

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: NEO-RAY

Report Number: P243003

Luminaire Tested: **S121DR-H490D940-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243003
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-57)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121DR-H490D940-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1711.5 lumens
Efficiency: N/A
Efficacy: 99.5 lumens/watt
Spacing Criteria (0/90/45): 1.13 / 1.2 / 1.28
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

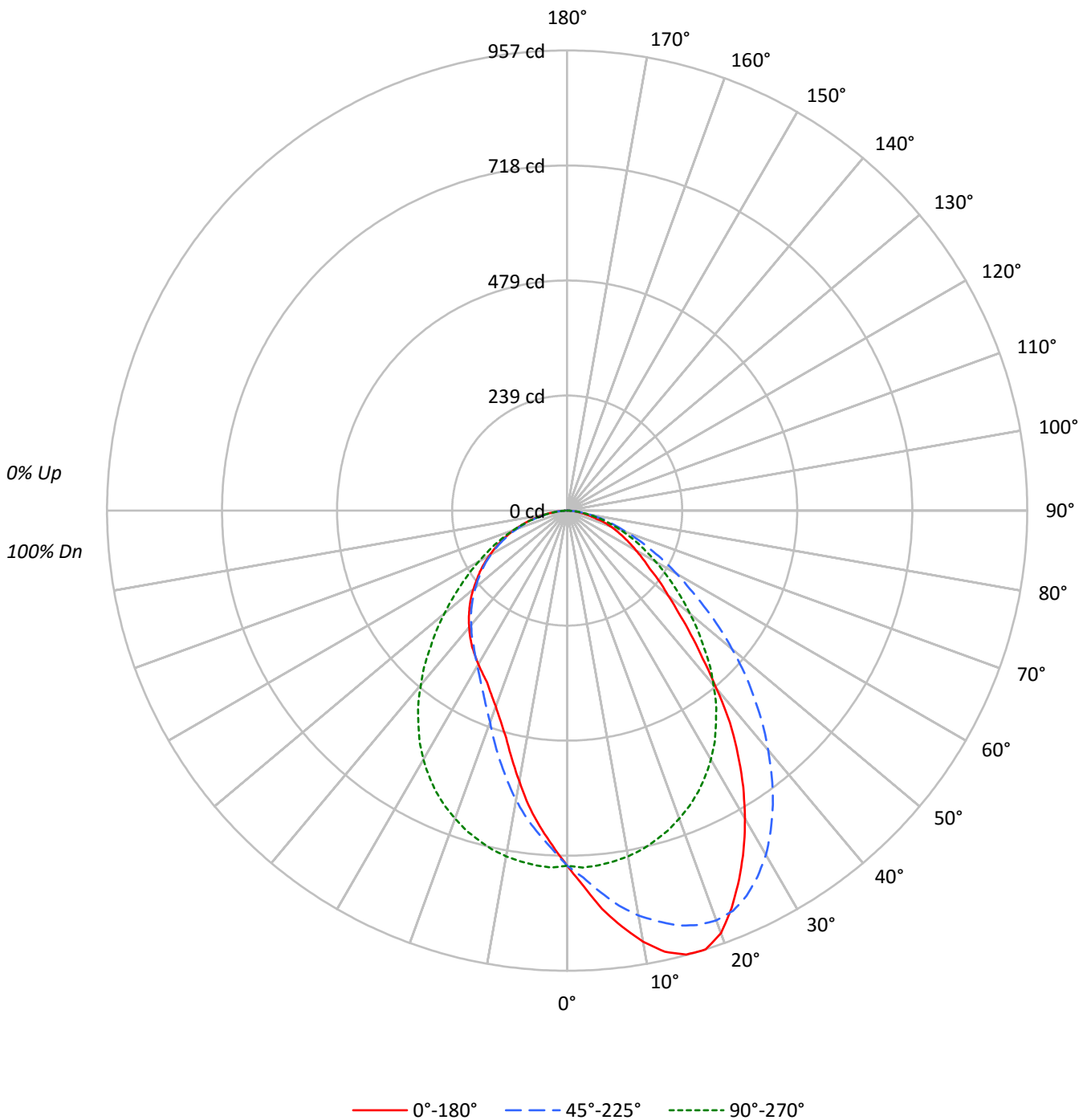
Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P243003

