

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: P242983

Luminaire Tested: **S121DR-H490D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P242983
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-H490D835-X4F0-XX-UDD-A-W
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1919.3 lumens
Efficiency: N/A
Efficacy: 111.6 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

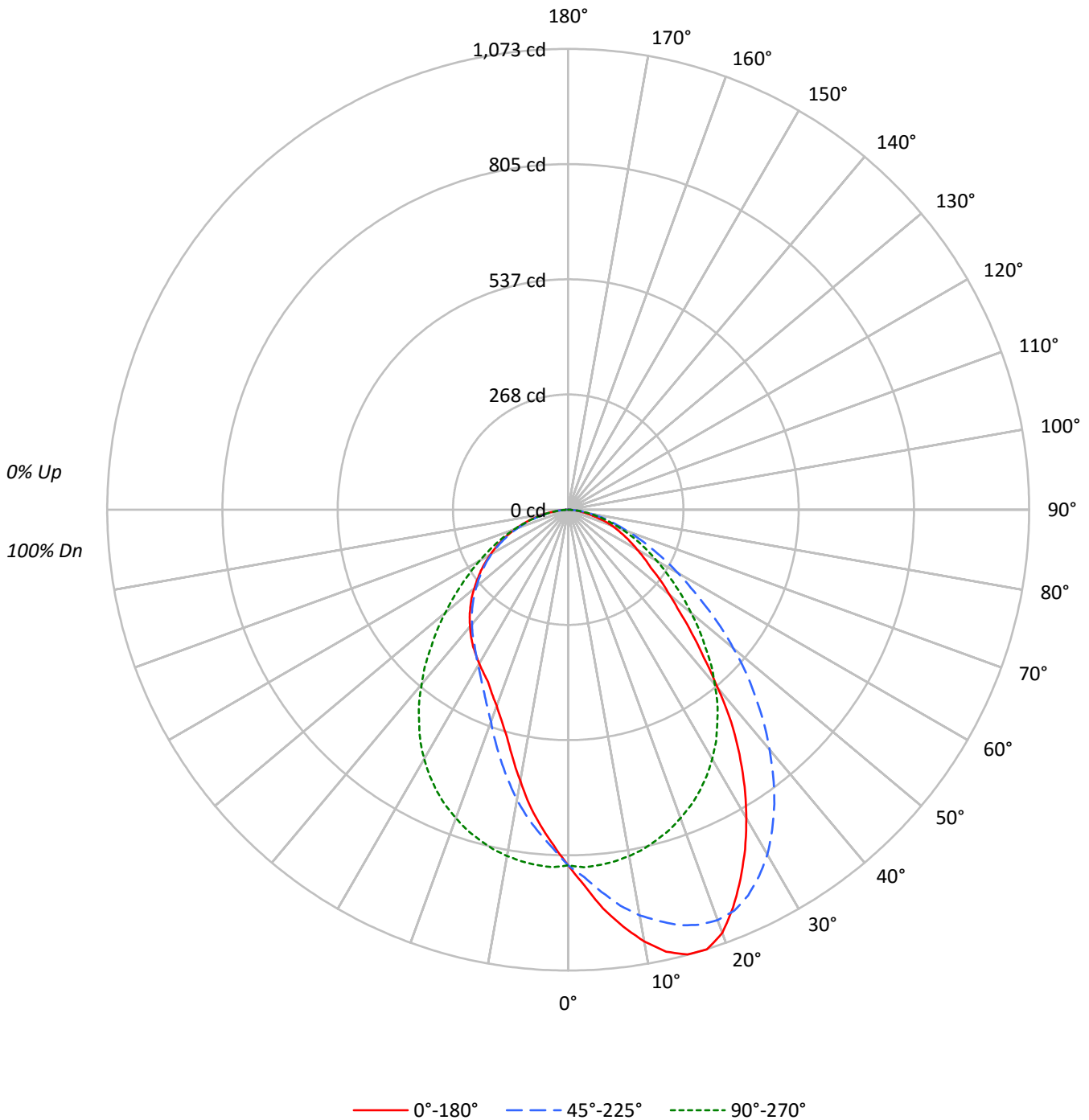
Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	24536	24536	24536
5°	27723	24710	21953
10°	30713	24635	19298
15°	32887	24420	16831
20°	33070	24103	15327
25°	31019	23650	14450
30°	28377	22937	14164
35°	25128	21887	13987
40°	20941	20527	13746
45°	17071	18886	13493
50°	14170	17212	13156
55°	12124	15601	12811
60°	10987	14127	12409
65°	10145	12858	11968
70°	9356	11583	11262
75°	7556	10269	10383
80°	6023	8310	8873
85°	4522	6119	7241



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	79.1	4.1
10°-20°	226.7	11.8
20°-30°	330.0	17.2
30°-40°	367.9	19.2
40°-50°	340.1	17.7
50°-60°	271.0	14.1
60°-70°	185.5	9.7
70°-80°	96.3	5.0
80°-90°	22.8	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°	635.8	33.1
0°-40°	1003.6	52.3
0°-60°	1614.7	84.1
0°-90°	1919.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1919.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	828	828	828	828	828	
5°	932	893	831	757	738	92
15°	1072	1002	796	604	549	301
25°	949	991	723	465	442	435
35°	695	837	605	381	387	431
45°	407	616	451	315	322	317
55°	235	389	302	242	248	215
65°	145	215	183	166	171	144
75°	66	97	90	85	91	72
85°	13	18	18	19	21	16
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1
2.5°	876.1	876.1	873.8	874.8	873.4	871.1	867.4	863.4	858.4	856.4	855.4
5°	932.1	933.4	931.8	928.4	927.8	925.1	917.1	912.4	901.8	893.4	890.8
7.5°	978.8	981.1	981.1	975.1	972.4	965.8	960.1	952.4	939.1	929.8	922.1
10°	1020.8	1021.8	1018.1	1014.8	1009.4	1004.1	994.4	984.8	970.4	959.1	946.4
12.5°	1054.1	1056.1	1053.4	1048.1	1041.8	1034.8	1022.8	1010.4	996.4	981.1	967.4
15°	1072.1	1075.1	1075.4	1071.1	1066.4	1058.1	1049.4	1036.1	1020.8	1001.8	979.4
