

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: P242123

Luminaire Tested: **S121DR-S490D835-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242123  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S121DR-S490D835-X4F0-XX-UDD-A-W  
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3500K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2056.0 lumens  
Efficiency: N/A  
Efficacy: 109.4 lumens/watt  
Spacing Criteria (0/90/45): 1.27 / 1.22 / 1.37  
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')  
CIE Type: Direct

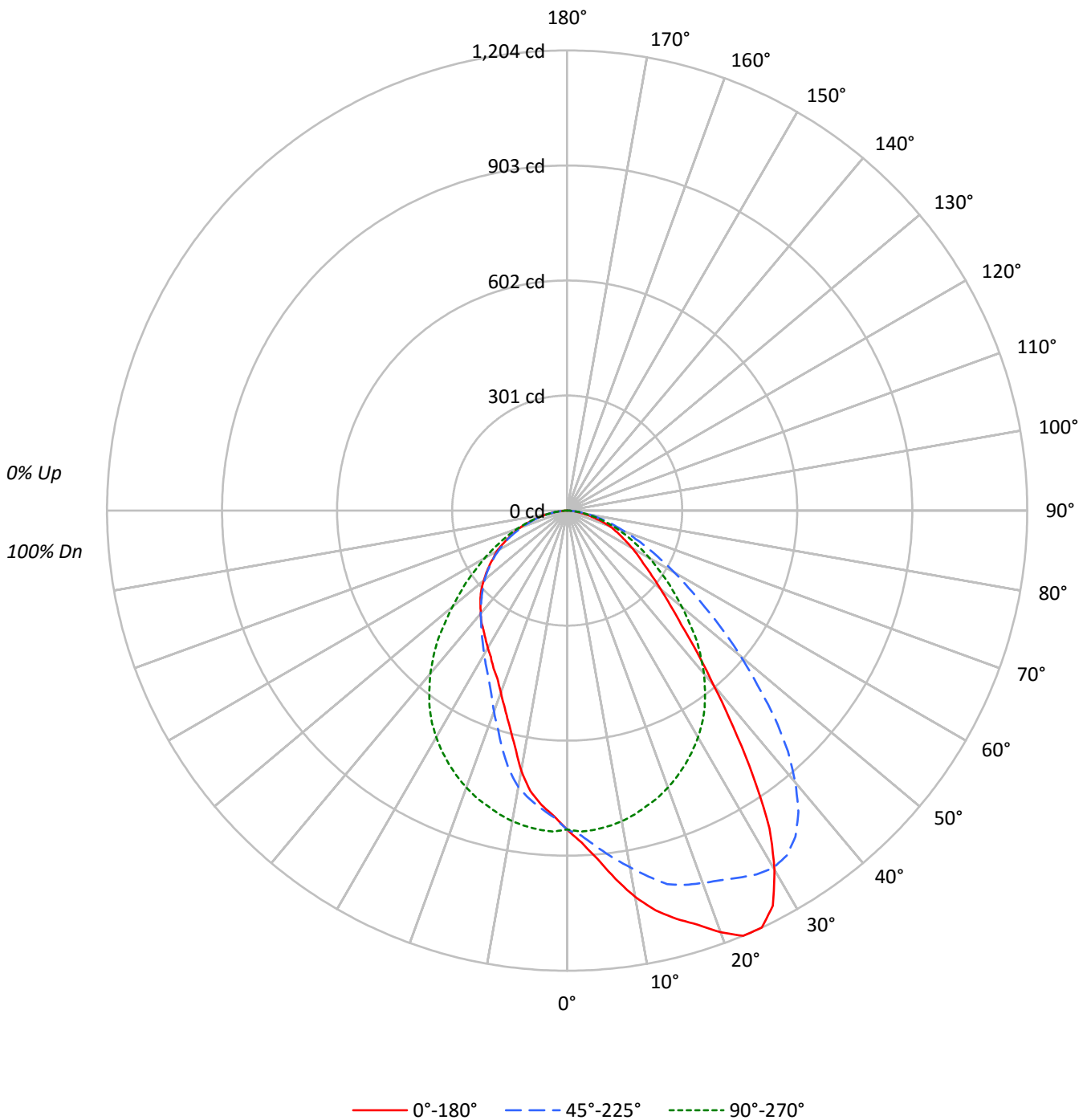
Input Watts (W): 18.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	82	98	91	85	81	88	83	79	85	80	77	82	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	73	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	52	45	40	51	45	40	50	44	40	38	38	38	38	38	38	38		
8	63	50	42	36	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	44	38	33	43	37	33	42	37	32	31	31	31	31	31	31	31		
10	56	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	30	28	28	28	28	28	28	28		

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	24723	24723	24723
5°	27209	24925	22979
10°	30893	24834	20784
15°	33920	24558	17862
20°	37018	24317	15983
25°	39369	23934	14882
30°	37122	23436	14199
35°	30673	22701	13792
40°	22995	21525	13607
45°	17721	20067	13451
50°	14695	18056	13142
55°	12687	16396	12759
60°	11656	14785	12593
65°	10776	13363	11884
70°	10205	12007	11383
75°	8380	10601	10109
80°	6620	8634	8327
85°	5133	6357	5609



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	80.2	3.9
10°-20°	234.0	11.4
20°-30°	358.3	17.4
30°-40°	408.9	19.9
40°-50°	366.9	17.8
50°-60°	287.8	14.0
60°-70°	195.8	9.5
70°-80°	100.8	4.9
80°-90°	23.2	1.1
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°	672.6	32.7
0°-40°	1081.5	52.6
0°-60°	1736.2	84.4
0°-90°	2056.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2056.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	834	834	834	834	834	
5°	915	882	838	782	773	91
15°	1106	1012	801	650	582	315
25°	1204	1060	732	486	455	543
35°	848	1041	628	390	381	526
45°	423	768	479	316	321	335
55°	246	438	317	244	247	224
65°	154	233	191	167	170	153
75°	73	103	93	85	88	79
85°	15	20	19	18	16	18
