

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: P209004

Luminaire Tested: **LDSQA6A45827D010TE LARH20SP 6LSQA1H 30°**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P209004
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: LDSQA6A45827D010TE LARH20SP 6LSQA1H 30°
Description: PORTFOLIO 6" SQUARE ADJUSTABLE REFLECTOR, ANGLE-CUT TRIM,
SELF-FLANGED, 20° SPOT, 30° Tilt
Light Source: (1) HIGH LUMEN LED 80CRI / 2700K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 4030.2 lumens
Efficiency: N/A
Efficacy: 74.1 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

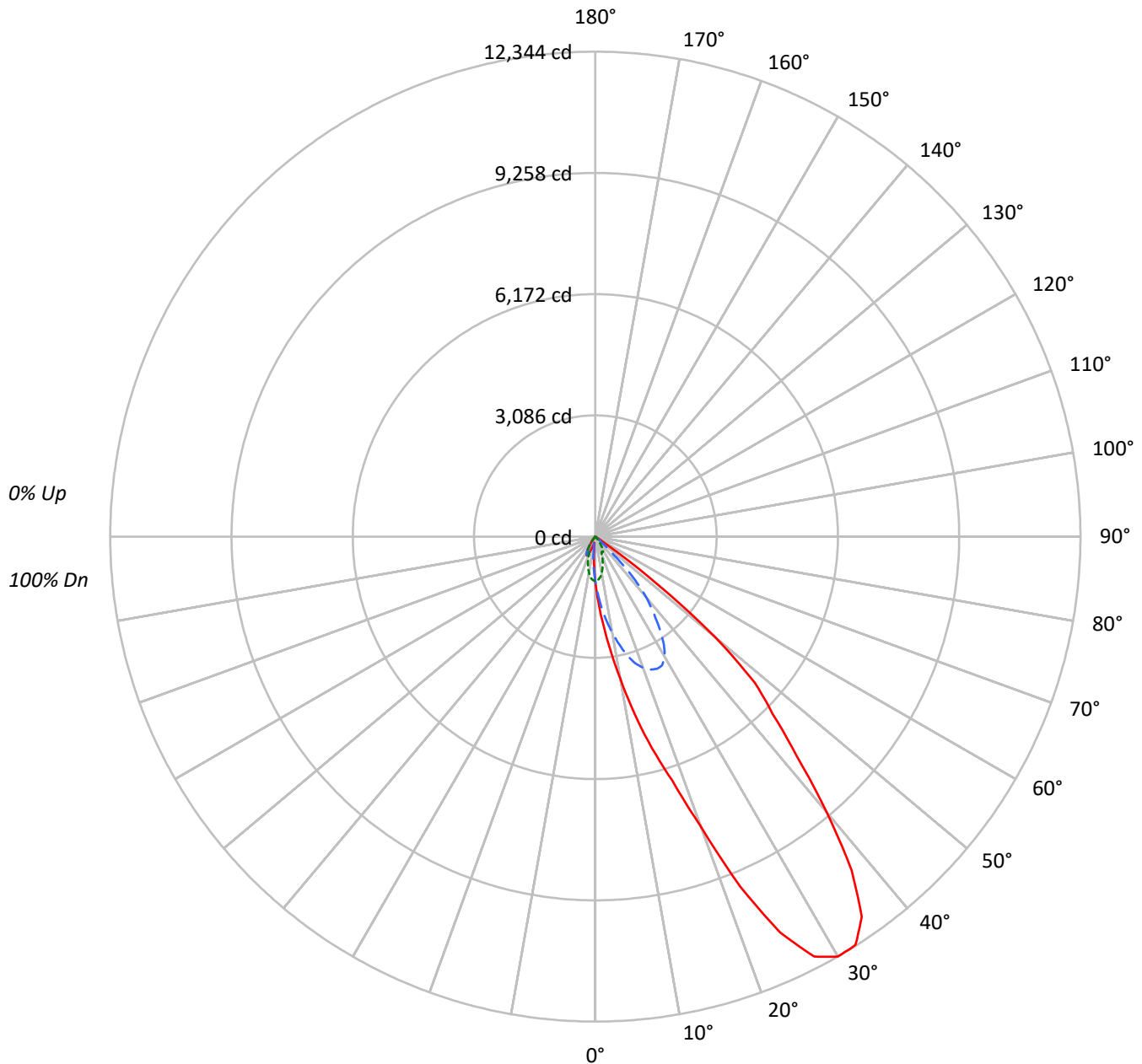
Input Watts (W): 54.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20					20					20					20
RC	80				70					50					30					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10
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°	48989	48989	48989
5°	94924	46682	15745
10°	161269	40852	7070
15°	248507	32584	11242
20°	359747	21205	19555
25°	527809	20466	25141
30°	613704	19384	19265
35°	621169	10270	10186
40°	514289	3873	4277
45°	388417	1315	1559
50°	265747	482	482
55°	36962	420	60
60°	964	413	0
65°	245	571	0
70°	101	705	0
75°	0	932	0
80°	0	1587	198
85°	0	3162	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	119.4	3.0
10°-20°	504.6	12.5
20°-30°	1151.0	28.6
30°-40°	1332.0	33.1
40°-50°	803.3	19.9
50°-60°	109.1	2.7
60°-70°	3.5	0.1
70°-80°	3.8	0.1
80°-90°	3.6	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°	1774.9	44.0
0°-40°	3106.9	77.1
0°-60°	4019.3	99.7
0°-90°	4030.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	4030.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1138	1138	1138	1138	1138	
5°	2196	1798	1080	591	364	256
15°	5575	3134	731	225	252	1650
25°	11110	3714	431	518	529	5028
35°	11818	2831	195	199	194	7122
45°	6379	771	22	26	26	4988
55°	492	6	6	4	1	965
65°	2	3	6	3	0	4
75°	0	4	6	4	0	0
85°	0	4	6	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°	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8
2.5°	1645.4	1630.2	1636.6	1619.8	1577.3	1568.5	1567.7	1556.5	1520.5	1492.5	1458.8
5°	2196.3	2195.5	2199.5	2163.4	2089.0	2065.8	2054.5	2027.3	1940.0	1872.8	1798.3
