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## Lotus LED Lights

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Client:

LumCAT: LFR-4R-FE-9W-5CCT-2700K

Luminaire: Fire rated slim panel

Report No:

Ballast type:

Test No: LCZP23080240

Voltage(V): 119.920

LampCAT:

Current(A): 0.080

Lamp flux(lm): 836.1

Power (W): 9.220

Number of Lamps: 1

PF: 0.965

Length(mm): -75

Width(mm): -75

Phm Type: C

Height(mm): 0

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## Photometric Results

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Lumens(lm): 836.07, Efficiency(%): 100.00% , Luminous Efficacy(lm/W): 90.68

Central intensity(cd): 294.296, Maximum intensity(cd): 294.296

Angle of maximum intensity: C=60.0  $\gamma$ =0.0

Beam Angle(50%Imax): [C0/180]Total=111.0

[C90/270]Total=111.4

Field angle(10%Imax): [C0/180]Total=163.4

[C90/270]Total=162.6

Maximum s/h(1/2): C0\_180=1.24 C90\_270=1.25

Maximum s/h(1/4): C0\_180=1.36 C90\_270=1.37

Up flux rate of lamp(%): 0.33%

Down flux rate of lamp(%): 99.67%

Up flux rate of LUM(%): 0.33%

Down flux rate of LUM(%): 99.67%

CIE Type : Direct lighting

Output flux ratio in  $\pi$  solid angle : 78.021%

Lotus LED Lights LFR-4R-FE-9W-5CCT-2700K

Zonal flux distribution table

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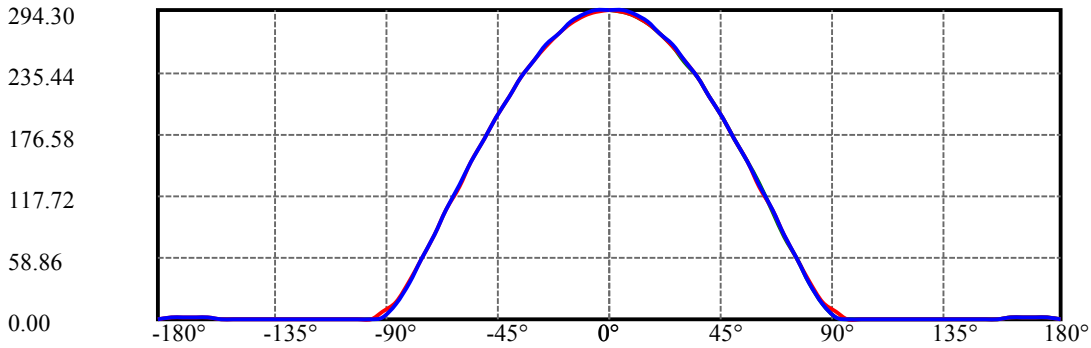
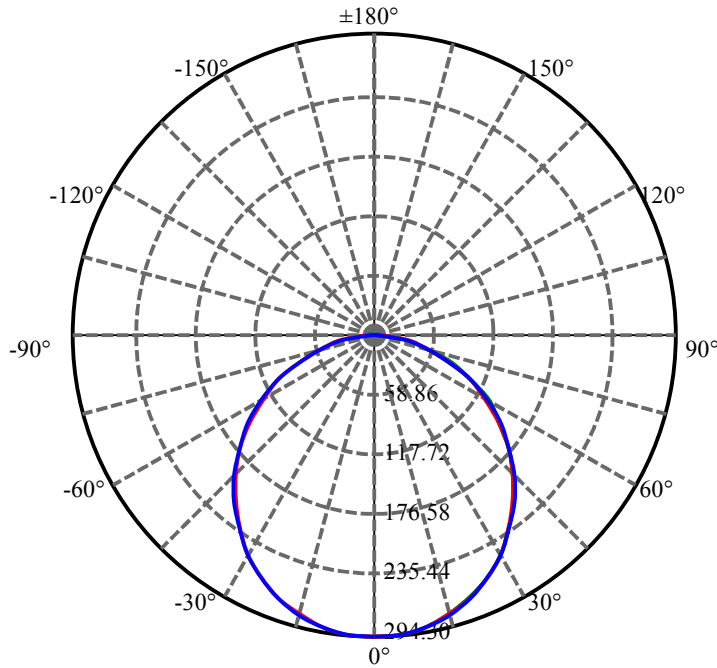
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	294.296	0.000	0	0.00%	0.00%
5.0	292.896	7.020	7.02	0.84%	0.84%
10.0	288.664	20.804	27.824	2.49%	3.33%
15.0	281.702	33.834	61.658	4.05%	7.37%
20.0	272.047	45.637	107.294	5.46%	12.83%
25.0	259.880	55.789	163.084	6.67%	19.51%
30.0	245.994	64.019	227.102	7.66%	27.16%
35.0	229.483	70.017	297.119	8.37%	35.54%
