

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: P242221

Luminaire Tested: **S121RDR-S490D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242221  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-28)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: NEO-RAY  
Catalog Number: S121RDR-S490D830-X4F0-XX-UDD-A-W  
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1630.9 lumens  
Efficiency: N/A  
Efficacy: 86.7 lumens/watt  
Spacing Criteria (0/90/45): 0.96 / 1.23 / 1.1  
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')  
CIE Type: Direct

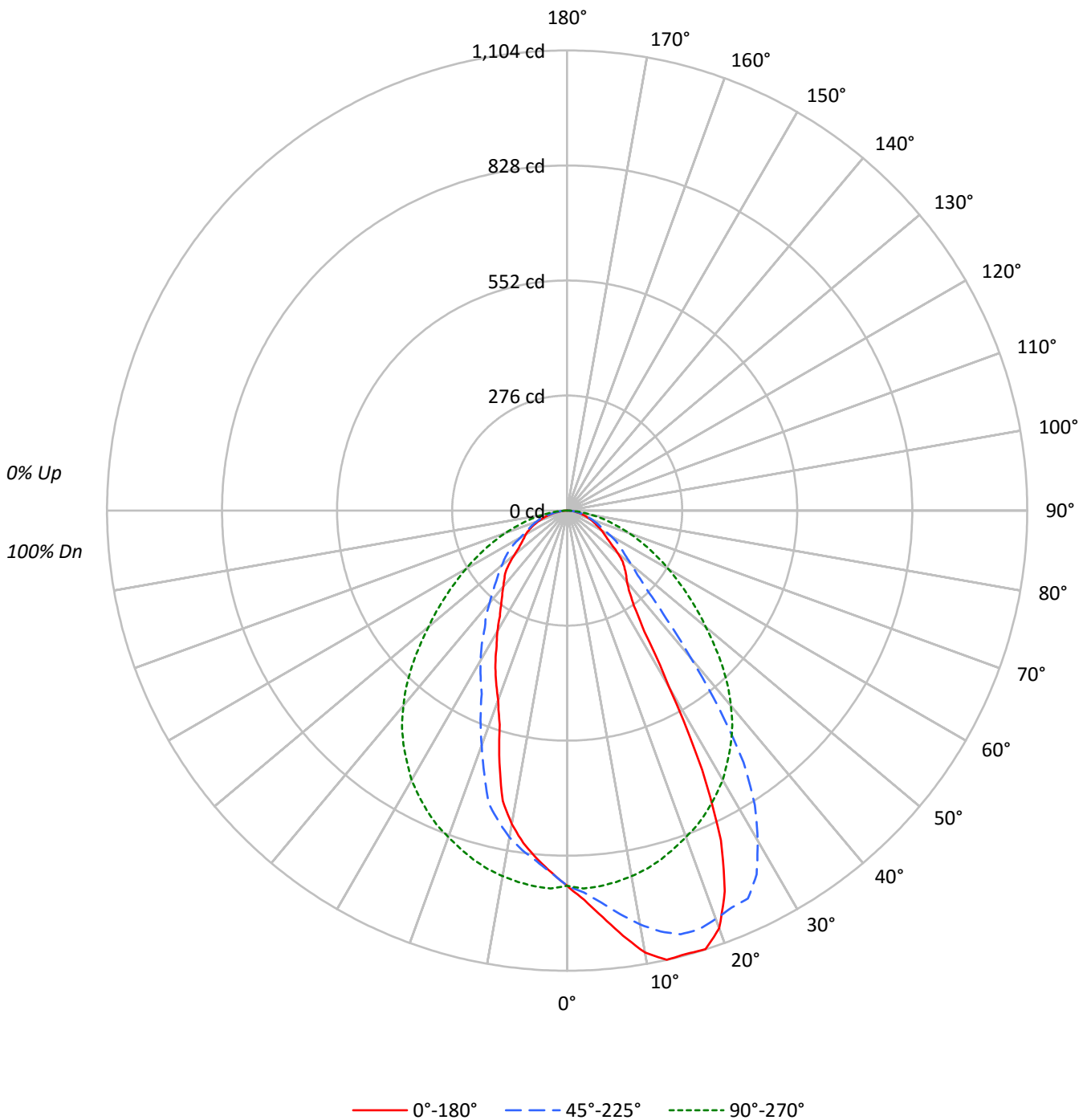
Input Watts (W): 18.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P242221