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°	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4
2.5°	869.6	869.6	871.0	870.6	869.2	866.7	864.5	862.0	855.6	851.2	855.2
5°	914.8	916.6	918.4	918.0	912.6	908.0	901.2	899.4	887.9	882.5	880.7
7.5°	972.2	971.9	972.6	966.5	961.8	957.2	948.2	937.1	923.4	915.9	908.7
10°	1026.8	1030.0	1028.6	1021.1	1013.9	1008.9	994.5	980.9	964.0	947.8	938.8
12.5°	1071.3	1069.5	1075.6	1068.5	1059.8	1050.5	1036.5	1024.3	1002.4	980.5	962.2
15°	1105.8	1104.0	1104.7	1099.3	1090.4	1082.1	1067.7	1054.8	1034.0	1012.1	992.7
17.5°	1136.0	1137.7	1134.5	1128.1	1115.8	1106.2	1088.2	1070.6	1048.7	1026.8	1007.8
20°	1174.0	1175.8	1169.7	1160.4	1148.5	1132.0	1113.3	1088.2	1063.8	1036.9	1013.2
22.5°	1204.2	1203.1	1200.9	1192.0	1179.4	1164.0	1137.0	1109.4	1080.3	1046.9	1016.4
25°	1204.2	1205.6	1206.7	1202.0	1193.8	1180.8	1162.5	1133.4	1100.8	1059.8	1017.1
27.5°	1165.4	1171.9	1176.5	1176.5	1174.7	1174.4	1163.6	1145.3	1114.8	1073.5	1026.1
30°	1085.0	1093.6	1100.8	1111.9	1125.2	1133.8	1137.0	1129.8	1114.1	1079.2	1030.0
32.5°	985.9	985.2	999.9	1017.8	1044.0	1062.4	1080.7	1091.4	1090.7	1069.9	1029.0
35°	848.0	858.1	875.7	900.8	934.5	964.7	1004.5	1025.4	1041.9	1041.2	1015.0
37.5°	713.7	715.2	734.9	769.4	799.2	845.9	897.9	941.4	981.2	994.1	985.5
40°	594.5	604.6	617.9	646.6	676.4	717.3	783.4	841.6	890.7	928.8	939.2
42.5°	502.6	508.0	520.9	546.1	572.6	621.5	669.9	732.1	794.2	854.8	886.1
45°	422.9	428.0	439.8	457.4	482.2	520.6	570.5	630.8	697.2	768.3	812.8
47.5°	364.8	366.6	375.5	388.8	412.2	440.2	480.4	538.9	606.0	675.3	740.7
50°	318.8	321.7	327.8	338.2	355.4	381.6	413.6	457.8	519.9	591.7	658.1
52.5°	278.6	280.8	287.9	293.7	307.0	329.2	356.9	397.1	449.5	514.1	582.7
55°	245.6	247.7	251.3	257.8	268.2	283.3	307.0	338.9	383.8	438.4	502.6
57.5°	220.4	221.5	222.2	226.5	234.8	247.0	267.1	292.2	327.1	377.0	434.1
60°	196.7	196.4	199.3	202.5	207.5	215.1	229.8	252.4	283.6	324.2	377.3
62.5°	173.0	174.8	176.6	179.2	182.4	186.7	198.5	215.4	240.2	275.0	318.8
65°	153.7	154.0	155.5	155.8	159.8	164.1	173.0	184.5	205.0	233.4	269.6
67.5°	135.0	135.4	135.0	136.1	137.9	141.5	146.1	155.5	171.3	194.2	225.8
70°	117.8	116.7	115.2	117.0	118.8	120.6	123.9	131.0	142.9	160.1	186.3
