

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: P209025

Luminaire Tested: **LDSQA6A65930D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209025
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P26686)
Test Lab: INNOVATION CENTER-P2
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: io LED
Catalog Number: LDSQA6A65930D010TE LARH20SP 6LSQA1H 30°
Description: PORTFOLIO 6" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 20° SPOT, 30° Tilt
Light Source: (1) HIGH LUMEN LED 90CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4414.7 lumens
Efficiency: N/A
Efficacy: 56.1 lumens/watt
Spacing Criteria (0/90/45): 2.35 / 0.6 / 1.31
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
CIE Type: Direct

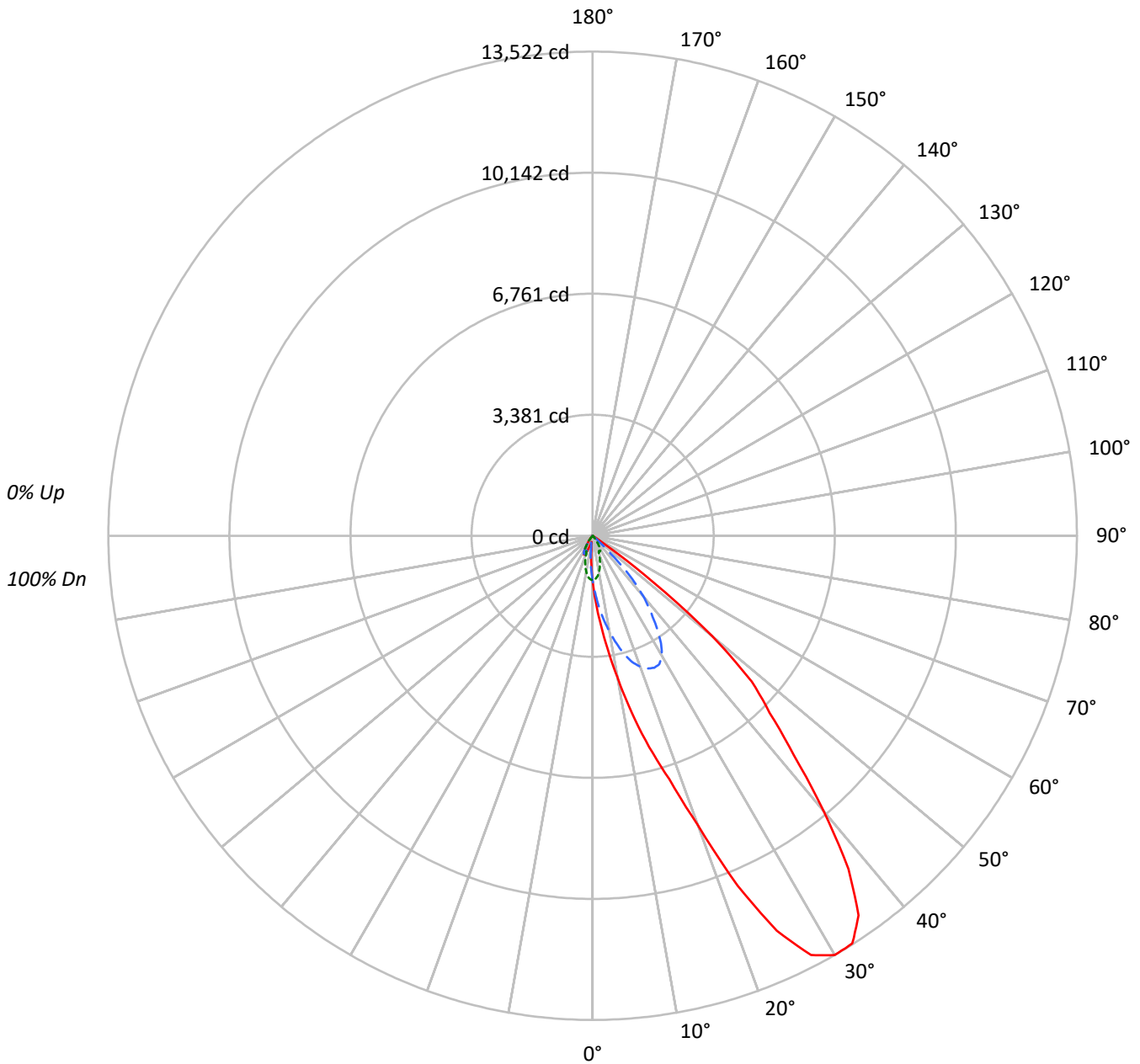
Input Watts (W): 78.67
Input Voltage (V): NR
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	96	89	84	80	87	82	78	84	80	77	82	79	76	74																			
4	92	83	76	71	90	82	76	71	79	74	70	77	73	69	75	71	68	66																			
5	86	76	69	64	84	75	68	63	73	67	63	71	66	62	69	65	61	60																			
6	80	69	62	57	79	69	62	57	67	61	56	65	60	56	64	59	55	54																			
7	75	64	56	51	73	63	56	51	62	55	51	60	55	50	59	54	50	49																			
8	70	59	51	46	69	58	51	46	57	50	46	56	50	46	54	49	46	44																			
9	66	54	47	42	64	53	47	42	52	46	42	51	46	42	50	45	41	40																			
10	61	50	43	38	60	49	43	38	48	42	38	48	42	38	47	41	38	36																			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	53660	53660	53660
5°	103979	51138	17249
10°	176654	44747	7747
15°	272216	35695	12316
20°	394065	23226	21420
25°	578161	22418	27540
30°	672250	21234	21105
35°	680426	11248	11153
40°	563350	4238	4682
45°	425474	1443	1711
50°	291093	529	529
55°	40490	458	68
60°	1059	456	0
65°	265	621	0
70°	113	768	0
75°	0	1015	0
80°	0	1736	223
85°	0	3458	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	130.8	3.0
10°-20°	552.7	12.5
20°-30°	1260.8	28.6
30°-40°	1459.1	33.0
40°-50°	879.9	19.9
50°-60°	119.5	2.7
60°-70°	3.9	0.1
70°-80°	4.2	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°	1944.2	44.0
0°-40°	3403.3	77.1
0°-60°	4402.8	99.7
0°-90°	4414.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4414.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1246	1246	1246	1246	1246	
