

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: P179917

Luminaire Tested: **LDA6A65830D010TE LARH20SP 6LAL1LI 30°**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P179917  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26689)  
Test Lab: INNOVATION CENTER-P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: LDA6A65830D010TE LARH20SP 6LAL1LI 30°  
Description: PORTFOLIO 6" Lensed Adjustable, Self-flanged, 20° Spot, 30° Tilt  
Light Source: (1) HIGH LUMEN LED 80CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 5331.7 lumens  
Efficiency: N/A  
Efficacy: 68.4 lumens/watt  
Spacing Criteria (0/90/45): 2.34 / 0.96 / 1.3  
Luminous Opening: Circular (Dia: 0.5' x H: 0')  
CIE Type: Direct

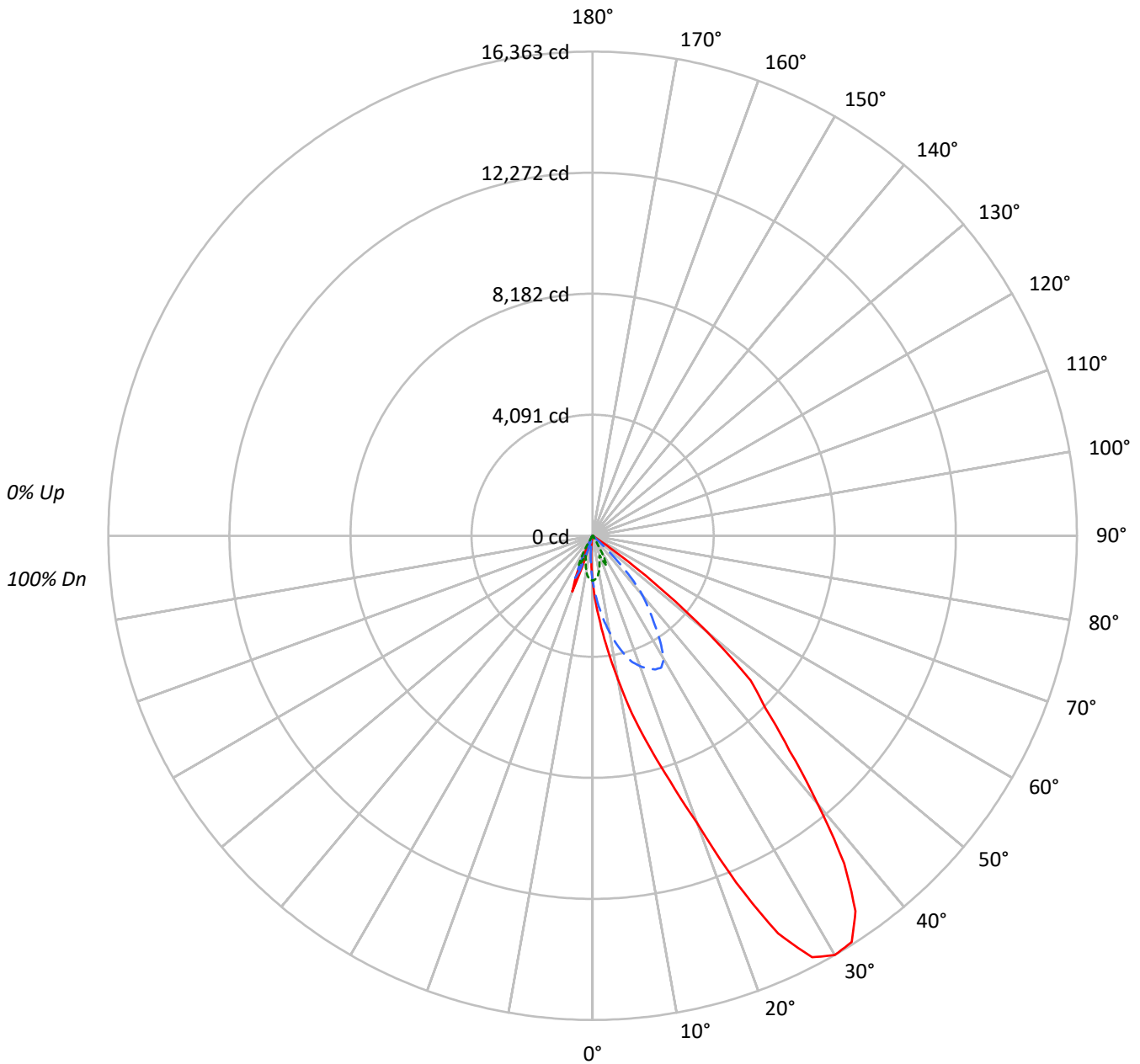
Input Watts (W): 78  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20									20									20									20									
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	97	96	96	94	93	91																			
2	105	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	76	71	90	82	76	71	80	74	70	77	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	70	62	57	79	69	62	57	67	61	57	66	60	56	64	59	56	54																			
7	75	64	57	51	74	63	56	51	62	56	51	60	55	51	59	54	50	49																			
8	70	59	52	47	69	58	51	46	57	51	46	56	50	46	55	50	46	44																			
9	66	54	47	42	64	54	47	42	53	46	42	52	46	42	51	45	42	40																			
10	62	50	43	38	61	50	43	38	49	43	38	48	42	38	47	42	38	36																			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	83206	83206	83206
5°	162678	79094	28852
10°	273815	67912	6402
15°	416994	51425	10505
20°	602566	41654	117184
25°	896774	67395	33873
30°	1035799	23073	6697
35°	1036123	5153	3614
40°	846872	2877	2218
45°	641291	1868	1427
50°	425888	1271	981
55°	68461	1099	765
60°	4287	1129	625
65°	1336	1492	739
70°	737	1651	914
75°	487	1949	1207
80°	347	2904	1799
85°	692	5787	2139



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	158.4	3.0