40.0	211.372	73.553	370.673	8.80%	44.34%
45.0	192.355	74.753	445.426	8.94%	53.28%
50.0	170.942	73.410	518.836	8.78%	62.06%
55.0	149.370	69.647	588.483	8.33%	70.39%
60.0	126.776	63.830	652.313	7.63%	78.02%
65.0	102.960	55.849	708.162	6.68%	84.70%
70.0	79.431	46.183	754.345	5.52%	90.22%
75.0	57.041	35.672	790.016	4.27%	94.49%
80.0	34.900	24.601	814.617	2.94%	97.43%
85.0	15.548	13.708	828.325	1.64%	99.07%
90.0	2.515	4.946	833.271	0.59%	99.67%
95.0	0.217	0.748	834.019	0.09%	99.75%
100.0	0.202	0.114	834.133	0.01%	99.77%
105.0	0.225	0.114	834.247	0.01%	99.78%
110.0	0.206	0.113	834.36	0.01%	99.80%
115.0	0.213	0.106	834.466	0.01%	99.81%
120.0	0.206	0.102	834.568	0.01%	99.82%
125.0	0.243	0.104	834.671	0.01%	99.83%
130.0	0.288	0.116	834.787	0.01%	99.85%
135.0	0.303	0.119	834.906	0.01%	99.86%
140.0	0.359	0.123	835.029	0.01%	99.88%
145.0	0.468	0.138	835.167	0.02%	99.89%
150.0	0.588	0.155	835.322	0.02%	99.91%
155.0	0.756	0.170	835.492	0.02%	99.93%
160.0	0.932	0.177	835.67	0.02%	99.95%
165.0	1.052	0.163	835.833	0.02%	99.97%
170.0	1.156	0.131	835.964	0.02%	99.99%
175.0	1.216	0.085	836.049	0.01%	100.00%
180.0	0.618	0.022	836.071	0.00%	100.00%

ZONAL LUMEN SUMMARY

Zone	Lumens	%Lamp	%Fixt
0-30	227.10	27.16%	27.16%
0-40	370.67	44.34%	44.34%
0-60	652.31	78.02%	78.02%
0-90	833.27	99.67%	99.67%
0-120	834.57	99.82%	99.82%
0-180	836.07	100.00%	100.00%
60-90	180.96	21.64%	21.64%
90-120	1.30	0.16%	0.16%
90-130	1.52	0.18%	0.18%
90-150	2.05	0.25%	0.25%
90-180	2.78	0.33%	0.33%
0-61.48	668.86	80.00%	80.00%

ZONAL LUMEN SUMMARY

0-10	27.82
10-20	79.47
20-30	119.81
30-40	143.57
40-50	148.16
50-60	133.48
60-70	102.03
70-80	60.27
80-90	18.65
90-100	0.86
100-110	0.23
110-120	0.21
120-130	0.22
130-140	0.24
140-150	0.29
150-160	0.35
160-170	0.29
170-180	0.08