CATALOG NUMBER: S121DR-H490D940-X4F0-XX-UDD-A-W

Luminous Intensity Polar Plot





TEST NUMBER: P243003

CATALOG NUMBER: S121DR-H490D940-X4F0-XX-UDD-A-W

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	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88					86				
2	101	93	87	81	98	91	85	80	88	83	79	84	80	77	81	78	75					73				
3	92	83	75	69	90	81	74	68	78	72	67	75	70	66	73	69	65					63				
4	85	74	66	59	83	72	65	59	70	63	58	68	62	57	66	61	57					54				
5	79	66	58	52	77	65	57	51	63	56	51	61	55	50	60	54	50					48				
6	73	60	52	46	71	59	51	45	57	50	45	56	49	45	54	49	44					42				
7	68	55	46	41	66	54	46	40	53	45	40	51	45	40	50	44	40					38				
8	63	50	42	37	62	50	42	36	48	41	36	47	41	36	46	40	36					34				
9	59	46	38	33	58	46	38	33	45	38	33	44	37	33	43	37	33					31				
10	56	43	35	30	54	42	35	30	41	35	30	41	34	30	40	34	30					28				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	21879	21879	21879
5°	24722	22034	19577
10°	27385	21966	17207
15°	29325	21776	15009
20°	29488	21492	13666
25°	27658	21090	12887
30°	25304	20453	12632
35°	22408	19514	12472
40°	18674	18307	12257
45°	15223	16841	12034
50°	12635	15345	11731
55°	10812	13911	11427
60°	9796	12593	11064
65°	9044	11463	10671
70°	8343	10326	10041
75°	6743	9158	9261
80°	5375	7405	7917
85°	4046	5473	6459



TEST NUMBER: P243003

CATALOG NUMBER: S121DR-H490D940-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	70.5	4.1
10°-20°	202.1	11.8
20°-30°	294.3	17.2
30°-40°	328.0	19.2
40°-50°	303.3	17.7
50°-60°	241.6	14.1
60°-70°	165.4	9.7
70°-80°	85.9	5.0
80°-90°	20.3	1.2
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°	566.9	33.1
0°-40°	895.0	52.3
0°-60°	1439.9	84.1
0°-90°	1711.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1711.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	738	738	738	738	738	
5°	831	797	741	675	658	82
15°	956	893	710	539	489	268
25°	846	884	645	415	394	388
35°	620	746	540	340	345	384
45°	363	550	402	281	287	283
55°	209	347	269	216	221	191
65°	129	192	164	148	152	128
75°	59	86	80	76	81	65
85°	12	16	16	17	19	15
90°	0	0	0	0	0	



