

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: P209043

Luminaire Tested: **LDSQA6A45940D010TE LARH30NF 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209043
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26687)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDSQA6A45940D010TE LARH30NF 6LSQA1H 30°
Description: PORTFOLIO 6" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 30° NARROW FLOOD, 30° Tilt
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4091.1 lumens
Efficiency: N/A
Efficacy: 75.2 lumens/watt
Spacing Criteria (0/90/45): 2.58 / 0.47 / 1.37
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
CIE Type: Direct

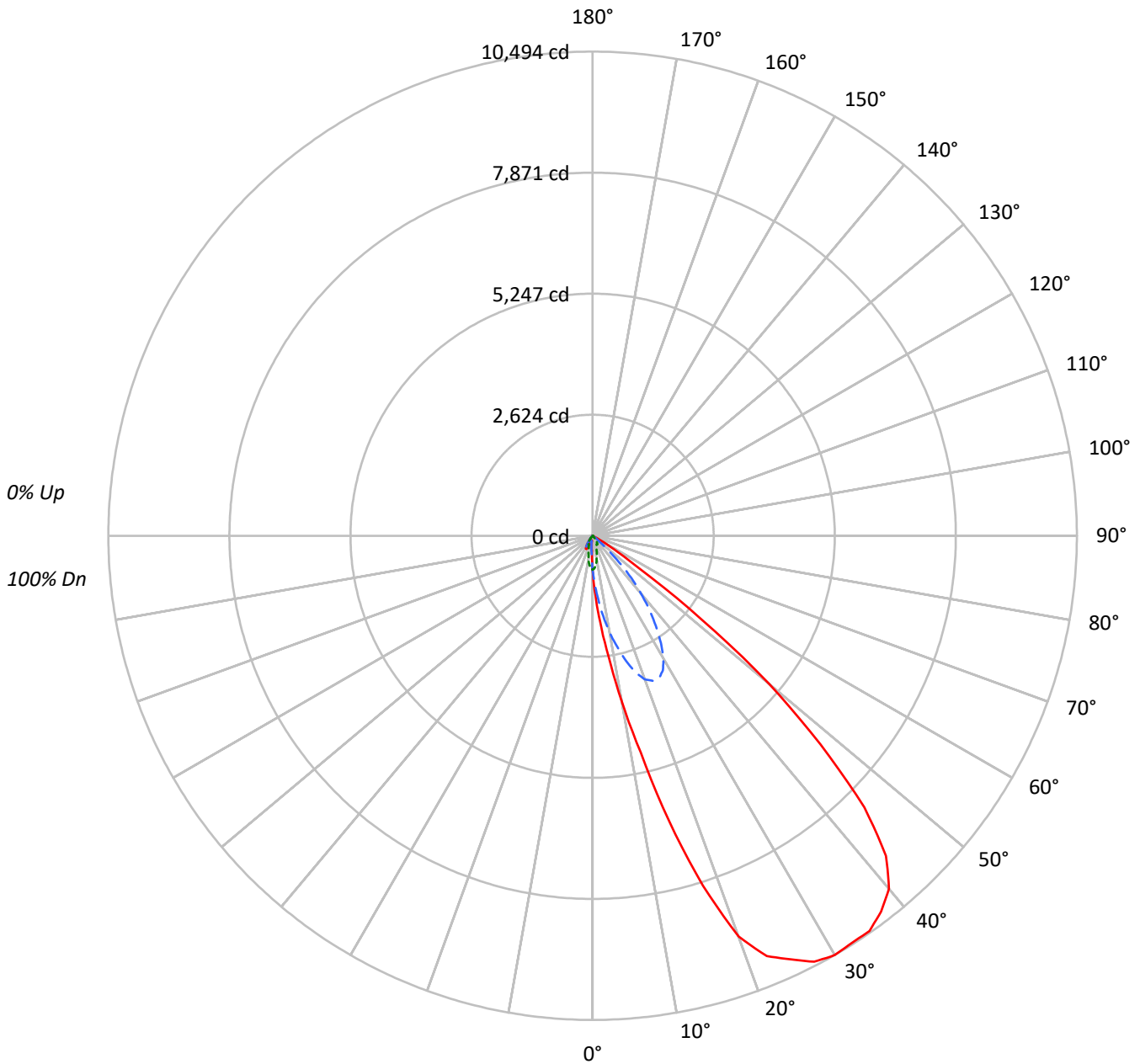
Input Watts (W): 54.4
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20									20									20									20									
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	103	110	107	104	102	103	100	98	99	97	95	95	94	93	91																			
2	105	99	94	90	103	97	93	89	94	90	87	91	88	85	88	85	83	81																			
3	98	90	84	79	96	89	83	78	86	81	77	83	79	76	81	77	74	73																			
4	91	82	75	70	89	81	74	69	78	73	68	76	71	67	74	70	67	65																			
5	85	74	67	62	83	73	67	61	71	65	61	70	64	60	68	63	60	58																			
6	79	68	60	55	77	67	60	55	65	59	54	64	58	54	62	57	54	52																			
7	74	62	55	49	72	61	54	49	60	53	49	59	53	49	57	52	48	46																			
8	69	57	49	44	67	56	49	44	55	49	44	54	48	44	53	47	43	42																			
9	64	52	45	40	63	52	45	40	51	44	40	50	44	40	49	43	39	38																			
10	60	48	41	36	59	48	41	36	47	40	36	46	40	36	45	40	36	34																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	31771	31771	31771
5°	81505	28906	9003
10°	158874	22214	4324
15°	285201	15088	5804
20°	423431	11450	9576
25°	481295	9435	15022
30°	521734	10316	14129
35°	549554	6686	8757
40°	561439	2968	4266
45°	507085	1133	1583
50°	333802	449	449
55°	91414	390	0
60°	18256	448	0
65°	1284	611	0