72.5°	94.8	95.5	96.2	96.9	97.3	99.8	102.7	107.7	117.0	130.3	150.4
75°	73.2	73.2	74.3	75.0	78.3	79.0	82.2	85.8	93.3	102.7	118.5
77.5°	53.9	53.5	55.3	55.6	57.4	59.6	61.4	65.0	70.7	78.6	89.0
80°	38.8	39.1	38.8	38.8	39.9	41.3	43.8	45.6	49.5	54.6	62.1
82.5°	25.8	25.8	26.2	26.2	27.3	27.3	28.7	30.2	32.7	35.9	41.3
85°	15.1	15.1	14.7	14.7	15.1	15.1	16.5	17.6	18.0	20.1	21.9
87.5°	6.5	6.5	6.1	6.5	6.1	6.5	6.1	6.8	7.2	7.5	8.3
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°	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4
2.5°	854.1	853.0	852.7	848.7	844.8	840.1	839.4	840.8	834.7	827.2	826.8
5°	876.4	872.4	866.7	859.1	852.7	844.1	839.8	838.0	828.6	817.9	815.7
7.5°	901.2	891.5	881.0	869.6	858.1	845.5	837.6	832.9	820.0	806.7	801.3
10°	924.8	912.3	896.5	878.9	862.7	845.5	833.7	825.4	809.6	793.1	784.8
12.5°	952.1	931.3	909.0	887.1	867.4	845.1	827.2	814.6	796.3	778.7	766.5
15°	971.9	941.7	924.5	893.3	868.5	841.6	819.7	800.6	780.5	761.1	748.9
17.5°	987.3	963.6	933.5	899.0	865.6	836.5	809.2	788.1	761.5	740.3	727.0
20°	992.3	968.3	937.4	899.7	866.3	829.0	796.7	771.2	742.8	717.0	698.7
22.5°	990.5	963.3	931.7	894.7	860.9	816.8	783.0	752.5	720.9	693.3	668.1
25°	986.6	955.0	920.2	885.4	847.7	804.2	765.4	732.1	694.0	663.8	633.7
27.5°	984.4	943.2	904.0	866.3	830.4	788.4	746.8	709.4	667.4	630.8	592.0
30°	983.7	934.5	885.4	841.6	808.5	765.8	724.5	685.0	635.8	594.5	555.1
32.5°	982.3	927.4	869.6	817.1	779.4	741.0	697.2	658.1	602.4	559.4	517.0
35°	972.6	914.8	851.2	791.6	747.5	707.6	668.5	627.6	569.8	523.5	482.9
37.5°	951.8	901.2	833.3	766.2	713.4	672.8	636.5	592.0	536.0	485.4	447.7
40°	920.9	879.6	813.9	741.0	678.9	634.4	596.0	556.5	498.7	450.2	416.1
42.5°	880.7	848.7	787.0	711.6	645.5	595.6	556.5	517.4	464.2	417.5	387.0
45°	827.9	808.2	754.0	679.6	613.2	555.4	513.0	478.9	429.8	387.0	359.0
47.5°	769.4	760.8	715.5	644.1	574.1	518.1	468.5	432.6	394.2	357.9	333.2
50°	698.7	705.5	669.9	604.2	536.4	478.9	430.5	391.7	358.3	330.3	308.4
52.5°	632.6	648.8	620.0	557.6	496.9	437.3	388.5	352.9	326.7	303.7	284.7
55°	559.0	582.3	565.1	511.3	450.9	398.2	349.3	317.4	294.8	277.2	261.0
57.5°	488.3	521.3	508.7	460.3	408.9	357.6	311.6	280.0	263.9	251.0	237.3
60°	425.4	455.6	453.8	412.5	361.2	315.6	277.9	249.5	235.2	226.5	214.7