17.5°	1073.4	1074.8	1075.8	1072.4	1069.4	1066.4	1057.8	1046.8	1032.1	1013.4	992.8
20°	1048.8	1051.8	1055.1	1052.1	1053.4	1053.4	1049.8	1044.1	1032.1	1017.1	997.1
22.5°	1002.8	1009.8	1014.1	1017.1	1020.1	1024.4	1028.8	1026.1	1021.4	1010.4	992.4
25°	948.8	954.4	962.8	965.4	967.8	980.4	988.1	993.4	993.4	991.1	979.1
27.5°	891.4	895.1	902.1	911.4	920.1	927.8	943.8	953.8	961.8	961.8	955.4
30°	829.4	834.8	843.1	849.4	860.1	875.8	889.1	901.1	919.4	927.4	926.1
32.5°	764.1	769.4	778.1	783.4	798.8	811.4	832.1	850.8	871.8	883.8	891.1
35°	694.7	695.1	709.7	718.4	731.7	747.4	772.7	793.8	816.8	836.8	852.4
37.5°	623.4	623.1	633.4	648.7	659.4	681.4	707.4	730.7	762.7	784.1	808.8
40°	541.4	548.4	557.1	571.1	589.4	615.4	640.1	670.4	702.4	729.1	755.4
42.5°	468.0	473.7	487.7	503.4	523.1	545.1	575.1	608.7	640.1	674.7	704.1
45°	407.4	410.4	418.7	431.4	452.0	477.1	508.4	544.1	581.1	616.4	649.1
47.5°	351.4	360.4	364.7	376.4	391.4	414.7	447.4	479.4	522.1	561.4	597.1
50°	307.4	309.0	316.7	325.4	343.0	360.4	385.0	418.0	457.7	502.1	538.4
52.5°	271.4	270.7	277.0	284.7	297.0	315.4	336.7	368.7	402.4	446.4	486.1
55°	234.7	238.0	241.0	248.7	259.7	273.7	291.7	318.7	350.4	389.4	431.0
57.5°	209.4	209.7	211.4	217.7	225.0	236.0	253.4	276.4	304.7	338.7	379.0
60°	185.4	185.7	188.7	190.7	195.7	205.0	218.4	237.4	262.4	295.0	330.4
62.5°	164.7	165.0	166.7	168.7	173.4	177.0	188.4	204.7	225.0	254.0	284.4
65°	144.7	145.0	145.0	147.7	150.7	154.0	162.0	172.4	192.0	215.0	242.0
67.5°	125.3	127.3	126.7	128.7	131.3	133.0	138.7	148.0	161.4	180.7	204.0
70°	108.0	107.7	108.7	109.7	110.7	113.3	117.0	123.3	134.7	148.3	169.0
72.5°	89.3	87.3	88.7	90.0	91.7	93.7	96.7	101.3	110.0	121.0	136.3
75°	66.0	65.0	67.0	67.3	70.3	73.0	76.3	81.0	87.3	96.7	106.7
77.5°	48.0	49.3	50.0	50.7	51.0	54.0	57.7	61.7	65.3	74.0	81.7
80°	35.3	35.3	35.7	36.3	37.0	37.7	40.0	42.7	45.7	51.0	58.7
82.5°	24.7	24.3	24.3	24.7	25.0	25.7	26.7	27.7	30.3	33.0	37.0
85°	13.3	13.7	14.0	13.3	13.7	14.0	14.7	15.7	16.3	18.3	20.0
87.5°	4.7	5.7	5.3	5.3	5.7	5.7	5.7	6.3	6.3	6.3	7.3