70°	189	755	0
75°	0	1115	0
80°	0	1661	174
85°	0	3310	346



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	90.4	2.2
10°-20°	480.2	11.7
20°-30°	1088.5	26.6
30°-40°	1306.5	31.9
40°-50°	920.8	22.5
50°-60°	190.0	4.6
60°-70°	6.7	0.2
70°-80°	4.0	0.1
80°-90°	3.9	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°	1659.1	40.6
0°-40°	2965.6	72.5
0°-60°	4076.5	99.6
0°-90°	4091.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4091.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	738	738	738	738	738	
5°	1886	1374	669	278	208	232
15°	6398	2815	338	120	130	1899
25°	10131	3405	199	278	316	4675
35°	10456	2384	127	167	167	6500
45°	8328	818	19	25	26	6125
55°	1218	16	5	4	0	1605
65°	13	4	6	4	0	38
75°	0	4	7	4	0	0
85°	0	4	7	4	1	0
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°	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9
2.5°	1257.9	1220.0	1234.9	1191.0	1181.3	1173.1	1181.3	1133.7	1106.9	1072.7	1045.2
5°	1885.8	1840.4	1850.8	1774.2	1739.2	1715.4	1711.0	1612.8	1539.1	1458.0	1374.0
7.5°	2625.2	2582.1	2576.1	2457.1	2384.9	2344.0	2326.9	2186.3	2059.1	1914.8	1757.1
10°	3633.9	3535.7	3505.2	3332.7	3195.0	3108.0	3000.9	2776.2	2553.1	2335.1	2134.2
12.5°	4807.8	4754.2	4678.4	4374.1	4133.1	4009.6	3849.7	3498.5	3160.8	2800.8	2464.5
15°	6398.3	6207.8	6078.4	5638.7	5250.4	5060.0	4826.4	4289.3	3779.0	3323.0	2814.9
17.5°	7952.3	7852.6	7650.2	7079.7	6481.6	6181.0	5832.9	5103.1	4382.3	3733.6	3113.2
20°	9241.4	9147.7	8917.1	8379.3	7715.7	7272.3	6834.2	5832.9	4891.1	4060.9	3312.6
22.5°	9858.9	9799.4	9611.2	9150.7	8585.3	8163.5	7692.6	6454.1	5267.5	4275.2	3403.3
25°	10131.1	10103.6	9982.4	9619.3	9086.7	8728.9	8284.0	6893.7	5501.9	4374.9	3404.8
27.5°	10407.1	10412.3	10144.5	9857.4	9352.3	9008.6	8580.1	7088.6	5544.3	4319.1	3293.2
30°	10494.2	10439.1	10320.8	9908.7	9428.9	9063.6	8603.9	6998.6	5370.2	4089.9	3070.8
32.5°	10458.4	10436.9	10306.7	9870.8	9298.7	8896.3	8374.1	6641.5	5026.5	3762.6	2755.4
