

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: io LED

Report Number: P170928

Luminaire Tested: **LDA4A28840D010TE LAR15SP 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170928
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25648)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt
Description: PORTFOLIO 4" Adjustable Reflector, Self-flanged Trim Ring, 15° Spot Optic, at 30° tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2587.1 lumens
Efficiency: N/A
Efficacy: 58.2 lumens/watt
Spacing Criteria (0/90/45): 2.52 / 1.04 / 1.28
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

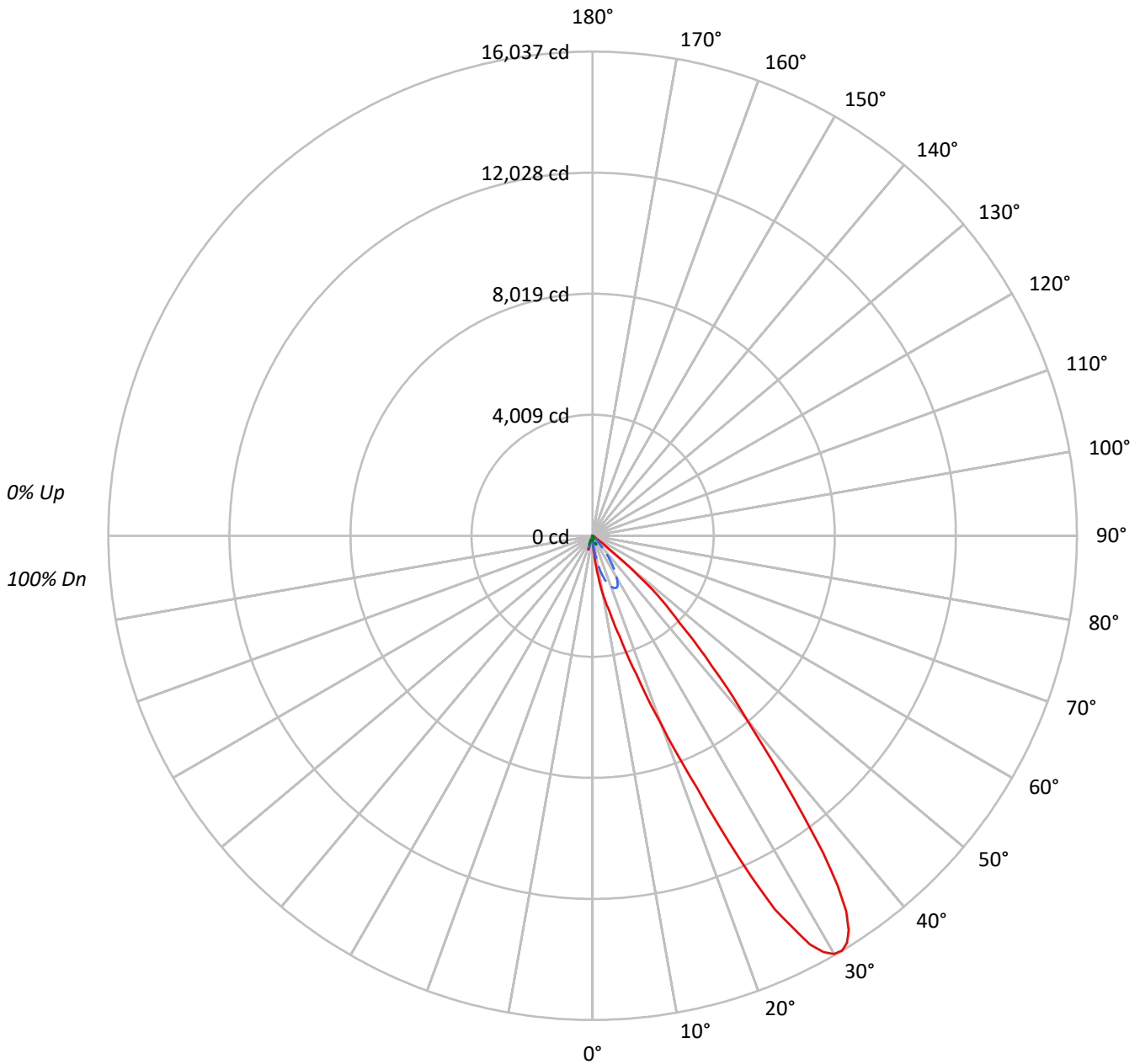
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P170928