7.5°	2884.0	2879.2	2874.4	2808.8	2691.9	2647.0	2618.2	2519.7	2399.6	2280.3	2147.4
10°	3688.7	3686.3	3667.9	3552.6	3365.3	3282.8	3226.7	3070.6	2877.6	2707.9	2482.1
12.5°	4623.1	4601.5	4568.7	4399.7	4142.7	4053.0	3929.7	3682.3	3386.1	3125.9	2810.4
15°	5575.1	5543.9	5485.5	5268.5	4949.8	4796.9	4643.9	4318.1	3916.1	3538.2	3133.9
17.5°	6506.3	6471.9	6335.0	5966.7	5655.2	5468.6	5298.9	4851.3	4378.9	3892.9	3380.5
20°	7851.5	7726.6	7488.0	6907.5	6328.6	5992.3	5793.7	5320.5	4736.0	4169.9	3555.8
22.5°	9648.2	9371.2	8862.7	7919.5	7092.4	6607.2	6282.1	5652.8	4993.0	4350.9	3663.9
25°	11110.2	10984.5	10406.4	9064.5	7773.8	7202.1	6749.7	5917.0	5180.4	4471.8	3713.6
27.5°	12052.6	12021.4	11360.8	10012.5	8330.3	7580.0	7074.8	6091.6	5270.9	4497.4	3689.5
30°	12344.1	12392.9	11758.8	10334.4	8491.2	7656.1	7103.6	6094.0	5201.2	4381.3	3535.8
32.5°	12322.5	12324.9	11547.4	10056.5	8229.4	7435.1	6863.4	5891.4	4944.2	4090.7	3243.6
35°	11818.0	11693.9	10814.8	9203.0	7620.1	6919.5	6387.8	5499.1	4520.6	3653.5	2831.2
37.5°	10710.7	10548.2	9523.3	8110.1	6898.7	6250.9	5821.7	4984.2	4016.2	3186.7	2405.2
40°	9150.2	8919.6	8074.1	7094.0	6109.2	5622.4	5262.1	4408.5	3476.6	2728.7	2005.7
42.5°	7588.0	7475.1	6916.3	6119.6	5445.4	4987.4	4611.1	3805.6	2957.7	2277.1	1500.5
45°	6379.0	6282.1	5906.6	5381.4	4720.0	4302.1	3939.3	3177.1	2298.0	1527.7	771.1
47.5°	5498.3	5419.8	5060.3	4508.6	3783.2	3326.0	2952.1	2083.4	1301.9	659.8	193.0
50°	3967.4	3887.3	3535.0	2896.1	2241.1	1858.4	1589.3	930.4	369.1	133.7	20.0
52.5°	1944.9	1879.2	1639.8	1227.4	823.9	592.5	433.2	174.5	42.4	14.4	9.6
55°	492.4	452.4	377.1	237.0	116.1	69.7	44.8	16.0	10.4	8.0	5.6
57.5°	28.0	27.2	24.8	18.4	13.6	12.0	10.4	8.0	5.6	4.8	4.0
60°	11.2	10.4	9.6	8.0	6.4	5.6	5.6	4.0	3.2	3.2	3.2
62.5°	4.8	4.8	4.8	4.0	3.2	3.2	3.2	2.4	3.2	3.2	3.2
65°	2.4	2.4	2.4	1.6	1.6	1.6	2.4	2.4	2.4	3.2	3.2
67.5°	1.6	0.8	0.8	0.8	1.6	1.6	1.6	2.4	2.4	3.2	3.2
70°	0.8	0.8	0.8	0.8	1.6	1.6	1.6	2.4	2.4	3.2	4.0
72.5°	0.0	0.8	0.8	0.8	1.6	1.6	1.6	2.4	2.4	3.2	4.0
75°	0.0	0.8	0.8	0.8	1.6	1.6	1.6	2.4	3.2	3.2	4.0
77.5°	0.0	0.8	0.8	0.8	1.6	1.6	1.6	2.4	3.2	3.2	4.0
80°	0.0	0.8	0.8	0.8	1.6	1.6	1.6	2.4	3.2	3.2	4.0
82.5°	0.0	0.0	0.8	0.8	1.6	1.6	1.6	2.4	3.2	3.2	4.0
