

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: P170703

Luminaire Tested: **LDA4A28835D010TE LAR25NF 4LA1 30° Tilt**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P170703
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: LDA4A28835D010TE 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 80CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2740.2 lumens
Efficiency: N/A
Efficacy: 61.6 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

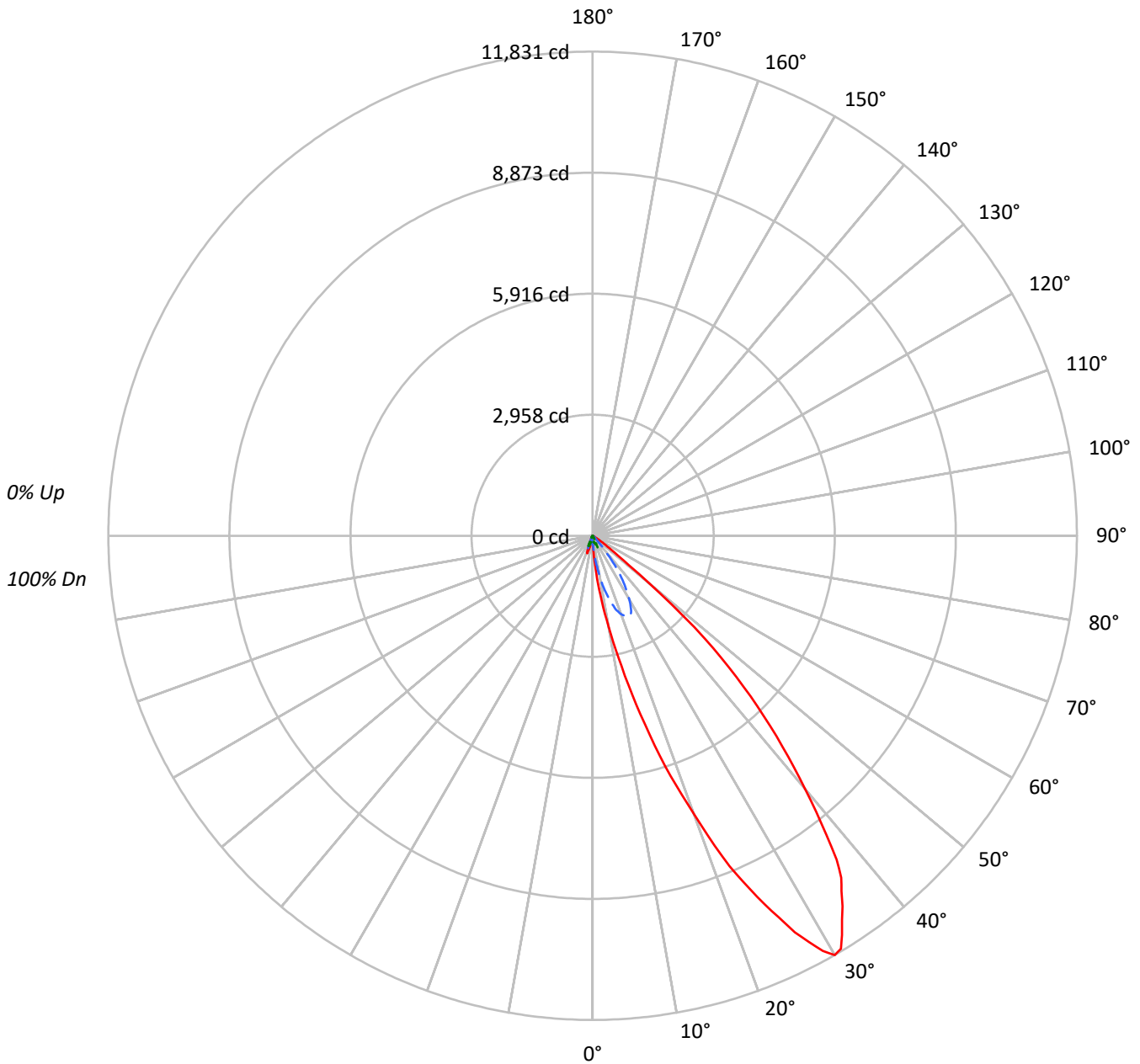
Input Watts (W): 44.49
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	22400	22400	22400
5°	97320	21136	12790
10°	280632	19025	13928
15°	575031	20993	40186
20°	948707	39050	40691
25°	1351455	24933	13637
30°	1685043	10924	5355
35°	1596615	4954	2364
40°	1300400	2528	757
45°	910875	1361	0
50°	341318	902	0
55°	72729	1011	0
60°	13913	765	0
65°	4115	1372	0
70°	1118	1695	0
75°	0	2240	0
80°	0	3339	0
85°	0	6652	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	38.1	1.4
10°-20°	328.2	12.0
20°-30°	838.2	30.6
30°-40°	970.8	35.4
40°-50°	500.9	18.3
50°-60°	51.7	1.9
60°-70°	5.6	0.2
70°-80°	3.5	0.1
80°-90°	3.2	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°	1204.5	44.0
0°-40°	2175.3	79.4
0°-60°	2727.9	99.6
0°-90°	2740.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2740.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	182	182	182	182	182	
5°	786	409	171	113	103	123
15°	4503	1649	164	219	315	1378
25°	9930	2153	183	114	100	4613
35°	10603	1178	33	19	16	6493
45°	5222	138	8	5	0	3910
55°	338	20	5	3	0	424
65°	14	5	5	3	0	18
75°	0	3	5	5	0	0
85°	0	3	5	5	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°	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6