10°-20°	677.4	12.7
20°-30°	1594.7	29.9
30°-40°	1680.2	31.5
40°-50°	1047.7	19.6
50°-60°	150.5	2.8
60°-70°	9.6	0.2
70°-80°	7.5	0.1
80°-90°	5.6	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°	2430.6	45.6
0°-40°	4110.8	77.1
0°-60°	5309.0	99.6
0°-90°	5331.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5331.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1518	1518	1518	1518	1518	
5°	2956	2393	1437	746	524	343
15°	7347	4159	906	158	185	2188
25°	14826	4986	1114	806	560	6671
35°	15482	3652	77	71	54	9339
45°	8272	1011	24	26	18	6474
55°	716	18	12	13	8	1287
65°	10	8	12	9	6	15
75°	2	6	9	9	6	3
85°	1	6	9	7	3	1
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8
2.5°	2215.7	2200.8	2205.4	2170.9	2124.9	2145.6	2093.8	2095.0	2062.8	1981.1	1945.5
5°	2956.2	2953.9	2950.4	2887.2	2805.6	2814.8	2738.9	2710.1	2627.3	2483.6	2392.8
7.5°	3876.0	3877.2	3859.9	3705.9	3615.0	3609.3	3489.7	3403.5	3249.4	3022.9	2857.3
10°	4918.9	4951.1	4920.1	4683.2	4514.2	4516.5	4301.5	4135.9	3888.7	3558.7	3323.0
12.5°	6143.5	6148.1	6099.8	5788.2	5530.6	5511.1	5222.5	4906.3	4530.3	4099.1	3756.5
15°	7347.4	7379.6	7317.5	6933.4	6574.7	6520.6	6152.7	5735.3	5268.5	4630.3	4158.9
17.5°	8682.3	8631.7	8467.3	7917.7	7486.5	7407.1	7011.6	6465.4	5869.8	5098.3	4479.7
20°	10328.8	10346.1	9997.7	9176.7	8447.7	8138.4	7679.7	7081.7	6339.0	5442.1	4693.6
22.5°	12681.4	12588.2	11840.9	10512.8	9417.0	9004.2	8350.0	7525.6	6689.7	5703.1	4853.4
25°	14825.8	14580.9	13892.1	12065.1	10349.5	9839.0	9161.8	7903.9	6980.6	5896.3	4985.6
27.5°	16057.3	15948.0	15167.3	13324.1	11102.7	10384.0	9430.8	8182.1	7153.0	5991.7	5023.6
30°	16363.1	16382.7	15688.2	13741.5	11280.9	10459.9	9474.5	8174.1	7036.9	5821.5	4805.1
32.5°	16284.9	16179.1	15311.0	13280.4	10806.0	10058.6	9046.8	7808.4	6574.7	5314.5	4261.2
35°	15482.3	15327.1	14258.9	12081.2	10000.0	9273.3	8355.7	7209.4	5929.6	4668.3	3651.8
37.5°	13955.4	13776.0	12543.4	10641.6	9033.0	8417.8	7624.5	6542.5	5277.7	4065.8	3116.0