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1
2.5°	854.4	853.4	850.8	845.4	841.8	835.1	833.8	833.4	827.4	818.4	817.8
5°	886.1	878.4	872.1	862.8	853.4	842.1	835.4	830.8	820.1	806.8	800.8
7.5°	915.1	904.1	891.1	876.4	862.8	846.8	835.1	825.8	810.1	793.1	782.7
10°	938.4	924.8	908.4	888.8	870.1	849.1	832.8	818.8	798.1	777.1	763.1
12.5°	954.4	939.1	920.4	897.4	874.8	850.8	827.1	809.4	783.4	759.1	741.1
15°	972.4	947.1	927.8	901.8	875.1	846.4	821.4	796.1	766.1	738.7	715.4
17.5°	976.8	953.4	930.4	901.8	874.1	839.1	810.1	782.1	748.7	715.1	692.4
20°	980.8	954.1	925.8	894.8	865.8	829.8	797.1	764.4	725.7	689.4	661.1
22.5°	977.8	951.8	920.1	885.1	853.8	816.8	781.4	745.4	702.1	664.1	632.1
25°	969.1	945.1	912.4	874.1	836.4	798.8	761.7	723.4	676.4	632.4	597.1
27.5°	951.4	930.1	898.8	858.1	818.4	776.7	738.1	698.1	647.7	602.7	565.1
30°	927.8	910.8	879.1	838.4	795.4	750.7	711.1	670.4	618.1	569.1	529.1
32.5°	895.1	883.1	855.8	816.1	769.7	722.4	681.7	640.4	584.4	537.7	497.1
35°	858.4	852.8	828.4	788.7	740.7	691.1	647.4	605.1	553.4	504.1	465.0
37.5°	815.4	819.4	797.4	758.1	708.4	657.7	611.7	570.7	518.4	471.0	432.7
40°	772.7	778.7	762.1	725.4	673.7	621.4	574.7	530.7	482.1	440.4	402.4
42.5°	725.4	737.4	724.4	688.7	638.4	583.1	534.4	493.4	447.0	408.7	375.4
45°	675.1	690.4	685.1	648.7	599.1	544.7	493.4	450.7	413.4	379.4	349.0
47.5°	624.1	641.7	639.4	609.1	561.4	505.7	455.0	413.0	378.7	351.4	326.0
50°	571.7	589.7	590.1	563.1	518.7	465.7	411.4	373.4	346.0	322.0	301.4
52.5°	520.7	538.7	539.1	518.1	473.7	422.0	372.0	337.4	314.0	295.4	278.0
55°	467.4	488.4	490.4	470.0	430.7	381.0	335.0	302.0	281.4	269.4	254.4
57.5°	413.4	436.0	440.0	423.7	385.7	339.4	300.7	269.0	252.4	244.0	232.7
60°	363.0	385.4	391.7	373.0	341.7	302.0	265.0	238.4	225.0	218.4	210.4
62.5°	316.7	339.0	342.4	326.4	295.4	262.0	234.0	209.7	198.7	193.7	187.4
65°	271.4	291.4	295.7	281.4	253.4	225.7	201.0	183.4	173.7	169.4	165.4
67.5°	229.7	248.4	251.4	238.4	215.0	191.4	173.4	158.0	151.3	145.7	144.0
70°	190.4	207.4	210.0	197.0	178.7	159.4	144.3	133.7	127.3	124.0	121.7