CATALOG NUMBER: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt

Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20									
RC	80									50									30									10									0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0																
RCR																																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100																			
1	112	109	106	104	110	107	104	102	103	101	99	99	98	96	96	94	93	91																			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	86	84	82																			
3	99	91	85	80	97	90	84	80	87	82	78	84	80	77	82	79	76	74																			
4	92	83	77	71	90	82	76	71	80	74	70	78	73	69	76	72	68	67																			
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	70	65	62	60																			
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	56	54																			
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49																			
8	70	58	51	46	69	58	51	46	57	50	46	55	50	46	54	49	45	44																			
9	65	54	47	42	64	53	46	42	52	46	41	51	45	41	50	45	41	40																			
10	61	49	42	38	60	49	42	38	48	42	38	47	41	37	46	41	37	36																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	18613	18613	18613
5°	83502	17495	11329
10°	247153	16094	14479
15°	441231	19065	40799
20°	874019	37515	43841
25°	1700761	24470	12453
30°	2278181	9144	4344
35°	2131706	3870	1686
40°	1277423	1803	515
45°	708895	1116	0
50°	260052	921	0
55°	39698	688	0
60°	8708	789	0
65°	2802	934	0
70°	577	1154	0
75°	0	2288	0
80°	0	3410	0
85°	0	6793	0



TEST NUMBER: P170928

CATALOG NUMBER: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.2	1.3
10°-20°	279.5	10.8
20°-30°	834.2	32.2
30°-40°	987.9	38.2
40°-50°	409.8	15.8
50°-60°	31.9	1.2
60°-70°	4.4	0.2
70°-80°	3.3	0.1
80°-90°	3.0	0.1
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	1146.8	44.3
0°-40°	2134.7	82.5
0°-60°	2576.4	99.6
0°-90°	2587.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2587.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	151	151	151	151	151	
5°	674	340	141	98	92	107
15°	3455	1460	149	223	320	1141
25°	12497	1896	180	104	92	5708
35°	14157	1056	26	14	11	8204
45°	4064	93	6	5	0	3313
55°	185	13	3	2	0	271
65°	10	3	3	3	0	12
75°	0	3	5	3	0	0
85°	0	3	5	3	0	0
90°	0	0	0	0	0	