35°	10455.5	10415.3	10117.0	9742.8	9038.4	8541.4	7853.3	6064.2	4540.0	3331.2	2384.2
37.5°	10266.5	10166.8	9942.9	9438.6	8510.2	7880.1	7108.7	5359.0	3944.9	2846.9	2016.0
40°	9989.1	9855.1	9560.6	8797.3	7595.2	6869.1	6116.3	4557.9	3314.8	2369.3	1624.7
42.5°	9409.6	9207.2	8790.6	7741.0	6375.9	5721.3	5095.0	3746.3	2703.3	1930.4	1240.1
45°	8327.9	8051.2	7488.1	6335.8	5150.7	4616.6	4113.0	3014.3	2164.0	1432.0	817.5
47.5°	6693.6	6436.9	5924.4	5043.6	4039.4	3587.8	3186.1	2242.1	1467.0	829.4	390.5
50°	4983.4	4763.2	4363.0	3505.2	2711.5	2356.7	2013.0	1273.6	687.4	394.3	162.2
52.5°	2973.4	2864.0	2509.2	1943.8	1339.0	1153.8	926.2	539.3	346.7	142.8	43.9
55°	1217.8	1124.0	990.9	795.2	582.5	493.9	422.5	266.3	107.9	29.8	16.4
57.5°	550.5	529.7	469.4	369.0	267.8	224.7	151.8	50.6	23.8	14.9	9.7
60°	212.0	191.2	163.7	88.5	37.9	32.0	26.0	17.1	11.9	8.2	6.0
62.5°	30.5	29.0	26.0	20.8	16.4	14.9	12.6	8.9	6.7	5.2	4.5
65°	12.6	12.6	11.2	8.9	7.4	6.7	6.0	4.5	3.7	3.7	3.7
67.5°	5.2	5.2	4.5	3.7	3.0	3.0	3.0	2.2	3.0	3.0	3.7
70°	1.5	1.5	1.5	1.5	1.5	1.5	2.2	2.2	3.0	3.0	3.7
72.5°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	3.0	3.7	3.7
75°	0.0	0.0	0.7	0.7	1.5	1.5	1.5	2.2	3.0	3.7	3.7
77.5°	0.0	0.0	0.7	0.7	1.5	1.5	2.2	2.2	3.0	3.7	3.7
80°	0.0	0.0	0.7	0.7	1.5	1.5	2.2	2.2	3.0	3.7	4.5
82.5°	0.0	0.0	0.7	0.7	1.5	1.5	2.2	2.2	3.0	3.7	4.5
85°	0.0	0.0	0.7	0.7	1.5	1.5	2.2	2.2	3.0	3.7	4.5
87.5°	0.0	0.0	0.7	0.7	1.5	1.5	2.2	2.2	3.0	3.7	4.5
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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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9
2.5°	1021.4	973.8	960.4	918.7	883.7	866.6	845.1	796.7	760.3	711.9	682.9
5°	1315.2	1225.2	1153.8	1066.7	1009.5	972.3	914.2	825.7	754.3	668.8	607.8
7.5°	1632.9	1468.5	1339.8	1196.2	1113.6	1048.9	950.0	822.8	717.9	604.0	509.6
10°	1939.3	1693.9	1491.5	1285.5	1176.8	1086.8	950.7	790.8	651.7	508.1	408.4
12.5°	2209.4	1892.5	1607.6	1342.7	1208.1	1095.8	925.4	733.5	565.4	418.1	330.3