40°	11834.0	11610.9	10580.7	9261.8	7993.6	7563.5	6893.2	5781.3	4601.6	3495.5	2621.6
42.5°	9850.5	9743.6	9125.0	7993.6	7139.2	6724.2	6048.1	5013.2	3927.8	2912.5	1940.9
45°	8271.8	8200.5	7790.0	7071.4	6204.4	5815.8	5178.8	4169.3	2988.4	1961.6	1010.7
47.5°	7240.4	7058.8	6657.5	5903.2	4939.6	4455.6	3848.5	2746.9	1685.6	869.3	310.5
50°	4993.7	5010.9	4557.9	3726.6	2906.7	2497.4	2062.8	1263.7	557.7	189.7	54.0
52.5°	2629.6	2435.3	2116.8	1581.0	1100.4	839.4	612.9	253.0	101.2	37.9	28.7
55°	716.3	629.0	502.5	355.3	192.0	134.5	88.5	47.1	33.3	26.4	18.4
57.5°	70.1	66.7	60.9	49.4	42.5	39.1	35.6	28.7	23.0	16.1	11.5
60°	39.1	37.9	35.6	31.0	27.6	25.3	23.0	19.5	13.8	10.3	9.2
62.5°	21.8	20.7	19.5	17.2	14.9	13.8	13.8	11.5	9.2	8.0	8.0
65°	10.3	10.3	10.3	10.3	10.3	9.2	8.0	8.0	8.0	8.0	8.0
67.5°	8.0	8.0	8.0	6.9	6.9	6.9	6.9	6.9	6.9	5.7	6.9
70°	4.6	4.6	5.7	4.6	4.6	4.6	4.6	4.6	4.6	4.6	5.7
72.5°	2.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.6	4.6	5.7
75°	2.3	2.3	2.3	2.3	3.4	3.4	3.4	3.4	4.6	4.6	5.7
77.5°	2.3	2.3	2.3	2.3	2.3	2.3	3.4	3.4	4.6	4.6	5.7
80°	1.1	1.1	1.1	2.3	2.3	2.3	2.3	3.4	4.6	4.6	5.7
82.5°	1.1	1.1	1.1	1.1	2.3	2.3	2.3	3.4	4.6	4.6	5.7
85°	1.1	1.1	1.1	1.1	2.3	2.3	2.3	3.4	3.4	4.6	5.7
87.5°	0.0	0.0	1.1	1.1	2.3	2.3	2.3	3.4	3.4	4.6	5.7
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8
2.5°	1908.7	1852.4	1796.0	1739.7	1737.4	1704.0	1654.6	1589.1	1535.0	1489.0	1444.2
5°	2301.9	2185.8	2069.7	1953.5	1919.1	1859.3	1752.3	1631.6	1528.1	1437.3	1349.9
7.5°	2696.3	2500.9	2316.9	2135.2	2062.8	1971.9	1805.2	1630.4	1481.0	1347.6	1217.7
10°	3048.2	2764.2	2505.5	2250.2	2145.6	2027.1	1802.9	1581.0	1391.3	1220.0	1054.4
12.5°	3372.4	2976.9	2649.2	2327.2	2184.7	2040.9	1767.3	1502.8	1276.3	1071.6	880.8
15°	3657.6	3172.4	2750.4	2361.7	2187.0	2014.5	1692.5	1394.7	1140.6	906.1	699.1
17.5°	3861.1	3270.1	2783.7	2330.7	2127.2	1934.0	1582.2	1263.7	990.0	745.1	545.0
20°	3985.3	3310.3	2766.5	2273.2	2057.0	1857.0	1500.5	1191.2	925.6	714.0	578.4