C60(Max): ———

C0/C180: ———

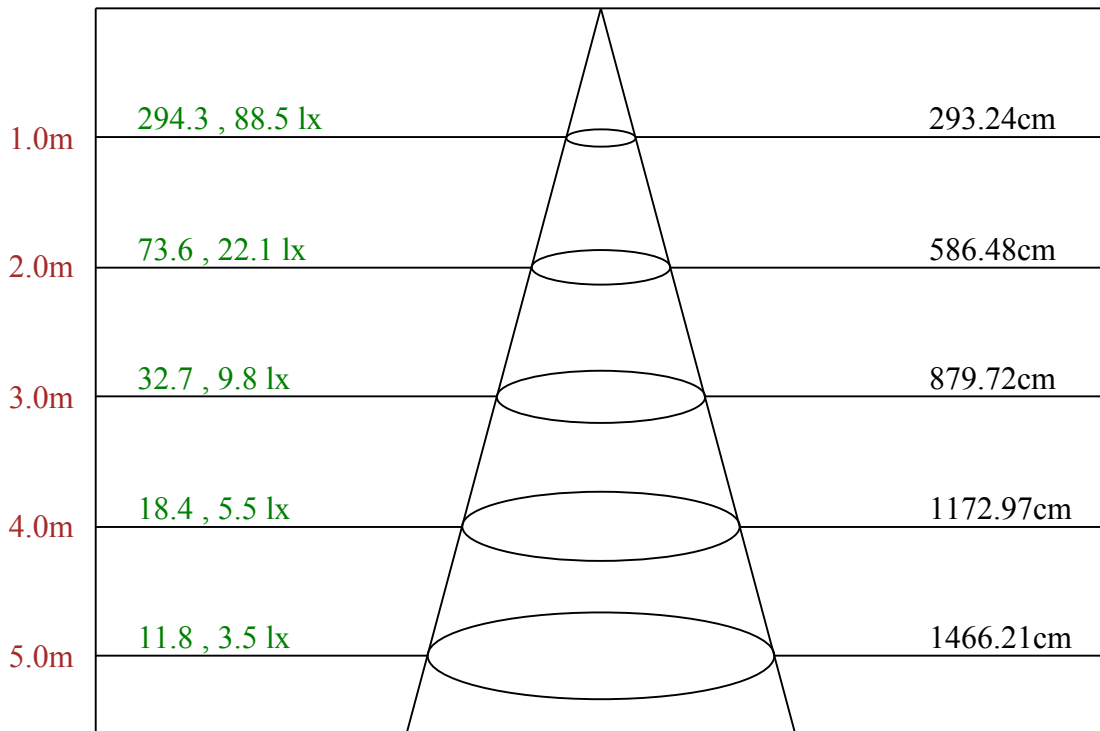
C90/C270: ———

Field angle(10%Imax):C0/180Left:81.7 Right:81.7

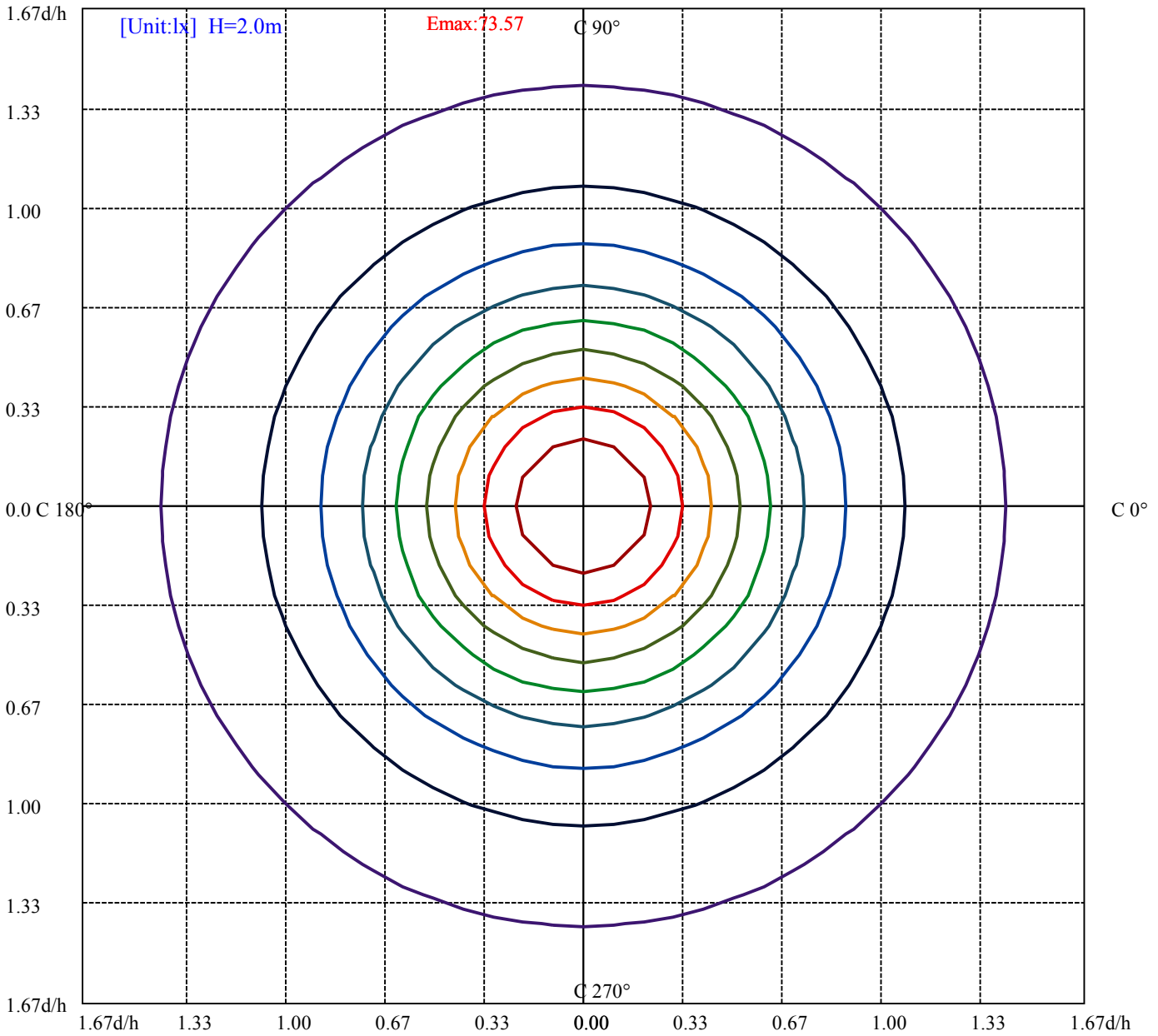
:C90/270Left:81.3 Right:81.3