85°	0.0	0.0	0.8	0.8	1.6	1.6	1.6	2.4	3.2	3.2	4.0
87.5°	0.0	0.0	0.8	0.8	1.6	1.6	1.6	2.4	2.4	3.2	4.0
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8
2.5°	1415.6	1386.8	1344.3	1316.3	1289.1	1263.5	1221.0	1197.0	1153.8	1113.7	1079.3
5°	1708.7	1636.6	1549.3	1474.9	1426.8	1379.6	1293.9	1230.6	1151.4	1080.1	1014.5
7.5°	2004.9	1877.6	1734.3	1611.8	1537.3	1464.4	1336.3	1233.8	1121.8	1020.1	923.2
10°	2273.9	2082.6	1880.0	1704.6	1603.8	1509.3	1340.3	1204.2	1060.1	934.4	812.7
12.5°	2523.7	2261.9	1997.7	1768.7	1643.8	1530.1	1323.5	1157.0	985.6	836.7	695.0
15°	2746.3	2410.0	2083.4	1805.5	1659.0	1524.5	1284.3	1090.5	897.6	731.0	551.7
17.5°	2915.3	2502.1	2121.0	1799.9	1631.8	1482.1	1217.0	1007.3	803.9	602.1	399.5
20°	3017.8	2541.4	2113.0	1756.7	1573.3	1414.8	1137.0	916.8	691.0	462.8	352.3
22.5°	3061.0	2538.2	2075.4	1691.8	1501.3	1341.1	1060.1	828.7	572.5	418.8	367.5
25°	3068.2	2505.3	2022.5	1620.6	1430.0	1270.7	982.4	728.6	497.2	430.8	411.5
27.5°	3013.0	2428.5	1923.2	1518.1	1329.9	1165.0	866.3	578.9	466.8	429.2	442.0
30°	2849.6	2253.1	1747.9	1337.9	1156.2	991.2	618.9	454.0	387.5	389.9	393.1
32.5°	2562.2	1961.7	1466.0	1074.5	875.9	653.4	385.1	303.5	294.7	294.7	293.0
35°	2178.6	1605.4	1150.6	679.8	435.6	313.9	199.4	200.2	196.2	195.4	194.6
37.5°	1782.3	1266.7	728.6	281.0	189.0	131.3	117.7	119.3	117.7	120.1	118.5
40°	1405.2	782.3	265.8	89.7	66.5	64.1	65.7	67.3	67.3	68.9	68.9
42.5°	816.7	259.4	69.7	36.0	36.0	34.4	35.2	36.8	37.6	38.4	37.6
45°	242.6	53.6	22.4	20.0	20.0	19.2	19.2	20.0	20.8	21.6	21.6
47.5°	38.4	15.2	12.8	11.2	11.2	11.2	11.2	11.2	12.0	12.0	12.8
50°	12.0	9.6	8.0	7.2	7.2	6.4	6.4	7.2	7.2	7.2	8.0
52.5°	7.2	5.6	5.6	4.8	5.6	5.6	4.8	5.6	5.6	5.6	6.4
55°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	5.6	5.6	5.6
57.5°	4.0	4.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
60°	4.0	4.0	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	5.6
62.5°	4.0	4.0	4.8	4.8	4.8	4.8	4.8	4.8	5.6	5.6	5.6
65°	4.0	4.0	4.8	4.8	4.8	4.8	4.8	5.6	5.6	5.6	5.6
67.5°	4.0	4.8	4.8	4.8	4.8	5.6	5.6	5.6	5.6	5.6	5.6
70°	4.0	4.8	4.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
72.5°	4.0	4.8	4.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