2.5°	313.2	302.2	294.4	297.5	314.7	295.9	297.5	291.2	288.1	285.0	277.1
5°	786.0	754.7	734.3	735.9	690.5	724.9	721.8	695.2	678.0	645.1	626.3
7.5°	1474.9	1407.6	1384.1	1376.3	1381.0	1348.1	1334.0	1299.6	1254.2	1194.7	1160.2
10°	2240.6	2199.9	2185.8	2160.8	2159.2	2101.3	2066.8	2023.0	1932.1	1849.2	1788.1
12.5°	3264.6	3139.4	3117.4	3070.5	3057.9	2959.3	2887.3	2823.1	2671.2	2561.6	2464.5
15°	4503.1	4401.4	4424.8	4280.8	4241.6	4080.4	3945.7	3807.9	3562.1	3394.6	3222.3
17.5°	5909.2	5779.2	5794.9	5614.8	5290.7	5320.5	5124.7	4935.3	4589.2	4365.3	4099.2
20°	7227.6	7135.2	7141.4	6901.9	6792.3	6494.8	6233.3	6007.8	5547.5	5262.5	4910.2
22.5°	8744.8	8505.2	8459.8	8134.1	7941.5	7542.3	7177.4	6878.4	6321.0	6000.0	5567.8
25°	9930.1	9765.7	9640.4	9255.2	8987.5	8467.6	8044.9	7601.8	6931.6	6576.2	6062.6
26°	10374.7	10219.7	10058.4	9643.5	9342.9	8793.3	8333.0	7857.0	7139.9	6759.4	6200.4
27°	10877.3	10623.7	10429.5	9964.5	9638.8	9061.1	8514.6	8065.2	7298.0	6876.8	6288.1
28°	11232.8	10979.1	10722.3	10216.6	9864.3	9259.9	8691.5	8201.5	7390.4	6933.2	6324.1
29°	11597.6	11328.3	10954.1	10402.9	10019.3	9383.6	8793.3	8268.8	7417.0	6930.1	6305.3
30°	11830.9	11560.0	11076.2	10507.8	10102.3	9433.7	8821.5	8256.3	7374.7	6867.4	6236.4
31°	11776.1	11527.1	11046.4	10518.8	10094.5	9404.0	8769.8	8167.0	7268.3	6756.3	6111.2
32°	11502.1	11290.7	10925.9	10445.2	10008.3	9302.2	8649.3	8026.1	7114.8	6626.3	5959.3
33°	11184.2	11008.9	10756.8	10296.4	9858.0	9148.7	8483.3	7852.3	6937.9	6449.4	5776.1
34°	10918.1	10759.9	10526.6	10096.0	9652.9	8943.6	8273.5	7633.1	6735.9	6241.1	5560.0