CATALOG NUMBER: S121RDR-S490D830-X4F0-XX-UDD-A-W

### Luminous Intensity Polar Plot





TEST NUMBER: P242221

CATALOG NUMBER: S121RDR-S490D830-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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87
2	102	95	89	84	100	93	88	83	90	85	82	87	83	80	84	81	78	76
3	94	85	78	73	92	84	77	72	81	75	71	78	74	70	76	72	68	67
4	88	77	69	64	85	76	69	63	73	67	62	71	66	61	69	65	61	59
5	81	70	62	56	79	69	62	56	67	60	55	65	59	55	63	58	54	52
6	76	64	56	50	74	63	56	50	61	55	50	60	54	49	58	53	49	47
7	71	59	51	45	69	58	51	45	57	50	45	55	49	45	54	48	44	43
8	67	54	47	41	65	54	46	41	52	46	41	51	45	41	50	45	40	39
9	63	50	43	38	61	50	43	38	49	42	37	48	42	37	47	41	37	35
10	59	47	40	35	58	46	39	35	45	39	35	44	39	34	44	38	34	33

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

	0°	90°	180°
0°	26673	26673	26673
5°	29109	26905	24922
10°	32397	26798	22968
15°	33779	26595	19224
20°	33631	26281	15258
25°	28521	25987	13319
30°	16789	25540	11438
35°	10085	24763	9987
40°	8637	23640	9213
45°	8167	22037	8762
50°	7302	20015	7583
55°	6085	18266	6855
60°	5653	16646	6821
65°	5216	15158	6597
70°	4929	13662	6211
75°	4648	12089	5655
80°	4163	10101	4965
85°	3910	7921	3910



TEST NUMBER: P242221

CATALOG NUMBER: S121RDR-S490D830-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	86.3	5.3
10°-20°	245.8	15.1
20°-30°	335.8	20.6
30°-40°	312.9	19.2
40°-50°	258.6	15.9
50°-60°	190.7	11.7
60°-70°	121.9	7.5
70°-80°	62.7	3.8
80°-90°	16.1	1.0
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°	667.9	41.0
0°-40°	980.8	60.1
0°-60°	1430.1	87.7
0°-90°	1630.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1630.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	900	900	900	900	900	
5°	979	944	905	844	838	96
15°	1101	1052	867	727	627	310
25°	872	1027	795	485	407	379
35°	279	738	685	344	276	189
45°	195	275	526	241	209	149
55°	118	158	354	172	133	108
65°	74	86	216	100	94	74
75°	41	44	106	56	49	42
85°	12	12	23	13	12	13
90°	0	0	0	0	0	