TEST NUMBER: P243003

CATALOG NUMBER: S121DR-H490D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4
2.5°	781.2	781.2	779.1	780.0	778.8	776.8	773.5	769.9	765.5	763.7	762.8
5°	831.2	832.4	830.9	827.9	827.3	824.9	817.8	813.6	804.1	796.7	794.3
7.5°	872.8	874.9	874.9	869.5	867.1	861.2	856.1	849.3	837.4	829.1	822.2
10°	910.2	911.1	907.9	904.9	900.1	895.4	886.8	878.1	865.3	855.2	843.9
12.5°	940.0	941.7	939.4	934.6	929.0	922.7	912.0	901.0	888.5	874.9	862.7
15°	956.0	958.7	959.0	955.1	951.0	943.5	935.8	923.9	910.2	893.3	873.4
17.5°	957.2	958.4	959.3	956.3	953.6	951.0	943.2	933.4	920.3	903.7	885.3
20°	935.2	937.9	940.9	938.2	939.4	939.4	936.1	931.0	920.3	907.0	889.1
22.5°	894.2	900.4	904.3	907.0	909.6	913.5	917.4	915.0	910.8	901.0	885.0
25°	846.0	851.1	858.5	860.9	863.0	874.3	881.1	885.9	885.9	883.8	873.1
27.5°	794.9	798.2	804.4	812.7	820.5	827.3	841.6	850.5	857.6	857.6	852.0
30°	739.6	744.4	751.8	757.4	767.0	780.9	792.8	803.5	819.9	827.0	825.8
32.5°	681.3	686.1	693.8	698.6	712.3	723.6	742.0	758.6	777.4	788.1	794.6
35°	619.5	619.8	632.9	640.6	652.5	666.5	689.1	707.8	728.3	746.1	760.1
37.5°	555.9	555.6	564.8	578.5	588.0	607.6	630.8	651.6	680.1	699.2	721.2
40°	482.8	489.0	496.7	509.2	525.6	548.8	570.8	597.8	626.3	650.1	673.6
42.5°	417.4	422.4	434.9	448.9	466.4	486.0	512.8	542.8	570.8	601.7	627.8
45°	363.3	365.9	373.4	384.7	403.1	425.4	453.3	485.1	518.1	549.6	578.8
47.5°	313.3	321.3	325.2	335.6	349.0	369.8	398.9	427.5	465.5	500.6	532.4
50°	274.1	275.6	282.4	290.1	305.9	321.3	343.3	372.8	408.1	447.7	480.1
52.5°	242.0	241.4	247.0	253.9	264.9	281.2	300.2	328.8	358.8	398.0	433.4
55°	209.3	212.2	214.9	221.8	231.6	244.1	260.1	284.2	312.4	347.2	384.4
57.5°	186.7	187.0	188.5	194.1	200.7	210.5	225.9	246.4	271.7	302.0	338.0
60°	165.3	165.6	168.3	170.0	174.5	182.8	194.7	211.7	234.0	263.1	294.6
62.5°	146.9	147.1	148.6	150.4	154.6	157.8	168.0	182.5	200.7	226.5	253.6
65°	129.0	129.3	129.3	131.7	134.4	137.3	144.5	153.7	171.2	191.7	215.8
67.5°	111.8	113.6	113.0	114.7	117.1	118.6	123.7	132.0	143.9	161.1	181.9
70°	96.3	96.0	96.9	97.8	98.7	101.1	104.3	110.0	120.1	132.3	150.7
72.5°	79.7	77.9	79.1	80.3	81.7	83.5	86.2	90.4	98.1	107.9	121.6
75°	58.9	58.0	59.8	60.0	62.7	65.1	68.1	72.2	77.9	86.2	95.1
77.5°	42.8	44.0	44.6	45.2	45.5	48.2	51.4	55.0	58.3	66.0	72.8
80°	31.5	31.5	31.8	32.4	33.0	33.6	35.7	38.1	40.7	45.5	52.3
82.5°	22.0	21.7	21.7	22.0	22.3	22.9	23.8	24.7	27.1	29.4	33.0
85°	11.9	12.2	12.5	11.9	12.2	12.5	13.1	14.0	14.6	16.3	17.8
87.5°	4.2	5.1	4.8	4.8	5.1	5.1	5.1	5.6	5.6	5.6	6.5
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: P243003