35°	10603.3	10459.3	10243.2	9825.2	9367.9	8668.1	8010.4	7379.4	6497.9	5993.7	5309.5
36°	10329.3	10102.3	9883.1	9476.0	9020.3	8334.5	7700.4	7081.9	6228.6	5710.3	5027.7
37°	9905.0	9678.0	9443.1	9057.9	8608.6	7952.5	7355.9	6764.1	5921.7	5497.4	4727.0
38°	9270.9	9166.0	8931.1	8564.7	8146.7	7531.3	6978.6	6402.4	5575.7	5085.6	4407.6
39°	8679.0	8592.9	8364.3	8029.2	7642.5	7078.8	6560.5	5995.3	5185.8	4722.3	4071.0
40°	8076.2	7990.1	7775.6	7473.4	7125.8	6607.5	6115.9	5561.6	4777.1	4348.1	3732.8
42.5°	6648.2	6559.0	6513.6	6205.1	5837.2	5392.5	4936.8	4435.8	3768.8	3416.5	2934.2
45°	5221.8	5140.4	4969.7	4842.9	4514.1	4144.6	3773.5	3364.8	2873.2	2525.6	2074.6
47.5°	3732.8	3693.6	3699.9	3465.0	3151.9	2860.6	2553.8	2184.2	1749.0	1312.1	962.9
50°	1778.7	1789.7	1833.5	1669.1	1434.2	1263.6	1081.9	848.6	620.0	487.0	377.3
51°	1152.4	1164.9	1202.5	1085.1	914.4	798.5	682.7	551.1	440.0	374.2	299.1
52°	779.7	779.7	787.6	718.7	634.1	568.4	501.0	424.3	342.9	294.4	236.4
53°	585.6	584.0	587.2	541.8	483.8	435.3	388.3	331.9	270.9	230.2	183.2
54°	447.8	446.2	449.4	414.9	374.2	338.2	302.2	259.9	209.8	172.2	137.8
55°	338.2	338.2	342.9	316.3	285.0	256.8	230.2	194.2	155.0	125.3	100.2
57.5°	136.2	136.2	140.9	131.5	117.4	106.5	97.1	83.0	68.9	57.9	47.0
60°	56.4	57.9	59.5	54.8	51.7	48.5	45.4	40.7	36.0	29.7	25.1
61°	42.3	42.3	43.8	40.7	39.1	36.0	34.4	31.3	28.2	23.5	20.4
62°	31.3	31.3	32.9	31.3	29.7	28.2	26.6	25.1	21.9	18.8	15.7
63°	23.5	23.5	25.1	23.5	23.5	21.9	20.4	18.8	17.2	14.1	12.5
64°	18.8	18.8	18.8	17.2	17.2	17.2	15.7	15.7	12.5	11.0	9.4
65°	14.1	14.1	14.1	14.1	12.5	12.5	12.5	11.0	11.0	7.8	7.8
66°	11.0	11.0	11.0	9.4	9.4	9.4	9.4	9.4	7.8	6.3	4.7