62.5°	369.1	399.6	396.7	359.4	318.8	276.4	244.5	218.6	208.2	198.9	191.4
65°	311.6	337.8	339.3	311.6	272.5	238.4	211.1	190.6	181.3	175.6	170.2
67.5°	259.6	285.1	287.6	265.7	231.2	201.8	181.3	164.1	155.8	150.8	146.8
70°	214.0	234.8	239.5	221.2	192.1	169.1	151.9	138.6	133.2	128.2	126.7
72.5°	173.4	190.3	193.5	176.6	155.1	137.9	124.6	114.5	110.6	105.6	104.5
75°	137.9	149.7	150.1	138.9	122.8	109.5	98.7	92.6	88.3	84.7	84.0
77.5°	100.2	110.6	113.8	105.6	92.3	81.1	75.0	70.4	67.5	65.7	65.3
80°	72.5	79.3	80.8	73.6	65.7	58.9	54.6	50.6	48.8	47.0	46.3
82.5°	45.2	51.3	51.7	46.7	42.7	38.1	34.5	33.0	32.0	30.9	30.9
85°	24.4	27.6	27.3	25.1	23.3	20.8	19.4	18.7	18.0	17.2	17.2
87.5°	9.3	10.4	10.4	10.8	9.3	8.3	7.5	7.9	7.5	7.5	7.5
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):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4	834.4
2.5°	824.3	822.9	819.3	813.5	810.3	803.1	803.5	804.9	805.3	804.2	803.9
5°	809.6	805.3	799.5	792.4	787.3	782.0	778.4	780.5	779.4	779.1	777.3
7.5°	793.4	787.7	780.5	773.3	767.6	760.4	757.5	755.0	752.2	751.8	750.4
10°	777.3	770.1	761.8	751.4	743.5	734.6	725.9	721.3	715.9	711.9	703.7
12.5°	758.3	746.1	736.7	725.9	711.6	697.2	687.5	674.2	667.1	659.9	650.2
15°	736.4	720.6	704.4	682.9	670.3	650.2	635.8	626.1	615.0	607.8	599.6
17.5°	705.1	688.6	668.1	643.7	621.5	601.0	590.6	578.0	573.4	557.6	556.1
20°	674.2	649.5	624.0	599.2	574.4	559.7	546.4	538.2	529.6	519.5	516.3
22.5°	639.4	607.1	580.2	557.2	534.6	518.4	512.0	502.6	494.4	488.6	483.2
25°	597.1	567.3	540.0	518.4	498.0	485.8	477.5	470.7	467.1	460.6	458.5
27.5°	557.9	528.1	506.2	486.1	469.6	458.8	451.7	445.5	440.9	439.8	437.3
30°	518.1	492.6	471.8	454.5	439.8	434.1	427.2	424.4	421.5	420.1	417.2
32.5°	482.2	459.6	441.2	424.7	416.1	410.7	407.1	404.3	402.1	401.4	400.7
35°	449.5	428.7	413.6	401.7	395.3	389.5	387.7	385.2	384.2	383.8	383.4
37.5°	420.8	401.4	389.9	379.5	374.8	369.4	369.8	368.7	368.0	365.8	367.3
40°	391.7	376.6	364.8	356.5	353.3	351.5	350.8	350.0	350.4	350.4	350.0
42.5°	365.1	351.8	344.3	336.4	335.0	333.5	333.5	332.5	332.8	334.6	335.3
45°	341.1	330.7	323.8	317.4	317.4	315.6	317.0	316.7	317.7	318.8	319.5
47.5°	317.0	307.7	302.7	299.4	298.0	298.0	299.1	300.9	301.6	301.9	302.7
50°	293.0	286.1	281.8	280.0	279.7	281.5	282.6	282.2	283.3	284.7	285.8