22.5°	4066.9	3349.4	2773.4	2272.0	2055.9	1867.3	1535.0	1245.3	1029.1	915.3	899.2
25°	4154.3	3404.6	2824.0	2323.8	2122.6	1947.8	1625.8	1343.0	1162.5	1114.2	1121.1
27.5°	4149.7	3380.5	2775.7	2278.9	2067.4	1890.3	1513.2	1155.6	986.5	850.9	801.4
30°	3902.5	3101.1	2446.8	1890.3	1640.8	1423.5	926.8	602.5	416.2	364.5	312.8
32.5°	3324.1	2512.4	1829.4	1307.3	1026.8	766.9	364.5	193.2	164.4	138.0	125.3
35°	2764.2	2003.0	1368.3	789.9	499.0	309.3	131.1	86.2	81.6	77.0	77.0
37.5°	2284.7	1573.0	884.2	333.4	182.8	111.5	63.2	57.5	55.2	54.0	54.0
40°	1786.8	1025.6	382.9	110.4	58.6	50.6	44.8	42.5	41.4	40.2	41.4
42.5°	1054.4	412.8	111.5	41.4	39.1	36.8	33.3	32.2	32.2	31.0	32.2
45°	358.7	106.9	36.8	29.9	27.6	27.6	25.3	25.3	25.3	24.1	26.4
47.5°	93.1	33.3	24.1	21.8	20.7	20.7	19.5	19.5	19.5	19.5	20.7
50°	32.2	21.8	17.2	16.1	14.9	16.1	14.9	14.9	14.9	14.9	16.1
52.5°	19.5	14.9	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6
55°	12.6	11.5	10.3	10.3	10.3	10.3	10.3	11.5	11.5	11.5	11.5
57.5°	10.3	9.2	9.2	9.2	9.2	9.2	10.3	9.2	9.2	10.3	11.5
60°	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	10.3	10.3	11.5
62.5°	8.0	9.2	9.2	9.2	9.2	9.2	9.2	10.3	10.3	10.3	11.5
65°	8.0	8.0	8.0	9.2	9.2	9.2	10.3	10.3	10.3	11.5	11.5
67.5°	6.9	6.9	8.0	8.0	9.2	9.2	9.2	10.3	10.3	10.3	11.5
70°	6.9	6.9	6.9	8.0	8.0	8.0	8.0	9.2	9.2	10.3	10.3
72.5°	5.7	6.9	6.9	8.0	8.0	8.0	8.0	9.2	9.2	9.2	10.3
75°	5.7	6.9	6.9	8.0	8.0	8.0	8.0	8.0	9.2	9.2	10.3
77.5°	5.7	6.9	6.9	8.0	8.0	8.0	8.0	9.2	9.2	9.2	10.3
80°	5.7	6.9	6.9	8.0	8.0	8.0	8.0	9.2	9.2	9.2	9.2
82.5°	5.7	6.9	6.9	8.0	8.0	8.0	8.0	9.2	9.2	9.2	9.2
85°	5.7	6.9	6.9	8.0	8.0	8.0	8.0	8.0	9.2	9.2	9.2
87.5°	5.7	6.9	6.9	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8
2.5°	1382.1	1362.5	1293.5	1284.4	1272.9	1216.5	1193.5	1154.4	1099.2	1083.1	1063.6
5°	1247.6	1183.2	1082.0	1054.4	1024.5	936.0	881.9	817.5	746.2	707.1	670.3
7.5°	1076.2	986.5	852.0	798.0	764.6	668.0	581.8	495.6	390.9	331.1	293.2
10°	885.4	762.3	622.1	560.0	515.1	374.8	293.2	255.3	219.6	190.9	165.6