75°	4.8	4.8	4.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	6.4
77.5°	4.8	4.8	5.6	5.6	5.6	5.6	5.6	5.6	6.4	6.4	6.4
80°	4.8	4.8	5.6	5.6	5.6	5.6	5.6	6.4	6.4	6.4	6.4
82.5°	4.8	4.8	5.6	5.6	5.6	5.6	5.6	6.4	6.4	6.4	6.4
85°	4.8	4.8	5.6	5.6	5.6	5.6	5.6	6.4	6.4	6.4	6.4
87.5°	4.8	4.8	5.6	5.6	5.6	5.6	5.6	6.4	6.4	6.4	6.4
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°	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8
2.5°	1049.7	1012.9	995.2	970.4	952.8	913.6	897.6	870.3	847.9	811.1	813.5
5°	958.4	888.8	841.5	804.7	779.1	716.6	675.0	630.9	590.9	541.3	522.8
7.5°	831.9	746.2	674.2	630.1	597.3	514.0	422.0	349.9	295.5	256.2	241.0
10°	705.4	594.1	479.6	411.5	364.3	284.2	243.4	224.2	206.6	185.0	170.5
12.5°	558.1	399.5	295.5	268.2	249.0	222.6	196.2	175.3	179.4	180.2	185.8
15°	381.1	287.4	254.6	236.2	215.4	200.2	209.0	214.6	225.0	225.8	233.0
17.5°	309.9	269.8	243.4	242.6	244.2	253.0	266.6	273.8	287.4	290.6	301.1
20°	309.9	286.6	309.1	309.1	313.1	325.1	342.7	353.1	368.3	373.9	386.7
22.5°	353.1	369.1	397.1	400.3	401.9	414.8	437.2	447.6	465.2	468.4	482.0
25°	430.8	445.2	470.8	473.2	474.0	483.6	500.4	506.0	518.0	511.6	519.6
27.5°	455.6	462.0	478.0	479.6	475.6	479.6	486.0	486.0	490.0	477.2	479.6
30°	400.3	401.9	409.9	410.7	401.9	403.5	404.3	403.5	402.7	389.1	389.1
32.5°	297.1	297.1	307.5	305.1	295.5	297.9	297.9	297.9	297.1	285.8	284.2
35°	197.0	197.8	206.6	205.0	197.8	199.4	199.4	201.8	199.4	193.0	191.4
37.5°	120.1	120.9	124.9	125.7	123.3	124.1	124.9	124.1	125.7	122.5	120.9
40°	69.7	71.3	74.5	75.3	74.5	74.5	75.3	76.1	79.3	75.3	73.7
42.5°	40.8	41.6	43.2	43.2	43.2	43.2	44.0	44.8	45.6	44.8	44.0
45°	23.2	24.0	24.8	24.8	25.6	24.8	25.6	25.6	26.4	25.6	25.6
47.5°	13.6	13.6	14.4	14.4	15.2	14.4	15.2	15.2	15.2	14.4	14.4
50°	8.0	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.0	8.0
52.5°	6.4	6.4	6.4	6.4	6.4	5.6	5.6	5.6	5.6	4.8	4.8
55°	5.6	5.6	5.6	5.6	5.6	5.6	4.8	4.0	4.0	3.2	3.2
57.5°	4.8	5.6	5.6	5.6	5.6	4.8	4.8	4.0	3.2	2.4	2.4
60°	5.6	5.6	5.6	5.6	4.8	4.8	4.8	4.0	3.2	2.4	2.4
62.5°	5.6	5.6	5.6	5.6	5.6	4.8	4.8	4.0	3.2	2.4	2.4
65°	5.6	5.6	5.6	5.6	5.6	4.8	4.8	4.0	3.2	2.4	2.4
67.5°	5.6	5.6	5.6	5.6	5.6	4.8	4.8	4.0	3.2	3.2	2.4
70°	5.6	6.4	6.4	5.6	5.6	5.6	4.8	4.0	4.0	3.2	2.4
