

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: P170708

Luminaire Tested: **LDA4A28940D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170708
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P25649)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDA4A28940D010TE LAR25NF 4LA1 30° Tilt
Description: PORTFOLIO 4" Adjustable Reflector, Self-flanged Trim Ring, 25°
Narrow Flood Optic, at 30° tilt
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2411.7 lumens
Efficiency: N/A
Efficacy: 54.2 lumens/watt
Spacing Criteria (0/90/45): 2.56 / 1.01 / 1.3
Luminous Opening: Circular (Dia: 0.33' x H: 0')
CIE Type: Direct

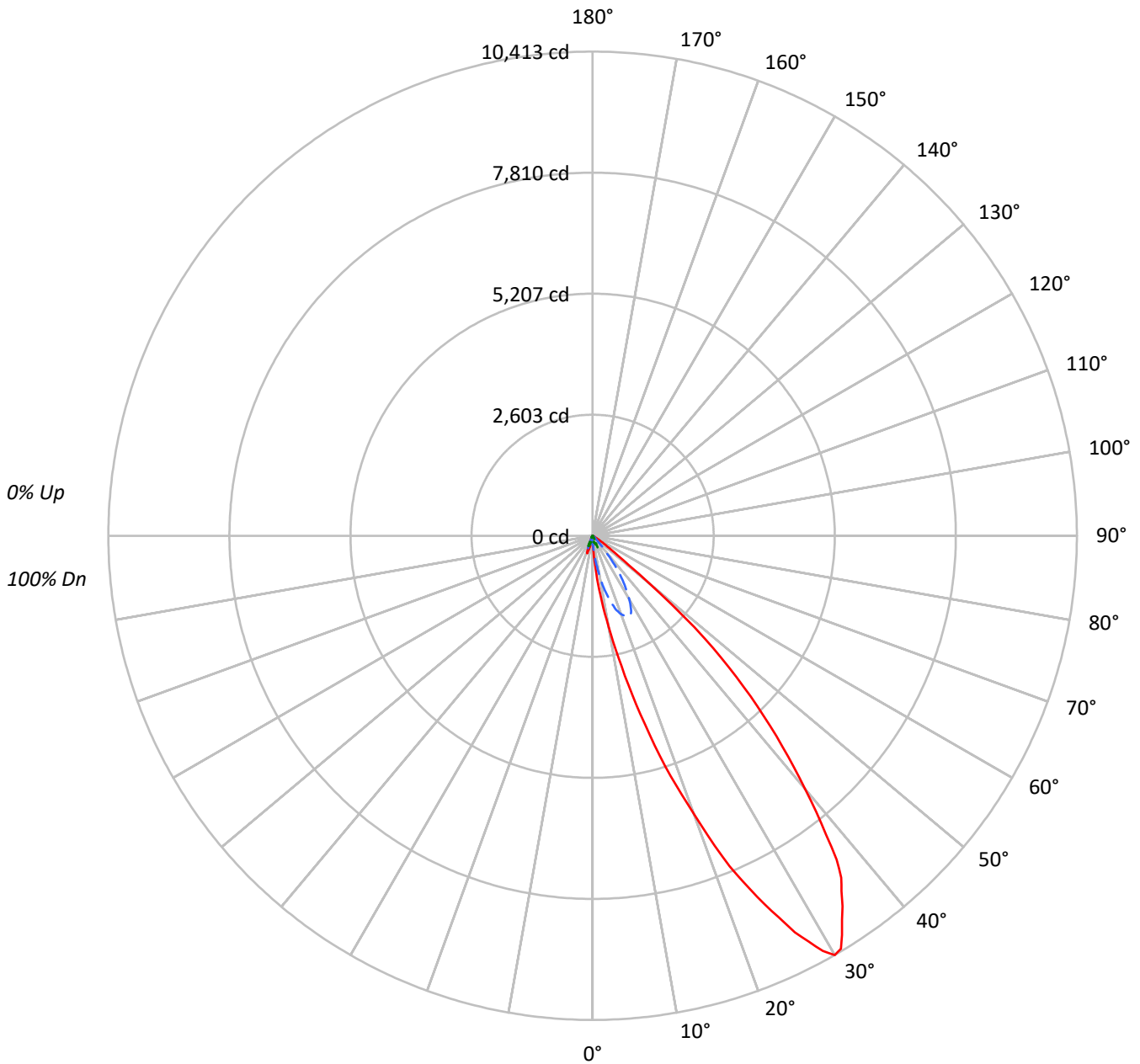
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20					20					20					20					20					
RC	80					70					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	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	112	109	106	104	110	107	104	102	103	101	99	99	97	96	96	94	93	91					91			
2	105	100	95	91	103	98	93	90	95	91	88	91	88	86	89	86	84	82					82			
3	99	91	85	80	96	89	84	79	87	82	78	84	80	77	82	78	76	74					74			
4	92	83	76	71	90	82	75	71	79	74	70	77	73	69	75	71	68	66					66			
5	86	76	69	63	84	75	68	63	73	67	62	71	66	62	69	65	61	60					60			
6	80	69	62	57	78	68	61	56	67	61	56	65	60	56	64	59	55	53					53			
7	75	63	56	51	73	63	56	51	61	55	50	60	54	50	59	54	50	48					48			
8	70	58	51	46	68	58	51	46	56	50	46	55	49	45	54	49	45	43					43			
9	65	53	46	41	64	53	46	41	52	46	41	51	45	41	50	45	41	39					39			
10	61	49	42	38	60	49	42	38	48	42	37	47	41	37	46	41	37	36					36			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	19723	19723	19723
5°	85656	18597	11267
10°	246990	16746	12249
15°	506113	18478	35372
20°	834982	34364	35821
25°	1189459	21939	12004
30°	1483067	9614	4714
35°	1405247	4352	2078
40°	1144520	2222	660
45°	801695	1204	0
50°	300407	787	0
55°	64019	882	0
60°	12236	691	0
65°	3619	1197	0
70°	1010	1479	0
75°	0	1954	0
80°	0	2912	0