12.5°	693.3	554.2	395.5	324.2	288.6	239.2	194.3	147.2	131.1	129.9	125.3
15°	508.2	353.0	266.8	240.3	215.0	154.1	152.9	152.9	157.5	161.0	162.1
17.5°	374.8	310.5	243.8	227.7	239.2	248.4	264.5	288.6	308.2	363.3	351.8
20°	549.6	545.0	594.5	657.7	702.5	798.0	918.7	1055.5	1198.1	1356.8	1477.5
22.5°	942.9	1057.8	1147.5	1223.4	1263.7	1371.7	1467.2	1514.3	1541.9	1528.1	1508.6
25°	1152.1	1193.5	1165.9	1139.5	1142.9	1045.2	973.9	883.1	806.0	735.9	694.5
27.5°	688.7	630.1	547.3	489.8	478.3	412.8	364.5	313.9	299.0	253.0	233.4
30°	248.4	231.1	204.7	184.0	181.7	164.4	154.1	142.6	141.4	131.1	125.3
32.5°	112.7	112.7	103.5	105.8	103.5	100.0	98.9	95.4	95.4	92.0	89.7
35°	73.6	74.7	73.6	73.6	72.4	72.4	72.4	70.1	71.3	69.0	65.5
37.5°	54.0	55.2	52.9	54.0	54.0	54.0	54.0	52.9	51.7	49.4	48.3
40°	41.4	41.4	41.4	41.4	41.4	41.4	41.4	40.2	40.2	39.1	36.8
42.5°	32.2	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	32.2	32.2
45°	26.4	27.6	26.4	27.6	27.6	27.6	26.4	26.4	26.4	25.3	24.1
47.5°	20.7	20.7	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	18.4
50°	16.1	16.1	16.1	16.1	16.1	16.1	17.2	16.1	16.1	16.1	16.1
52.5°	12.6	13.8	13.8	14.9	14.9	14.9	14.9	14.9	13.8	13.8	12.6
55°	11.5	12.6	12.6	13.8	13.8	13.8	13.8	12.6	12.6	12.6	11.5
57.5°	11.5	12.6	12.6	12.6	12.6	12.6	12.6	11.5	11.5	10.3	10.3
60°	11.5	11.5	11.5	12.6	12.6	11.5	11.5	10.3	10.3	9.2	9.2
62.5°	11.5	11.5	11.5	12.6	12.6	11.5	11.5	10.3	9.2	9.2	8.0
65°	11.5	12.6	11.5	12.6	12.6	11.5	11.5	10.3	9.2	9.2	8.0
67.5°	11.5	12.6	12.6	12.6	11.5	11.5	11.5	10.3	9.2	9.2	8.0
70°	10.3	11.5	11.5	11.5	11.5	11.5	10.3	10.3	9.2	9.2	8.0
72.5°	10.3	11.5	10.3	11.5	11.5	10.3	10.3	10.3	9.2	9.2	8.0
75°	10.3	10.3	10.3	10.3	10.3	10.3	10.3	9.2	9.2	8.0	8.0
77.5°	10.3	10.3	10.3	10.3	10.3	10.3	9.2	9.2	9.2	8.0	8.0
80°	10.3	10.3	10.3	10.3	10.3	10.3	9.2	9.2	8.0	8.0	6.9
82.5°	9.2	10.3	10.3	10.3	10.3	10.3	9.2	9.2	8.0	8.0	6.9
85°	9.2	9.2	9.2	9.2	9.2	9.2	8.0	8.0	6.9	5.7	5.7
87.5°	8.0	9.2	8.0	8.0	8.0	8.0	6.9	5.7	4.6	4.6	3.4