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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	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
75°	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6
77.5°	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6	1.6
80°	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.6	1.6	1.6	1.6
82.5°	0.0	0.0	0.0	0.0	0.0	1.6	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°	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6	181.6
2.5°	280.3	278.7	263.0	263.0	269.3	259.9	255.2	244.3	209.8	178.5	150.3
5°	620.0	602.8	549.6	533.9	532.4	488.5	463.5	408.7	239.6	170.7	130.0
7.5°	1144.6	1092.9	1002.1	953.5	894.0	859.6	798.5	704.6	272.4	159.7	117.4
10°	1692.6	1634.7	1500.0	1413.9	1368.5	1257.3	1155.5	1027.1	305.3	151.9	115.9
12.5°	2320.5	2190.5	2062.1	1908.7	1772.4	1673.8	1504.7	1354.4	327.2	150.3	126.8
15°	3000.0	2837.2	2618.0	2411.3	2218.7	2077.8	1850.7	1648.7	335.1	164.4	166.0
17.5°	3761.0	3455.6	3139.4	2857.5	2592.9	2403.4	2121.6	1883.6	330.4	202.0	264.6
20°	4473.4	4067.8	3638.8	3247.4	2873.2	2627.3	2301.7	2043.3	331.9	297.5	357.0
22.5°	5038.6	4545.4	4022.4	3544.9	3070.5	2776.1	2420.7	2127.9	372.7	317.8	242.7
25°	5455.1	4874.2	4274.5	3724.9	3225.5	2895.1	2505.2	2152.9	347.6	183.2	137.8
26°	5566.3	4954.1	4321.5	3751.6	3244.3	2895.1	2492.7	2126.3	300.6	145.6	114.3
27°	5628.9	4990.1	4329.3	3739.0	3220.8	2862.2	2447.3	2073.1	245.8	122.1	97.1
28°	5636.7	4974.4	4290.2	3687.4	3155.0	2791.8	2365.9	1991.6	203.5	103.3	79.9
29°	5594.5	4916.5	4215.0	3601.3	3054.8	2688.4	2254.7	1891.4	173.8	89.2	67.3
30°	5505.2	4814.7	4100.7	3485.4	2924.8	2563.2	2124.7	1780.3	151.9	76.7	56.4
31°	5376.8	4675.4	3977.0	3347.6	2788.6	2437.9	2002.6	1667.5	134.7	64.2	47.0
32°	5210.9	4511.0	3817.3	3198.8	2666.5	2318.9	1885.2	1553.2	120.6	54.8	39.1
33°	5026.1	4324.6	3643.5	3043.8	2549.1	2196.8	1761.5	1432.7	108.0	45.4	32.9
34°	4813.1	4119.5	3458.8	2888.8	2423.8	2062.1	1628.4	1309.0	93.9	37.6	28.2
35°	4570.5	3890.9	3259.9	2747.9	2284.4	1916.5	1489.0	1177.5	83.0	32.9	23.5
36°	4307.4	3652.9	3059.5	2586.6	2134.1	1764.6	1341.9	1044.4	72.0	28.2	20.4
37°	4031.8	3405.5	2859.1	2403.4	1968.2	1603.3	1190.0	900.3	62.6	23.5	17.2
38°	3740.6	3156.6	2664.9	2229.6	1792.8	1429.5	1035.0	742.2	54.8	20.4	15.7
39°	3443.1	2910.7	2472.3	2038.6	1612.7	1258.9	886.2	576.2	48.5	17.2	14.1
40°	3151.9	2679.0	2268.8	1830.4	1432.7	1091.3	742.2	424.3	42.3	15.7	11.0
42.5°	2495.8	2057.4	1628.4	1221.3	999.0	692.1	411.8	222.3	29.7	11.0	7.8
45°	1633.1	1216.6	878.4	595.0	516.7	292.8	191.0	137.8	21.9	7.8	6.3
47.5°	676.4	493.2	342.9	247.4	200.4	156.6	122.1	89.2	15.7	6.3	6.3
50°	297.5	234.9	186.3	145.6	126.8	101.8	78.3	54.8	9.4	4.7	4.7
51°	238.0	189.5	145.6	115.9	103.3	83.0	64.2	43.8	9.4	4.7	4.7
52°	187.9	147.2	114.3	89.2	83.0	67.3	53.2	36.0	7.8	4.7	4.7
53°	144.1	111.2	86.1	70.5	65.8	54.8	43.8	29.7	6.3	4.7	4.7
54°	106.5	84.6	67.3	54.8	53.2	43.8	36.0	25.1	6.3	4.7	4.7
55°	78.3	65.8	51.7	43.8	42.3	36.0	29.7	20.4	6.3	4.7	4.7
57.5°	40.7	34.4	28.2	25.1	25.1	23.5	20.4	12.5	4.7	3.1	4.7
60°	21.9	18.8	15.7	14.1	17.2	15.7	14.1	7.8	4.7	3.1	4.7
61°	17.2	15.7	12.5	11.0	14.1	12.5	12.5	6.3	4.7	4.7	4.7
62°	14.1	12.5	11.0	9.4	12.5	11.0	11.0	6.3	4.7	4.7	4.7
63°	11.0	9.4	7.8	7.8	11.0	11.0	9.4	4.7	4.7	4.7	4.7
64°	7.8	7.8	6.3	6.3	9.4	9.4	7.8	4.7	4.7	4.7	4.7
65°	6.3	6.3	4.7	4.7	7.8	7.8	7.8	4.7	4.7	4.7	4.7
66°	4.7	4.7	4.7	3.1	6.3	7.8	7.8	3.1	4.7	4.7	4.7