85°	0	5802	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.5	1.4
10°-20°	288.8	12.0
20°-30°	737.8	30.6
30°-40°	854.5	35.4
40°-50°	440.8	18.3
50°-60°	45.5	1.9
60°-70°	4.9	0.2
70°-80°	3.1	0.1
80°-90°	2.8	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°	1060.1	44.0
0°-40°	1914.6	79.4
0°-60°	2400.9	99.6
0°-90°	2411.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2411.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	160	160	160	160	160	
5°	692	360	150	99	91	108
15°	3963	1451	145	193	277	1213
25°	8740	1895	161	101	88	4060
35°	9332	1036	29	16	14	5715
45°	4596	121	7	4	0	3442
55°	298	18	4	3	0	373
65°	12	4	4	3	0	16
75°	0	3	4	4	0	0
85°	0	3	4	4	0	0
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	2.5°	5°	7.5°	10°	12.5°	15°	17.5°	20°	22.5°	25°
0°	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9
2.5°	275.6	266.0	259.1	261.8	277.0	260.5	261.8	256.3	253.6	250.8	243.9
5°	691.8	664.2	646.3	647.7	607.7	638.1	635.3	611.9	596.7	567.8	551.2
7.5°	1298.2	1238.9	1218.2	1211.3	1215.5	1186.5	1174.1	1143.8	1103.8	1051.5	1021.2
10°	1972.0	1936.2	1923.8	1901.8	1900.4	1849.4	1819.1	1780.5	1700.6	1627.5	1573.8
12.5°	2873.3	2763.1	2743.8	2702.4	2691.4	2604.6	2541.2	2484.7	2351.0	2254.5	2169.1
15°	3963.4	3873.8	3894.5	3767.7	3733.2	3591.3	3472.8	3351.5	3135.1	2987.7	2836.1
17.5°	5200.9	5086.5	5100.3	4941.8	4656.5	4682.7	4510.5	4343.7	4039.2	3842.1	3607.8
20°	6361.2	6279.9	6285.4	6074.6	5978.1	5716.3	5486.1	5287.7	4882.5	4631.7	4321.7
22.5°	7696.6	7485.7	7445.8	7159.1	6989.6	6638.2	6317.1	6053.9	5563.3	5280.8	4900.5
25°	8739.8	8595.1	8484.8	8145.8	7910.2	7452.7	7080.6	6690.6	6100.8	5787.9	5335.9
26°	9131.2	8994.7	8852.8	8487.6	8223.0	7739.3	7334.2	6915.2	6284.1	5949.2	5457.2
27°	9573.5	9350.3	9179.4	8770.1	8483.5	7975.0	7494.0	7098.5	6423.2	6052.5	5534.4
28°	9886.4	9663.1	9437.1	8992.0	8681.9	8150.0	7649.7	7218.4	6504.5	6102.1	5566.1
29°	10207.5	9970.4	9641.1	9156.0	8818.3	8258.8	7739.3	7277.6	6528.0	6099.4	5549.5
30°	10412.8	10174.4	9748.5	9248.3	8891.4	8302.9	7764.1	7266.6	6490.8	6044.3	5488.9