TEST NUMBER: P170928

CATALOG NUMBER: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9
2.5°	261.7	248.9	255.3	244.1	250.5	239.2	231.2	239.2	239.2	232.8	223.2
5°	674.4	671.2	684.0	653.5	661.5	627.8	598.9	606.9	600.5	579.6	542.7
7.5°	1284.5	1271.7	1286.1	1242.8	1244.4	1188.2	1144.8	1154.5	1125.6	1090.2	1026.0
10°	1973.3	1955.7	1971.7	1920.3	1910.7	1832.0	1771.0	1780.7	1714.8	1657.0	1559.1
12.5°	2570.6	2569.0	2517.6	2527.3	2508.0	2387.6	2349.0	2352.3	2262.3	2198.1	2080.9
15°	3455.3	3489.1	3498.7	3432.9	3314.0	3095.7	2999.3	2962.4	2816.3	2708.7	2540.1
17.5°	4815.3	4861.9	4702.9	4741.5	4545.6	4203.6	4012.5	3898.5	3623.9	3421.6	3116.5
20°	6658.6	6618.4	6388.8	6359.9	6026.0	5586.0	5184.6	4969.5	4547.2	4251.7	3807.0
22.5°	9038.1	9007.6	8614.3	8439.2	7740.8	7121.0	6600.8	6061.3	5433.5	5038.5	4434.8
25°	12496.7	12357.0	11599.1	11101.4	9873.1	8819.8	7952.7	7114.6	6152.8	5724.1	4956.6
26°	13770.0	13736.2	12946.3	12291.2	10810.8	9503.8	8334.9	7495.1	6435.4	5934.4	5104.3
27°	14534.2	14802.4	14067.0	13325.2	11706.7	10141.2	8786.1	7801.8	6655.4	6082.2	5199.1
28°	15327.4	15500.8	14842.5	13911.3	12424.4	10648.6	9128.1	8008.9	6790.2	6154.4	5231.2
29°	15764.2	15931.1	15319.4	14445.9	12894.9	10977.8	9330.4	8100.4	6840.0	6152.8	5202.3
30°	15995.4	16151.1	15553.8	14706.0	13089.2	11080.5	9373.7	8063.5	6791.9	6078.9	5120.4
31°	16037.1	16167.2	15577.9	14698.0	13015.3	10953.7	9251.7	7911.0	6663.4	5942.5	4996.7
32°	15895.8	15997.0	15398.1	14460.4	12682.9	10632.5	8998.0	7675.0	6467.5	5772.3	4837.8
33°	15565.1	15746.5	15015.9	13980.3	12104.9	10157.3	8638.3	7366.7	6223.5	5550.7	4643.5
34°	15017.5	15133.1	14376.9	13228.9	11334.2	9579.2	8196.8	7008.6	5944.1	5289.0	4423.5
35°	14156.9	14259.7	13423.1	12214.1	10455.9	8927.4	7692.6	6613.6	5631.0	4995.1	4179.5
36°	12965.5	13063.5	12188.4	11086.9	9569.6	8248.2	7161.1	6183.3	5292.2	4680.4	3921.0
37°	11573.4	11658.5	10879.8	9980.7	8699.4	7561.0	6623.3	5746.6	4934.1	4359.3	3675.3
38°	10227.9	10305.0	9675.6	8943.4	7859.6	6889.8	6087.0	5293.8	4564.8	4036.6	3416.8
39°	9014.1	9081.5	8574.1	7970.4	7060.0	6245.9	5552.3	4844.2	4193.9	3713.8	3150.3
40°	7933.5	7991.3	7573.8	7077.7	6334.2	5643.8	5032.1	4409.1	3831.1	3400.7	2901.4
42.5°	5823.7	5836.5	5587.6	5295.4	4717.4	4320.8	3885.6	3436.1	3013.8	2718.3	2400.4
45°	4063.9	4222.8	4060.7	3866.4	3452.1	3203.2	2925.5	2654.1	2410.1	2125.9	1811.2
47.5°	2922.3	2928.7	2832.3	2710.3	2382.8	2212.6	1984.6	1655.4	1413.0	1009.9	749.8
50°	1355.2	1279.7	1284.5	1201.0	1071.0	851.0	711.3	507.4	404.6	289.0	232.8
51°	806.0	749.8	757.9	698.5	611.7	476.9	404.6	324.3	281.0	218.4	179.8
52°	470.5	451.2	449.6	422.3	359.7	330.8	292.2	244.1	213.5	168.6	139.7
53°	342.0	329.2	329.2	311.5	268.1	248.9	221.6	187.9	163.8	128.5	106.0
54°	255.3	245.7	245.7	234.4	216.8	186.3	167.0	139.7	122.0	99.5	78.7
55°	184.6	178.2	178.2	170.2	157.4	134.9	120.4	101.2	89.9	72.3	57.8
57.5°	77.1	73.9	73.9	70.6	67.4	57.8	54.6	46.6	40.1	35.3	28.9
60°	35.3	33.7	35.3	33.7	30.5	32.1	27.3	24.1	22.5	19.3	16.1
61°	27.3	25.7	25.7	25.7	22.5	22.5	20.9	19.3	17.7	14.5	12.8
62°	20.9	19.3	19.3	19.3	17.7	17.7	16.1	14.5	14.5	11.2	9.6
63°	16.1	14.5	14.5	14.5	12.8	12.8	12.8	11.2	11.2	9.6	8.0
64°	11.2	11.2	11.2	11.2	11.2	9.6	9.6	9.6	8.0	6.4	6.4
65°	9.6	8.0	9.6	8.0	8.0	8.0	8.0	8.0	6.4	4.8	4.8
66°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	4.8	3.2