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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°	1.6	1.6	1.6	1.6	4.7	6.3	6.3	3.1	4.7	4.7	4.7
75°	1.6	1.6	1.6	1.6	4.7	6.3	6.3	3.1	4.7	4.7	4.7
77.5°	1.6	1.6	1.6	1.6	4.7	6.3	6.3	3.1	4.7	4.7	6.3
80°	1.6	1.6	1.6	1.6	4.7	6.3	6.3	3.1	4.7	4.7	6.3
82.5°	1.6	1.6	1.6	1.6	4.7	6.3	6.3	3.1	4.7	4.7	6.3
85°	1.6	1.6	1.6	1.6	4.7	6.3	6.3	3.1	4.7	4.7	6.3
87.5°	1.6	1.6	1.6	1.6	4.7	6.3	6.3	3.1	4.7	4.7	6.3
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: LDA4A28835D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
0°	181.6	181.6	181.6
2.5°	136.2	128.4	126.8
5°	112.7	104.9	103.3
7.5°	103.3	97.1	95.5
10°	106.5	108.0	111.2
12.5°	136.2	150.3	162.8
15°	219.2	275.6	314.7
17.5°	382.0	422.8	449.4
20°	335.1	308.5	310.0
22.5°	187.9	169.1	167.5
25°	114.3	103.3	100.2
26°	95.5	86.1	83.0
27°	78.3	70.5	67.3
28°	64.2	57.9	56.4
29°	54.8	47.0	45.4
30°	45.4	39.1	37.6
31°	37.6	32.9	31.3
32°	32.9	28.2	25.1
33°	26.6	23.5	21.9
34°	23.5	18.8	17.2
35°	18.8	15.7	15.7
36°	17.2	14.1	12.5
37°	14.1	11.0	11.0
38°	12.5	9.4	7.8
39°	11.0	7.8	6.3
40°	9.4	6.3	4.7
42.5°	6.3	3.1	1.6
45°	4.7	1.6	0.0
47.5°	3.1	1.6	0.0
50°	3.1	0.0	0.0
51°	3.1	0.0	0.0
52°	3.1	0.0	0.0
53°	3.1	0.0	0.0
54°	3.1	0.0	0.0
55°	3.1	0.0	0.0
57.5°	3.1	0.0	0.0
60°	3.1	0.0	0.0
61°	3.1	0.0	0.0
62°	3.1	0.0	0.0
63°	3.1	1.6	0.0
64°	3.1	1.6	0.0
65°	3.1	1.6	0.0
66°	3.1	1.6	0.0



TEST NUMBER: P170703

CATALOG NUMBER: LDA4A28835D010TE LAR25NF 4LA1 30° Tilt

CANDELA DISTRIBUTION (continued):

	135°	157.5°	180°
72.5°	4.7	1.6	0.0
75°	4.7	1.6	0.0
77.5°	4.7	1.6	0.0
80°	4.7	1.6	0.0
82.5°	4.7	1.6	0.0
85°	4.7	1.6	0.0
87.5°	3.1	1.6	0.0
90°	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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







67.5°	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	4.7	3.1
70°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	1.6	1.6





67.5°	3.1	3.1	3.1	3.1	6.3	6.3	6.3	3.1	4.7	4.7	4.7
70°	1.6	1.6	1.6	3.1	4.7	6.3	6.3	3.1	4.7	4.7	4.7





67.5°	3.1	1.6	0.0
70°	3.1	1.6	0.0



(END OF REPORT)