5°	2406	1970	1183	647	399	280
15°	6107	3433	801	246	276	1808
25°	12170	4068	472	568	580	5508
35°	12945	3101	214	218	212	7802
45°	6988	845	24	29	28	5464
55°	539	6	6	4	1	1057
65°	3	4	6	4	0	4
75°	0	4	6	4	0	0
85°	0	4	7	4	0	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°	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3
2.5°	1802.4	1785.7	1792.7	1774.3	1727.8	1718.2	1717.3	1705.0	1665.5	1634.8	1598.0
5°	2405.8	2404.9	2409.3	2369.8	2288.3	2262.8	2250.5	2220.7	2125.1	2051.4	1969.9
7.5°	3159.2	3153.9	3148.7	3076.7	2948.7	2899.6	2868.0	2760.1	2628.6	2497.9	2352.3
10°	4040.6	4038.0	4017.8	3891.5	3686.3	3596.0	3534.6	3363.5	3152.2	2966.2	2718.9
12.5°	5064.2	5040.5	5004.5	4819.5	4537.9	4439.7	4304.6	4033.6	3709.1	3424.1	3078.5
15°	6107.0	6072.8	6008.8	5771.1	5422.0	5254.5	5087.0	4730.0	4289.7	3875.7	3432.8
17.5°	7127.0	7089.3	6939.3	6535.9	6194.7	5990.3	5804.4	5314.1	4796.7	4264.3	3703.0
20°	8600.5	8463.7	8202.3	7566.4	6932.3	6563.9	6346.4	5828.1	5187.8	4567.7	3895.0
22.5°	10568.6	10265.1	9708.2	8675.0	7769.0	7237.5	6881.4	6192.1	5469.4	4766.0	4013.4
25°	12170.1	12032.4	11399.2	9929.2	8515.4	7889.2	7393.6	6481.5	5674.6	4898.4	4067.8
27.5°	13202.4	13168.2	12444.6	10967.7	9125.0	8303.1	7749.7	6672.7	5773.7	4926.5	4041.5
30°	13521.7	13575.2	12880.5	11320.2	9301.2	8386.5	7781.3	6675.3	5697.4	4799.3	3873.1
32.5°	13498.0	13500.6	12649.0	11015.9	9014.4	8144.4	7518.2	6453.4	5415.9	4480.9	3553.0
35°	12945.4	12809.5	11846.5	10081.0	8347.0	7579.6	6997.2	6023.7	4951.9	4002.0	3101.3
37.5°	11732.5	11554.4	10431.8	8883.8	7556.8	6847.2	6377.1	5459.7	4399.3	3490.7	2634.7
40°	10023.1	9770.5	8844.3	7770.8	6692.0	6158.7	5764.1	4829.1	3808.2	2989.0	2197.0
42.5°	8311.9	8188.3	7576.1	6703.4	5964.9	5463.2	5051.0	4168.7	3239.9	2494.4	1643.6
45°	6987.6	6881.4	6470.1	5894.7	5170.3	4712.5	4315.1	3480.2	2517.2	1673.4	844.6
47.5°	6022.8	5936.8	5543.0	4938.7	4144.1	3643.3	3233.7	2282.1	1426.1	722.7	211.4
50°	4345.8	4258.1	3872.2	3172.3	2454.9	2035.7	1741.0	1019.1	404.3	146.5	21.9
52.5°	2130.4	2058.5	1796.2	1344.5	902.5	649.0	474.5	191.2	46.5	15.8	10.5
55°	539.4	495.5	413.1	259.6	127.2	76.3	49.1	17.5	11.4	8.8	6.1
57.5°	30.7	29.8	27.2	20.2	14.9	13.2	11.4	8.8	6.1	5.3	4.4
60°	12.3	11.4	10.5	8.8	7.0	6.1	6.1	4.4	3.5	3.5	3.5
62.5°	5.3	5.3	5.3	4.4	3.5	3.5	3.5	2.6	3.5	3.5	3.5