31°	10364.6	10145.4	9722.4	9258.0	8884.5	8276.8	7718.6	7188.1	6397.1	5946.4	5378.7
32°	10123.4	9937.3	9616.3	9193.2	8808.7	8187.2	7612.5	7064.0	6262.0	5832.0	5245.0
33°	9843.6	9689.3	9467.4	9062.3	8676.4	8052.1	7466.4	6911.1	6106.3	5676.3	5083.7
34°	9609.4	9470.2	9264.8	8885.9	8495.9	7871.6	7281.8	6718.1	5928.5	5493.0	4893.6
35°	9332.4	9205.6	9015.4	8647.5	8245.1	7629.1	7050.3	6494.9	5719.0	5275.3	4673.1
36°	9091.2	8891.4	8698.5	8340.2	7939.1	7335.5	6777.4	6233.1	5482.0	5025.9	4425.0
37°	8717.7	8517.9	8311.2	7972.2	7576.7	6999.3	6474.2	5953.3	5211.9	4838.4	4160.4
38°	8159.6	8067.3	7860.6	7538.1	7170.2	6628.6	6142.1	5635.0	4907.3	4476.0	3879.3
39°	7638.7	7562.9	7361.7	7066.8	6726.4	6230.3	5774.2	5276.7	4564.2	4156.3	3583.0
40°	7108.1	7032.4	6843.6	6577.6	6271.6	5815.5	5382.8	4894.9	4204.5	3826.9	3285.3
42.5°	5851.3	5772.8	5732.8	5461.3	5137.5	4746.1	4345.1	3904.1	3317.0	3007.0	2582.5
45°	4595.9	4524.2	4374.0	4262.4	3973.0	3647.8	3321.2	2961.5	2528.8	2222.8	1826.0
47.5°	3285.3	3250.9	3256.4	3049.7	2774.1	2517.8	2247.7	1922.4	1539.3	1154.8	847.5
50°	1565.5	1575.1	1613.7	1469.0	1262.3	1112.1	952.3	746.9	545.7	428.6	332.1
51°	1014.3	1025.3	1058.4	955.0	804.8	702.8	600.8	485.1	387.2	329.4	263.2
52°	686.3	686.3	693.2	632.5	558.1	500.2	441.0	373.5	301.8	259.1	208.1
53°	515.4	514.0	516.8	476.8	425.8	383.1	341.8	292.2	238.4	202.6	161.2
54°	394.1	392.8	395.5	365.2	329.4	297.7	266.0	228.8	184.7	151.6	121.3
55°	297.7	297.7	301.8	278.4	250.8	226.0	202.6	170.9	136.4	110.2	88.2
57.5°	119.9	119.9	124.0	115.8	103.4	93.7	85.4	73.0	60.6	51.0	41.3
60°	49.6	51.0	52.4	48.2	45.5	42.7	40.0	35.8	31.7	26.2	22.0
61°	37.2	37.2	38.6	35.8	34.5	31.7	30.3	27.6	24.8	20.7	17.9
62°	27.6	27.6	28.9	27.6	26.2	24.8	23.4	22.0	19.3	16.5	13.8
63°	20.7	20.7	22.0	20.7	20.7	19.3	17.9	16.5	15.2	12.4	11.0
64°	16.5	16.5	16.5	15.2	15.2	15.2	13.8	13.8	11.0	9.6	8.3
65°	12.4	12.4	12.4	12.4	11.0	11.0	11.0	9.6	9.6	6.9	6.9
66°	9.6	9.6	9.6	8.3	8.3	8.3	8.3	8.3	6.9	5.5	4.1