72.5°	5.6	6.4	6.4	5.6	5.6	5.6	4.8	4.0	4.0	3.2	2.4
75°	6.4	6.4	6.4	6.4	5.6	5.6	4.8	4.8	4.0	3.2	2.4
77.5°	6.4	6.4	6.4	6.4	5.6	5.6	4.8	4.8	4.0	3.2	2.4
80°	6.4	6.4	6.4	6.4	6.4	5.6	5.6	4.8	4.0	3.2	3.2
82.5°	6.4	6.4	6.4	6.4	6.4	5.6	5.6	4.8	4.0	3.2	3.2
85°	6.4	6.4	6.4	6.4	6.4	5.6	5.6	4.8	4.0	3.2	2.4
87.5°	6.4	6.4	6.4	6.4	5.6	5.6	4.8	4.8	4.0	3.2	2.4
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: P209004

CATALOG NUMBER: LDSQA6A45827D010TE LARH20SP 6LSQA1H 30°

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8	1137.8
2.5°	783.9	765.4	757.4	770.3	763.8	744.6	748.6	736.6
5°	467.6	439.6	422.0	430.0	404.3	381.1	381.1	364.3
7.5°	225.8	217.0	212.2	213.8	208.2	201.0	197.0	197.0
10°	158.5	155.3	156.1	156.1	160.9	160.1	162.5	161.7
12.5°	188.2	189.8	190.6	193.8	197.8	197.8	200.2	198.6
15°	241.0	239.4	244.2	245.0	251.4	252.2	255.4	252.2
17.5°	306.7	309.9	314.7	313.9	326.7	327.5	327.5	326.7
20°	394.7	397.1	401.9	403.5	418.8	420.4	426.0	426.8
22.5°	490.8	490.8	493.2	496.4	510.8	511.6	514.0	514.0
25°	523.6	518.8	519.6	523.6	531.7	528.4	530.9	529.2
27.5°	481.2	474.0	472.4	478.0	483.6	474.8	478.0	478.0
30°	390.7	384.3	382.7	388.3	392.3	382.7	385.9	387.5
32.5°	285.8	281.8	281.0	285.0	288.2	280.2	283.4	285.8
35°	193.0	191.4	189.8	190.6	195.4	189.0	192.2	193.8
37.5°	122.5	119.3	120.1	121.7	124.9	120.9	124.1	124.1
40°	75.3	73.7	73.7	75.3	76.9	73.7	75.3	76.1
42.5°	44.0	44.0	44.0	44.8	45.6	44.0	44.0	44.8
45°	25.6	24.8	24.8	25.6	26.4	24.8	25.6	25.6
47.5°	14.4	13.6	13.6	14.4	14.4	13.6	14.4	14.4
50°	8.0	7.2	7.2	8.0	8.0	7.2	7.2	7.2
52.5°	4.0	4.0	4.0	4.0	4.0	4.0	3.2	3.2
55°	2.4	2.4	1.6	1.6	1.6	1.6	1.6	0.8
57.5°	1.6	1.6	0.8	0.8	0.8	0.8	0.0	0.0
60°	1.6	1.6	0.8	0.8	0.8	0.0	0.0	0.0
62.5°	1.6	1.6	0.8	0.8	0.8	0.0	0.0	0.0
65°	1.6	1.6	0.8	0.8	0.8	0.0	0.0	0.0
67.5°	1.6	1.6	0.8	0.8	0.8	0.0	0.0	0.0
70°	2.4	1.6	1.6	0.8	0.8	0.8	0.0	0.0
72.5°	2.4	1.6	1.6	1.6	0.8	0.8	0.0	0.0
75°	2.4	1.6	1.6	1.6	0.8	0.8	0.0	0.0
77.5°	2.4	1.6	1.6	1.6	0.8	0.8	0.8	0.0
80°	2.4	1.6	1.6	1.6	0.8	0.8	0.8	0.8
82.5°	2.4	1.6	1.6	1.6	0.8	0.8	0.8	0.8
85°	2.4	1.6	1.6	1.6	0.8	0.8	0.8	0.0
87.5°	2.4	1.6	1.6	1.6	0.8	0.8	0.8	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)