TEST NUMBER: P170928

CATALOG NUMBER: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
72.5°	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6
75°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
80°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
85°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
0°	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9	150.9
2.5°	218.4	224.8	220.0	207.1	213.5	210.3	203.9	199.1	170.2	147.7	125.2
5°	515.4	520.2	492.9	444.8	428.7	403.0	366.1	340.4	192.7	141.3	110.8
7.5°	974.6	942.5	916.8	826.9	788.4	729.0	658.3	608.5	220.0	133.3	102.8
10°	1475.6	1424.2	1371.2	1239.6	1170.5	1079.0	977.8	920.0	248.9	128.5	102.8
12.5°	1971.7	1902.7	1806.3	1661.8	1563.9	1440.3	1302.2	1199.4	269.7	131.7	118.8
15°	2402.0	2318.5	2212.6	2048.8	1934.8	1780.7	1600.8	1459.5	279.4	149.3	165.4
17.5°	2870.9	2720.0	2544.9	2336.2	2211.0	2032.7	1830.4	1658.6	279.4	189.5	264.9
20°	3410.4	3134.2	2853.2	2561.0	2384.4	2198.1	1981.4	1796.7	290.6	285.8	364.5
22.5°	3912.9	3532.4	3135.8	2755.3	2509.6	2307.3	2087.3	1875.4	337.2	314.7	242.5
25°	4303.1	3819.8	3352.6	2890.1	2612.4	2387.6	2151.6	1896.3	308.3	179.8	131.7
26°	4404.3	3882.4	3395.9	2906.2	2617.2	2386.0	2145.1	1873.8	258.5	142.9	106.0
27°	4457.3	3903.3	3399.1	2891.8	2597.9	2358.7	2109.8	1827.2	207.1	115.6	86.7
28°	4457.3	3879.2	3365.4	2851.6	2548.1	2307.3	2048.8	1753.4	168.6	94.7	69.0
29°	4412.3	3816.6	3298.0	2790.6	2480.7	2235.0	1965.3	1666.7	142.9	78.7	56.2
30°	4325.6	3725.1	3208.1	2711.9	2394.0	2153.2	1873.8	1576.7	123.6	64.2	45.0
31°	4203.6	3622.3	3097.3	2626.8	2313.7	2077.7	1790.3	1485.2	107.6	51.4	36.9
32°	4057.4	3493.9	2983.3	2538.5	2247.9	2007.0	1703.6	1388.9	93.1	43.4	32.1
33°	3888.9	3349.4	2864.5	2451.8	2183.7	1926.8	1608.9	1284.5	80.3	35.3	27.3
34°	3702.6	3190.4	2742.4	2358.7	2105.0	1825.6	1498.1	1173.7	69.0	30.5	22.5
35°	3500.3	3012.2	2617.2	2264.0	2016.7	1713.2	1379.2	1056.5	59.4	25.7	19.3
36°	3281.9	2845.2	2495.2	2169.2	1907.5	1591.2	1249.2	936.1	51.4	20.9	17.7
37°	3063.6	2687.8	2374.7	2068.1	1780.7	1453.1	1112.7	810.8	45.0	17.7	14.5
38°	2856.4	2535.3	2255.9	1950.9	1632.9	1300.6	971.4	685.6	38.5	16.1	12.8
39°	2662.1	2387.6	2133.9	1811.2	1480.4	1152.8	834.9	555.6	33.7	14.5	11.2
40°	2487.1	2247.9	2000.6	1655.4	1323.0	1001.9	696.8	414.3	28.9	11.2	9.6
42.5°	2117.8	1864.1	1538.2	1154.5	894.3	581.2	324.3	154.1	20.9	8.0	8.0
45°	1398.5	1075.8	730.6	435.1	293.8	176.6	131.7	93.1	16.1	6.4	6.4
47.5°	467.2	297.0	216.8	155.7	133.3	106.0	85.1	57.8	11.2	4.8	4.8
50°	178.2	144.5	118.8	89.9	80.3	64.2	51.4	33.7	8.0	4.8	4.8
51°	139.7	114.0	93.1	70.6	64.2	51.4	41.7	28.9	6.4	4.8	4.8
52°	107.6	88.3	72.3	54.6	51.4	41.7	35.3	24.1	6.4	3.2	4.8
53°	81.9	67.4	54.6	41.7	40.1	33.7	28.9	19.3	4.8	3.2	4.8
54°	61.0	51.4	43.4	33.7	33.7	28.9	24.1	16.1	4.8	3.2	4.8
55°	46.6	38.5	33.7	25.7	27.3	24.1	20.9	12.8	4.8	3.2	4.8
57.5°	24.1	22.5	19.3	16.1	17.7	16.1	14.5	8.0	4.8	3.2	4.8
60°	14.5	12.8	11.2	9.6	11.2	11.2	11.2	4.8	4.8	3.2	4.8
61°	11.2	9.6	8.0	8.0	9.6	9.6	9.6	4.8	4.8	3.2	4.8
62°	8.0	8.0	6.4	6.4	9.6	8.0	8.0	4.8	4.8	3.2	4.8
63°	6.4	6.4	6.4	4.8	8.0	8.0	8.0	4.8	4.8	3.2	4.8
64°	4.8	4.8	4.8	4.8	6.4	8.0	8.0	3.2	4.8	3.2	4.8
65°	4.8	4.8	3.2	3.2	6.4	6.4	6.4	3.2	4.8	3.2	4.8
66°	3.2	3.2	3.2	3.2	6.4	6.4	6.4	3.2	4.8	3.2	4.8