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: P179917

CATALOG NUMBER: LDA6A65830D010TE LARH20SP 6LAL1LI 30°

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8	1517.8
2.5°	1032.5	1003.8	1004.9	1009.5	980.8	965.8	962.4	947.5
5°	620.9	587.6	581.8	577.2	537.0	520.9	508.2	524.3
7.5°	266.8	254.1	251.8	248.4	230.0	220.8	216.2	220.8
10°	132.2	124.2	125.3	126.5	120.7	117.3	116.1	115.0
12.5°	131.1	129.9	131.1	131.1	132.2	129.9	131.1	131.1
15°	170.2	170.2	173.6	175.9	181.7	180.5	182.8	185.1
17.5°	424.3	402.4	413.9	413.9	465.7	419.7	458.8	423.1
20°	1667.2	1745.4	1824.8	1891.5	1959.3	1980.0	2020.2	2008.7
22.5°	1478.7	1487.9	1476.4	1463.7	1460.3	1463.7	1401.6	1410.8
25°	634.7	630.1	611.7	592.2	597.9	602.5	580.7	560.0
27.5°	217.3	211.6	205.8	201.2	198.9	195.5	188.6	184.0
30°	123.0	119.6	117.3	116.1	113.8	111.5	108.1	105.8
32.5°	88.5	86.2	85.1	83.9	81.6	79.3	75.9	74.7
35°	65.5	63.2	62.1	60.9	58.6	56.3	55.2	54.0
37.5°	48.3	46.0	46.0	46.0	42.5	40.2	39.1	37.9
40°	36.8	35.6	35.6	35.6	33.3	32.2	31.0	31.0
42.5°	32.2	31.0	31.0	31.0	28.7	27.6	27.6	26.4
45°	24.1	23.0	23.0	21.8	20.7	20.7	19.5	18.4
47.5°	18.4	17.2	17.2	17.2	16.1	14.9	14.9	13.8
50°	14.9	14.9	13.8	14.9	12.6	12.6	12.6	11.5
52.5°	12.6	12.6	11.5	11.5	10.3	10.3	10.3	9.2
55°	11.5	10.3	10.3	10.3	9.2	9.2	9.2	8.0
57.5°	9.2	9.2	8.0	8.0	6.9	6.9	6.9	6.9
60°	8.0	8.0	6.9	6.9	5.7	5.7	5.7	5.7
62.5°	8.0	6.9	6.9	6.9	5.7	5.7	5.7	5.7
65°	8.0	6.9	6.9	6.9	5.7	5.7	5.7	5.7
67.5°	8.0	6.9	6.9	6.9	5.7	5.7	5.7	5.7
70°	8.0	8.0	6.9	6.9	6.9	5.7	5.7	5.7
72.5°	8.0	8.0	6.9	6.9	6.9	6.9	5.7	5.7
75°	6.9	6.9	6.9	6.9	5.7	5.7	5.7	5.7
77.5°	6.9	6.9	6.9	6.9	5.7	5.7	5.7	5.7
80°	6.9	6.9	5.7	5.7	5.7	5.7	5.7	5.7
82.5°	6.9	5.7	5.7	5.7	5.7	4.6	4.6	4.6
85°	4.6	4.6	4.6	4.6	3.4	3.4	3.4	3.4
87.5°	3.4	2.3	2.3	2.3	1.1	1.1	1.1	1.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Report Generated By E9808895 / USPTCWHP6082093





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















(END OF REPORT)