15°	2434.8	2046.5	1689.4	1364.3	1210.3	1076.4	872.6	651.7	469.4	338.5	276.7
17.5°	2605.9	2127.5	1714.7	1338.3	1167.2	1021.4	791.5	548.3	380.9	287.1	232.8
20°	2694.4	2143.2	1678.2	1267.6	1087.6	938.1	685.1	444.9	322.9	249.9	194.9
22.5°	2705.6	2099.3	1591.2	1166.4	987.2	836.9	567.6	371.2	287.9	220.9	171.8
25°	2639.3	2004.1	1467.0	1051.9	877.1	720.8	462.0	332.5	261.9	198.6	197.9
27.5°	2498.0	1840.4	1318.2	918.7	743.9	586.2	392.0	300.5	233.6	210.5	223.9
30°	2298.6	1630.6	1135.2	750.6	581.0	450.8	330.3	247.7	205.3	207.5	218.7
32.5°	2028.6	1370.3	920.2	549.7	415.8	339.2	247.7	168.9	170.4	171.1	180.8
35°	1689.4	1098.7	687.4	369.7	292.4	238.8	139.9	124.2	126.5	127.2	133.9
37.5°	1353.9	844.3	456.8	246.2	183.7	125.7	87.0	83.3	84.8	84.1	91.5
40°	1037.0	588.4	273.8	122.0	70.7	58.8	53.6	51.3	52.1	52.8	57.3
42.5°	734.2	319.1	135.4	46.1	37.2	34.2	32.0	30.5	31.2	31.2	34.2
45°	372.7	151.0	46.1	25.3	23.1	20.8	19.3	18.6	18.6	18.6	20.1
47.5°	161.4	49.8	21.6	15.6	14.1	13.4	11.9	11.2	11.2	11.2	11.9
50°	50.6	20.1	13.4	10.4	8.9	8.2	7.4	7.4	7.4	6.7	7.4
52.5°	18.6	12.6	8.9	6.7	6.0	6.0	6.0	5.2	6.0	5.2	6.0
55°	11.2	8.2	6.0	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
57.5°	7.4	6.0	5.2	5.2	4.5	4.5	5.2	5.2	5.2	5.2	5.2
60°	5.2	5.2	4.5	4.5	4.5	4.5	5.2	5.2	5.2	5.2	5.2
62.5°	4.5	4.5	4.5	4.5	4.5	4.5	5.2	5.2	5.2	5.2	6.0
65°	3.7	4.5	4.5	4.5	4.5	4.5	5.2	5.2	6.0	6.0	6.0
67.5°	3.7	4.5	4.5	5.2	5.2	5.2	5.2	6.0	6.0	6.0	6.0
70°	4.5	4.5	5.2	5.2	5.2	5.2	6.0	6.0	6.0	6.0	6.7
72.5°	4.5	4.5	5.2	5.2	5.2	5.2	6.0	6.0	6.7	6.7	6.7
75°	4.5	5.2	5.2	5.2	5.2	6.0	6.0	6.0	6.7	6.7	6.7
77.5°	4.5	5.2	5.2	6.0	6.0	6.0	6.0	6.7	6.7	6.7	6.7
80°	4.5	5.2	5.2	6.0	6.0	6.0	6.7	6.7	6.7	6.7	7.4
82.5°	4.5	5.2	5.2	6.0	6.0	6.0	6.7	6.7	6.7	6.7	7.4
85°	5.2	5.2	6.0	6.0	6.0	6.0	6.7	6.7	6.7	6.7	7.4
87.5°	5.2	5.2	6.0	6.0	6.0	6.0	6.7	6.7	7.4	6.7	7.4
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9
2.5°	644.2	601.1	571.3	560.2	538.6	504.4	484.3	465.7	430.7	423.3	403.9