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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	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
75°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4
77.5°	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
82.5°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
85°	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4	1.4
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	1.4	1.4
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°	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9	159.9
2.5°	246.7	245.3	231.5	231.5	237.0	228.8	224.6	215.0	184.7	157.1	132.3
5°	545.7	530.6	483.7	469.9	468.5	430.0	407.9	359.7	210.8	150.2	114.4
7.5°	1007.4	961.9	882.0	839.3	786.9	756.6	702.8	620.1	239.8	140.6	103.4
10°	1489.7	1438.7	1320.2	1244.4	1204.4	1106.6	1017.0	904.0	268.7	133.7	102.0
12.5°	2042.3	1927.9	1814.9	1679.9	1560.0	1473.2	1324.3	1192.0	288.0	132.3	111.6
15°	2640.4	2497.1	2304.2	2122.2	1952.7	1828.7	1628.9	1451.1	294.9	144.7	146.1
17.5°	3310.2	3041.4	2763.1	2515.0	2282.1	2115.4	1867.3	1657.8	290.8	177.8	232.9
20°	3937.2	3580.3	3202.7	2858.1	2528.8	2312.4	2025.8	1798.4	292.2	261.8	314.2
22.5°	4434.7	4000.6	3540.3	3120.0	2702.4	2443.3	2130.5	1872.8	328.0	279.8	213.6
25°	4801.2	4290.0	3762.2	3278.5	2838.8	2548.1	2204.9	1894.9	305.9	161.2	121.3
26°	4899.1	4360.3	3803.5	3301.9	2855.4	2548.1	2193.9	1871.4	264.6	128.2	100.6
27°	4954.2	4391.9	3810.4	3290.9	2834.7	2519.1	2153.9	1824.6	216.4	107.5	85.4
28°	4961.1	4378.2	3775.9	3245.4	2776.8	2457.1	2082.3	1752.9	179.2	91.0	70.3
29°	4923.9	4327.2	3709.8	3169.6	2688.6	2366.2	1984.4	1664.7	153.0	78.6	59.3
30°	4845.3	4237.6	3609.2	3067.6	2574.3	2255.9	1870.1	1566.9	133.7	67.5	49.6
31°	4732.3	4115.0	3500.3	2946.3	2454.4	2145.7	1762.6	1467.7	118.5	56.5	41.3
32°	4586.3	3970.3	3359.8	2815.4	2346.9	2040.9	1659.2	1367.1	106.1	48.2	34.5
33°	4423.6	3806.3	3206.8	2679.0	2243.5	1933.4	1550.3	1260.9	95.1	40.0	28.9
34°	4236.2	3625.7	3044.2	2542.6	2133.3	1814.9	1433.2	1152.1	82.7	33.1	24.8
35°	4022.6	3424.5	2869.2	2418.5	2010.6	1686.8	1310.6	1036.3	73.0	28.9	20.7
36°	3791.1	3215.1	2692.8	2276.6	1878.3	1553.1	1181.0	919.2	63.4	24.8	17.9
37°	3548.6	2997.3	2516.4	2115.4	1732.2	1411.2	1047.3	792.4	55.1	20.7	15.2
38°	3292.2	2778.2	2345.5	1962.4	1577.9	1258.2	910.9	653.2	48.2	17.9	13.8
39°	3030.4	2561.9	2176.0	1794.3	1419.4	1108.0	780.0	507.1	42.7	15.2	12.4
40°	2774.1	2357.9	1996.8	1611.0	1260.9	960.5	653.2	373.5	37.2	13.8	9.6
42.5°	2196.7	1810.8	1433.2	1074.9	879.2	609.1	362.4	195.7	26.2	9.6	6.9
45°	1437.3	1070.8	773.1	523.7	454.8	257.7	168.1	121.3	19.3	6.9	5.5
47.5°	595.3	434.1	301.8	217.7	176.4	137.8	107.5	78.6	13.8	5.5	5.5
50°	261.8	206.7	164.0	128.2	111.6	89.6	68.9	48.2	8.3	4.1	4.1
51°	209.5	166.7	128.2	102.0	91.0	73.0	56.5	38.6	8.3	4.1	4.1
52°	165.4	129.5	100.6	78.6	73.0	59.3	46.9	31.7	6.9	4.1	4.1
53°	126.8	97.8	75.8	62.0	57.9	48.2	38.6	26.2	5.5	4.1	4.1
54°	93.7	74.4	59.3	48.2	46.9	38.6	31.7	22.0	5.5	4.1	4.1
55°	68.9	57.9	45.5	38.6	37.2	31.7	26.2	17.9	5.5	4.1	4.1
57.5°	35.8	30.3	24.8	22.0	22.0	20.7	17.9	11.0	4.1	2.8	4.1
60°	19.3	16.5	13.8	12.4	15.2	13.8	12.4	6.9	4.1	2.8	4.1
61°	15.2	13.8	11.0	9.6	12.4	11.0	11.0	5.5	4.1	4.1	4.1
62°	12.4	11.0	9.6	8.3	11.0	9.6	9.6	5.5	4.1	4.1	4.1
63°	9.6	8.3	6.9	6.9	9.6	9.6	8.3	4.1	4.1	4.1	4.1
64°	6.9	6.9	5.5	5.5	8.3	8.3	6.9	4.1	4.1	4.1	4.1
65°	5.5	5.5	4.1	4.1	6.9	6.9	6.9	4.1	4.1	4.1	4.1
66°	4.1	4.1	4.1	2.8	5.5	6.9	6.9	2.8	4.1	4.1	4.1