TEST NUMBER: P170928

CATALOG NUMBER: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	4.8	4.8
75°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	4.8	4.8
77.5°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	4.8	6.4
80°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	4.8	6.4
82.5°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	4.8	6.4
85°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	4.8	6.4
87.5°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	4.8	4.8
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P170928

CATALOG NUMBER: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	150.9	150.9	150.9
2.5°	114.0	109.2	106.0
5°	97.9	93.1	91.5
7.5°	91.5	89.9	91.5
10°	101.2	107.6	115.6
12.5°	134.9	159.0	171.8
15°	223.2	290.6	319.5
17.5°	393.4	448.0	480.1
20°	346.8	316.3	334.0
22.5°	187.9	163.8	168.6
25°	104.4	89.9	91.5
26°	83.5	72.3	72.3
27°	67.4	57.8	57.8
28°	54.6	46.6	46.6
29°	43.4	36.9	36.9
30°	35.3	30.5	30.5
31°	28.9	24.1	24.1
32°	24.1	20.9	19.3
33°	20.9	17.7	16.1
34°	17.7	14.5	12.8
35°	14.5	11.2	11.2
36°	12.8	9.6	9.6
37°	11.2	8.0	8.0
38°	9.6	6.4	6.4
39°	8.0	6.4	4.8
40°	6.4	4.8	3.2
42.5°	4.8	3.2	1.6
45°	4.8	1.6	0.0
47.5°	3.2	1.6	0.0
50°	3.2	0.0	0.0
51°	3.2	0.0	0.0
52°	3.2	0.0	0.0
53°	1.6	0.0	0.0
54°	3.2	0.0	0.0
55°	1.6	0.0	0.0
57.5°	3.2	0.0	0.0
60°	3.2	0.0	0.0
61°	3.2	0.0	0.0
62°	3.2	0.0	0.0
63°	3.2	0.0	0.0
64°	3.2	1.6	0.0
65°	3.2	1.6	0.0
66°	3.2	1.6	0.0



TEST NUMBER: P170928

CATALOG NUMBER: LDA4A28840D010TE LAR15SP 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	3.2	1.6	0.0
75°	3.2	1.6	0.0
77.5°	3.2	1.6	0.0
80°	3.2	1.6	0.0
82.5°	3.2	1.6	0.0
85°	3.2	1.6	0.0
87.5°	3.2	1.6	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





— 0°-180° - - 45°-225° - - - - 90°-270°







67.5°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	3.2	3.2
70°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	3.2	3.2	1.6	1.6





67.5°	3.2	1.6	3.2	3.2	4.8	6.4	6.4	3.2	4.8	3.2	4.8
70°	1.6	1.6	1.6	1.6	4.8	4.8	6.4	3.2	4.8	3.2	4.8





67.5°	3.2	1.6	0.0
70°	3.2	1.6	0.0



(END OF REPORT)