CATALOG NUMBER: S121DR-H490D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4
2.5°	761.9	761.0	758.6	753.9	750.6	744.7	743.5	743.2	737.8	729.8	729.2
5°	790.1	783.3	777.7	769.3	761.0	750.9	745.0	740.8	731.3	719.4	714.0
7.5°	816.0	806.2	794.6	781.5	769.3	755.1	744.7	736.3	722.4	707.2	698.0
10°	836.8	824.6	810.1	792.5	775.9	757.1	742.6	730.1	711.7	692.9	680.4
12.5°	851.1	837.4	820.8	800.2	780.0	758.6	737.5	721.8	698.6	676.9	660.8
15°	867.1	844.5	827.3	804.1	780.3	754.8	732.5	709.9	683.1	658.7	637.9
17.5°	871.0	850.2	829.7	804.1	779.4	748.2	722.4	697.4	667.7	637.6	617.4
20°	874.6	850.8	825.5	797.9	772.0	739.9	710.8	681.6	647.2	614.8	589.5
22.5°	871.9	848.7	820.5	789.2	761.3	728.3	696.8	664.7	626.0	592.2	563.6
25°	864.2	842.8	813.6	779.4	745.8	712.3	679.3	645.1	603.2	563.9	532.4
27.5°	848.4	829.4	801.4	765.2	729.8	692.6	658.2	622.5	577.6	537.5	503.9
30°	827.3	812.1	783.9	747.6	709.3	669.4	634.1	597.8	551.1	507.4	471.8
32.5°	798.2	787.5	763.1	727.7	686.4	644.2	607.9	571.1	521.1	479.5	443.2
35°	765.5	760.4	738.7	703.3	660.5	616.2	577.3	539.5	493.5	449.5	414.7
37.5°	727.1	730.7	711.1	676.0	631.7	586.5	545.5	508.9	462.3	420.0	385.9
40°	689.1	694.4	679.6	646.9	600.8	554.1	512.5	473.3	429.8	392.7	358.8
42.5°	646.9	657.6	646.0	614.2	569.3	519.9	476.5	440.0	398.6	364.5	334.7
45°	602.0	615.6	610.9	578.5	534.2	485.7	440.0	401.9	368.6	338.3	311.2
47.5°	556.5	572.2	570.2	543.1	500.6	451.0	405.8	368.3	337.7	313.3	290.7
50°	509.8	525.9	526.2	502.1	462.5	415.3	366.8	332.9	308.6	287.2	268.7
52.5°	464.3	480.4	480.7	462.0	422.4	376.3	331.8	300.8	280.0	263.4	247.9
55°	416.8	435.5	437.3	419.1	384.1	339.8	298.8	269.3	250.9	240.2	226.8
57.5°	368.6	388.8	392.4	377.8	343.9	302.6	268.1	239.9	225.0	217.6	207.5
60°	323.7	343.6	349.3	332.6	304.7	269.3	236.3	212.5	200.7	194.7	187.6
62.5°	282.4	302.3	305.3	291.0	263.4	233.7	208.7	187.0	177.2	172.7	167.1
65°	242.0	259.8	263.7	250.9	225.9	201.3	179.3	163.5	154.9	151.0	147.4
67.5°	204.8	221.5	224.1	212.5	191.7	170.6	154.6	140.9	135.0	129.9	128.4
70°	169.7	184.9	187.3	175.7	159.3	142.1	128.7	119.2	113.6	110.6	108.5
72.5°	137.3	149.2	151.3	144.2	131.4	116.2	105.8	97.8	94.2	91.6	90.7
75°	107.3	118.9	119.2	113.0	102.6	92.2	84.1	80.0	75.8	73.1	72.5
77.5°	82.3	88.9	89.8	86.5	76.4	69.9	63.6	60.6	59.2	56.5	56.5
80°	58.9	62.7	64.2	59.5	54.7	49.0	45.8	43.4	42.2	40.4	40.4
82.5°	36.6	39.8	41.6	38.1	35.7	32.7	30.3	28.8	27.9	27.1	26.8
85°	19.9	22.3	22.3	21.1	19.0	17.5	16.6	16.1	15.8	15.5	15.2
87.5°	7.1	8.9	8.0	8.3	7.4	7.1	6.8	6.8	7.1	6.5	6.5
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: P243003