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CANDELA DISTRIBUTION (continued):

	27.5°	30°	32.5°	35°	37.5°	40°	42.5°	45°	67.5°	90°	112.5°
72.5°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	4.1
75°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	4.1
77.5°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
80°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
82.5°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
85°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
87.5°	1.4	1.4	1.4	1.4	4.1	5.5	5.5	2.8	4.1	4.1	5.5
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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CATALOG NUMBER: LDA4A28940D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	159.9	159.9	159.9
2.5°	119.9	113.0	111.6
5°	99.2	92.3	91.0
7.5°	91.0	85.4	84.1
10°	93.7	95.1	97.8
12.5°	119.9	132.3	143.3
15°	192.9	242.5	277.0
17.5°	336.3	372.1	395.5
20°	294.9	271.5	272.9
22.5°	165.4	148.8	147.5
25°	100.6	91.0	88.2
26°	84.1	75.8	73.0
27°	68.9	62.0	59.3
28°	56.5	51.0	49.6
29°	48.2	41.3	40.0
30°	40.0	34.5	33.1
31°	33.1	28.9	27.6
32°	28.9	24.8	22.0
33°	23.4	20.7	19.3
34°	20.7	16.5	15.2
35°	16.5	13.8	13.8
36°	15.2	12.4	11.0
37°	12.4	9.6	9.6
38°	11.0	8.3	6.9
39°	9.6	6.9	5.5
40°	8.3	5.5	4.1
42.5°	5.5	2.8	1.4
45°	4.1	1.4	0.0
47.5°	2.8	1.4	0.0
50°	2.8	0.0	0.0
51°	2.8	0.0	0.0
52°	2.8	0.0	0.0
53°	2.8	0.0	0.0
54°	2.8	0.0	0.0
55°	2.8	0.0	0.0
57.5°	2.8	0.0	0.0
60°	2.8	0.0	0.0
61°	2.8	0.0	0.0
62°	2.8	0.0	0.0
63°	2.8	1.4	0.0
64°	2.8	1.4	0.0
65°	2.8	1.4	0.0
66°	2.8	1.4	0.0



TEST NUMBER: P170708

CATALOG NUMBER: LDA4A28940D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	4.1	1.4	0.0
75°	4.1	1.4	0.0
77.5°	4.1	1.4	0.0
80°	4.1	1.4	0.0
82.5°	4.1	1.4	0.0
85°	4.1	1.4	0.0
87.5°	2.8	1.4	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.1	2.8
70°	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	1.4	1.4





67.5°	2.8	2.8	2.8	2.8	5.5	5.5	5.5	2.8	4.1	4.1	4.1
70°	1.4	1.4	1.4	2.8	4.1	5.5	5.5	2.8	4.1	4.1	4.1





67.5°	2.8	1.4	0.0
70°	2.8	1.4	0.0



(END OF REPORT)