Beam Angle(50%Imax):C0/180Left:55.5 Right:55.5

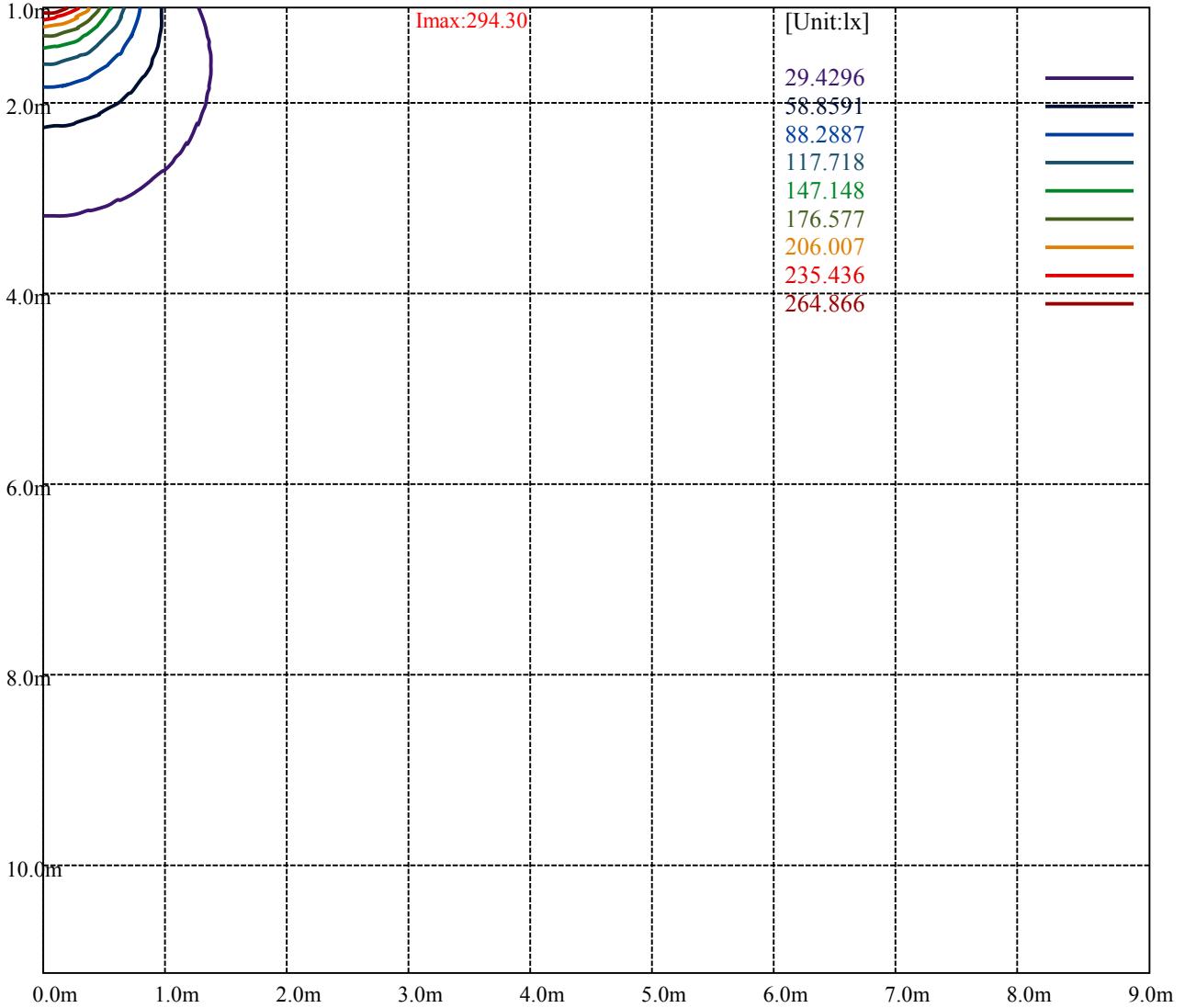
:C90/270Left:55.7 Right:55.7



Max , Ave      Beam angle of C60 plane 111.41



- (10%Emax) 7.357375
- (20%Emax) 14.71478
- (30%Emax) 22.07215
- (40%Emax) 29.4295