65°	2.6	2.6	2.6	1.8	1.8	1.8	2.6	2.6	2.6	3.5	3.5
67.5°	1.8	0.9	0.9	0.9	1.8	1.8	1.8	2.6	2.6	3.5	3.5
70°	0.9	0.9	0.9	0.9	1.8	1.8	1.8	2.6	2.6	3.5	4.4
72.5°	0.0	0.9	0.9	0.9	1.8	1.8	1.8	2.6	2.6	3.5	4.4
75°	0.0	0.9	0.9	0.9	1.8	1.8	1.8	2.6	3.5	3.5	4.4
77.5°	0.0	0.9	0.9	0.9	1.8	1.8	1.8	2.6	3.5	3.5	4.4
80°	0.0	0.9	0.9	0.9	1.8	1.8	1.8	2.6	3.5	3.5	4.4
82.5°	0.0	0.0	0.9	0.9	1.8	1.8	1.8	2.6	3.5	3.5	4.4
85°	0.0	0.0	0.9	0.9	1.8	1.8	1.8	2.6	3.5	3.5	4.4
87.5°	0.0	0.0	0.9	0.9	1.8	1.8	1.8	2.6	2.6	3.5	4.4
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3
2.5°	1550.6	1519.1	1472.6	1441.9	1412.1	1384.0	1337.5	1311.2	1263.8	1220.0	1182.3
5°	1871.7	1792.7	1697.1	1615.5	1562.9	1511.2	1417.3	1348.0	1261.2	1183.2	1111.2
7.5°	2196.2	2056.7	1899.7	1765.5	1684.0	1604.1	1463.8	1351.6	1228.8	1117.4	1011.3
10°	2490.9	2281.2	2059.3	1867.3	1756.8	1653.3	1468.2	1319.1	1161.2	1023.5	890.2
12.5°	2764.5	2477.7	2188.3	1937.4	1800.6	1676.1	1449.8	1267.4	1079.7	916.5	761.3
15°	3008.3	2640.0	2282.1	1977.8	1817.3	1669.9	1406.8	1194.6	983.2	800.8	604.3
17.5°	3193.4	2740.8	2323.3	1971.6	1787.5	1623.4	1333.1	1103.3	880.6	659.6	437.7
20°	3305.6	2783.8	2314.6	1924.3	1723.4	1549.8	1245.4	1004.2	756.9	506.9	385.9
22.5°	3353.0	2780.3	2273.3	1853.2	1644.5	1469.1	1161.2	907.8	627.1	458.7	402.6
25°	3360.9	2744.3	2215.5	1775.2	1566.4	1391.9	1076.2	798.1	544.7	471.9	450.8
27.5°	3300.4	2660.1	2106.7	1662.9	1456.8	1276.1	949.0	634.1	511.3	470.1	484.1
30°	3121.5	2468.1	1914.6	1465.6	1266.5	1085.8	678.0	497.3	424.5	427.1	430.6
32.5°	2806.6	2148.8	1605.9	1177.0	959.5	715.7	421.9	332.4	322.8	322.8	321.0
35°	2386.5	1758.5	1260.3	744.6	477.1	343.8	218.4	219.3	214.9	214.0	213.1
37.5°	1952.3	1387.5	798.1	307.8	207.0	143.8	128.9	130.7	128.9	131.6	129.8
40°	1539.2	856.9	291.2	98.2	72.8	70.2	71.9	73.7	73.7	75.4	75.4
42.5°	894.6	284.2	76.3	39.5	39.5	37.7	38.6	40.3	41.2	42.1	41.2
45°	265.7	58.8	24.6	21.9	21.9	21.0	21.0	21.9	22.8	23.7	23.7
47.5°	42.1	16.7	14.0	12.3	12.3	12.3	12.3	12.3	13.2	13.2	14.0
50°	13.2	10.5	8.8	7.9	7.9	7.0	7.0	7.9	7.9	7.9	8.8
52.5°	7.9	6.1	6.1	5.3	6.1	6.1	5.3	6.1	6.1	6.1	7.0
55°	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	6.1	6.1	6.1
57.5°	4.4	4.4	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
60°	4.4	4.4	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	6.1
62.5°	4.4	4.4	5.3	5.3	5.3	5.3	5.3	5.3	6.1	6.1	6.1