5°	537.8	468.7	419.6	401.0	376.4	347.4	319.1	300.5	278.2	269.3	255.9
7.5°	424.0	354.8	312.4	297.6	280.4	256.6	231.4	212.8	189.7	177.8	166.6
10°	333.3	281.9	246.2	231.4	213.5	188.2	162.2	137.6	117.5	104.9	102.7
12.5°	270.8	228.4	190.4	174.8	154.0	128.7	110.1	109.4	107.9	107.1	108.6
15°	221.7	180.8	140.6	123.5	117.5	116.8	119.0	121.3	120.5	122.7	124.2
17.5°	182.3	138.4	129.4	130.2	130.9	133.2	136.9	142.8	143.6	147.3	150.3
20°	148.8	146.5	150.3	153.2	155.5	159.9	168.1	175.6	177.8	183.0	188.9
22.5°	168.9	175.6	183.7	187.5	190.4	198.6	207.5	219.4	223.9	230.6	238.8
25°	203.8	215.0	227.6	232.1	236.6	249.9	260.4	274.5	278.2	286.4	294.6
27.5°	232.8	244.7	258.1	264.1	267.8	281.2	290.1	299.0	299.0	303.5	309.5
30°	228.4	238.0	249.2	253.7	255.2	264.8	273.8	276.7	275.2	277.5	281.9
32.5°	189.7	197.1	206.1	209.8	211.3	218.0	225.4	225.4	224.7	224.7	227.6
35°	140.6	145.8	150.3	154.0	156.2	160.7	167.4	166.6	166.6	165.1	167.4
37.5°	94.5	97.5	102.7	104.1	104.9	107.9	113.1	113.1	111.6	112.3	113.8
40°	57.3	61.0	64.0	64.7	66.2	68.4	72.2	72.2	72.2	72.2	72.9
42.5°	34.2	36.5	38.7	38.7	39.4	42.4	43.9	43.9	43.9	43.9	44.6
45°	20.1	20.8	22.3	23.1	23.1	24.5	25.3	25.3	25.3	25.3	26.0
47.5°	11.9	12.6	12.6	13.4	13.4	14.1	14.9	14.9	14.1	14.1	14.1
50°	7.4	7.4	7.4	7.4	8.2	8.2	8.2	8.2	8.2	8.2	7.4
52.5°	6.0	6.0	6.0	6.0	5.2	5.2	5.2	5.2	4.5	4.5	3.7
55°	5.2	5.2	5.2	5.2	5.2	4.5	4.5	4.5	3.7	3.0	2.2
57.5°	5.2	5.2	5.2	5.2	5.2	4.5	4.5	3.7	3.0	3.0	2.2
60°	5.2	5.2	5.2	5.2	5.2	4.5	4.5	3.7	3.0	3.0	2.2
62.5°	6.0	6.0	5.2	5.2	5.2	4.5	4.5	3.7	3.7	3.0	2.2
65°	6.0	6.0	5.2	5.2	5.2	5.2	4.5	4.5	3.7	3.0	2.2
67.5°	6.0	6.0	6.0	6.0	5.2	5.2	5.2	4.5	3.7	3.0	2.2
70°	6.7	6.7	6.0	6.0	6.0	5.2	5.2	4.5	3.7	3.7	3.0
72.5°	6.7	6.7	6.0	6.0	6.0	6.0	5.2	4.5	4.5	3.7	3.0
75°	6.7	6.7	6.7	6.7	6.0	6.0	5.2	5.2	4.5	3.7	3.0
77.5°	6.7	6.7	6.7	6.7	6.0	6.0	6.0	5.2	4.5	3.7	3.0
80°	6.7	6.7	6.7	6.7	6.7	6.0	6.0	5.2	4.5	3.7	3.0
82.5°	7.4	7.4	6.7	6.7	6.7	6.0	6.0	5.2	4.5	3.7	3.7
85°	7.4	7.4	6.7	6.7	6.7	6.0	6.0	5.2	4.5	4.5	3.7