- (50%Emax) 36.787
- (60%Emax) 44.14425
- (70%Emax) 51.50175
- (80%Emax) 58.859
- (90%Emax) 66.2165



Lotus LED Lights LFR-4R-FE-9W-5CCT-2700K

Luminance Limiting Curve(no luminous side)

Luminance Table

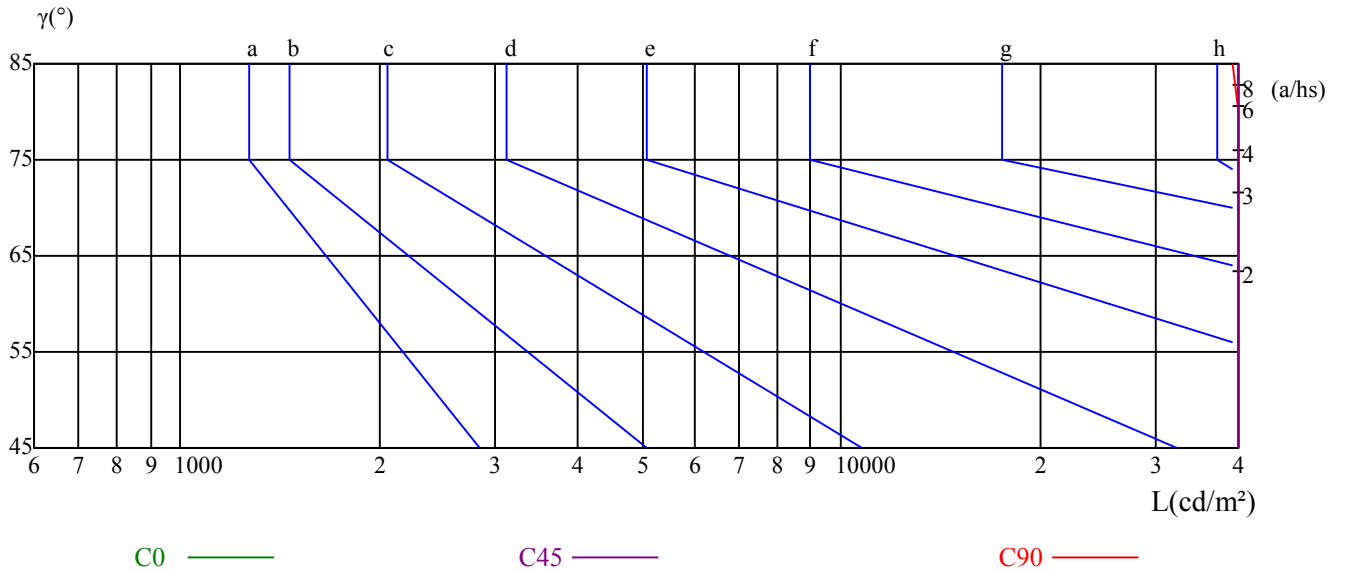
$\gamma$	45	50	55	60	65	70	75	80	85
C0	61488	60207	58890	57098	55423	52806	49934	46848	44615
C45	62122	60162	58822	57034	55085	52516	49477	45517	40391
C90	61618	60443	59314	57544	55419	52656	49578	45135	39292