65°	4.4	4.4	5.3	5.3	5.3	5.3	5.3	6.1	6.1	6.1	6.1
67.5°	4.4	5.3	5.3	5.3	5.3	6.1	6.1	6.1	6.1	6.1	6.1
70°	4.4	5.3	5.3	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
72.5°	4.4	5.3	5.3	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
75°	5.3	5.3	5.3	6.1	6.1	6.1	6.1	6.1	6.1	6.1	7.0
77.5°	5.3	5.3	6.1	6.1	6.1	6.1	6.1	6.1	7.0	7.0	7.0
80°	5.3	5.3	6.1	6.1	6.1	6.1	6.1	7.0	7.0	7.0	7.0
82.5°	5.3	5.3	6.1	6.1	6.1	6.1	6.1	7.0	7.0	7.0	7.0
85°	5.3	5.3	6.1	6.1	6.1	6.1	6.1	7.0	7.0	7.0	7.0
87.5°	5.3	5.3	6.1	6.1	6.1	6.1	6.1	7.0	7.0	7.0	7.0
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°	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3
2.5°	1149.8	1109.5	1090.2	1063.0	1043.7	1000.7	983.2	953.4	928.8	888.5	891.1
5°	1049.8	973.5	921.8	881.4	853.4	785.0	739.4	691.1	647.3	592.9	572.7
7.5°	911.3	817.4	738.5	690.2	654.3	563.1	462.2	383.3	323.6	280.7	264.0
10°	772.7	650.8	525.4	450.8	399.1	311.4	266.6	245.6	226.3	202.6	186.8
12.5°	611.3	437.7	323.6	293.8	272.8	243.8	214.9	192.1	196.5	197.3	203.5
15°	417.5	314.9	278.9	258.7	235.9	219.3	228.9	235.1	246.5	247.3	255.2
17.5°	339.4	295.6	266.6	265.7	267.5	277.2	292.1	300.0	314.9	318.4	329.8
20°	339.4	314.0	338.5	338.5	342.9	356.1	375.4	386.8	403.4	409.6	423.6
22.5°	386.8	404.3	435.0	438.5	440.3	454.3	478.9	490.3	509.6	513.1	528.0
25°	471.9	487.6	515.7	518.3	519.2	529.7	548.2	554.3	567.5	560.4	569.2
27.5°	499.0	506.1	523.6	525.4	521.0	525.4	532.4	532.4	536.8	522.7	525.4
30°	438.5	440.3	449.1	449.9	440.3	442.0	442.9	442.0	441.2	426.3	426.3
32.5°	325.4	325.4	336.8	334.2	323.6	326.3	326.3	326.3	325.4	313.1	311.4
35°	215.8	216.6	226.3	224.5	216.6	218.4	218.4	221.0	218.4	211.4	209.6
37.5°	131.6	132.4	136.8	137.7	135.1	135.9	136.8	135.9	137.7	134.2	132.4
40°	76.3	78.1	81.6	82.4	81.6	81.6	82.4	83.3	86.8	82.4	80.7
42.5°	44.7	45.6	47.4	47.4	47.4	47.4	48.2	49.1	50.0	49.1	48.2
45°	25.4	26.3	27.2	27.2	28.1	27.2	28.1	28.1	28.9	28.1	28.1
47.5°	14.9	14.9	15.8	15.8	16.7	15.8	16.7	16.7	16.7	15.8	15.8
50°	8.8	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	8.8	8.8
52.5°	7.0	7.0	7.0	7.0	7.0	6.1	6.1	6.1	6.1	5.3	5.3
55°	6.1	6.1	6.1	6.1	6.1	6.1	5.3	4.4	4.4	3.5	3.5
57.5°	5.3	6.1	6.1	6.1	6.1	5.3	5.3	4.4	3.5	2.6	2.6
60°	6.1	6.1	6.1	6.1	5.3	5.3	5.3	4.4	3.5	2.6	2.6
62.5°	6.1	6.1	6.1	6.1	6.1	5.3	5.3	4.4	3.5	2.6	2.6