52.5°	271.8	265.7	262.8	262.1	262.1	263.5	263.9	265.0	265.7	265.7	267.1
55°	249.9	245.6	243.4	243.1	243.4	244.1	245.6	246.3	245.9	246.6	246.6
57.5°	228.0	224.7	223.7	224.7	224.7	226.2	226.2	226.2	225.8	227.3	226.9
60°	207.5	203.9	205.0	204.6	205.7	205.7	206.8	206.8	205.7	207.2	207.9
62.5°	187.1	186.3	184.9	184.9	186.0	186.3	185.3	186.3	186.7	187.8	188.5
65°	165.5	163.0	164.1	163.7	164.8	166.6	165.2	165.2	166.2	167.7	168.4
67.5°	145.0	142.9	144.0	144.3	144.3	145.0	144.0	144.7	146.1	147.9	149.0
70°	124.2	123.5	123.9	123.5	123.5	125.3	125.7	125.3	126.7	128.5	128.9
72.5°	103.0	103.8	103.0	103.8	104.5	103.4	103.8	104.8	106.3	107.3	109.1
75°	83.7	82.6	82.9	84.7	84.4	85.1	84.7	85.8	88.3	87.6	88.0
77.5°	64.6	64.3	64.6	65.0	65.3	66.4	66.1	67.9	68.2	68.6	69.3
80°	46.0	46.3	46.7	47.4	48.5	48.1	48.8	49.2	50.6	49.2	50.3
82.5°	31.2	30.9	31.6	31.6	32.7	33.4	32.3	32.3	32.3	32.0	32.0
85°	17.2	18.3	18.3	18.3	17.6	17.6	18.0	17.6	17.6	17.6	17.2
87.5°	7.5	7.5	7.2	6.8	7.2	6.8	6.8	6.5	6.1	6.1	5.7
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: P242123

CATALOG NUMBER: S121DR-S490D835-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	834.4	834.4	834.4	834.4
2.5°	801.7	803.5	801.3	799.9
5°	775.5	775.5	773.3	772.6
7.5°	746.1	746.4	742.5	739.6
10°	701.9	699.7	694.0	690.8
12.5°	643.0	646.2	637.6	631.2
15°	591.7	582.7	586.3	582.3
17.5°	548.6	545.7	541.8	542.1
20°	510.9	508.7	506.6	506.9
22.5°	481.1	479.3	478.6	476.1
25°	456.3	457.0	455.2	455.2
27.5°	435.9	434.8	433.7	432.3
30°	416.5	416.8	415.7	415.0
32.5°	399.2	399.6	398.9	397.8
35°	382.4	382.0	382.4	381.3
37.5°	366.9	366.6	366.9	368.4
40°	351.1	351.5	350.4	351.8
42.5°	335.7	336.0	336.0	335.3
45°	318.8	319.9	320.2	321.0
47.5°	302.3	304.1	303.4	303.7
50°	285.8	285.4	285.4	285.1
52.5°	267.5	266.4	266.0	266.4
55°	245.6	247.0	247.0	247.0
57.5°	227.6	228.0	229.1	227.6
60°	209.3	209.3	209.7	212.5
62.5°	188.8	189.2	189.9	190.3
65°	169.1	170.2	169.8	169.5
67.5°	149.7	149.7	150.1	149.4
70°	129.6	129.6	129.6	131.4
72.5°	108.8	108.8	109.1	109.9
75°	89.4	89.4	89.4	88.3
77.5°	68.2	68.6	68.6	68.9
80°	49.5	49.2	49.2	48.8
82.5°	31.2	31.6	31.2	30.9
85°	17.2	17.6	16.5	16.5
87.5°	6.1	6.1	5.7	6.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)