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
55423	55419	55085	49934	49578	49477	44615	39292	40391

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	1.04	0.99	0.95	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	0.77	0.88	0.82	0.76	0.85	0.79	0.75	0.81	0.77	0.73	0.78	0.74	0.71	0.69
3	0.79	0.71	0.64	0.77	0.70	0.64	0.74	0.68	0.62	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	0.50	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	0.47	0.38	0.32	0.46	0.38	0.32	0.44	0.37	0.32	0.43	0.36	0.32	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

Lotus LED Lights LFR-4R-FE-9W-5CCT-2700K

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	294.30	295.92	294.39	289.87	282.63	272.42	260.57	246.01	229.02
15.0	294.30	295.29	293.03	288.43	280.40	270.48	258.39	243.77	227.17
30.0	294.30	293.67	292.22	286.64	278.81	268.45	256.11	240.98	224.05
45.0	294.30	294.21	292.04	286.73	278.45	267.82	254.22	239.27	221.80
60.0	294.30	294.21	290.52	285.12	276.76	265.78	252.65	237.00	219.64
75.0	294.30	293.94	289.98	284.51	275.17	264.39	250.56	234.57	217.24
90.0	294.30	294.48	290.60	284.75	275.74	264.31	250.08	234.59	217.03
105.0	294.30	292.78	288.67	282.59	272.49	261.23	247.73	231.56	214.04
120.0	294.30	293.67	289.63	282.91	273.76	261.75	247.40	232.42	214.40
135.0	294.30	292.68	288.75	282.13	272.73	261.28	247.14	231.84	213.94
150.0	294.30	293.67	289.64	282.93	273.89	261.73	248.04	231.93	213.68
165.0	294.30	293.58	289.20	282.86	273.40	262.32	248.39	231.86	214.54
180.0	294.30	290.41	284.35	274.04	262.56	248.18	231.46	213.83	193.30
195.0	294.30	290.78	284.01	274.81	262.45	248.92	232.04	214.81	195.05
210.0	294.30	289.79	283.13	275.20	264.49	250.26	234.77	216.31	197.49
225.0	294.30	290.96	285.38	277.01	265.84	251.61	236.12	219.10	200.01
240.0	294.30	290.97	286.65	277.30	266.68	253.46	238.08	221.08	201.92
255.0	294.30	292.05	286.57	278.13	267.71	254.51	240.32	223.62	205.39
270.0	294.30	293.94	288.98	280.70	270.34	257.46	243.51	225.94	207.03
285.0	294.30	291.61	287.15	279.73	269.54	256.67	242.19	226.91	207.25
300.0	294.30	292.86	288.47	281.29	271.34	258.70	244.71	228.12	210.28
315.0	294.30	292.68	287.94	281.05	271.57	258.77	244.72	227.99	210.45
330.0	294.30	293.04	288.84	280.78	271.75	258.41	251.26	227.81	209.56
345.0	294.30	292.33	287.78	281.34	270.63	258.21	243.39	226.24	208.64
360.0	294.30	295.92	294.39	289.87	282.63	272.42	260.57	246.01	229.02
C/γ(°)	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0
0.0	211.75	191.50	170.52	148.37	126.13	101.90	78.75	55.69	33.91
15.0	208.95	189.28	167.99	145.79	123.60	98.97	75.87	52.78	31.22
30.0	205.77	186.14	165.52	142.74	120.13	96.45	73.30	49.71	28.55
45.0	203.70	183.89	162.37	139.85	116.89	93.12	70.15	47.19	26.21
60.0	201.38	180.97	159.11	136.98	114.32	90.03	66.83	44.16	23.12
75.0	198.83	178.36	157.07	134.35	111.72	87.47	64.48	41.49	20.92
90.0	197.31	176.69	155.70	133.19	109.60	85.73	62.59	39.35	18.73
105.0	194.65	174.27	153.09	130.30	106.89	82.94	59.97	38.16	17.87
120.0	195.03	174.05	152.80	129.66	106.71	82.94	59.90	37.21	17.31
135.0	193.99	172.78	151.49	128.85	106.03	82.14	59.41	37.31	17.18
150.0	195.06	173.95	152.20	129.65	106.30	82.32	59.68	37.49	17.36
165.0	196.05	174.70	153.44	130.49	107.18	84.05	61.00	38.14	18.49
180.0	172.42	150.45	127.93	103.88	80.83	57.68	35.44	16.18	0.45
195.0	173.94	152.02	129.83	106.28	82.10	59.27	36.99	18.04	0.54
210.0	176.42	154.44	133.10	108.78	85.01	61.87	40.07	19.81	2.88
225.0	179.30	157.41	135.17	111.40	88.25	65.20	42.51	22.33	5.22
240.0	181.78	160.73	137.88	114.86	91.20	67.82	45.51	25.27	7.56
255.0	187.25	163.54	141.98	118.19	94.12	71.04	48.50	27.30	9.61
270.0	187.67	166.60	144.90	121.03	97.35	73.39	50.79	29.90	11.53
285.0	187.59	167.12	145.49	122.17	98.04	75.79	63.27	31.19	12.69
300.0	190.01	168.94	147.42	135.13	100.52	77.03	63.80	32.46	13.18
315.0	199.27	169.29	147.19	123.84	100.22	76.95	54.22	32.84	13.60
330.0	190.50	168.67	147.46	124.02	99.50	76.86	54.05	32.75	13.24
345.0	187.92	166.84	145.23	122.81	98.43	75.38	51.89	30.81	11.79
360.0	211.75	191.50	170.52	148.37	126.13	101.90	78.75	55.69	33.91