65°	6.1	6.1	6.1	6.1	6.1	5.3	5.3	4.4	3.5	2.6	2.6
67.5°	6.1	6.1	6.1	6.1	6.1	5.3	5.3	4.4	3.5	3.5	2.6
70°	6.1	7.0	7.0	6.1	6.1	6.1	5.3	4.4	4.4	3.5	2.6
72.5°	6.1	7.0	7.0	6.1	6.1	6.1	5.3	4.4	4.4	3.5	2.6
75°	7.0	7.0	7.0	7.0	6.1	6.1	5.3	5.3	4.4	3.5	2.6
77.5°	7.0	7.0	7.0	7.0	6.1	6.1	5.3	5.3	4.4	3.5	2.6
80°	7.0	7.0	7.0	7.0	7.0	6.1	6.1	5.3	4.4	3.5	3.5
82.5°	7.0	7.0	7.0	7.0	7.0	6.1	6.1	5.3	4.4	3.5	3.5
85°	7.0	7.0	7.0	7.0	7.0	6.1	6.1	5.3	4.4	3.5	2.6
87.5°	7.0	7.0	7.0	7.0	6.1	6.1	5.3	5.3	4.4	3.5	2.6
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: P209025

CATALOG NUMBER: LDSQA6A65930D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3	1246.3
2.5°	858.6	838.5	829.7	843.7	836.7	815.7	820.1	806.9
5°	512.2	481.5	462.2	471.0	442.9	417.5	417.5	399.1
7.5°	247.3	237.7	232.4	234.2	228.0	220.1	215.8	215.8
10°	173.7	170.2	171.0	171.0	176.3	175.4	178.0	177.2
12.5°	206.1	207.9	208.7	212.2	216.6	216.6	219.3	217.5
15°	264.0	262.2	267.5	268.4	275.4	276.3	279.8	276.3
17.5°	335.9	339.4	344.7	343.8	357.8	358.7	358.7	357.8
20°	432.4	435.0	440.3	442.0	458.7	460.5	466.6	467.5
22.5°	537.6	537.6	540.3	543.8	559.6	560.4	563.1	563.1
25°	573.6	568.3	569.2	573.6	582.4	578.9	581.5	579.7
27.5°	527.1	519.2	517.5	523.6	529.7	520.1	523.6	523.6
30°	428.0	421.0	419.2	425.4	429.8	419.2	422.7	424.5
32.5°	313.1	308.7	307.8	312.2	315.7	307.0	310.5	313.1
35°	211.4	209.6	207.9	208.7	214.0	207.0	210.5	212.2
37.5°	134.2	130.7	131.6	133.3	136.8	132.4	135.9	135.9
40°	82.4	80.7	80.7	82.4	84.2	80.7	82.4	83.3
42.5°	48.2	48.2	48.2	49.1	50.0	48.2	48.2	49.1
45°	28.1	27.2	27.2	28.1	28.9	27.2	28.1	28.1
47.5°	15.8	14.9	14.9	15.8	15.8	14.9	15.8	15.8
50°	8.8	7.9	7.9	8.8	8.8	7.9	7.9	7.9
52.5°	4.4	4.4	4.4	4.4	4.4	4.4	3.5	3.5
55°	2.6	2.6	1.8	1.8	1.8	1.8	1.8	0.9
57.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.0	0.0
60°	1.8	1.8	0.9	0.9	0.9	0.0	0.0	0.0
62.5°	1.8	1.8	0.9	0.9	0.9	0.0	0.0	0.0
65°	1.8	1.8	0.9	0.9	0.9	0.0	0.0	0.0
67.5°	1.8	1.8	0.9	0.9	0.9	0.0	0.0	0.0
70°	2.6	1.8	1.8	0.9	0.9	0.9	0.0	0.0
72.5°	2.6	1.8	1.8	1.8	0.9	0.9	0.0	0.0
75°	2.6	1.8	1.8	1.8	0.9	0.9	0.0	0.0
77.5°	2.6	1.8	1.8	1.8	0.9	0.9	0.9	0.0
80°	2.6	1.8	1.8	1.8	0.9	0.9	0.9	0.9
82.5°	2.6	1.8	1.8	1.8	0.9	0.9	0.9	0.9
85°	2.6	1.8	1.8	1.8	0.9	0.9	0.9	0.0
87.5°	2.6	1.8	1.8	1.8	0.9	0.9	0.9	0.0
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)