CATALOG NUMBER: S121DR-H490D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4	738.4
2.5°	725.3	723.8	719.4	715.2	712.0	704.8	703.3	703.9	703.9	704.2	701.0
5°	707.8	701.6	694.4	687.9	682.8	674.8	670.3	669.2	668.3	666.5	663.2
7.5°	687.9	680.7	670.6	664.7	654.0	645.1	638.8	634.7	632.0	628.1	622.8
10°	667.7	657.3	646.0	634.1	623.4	611.5	601.7	596.9	591.3	587.4	581.5
12.5°	647.5	632.9	617.4	603.8	589.2	575.2	565.1	558.6	548.5	542.8	536.6
15°	621.0	603.2	590.1	566.3	559.2	538.9	526.8	521.7	511.9	510.1	500.3
17.5°	596.0	575.5	556.2	536.3	517.2	503.3	492.9	486.3	478.6	473.8	467.3
20°	564.8	543.4	520.2	499.4	483.4	468.5	462.0	453.6	449.2	444.4	439.7
22.5°	535.1	508.9	485.7	468.8	452.4	440.3	433.1	427.5	423.6	418.9	415.6
25°	503.3	478.9	457.5	440.0	424.2	414.7	408.7	405.5	403.1	399.5	397.4
27.5°	473.0	448.3	427.2	413.8	401.0	392.7	389.7	386.7	383.8	382.6	382.3
30°	440.6	418.0	400.7	389.1	377.5	373.1	371.6	368.6	369.2	369.5	368.6
32.5°	413.2	391.2	378.1	368.3	359.4	356.1	355.8	354.6	354.9	356.4	355.8
35°	385.0	368.6	355.5	347.5	341.9	339.5	339.8	340.1	341.9	342.2	343.3
37.5°	360.9	345.1	336.5	328.8	326.1	326.1	326.4	326.7	328.2	330.0	330.6
40°	337.1	324.3	316.9	311.8	310.3	310.3	311.5	313.0	313.9	315.7	316.0
42.5°	315.7	305.0	299.3	294.3	294.9	296.4	296.7	297.6	299.9	300.2	300.8
45°	294.6	286.6	280.9	279.4	279.4	280.6	282.1	282.7	284.5	284.8	285.4
47.5°	276.5	268.1	264.0	262.5	263.4	264.9	266.9	267.8	269.3	269.0	270.5
50°	256.2	249.4	246.1	245.5	246.1	248.8	249.7	251.8	253.3	254.2	254.8
52.5°	236.9	231.6	230.1	229.8	231.0	232.8	234.0	236.0	237.8	237.8	237.5
55°	218.5	213.7	212.0	213.4	214.9	215.8	218.2	219.4	221.2	221.5	221.2
57.5°	199.8	195.6	195.0	195.6	198.6	200.4	201.8	201.8	202.7	203.0	203.9
60°	180.4	177.8	177.2	178.7	181.9	183.1	184.0	184.3	185.5	184.9	186.7
62.5°	162.3	159.6	160.8	162.3	163.5	165.3	165.9	167.4	167.1	167.7	168.6
65°	143.6	142.1	142.4	144.2	145.7	148.0	148.0	148.0	149.5	149.5	150.1
67.5°	125.4	124.6	125.7	127.2	127.5	129.0	128.7	130.5	131.7	132.3	132.9
70°	107.9	107.3	107.3	108.8	110.3	110.9	111.5	112.7	113.0	113.9	115.3
72.5°	91.3	89.5	89.8	91.9	91.9	93.0	94.5	94.5	96.3	96.6	98.1
75°	73.1	72.5	73.1	74.3	75.8	75.5	77.3	77.0	77.6	79.7	80.0
77.5°	57.1	56.2	57.7	58.3	58.6	58.9	59.5	60.9	62.1	63.0	63.3
80°	41.0	40.7	42.2	42.8	42.5	43.1	44.0	45.5	45.5	46.1	47.0
82.5°	27.6	27.1	27.9	28.8	29.4	29.7	29.7	30.3	30.6	31.2	31.2
85°	15.8	15.8	16.3	16.6	17.2	16.9	17.5	17.2	17.8	18.4	18.1
87.5°	6.8	6.8	6.8	6.8	7.1	7.1	7.4	7.4	7.1	7.4	6.8
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: P243003

CATALOG NUMBER: S121DR-H490D940-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	738.4	738.4	738.4	738.4
2.5°	699.8	700.4	698.9	697.4
5°	662.9	660.8	658.7	658.2
7.5°	621.6	621.6	616.5	617.7
10°	577.3	575.5	571.6	571.9
12.5°	534.2	532.7	530.6	529.7
15°	495.2	496.1	497.6	489.3
17.5°	464.6	462.3	461.1	459.6
20°	437.3	436.1	433.7	433.4
22.5°	416.2	413.5	412.9	413.2
25°	396.0	396.0	396.0	394.2
27.5°	381.7	381.7	380.8	381.1
30°	369.2	369.8	368.9	369.2
32.5°	357.3	357.6	357.0	356.7
35°	343.9	344.8	344.5	344.8
37.5°	331.2	331.8	331.2	331.2
40°	316.6	318.1	317.8	316.9
42.5°	302.0	302.0	302.9	302.6
45°	286.9	286.3	286.3	287.2
47.5°	270.8	272.0	271.4	271.7
50°	255.9	255.7	254.8	254.5
52.5°	238.4	239.0	238.7	237.2
55°	221.5	221.5	221.2	221.2
57.5°	203.3	204.2	203.9	203.9
60°	186.1	186.7	187.0	186.7
62.5°	168.6	168.8	168.6	168.8
65°	151.6	151.6	151.3	152.2
67.5°	133.2	133.5	133.2	133.8
70°	115.6	116.2	116.5	115.9
72.5°	99.0	98.4	98.7	98.1
75°	80.6	80.9	80.6	80.9
77.5°	63.3	63.6	63.3	63.6
80°	46.7	46.7	47.0	46.4
82.5°	31.5	31.5	32.4	31.5
85°	18.4	18.4	17.8	19.0
87.5°	7.1	7.1	7.1	7.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)