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Appendix Page: 11 Total:12

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	13.56	0.09	0.00	0.09	0.00	0.00	0.09	0.18	0.27
15.0	12.00	0.18	0.09	0.09	0.09	0.00	0.09	0.18	0.27
30.0	9.82	0.18	0.00	0.09	0.09	0.09	0.00	0.18	0.27
45.0	7.83	0.09	0.09	0.00	0.09	0.09	0.09	0.18	0.27
60.0	5.67	0.09	0.09	0.09	0.09	0.18	0.00	0.18	0.36
75.0	3.05	0.09	0.09	0.18	0.09	0.09	0.09	0.09	0.36
90.0	1.62	0.18	0.09	0.09	0.09	0.09	0.18	0.18	0.27
105.0	0.63	0.09	0.09	0.09	0.09	0.09	0.09	0.18	0.27
120.0	0.27	0.09	0.09	0.09	0.09	0.18	0.09	0.18	0.36
135.0	0.27	0.09	0.09	0.09	0.09	0.09	0.00	0.18	0.36
150.0	0.36	0.09	0.09	0.18	0.09	0.09	0.09	0.27	0.27
165.0	0.71	0.18	0.09	0.18	0.09	0.18	0.09	0.18	0.27
180.0	0.45	0.36	0.45	0.45	0.36	0.36	0.36	0.36	0.27
195.0	0.36	0.36	0.36	0.45	0.36	0.36	0.36	0.36	0.27
210.0	0.36	0.36	0.36	0.36	0.36	0.27	0.36	0.36	0.36
225.0	0.36	0.27	0.36	0.36	0.36	0.36	0.27	0.36	0.27
240.0	0.27	0.27	0.27	0.36	0.45	0.27	0.36	0.27	0.27
255.0	0.27	0.27	0.36	0.27	0.36	0.36	0.27	0.27	0.27
270.0	0.90	0.27	0.36	0.36	0.27	0.36	0.36	0.27	0.27
285.0	0.27	0.27	0.27	0.36	0.36	0.27	0.27	0.27	0.27
300.0	0.27	0.27	0.27	0.27	0.27	0.36	0.36	0.27	0.27
315.0	0.36	0.36	0.36	0.27	0.27	0.36	0.36	0.27	0.27
330.0	0.36	0.36	0.27	0.27	0.27	0.27	0.45	0.36	0.27
345.0	0.36	0.36	0.27	0.36	0.27	0.36	0.27	0.27	0.27
360.0	13.56	0.09	0.00	0.09	0.00	0.00	0.09	0.18	0.27
C/γ(°)	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0
0.0	0.36	0.36	0.54	0.63	0.81	0.99	1.08	1.27	1.27
15.0	0.36	0.36	0.45	0.63	0.81	0.99	1.17	1.26	1.26
30.0	0.27	0.36	0.45	0.63	0.81	0.99	1.08	1.26	1.17
45.0	0.36	0.36	0.54	0.63	0.81	0.99	1.17	1.26	1.35
60.0	0.36	0.36	0.54	0.63	0.81	0.99	1.17	1.17	1.26
75.0	0.27	0.36	0.45	0.63	0.81	0.99	1.17	1.17	1.26
90.0	0.36	0.36	0.45	0.72	0.81	1.08	1.17	1.26	1.17
105.0	0.36	0.45	0.45	0.71	0.80	1.07	1.16	1.25	1.16
120.0	0.36	0.45	0.45	0.63	0.81	0.99	1.17	1.26	1.17
135.0	0.36	0.36	0.54	0.63	0.89	1.07	1.16	1.16	1.25
150.0	0.36	0.45	0.54	0.63	0.81	1.07	1.16	1.16	1.16
165.0	0.36	0.36	0.54	0.63	0.80	0.98	1.16	1.25	1.25
180.0	0.27	0.36	0.45	0.63	0.72	0.90	0.90	1.08	1.27
195.0	0.27	0.36	0.36	0.54	0.72	0.81	0.90	0.99	1.17
210.0	0.27	0.45	0.45	0.45	0.72	0.90	0.99	1.08	1.17
225.0	0.27	0.36	0.45	0.45	0.63	0.90	0.90	1.17	1.17
240.0	0.27	0.36	0.45	0.54	0.72	0.90	0.99	1.08	1.17
255.0	0.27	0.27	0.45	0.54	0.72	0.90	0.99	1.08	1.26
270.0	0.27	0.36	0.45	0.54	0.63	0.81	0.99	1.17	1.26
285.0	0.27	0.45	0.45	0.54	0.71	0.80	0.89	1.07	1.16
300.0	0.27	0.27	0.36	0.54	0.72	0.81	0.99	1.08	1.26
315.0	0.27	0.27	0.45	0.54	0.63	0.81	0.89	1.07	1.25
330.0	0.18	0.27	0.45	0.54	0.72	0.81	0.98	1.07	1.16
345.0	0.27	0.27	0.54	0.54	0.71	0.80	0.98	1.07	1.16
360.0	0.36	0.36	0.54	0.63	0.81	0.99	1.08	1.27	1.27

Lotus LED Lights LFR-4R-FE-9W-5CCT-2700K

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Intensity data(cd)

C/γ(°)	180.0
0.0	1.27
15.0	1.26
30.0	1.26
45.0	1.17
60.0	1.26
75.0	1.17
90.0	1.26
105.0	1.25
120.0	1.26
135.0	1.16
150.0	1.25
165.0	1.25
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	1.27