	446.92	437.03	419.94	399.26	373.18	340.81	306.64
165.0	455.01	451.43	445.16	433.52	415.60	395.00	367.24	338.57	303.64
180.0	455.01	447.92	433.73	415.99	392.93	366.32	334.39	298.91	260.77
195.0	455.01	446.97	434.45	414.79	389.76	364.73	332.54	296.79	258.35
210.0	455.01	448.71	436.09	415.37	391.04	364.91	330.67	297.34	258.59
225.0	455.01	447.81	431.59	415.37	391.94	365.81	331.57	294.63	256.79
240.0	455.01	446.02	433.43	414.55	391.17	363.29	330.92	294.95	257.18
255.0	455.01	446.92	434.33	417.25	392.97	364.19	334.52	297.65	258.98
270.0	455.01	449.60	436.96	418.90	396.33	369.25	338.55	302.44	265.42
285.0	455.01	449.60	439.67	421.61	398.14	371.96	342.16	307.86	270.84
300.0	455.01	449.61	440.60	422.58	402.75	375.72	346.89	312.65	274.81
315.0	455.01	447.85	439.79	422.77	403.06	378.88	349.32	317.08	279.46
330.0	455.01	451.42	443.32	428.04	407.35	385.77	369.59	321.93	286.86
345.0	455.01	452.33	441.58	428.14	409.33	386.04	357.38	326.03	290.21
360.0	455.01	459.45	456.79	449.69	436.39	417.76	395.59	368.98	338.82
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	302.46	263.43	226.18	187.15	148.12	109.98	74.51	42.57	15.08
15.0	303.94	265.50	227.95	189.51	151.08	112.64	76.88	43.80	16.09
30.0	304.54	267.60	227.96	190.11	151.37	112.63	77.49	44.15	16.22
45.0	303.64	265.80	226.16	187.41	148.67	110.83	75.69	43.25	15.32
60.0	297.65	261.68	222.11	183.44	145.68	107.91	73.74	40.47	12.59
75.0	294.05	256.28	217.62	178.05	140.28	103.41	69.24	36.87	10.79
90.0	289.80	251.88	212.16	173.34	136.32	100.21	64.10	34.31	9.93
105.0	285.29	246.47	208.55	168.82	130.91	94.79	59.59	29.79	8.13
120.0	279.32	240.57	202.73	163.08	127.04	90.10	55.86	26.13	6.31
135.0	273.19	236.46	197.05	157.64	120.92	85.99	51.95	22.39	5.37
150.0	272.47	232.00	194.24	155.57	118.70	80.93	48.56	19.78	4.50
165.0	267.81	228.40	189.89	152.27	114.65	77.93	45.68	17.02	3.58
180.0	222.63	183.60	145.46	106.44	70.07	38.14	13.30	3.55	0.00
195.0	219.91	181.47	143.92	105.48	68.83	37.55	12.52	3.58	0.00
210.0	218.95	182.01	141.46	105.42	68.48	36.94	11.71	2.70	0.00
225.0	218.05	179.30	141.46	104.52	68.48	36.94	11.71	2.70	0.00
240.0	218.51	180.75	142.08	106.11	70.14	38.67	10.79	2.70	0.00
255.0	220.31	183.44	146.58	108.81	73.74	42.26	12.59	2.70	0.00
270.0	226.60	186.88	150.77	112.85	77.64	45.14	17.15	3.61	0.00
285.0	230.22	193.20	153.48	117.36	82.16	49.65	33.40	4.51	0.90
300.0	236.97	199.12	160.38	139.66	87.40	54.06	24.33	6.31	0.90
315.0	258.86	202.43	165.70	127.19	91.36	58.22	28.66	8.06	1.79
330.0	249.09	210.42	172.65	133.99	96.22	62.95	32.37	9.89	2.70
345.0	253.48	214.07	175.56	139.73	101.21	67.18	34.93	10.75	2.69
360.0	302.46	263.43	226.18	187.15	148.12	109.98	74.51	42.57	15.08

Lotus LED Lights LFR-4R-RB-9W-5CCT-3500K

Intensity data(cd)

C/γ(°)	90.0	95.0	100.0	105.0	110.0	115.0	120.0	125.0	130.0
0.0	3.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.0	3.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30.0	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45.0	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.0	2.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.0	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90.0	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105.0	1.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120.0	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135.0	0.90	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	0.89	0.00	0.00	0.00	0.00
195.0	0.00	0.00	0.00	0.89	0.89	0.89	0.89	0.00	0.00
210.0	0.00	0.00	0.00	0.90	0.90	0.00	0.90	0.90	0.00
225.0	0.00	0.00	0.00	0.00	0.90	0.00	0.90	0.00	0.00
240.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.90
255.0	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00
270.0	0.00	0.00	0.00	0.90	0.90	0.90	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	3.55	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	0.89	0.89	0.89	0.89	0.89	1.77	1.77	1.77	1.77
15.0	0.00	0.89	0.89	0.89	0.89	1.79	1.79	1.79	1.79
30.0	0.00	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
45.0	0.00	0.00	0.90	0.90	0.90	1.80	1.80	1.80	1.80
60.0	0.90	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
75.0	0.90	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
90.0	0.00	0.90	0.90	0.90	0.90	1.81	1.81	1.81	1.81
105.0	0.90	0.90	0.90	0.90	0.90	1.81	1.81	1.81	1.81
120.0	0.90	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
135.0	0.00	0.90	0.90	0.90	0.90	1.79	1.79	1.79	1.79
150.0	0.90	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
165.0	0.90	0.90	0.90	0.90	0.90	1.79	1.79	1.79	1.79
180.0	0.89	0.89	0.89	0.89	0.89	1.77	1.77	1.77	1.77
195.0	0.89	0.89	0.89	0.89	0.89	1.79	1.79	1.79	1.79
210.0	0.90	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
225.0	0.90	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
240.0	0.00	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
255.0	0.00	0.90	0.90	0.90	0.90	1.80	1.80	1.80	1.80
270.0	0.00	0.90	0.90	0.90	0.90	0.90	1.81	1.81	1.81
285.0	0.00	0.90	0.90	0.90	0.90	0.90	1.81	1.81	1.81
300.0	0.00	0.00	0.90	0.90	0.90	0.90	1.80	1.80	1.80
315.0	0.90	0.90	0.90	0.90	0.90	0.90	1.79	1.79	1.79
330.0	0.00	0.90	0.90	0.90	0.90	0.90	1.80	1.80	1.80
345.0	0.00	0.90	0.90	0.90	0.90	1.79	1.79	1.79	1.79
360.0	0.89	0.89	0.89	0.89	0.89	1.77	1.77	1.77	1.77

Intensity data(cd)

C/γ(°)	180.0
0.0	1.77
15.0	1.79
30.0	1.80
45.0	1.80
60.0	1.80
75.0	1.80
90.0	1.81
105.0	1.81
120.0	1.80
135.0	1.79
150.0	1.80
165.0	1.79
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	1.77