72.5°	154.0	167.4	169.7	161.7	147.3	130.3	118.7	109.7	105.7	102.7	101.7
75°	120.3	133.3	133.7	126.7	115.0	103.3	94.3	89.7	85.0	82.0	81.3
77.5°	92.3	99.7	100.7	97.0	85.7	78.3	71.3	68.0	66.3	63.3	63.3
80°	66.0	70.3	72.0	66.7	61.3	55.0	51.3	48.7	47.3	45.3	45.3
82.5°	41.0	44.7	46.7	42.7	40.0	36.7	34.0	32.3	31.3	30.3	30.0
85°	22.3	25.0	25.0	23.7	21.3	19.7	18.7	18.0	17.7	17.3	17.0
87.5°	8.0	10.0	9.0	9.3	8.3	8.0	7.7	7.7	8.0	7.3	7.3
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1	828.1
2.5°	813.4	811.8	806.8	802.1	798.4	790.4	788.7	789.4	789.4	789.7	786.1
5°	793.8	786.7	778.7	771.4	765.7	756.7	751.7	750.4	749.4	747.4	743.7
7.5°	771.4	763.4	752.1	745.4	733.4	723.4	716.4	711.7	708.7	704.4	698.4
10°	748.7	737.1	724.4	711.1	699.1	685.7	674.7	669.4	663.1	658.7	652.1
12.5°	726.1	709.7	692.4	677.1	660.7	645.1	633.7	626.4	615.1	608.7	601.7
15°	696.4	676.4	661.7	635.1	627.1	604.4	590.7	585.1	574.1	572.1	561.1
17.5°	668.4	645.4	623.7	601.4	580.1	564.4	552.7	545.4	536.7	531.4	524.1
20°	633.4	609.4	583.4	560.1	542.1	525.4	518.1	508.7	503.7	498.4	493.1
22.5°	600.1	570.7	544.7	525.7	507.4	493.7	485.7	479.4	475.0	469.7	466.0
25°	564.4	537.1	513.1	493.4	475.7	465.0	458.4	454.7	452.0	448.0	445.7
27.5°	530.4	502.7	479.1	464.0	449.7	440.4	437.0	433.7	430.4	429.0	428.7
30°	494.1	468.7	449.4	436.4	423.4	418.4	416.7	413.4	414.0	414.4	413.4
32.5°	463.4	438.7	424.0	413.0	403.0	399.4	399.0	397.7	398.0	399.7	399.0
35°	431.7	413.4	398.7	389.7	383.4	380.7	381.0	381.4	383.4	383.7	385.0
37.5°	404.7	387.0	377.4	368.7	365.7	365.7	366.0	366.4	368.0	370.0	370.7
40°	378.0	363.7	355.4	349.7	348.0	348.0	349.4	351.0	352.0	354.0	354.4
42.5°	354.0	342.0	335.7	330.0	330.7	332.4	332.7	333.7	336.4	336.7	337.4
45°	330.4	321.4	315.0	313.4	313.4	314.7	316.4	317.0	319.0	319.4	320.0
47.5°	310.0	300.7	296.0	294.4	295.4	297.0	299.4	300.4	302.0	301.7	303.4
50°	287.4	279.7	276.0	275.4	276.0	279.0	280.0	282.4	284.0	285.0	285.7
52.5°	265.7	259.7	258.0	257.7	259.0	261.0	262.4	264.7	266.7	266.7	266.4
55°	245.0	239.7	237.7	239.4	241.0	242.0	244.7	246.0	248.0	248.4	248.0