87.5°	7.4	7.4	6.7	6.7	6.7	6.0	6.0	5.2	4.5	4.5	3.7
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: P209043

CATALOG NUMBER: LDSQA6A45940D010TE LARH30NF 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	737.9	737.9	737.9	737.9	737.9	737.9	737.9	737.9
2.5°	392.0	369.7	362.3	367.5	361.5	357.1	351.1	348.1
5°	245.5	229.1	223.9	225.4	220.2	215.7	209.8	208.3
7.5°	151.0	135.4	129.4	129.4	123.5	118.3	114.6	112.3
10°	101.2	98.2	98.9	99.7	98.9	99.7	97.5	98.9
12.5°	108.6	107.1	108.6	109.4	109.4	110.8	107.9	110.1
15°	126.5	125.0	127.2	128.7	128.7	130.9	128.0	130.2
17.5°	154.7	154.0	157.7	159.2	159.9	163.7	159.9	162.9
20°	195.6	194.9	200.1	202.3	201.6	209.0	203.8	209.0
22.5°	248.5	247.0	254.4	256.6	257.4	267.1	262.6	266.3
25°	301.3	302.8	306.5	310.2	310.9	319.1	312.4	316.2
27.5°	312.4	310.2	312.4	316.9	317.6	321.4	315.4	318.4
30°	282.7	279.0	279.7	284.9	286.4	287.9	282.7	284.2
32.5°	229.9	223.9	223.9	229.1	230.6	232.8	223.9	227.6
35°	169.6	164.4	164.4	168.1	168.9	170.4	163.7	166.6
37.5°	116.0	111.6	113.1	114.6	115.3	116.8	116.0	115.3
40°	74.4	71.4	73.6	73.6	74.4	75.1	75.1	75.9
42.5°	45.4	43.1	44.6	44.6	45.4	45.4	45.4	46.1
45°	26.0	25.3	25.3	26.0	26.0	26.0	25.3	26.0
47.5°	14.1	13.4	14.1	14.1	14.1	14.1	14.1	14.1
50°	7.4	6.7	6.7	6.7	6.7	6.7	6.7	6.7
52.5°	3.7	3.0	3.0	3.0	2.2	3.0	2.2	2.2
55°	2.2	1.5	1.5	1.5	0.7	0.7	0.0	0.0
57.5°	1.5	0.7	0.7	0.7	0.0	0.0	0.0	0.0
60°	1.5	0.7	0.7	0.7	0.0	0.0	0.0	0.0
62.5°	1.5	0.7	0.7	0.7	0.0	0.0	0.0	0.0
65°	1.5	0.7	0.7	0.7	0.0	0.0	0.0	0.0
67.5°	2.2	1.5	0.7	0.7	0.7	0.0	0.0	0.0
70°	2.2	1.5	1.5	0.7	0.7	0.0	0.0	0.0
72.5°	2.2	1.5	1.5	1.5	0.7	0.7	0.0	0.0
75°	2.2	1.5	1.5	1.5	0.7	0.7	0.0	0.0
77.5°	2.2	2.2	1.5	1.5	0.7	0.7	0.7	0.0
80°	3.0	2.2	1.5	1.5	1.5	0.7	0.7	0.7
82.5°	3.0	2.2	1.5	1.5	1.5	0.7	0.7	0.7
85°	3.0	2.2	2.2	1.5	1.5	0.7	0.7	0.7
87.5°	3.0	2.2	2.2	1.5	1.5	0.7	0.7	0.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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













(END OF REPORT)