57.5°	224.0	219.4	218.7	219.4	222.7	224.7	226.4	226.4	227.4	227.7	228.7
60°	202.4	199.4	198.7	200.4	204.0	205.4	206.4	206.7	208.0	207.4	209.4
62.5°	182.0	179.0	180.4	182.0	183.4	185.4	186.0	187.7	187.4	188.0	189.0
65°	161.0	159.4	159.7	161.7	163.4	166.0	166.0	166.0	167.7	167.7	168.4
67.5°	140.7	139.7	141.0	142.7	143.0	144.7	144.3	146.3	147.7	148.3	149.0
70°	121.0	120.3	120.3	122.0	123.7	124.3	125.0	126.3	126.7	127.7	129.3
72.5°	102.3	100.3	100.7	103.0	103.0	104.3	106.0	106.0	108.0	108.3	110.0
75°	82.0	81.3	82.0	83.3	85.0	84.7	86.7	86.3	87.0	89.3	89.7
77.5°	64.0	63.0	64.7	65.3	65.7	66.0	66.7	68.3	69.7	70.7	71.0
80°	46.0	45.7	47.3	48.0	47.7	48.3	49.3	51.0	51.0	51.7	52.7
82.5°	31.0	30.3	31.3	32.3	33.0	33.3	33.3	34.0	34.3	35.0	35.0
85°	17.7	17.7	18.3	18.7	19.3	19.0	19.7	19.3	20.0	20.7	20.3
87.5°	7.7	7.7	7.7	7.7	8.0	8.0	8.3	8.3	8.0	8.3	7.7
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: P242983

CATALOG NUMBER: S121DR-H490D835-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	828.1	828.1	828.1	828.1
2.5°	784.7	785.4	783.7	782.1
5°	743.4	741.1	738.7	738.1
7.5°	697.1	697.1	691.4	692.7
10°	647.4	645.4	641.1	641.4
12.5°	599.1	597.4	595.1	594.1
15°	555.4	556.4	558.1	548.7
17.5°	521.1	518.4	517.1	515.4
20°	490.4	489.1	486.4	486.1
22.5°	466.7	463.7	463.0	463.4
25°	444.0	444.0	444.0	442.0
27.5°	428.0	428.0	427.0	427.4
30°	414.0	414.7	413.7	414.0
32.5°	400.7	401.0	400.4	400.0
35°	385.7	386.7	386.4	386.7
37.5°	371.4	372.0	371.4	371.4
40°	355.0	356.7	356.4	355.4
42.5°	338.7	338.7	339.7	339.4
45°	321.7	321.0	321.0	322.0
47.5°	303.7	305.0	304.4	304.7
50°	287.0	286.7	285.7	285.4
52.5°	267.4	268.0	267.7	266.0
55°	248.4	248.4	248.0	248.0
57.5°	228.0	229.0	228.7	228.7
60°	208.7	209.4	209.7	209.4
62.5°	189.0	189.4	189.0	189.4
65°	170.0	170.0	169.7	170.7
67.5°	149.3	149.7	149.3	150.0
70°	129.7	130.3	130.7	130.0
72.5°	111.0	110.3	110.7	110.0
75°	90.3	90.7	90.3	90.7
77.5°	71.0	71.3	71.0	71.3
80°	52.3	52.3	52.7	52.0
82.5°	35.3	35.3	36.3	35.3
85°	20.7	20.7	20.0	21.3
87.5°	8.0	8.0	8.0	8.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)