TEST NUMBER: P242221

CATALOG NUMBER: S121RDR-S490D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2
2.5°	934.7	934.0	935.0	934.3	933.7	932.0	930.6	926.6	920.5	917.1	920.5
5°	978.7	981.4	980.4	979.0	976.0	973.3	967.2	963.4	952.6	944.1	946.5
7.5°	1028.7	1032.1	1027.7	1024.7	1023.0	1015.2	1008.4	998.0	986.1	976.6	971.2
10°	1076.8	1077.8	1076.5	1073.8	1068.0	1059.5	1049.7	1037.9	1023.0	1008.4	998.6
12.5°	1103.9	1105.6	1107.6	1102.9	1098.5	1091.7	1081.5	1069.7	1051.4	1034.5	1023.3
15°	1101.2	1102.5	1106.2	1104.6	1102.5	1099.5	1093.7	1083.9	1071.0	1052.4	1036.5
17.5°	1103.2	1104.2	1105.9	1099.8	1096.4	1092.7	1085.3	1078.5	1067.7	1053.1	1041.3
20°	1066.6	1083.2	1081.2	1089.3	1092.7	1092.4	1085.3	1072.4	1057.5	1042.6	1037.2
22.5°	988.1	1001.3	1003.0	1015.6	1031.1	1043.6	1059.2	1065.0	1053.5	1031.1	1023.7
25°	872.4	881.9	891.4	909.3	925.9	960.7	992.5	1016.6	1029.8	1026.7	1012.2
27.5°	701.2	691.0	728.6	749.2	795.6	846.3	891.0	935.0	956.0	984.1	998.3
30°	490.7	489.7	518.1	554.0	623.3	670.0	753.6	824.4	879.5	914.0	952.6
32.5°	344.5	349.6	370.6	392.5	430.8	506.9	570.9	668.3	762.4	837.9	885.3
35°	278.8	279.5	284.3	297.5	320.8	363.1	412.9	507.6	635.2	737.7	808.4
37.5°	244.3	246.4	247.7	255.2	263.6	281.6	313.0	378.7	484.3	598.6	721.5
40°	223.3	225.0	226.4	228.8	233.8	242.3	262.9	294.4	355.3	460.6	597.3
42.5°	209.1	208.5	211.5	212.5	215.2	220.0	229.1	246.0	281.2	352.6	470.4
45°	194.9	195.9	195.9	197.3	199.7	202.4	206.1	216.6	234.5	275.1	367.5
47.5°	180.0	179.7	181.7	182.7	185.1	187.5	190.2	195.6	206.1	229.8	283.2
50°	158.4	159.0	162.8	166.2	169.5	172.6	176.0	179.4	186.1	199.0	231.8
52.5°	135.4	135.4	139.4	141.8	146.5	154.0	159.7	164.8	169.2	175.6	195.3
55°	117.8	118.1	119.5	121.5	124.9	128.6	136.0	144.8	152.3	157.7	168.5
57.5°	105.6	105.9	106.3	108.0	109.6	111.0	115.4	122.2	132.0	141.8	148.2
60°	95.4	95.1	95.1	96.1	97.5	99.2	101.5	104.2	109.6	120.1	131.6
62.5°	83.9	84.6	84.6	85.6	86.6	88.3	89.3	92.0	95.1	99.8	111.7
65°	74.4	75.1	74.4	75.5	76.1	77.2	78.8	80.2	82.9	86.0	90.7
67.5°	65.0	65.3	66.0	66.3	67.0	67.3	68.7	70.4	72.1	74.1	77.8
70°	56.9	56.9	56.9	57.5	58.2	58.2	59.2	59.9	61.6	63.6	65.7
72.5°	48.1	48.4	48.4	48.1	49.4	49.7	50.1	50.8	52.1	53.8	55.5
75°	40.6	39.9	39.9	40.3	41.3	41.3	41.6	42.0	43.0	44.3	45.3
77.5°	31.8	31.8	32.1	32.5	32.8	32.8	33.5	33.5	34.9	35.5	36.2
80°	24.4	25.0	25.4	25.0	25.0	25.4	25.4	26.1	26.4	26.7	27.4
82.5°	18.3	18.6	17.9	17.9	18.3	18.3	18.6	18.6	19.0	19.3	19.3
85°	11.5	11.5	11.8	11.5	11.8	11.5	11.5	12.2	11.8	11.8	12.2
87.5°	5.4	5.8	5.4	5.8	5.4	5.8	5.8	5.8	5.8	5.8	5.4
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: P242221

CATALOG NUMBER: S121RDR-S490D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2
2.5°	919.4	919.1	917.4	913.7	911.0	905.9	905.9	907.6	898.8	892.7	892.4
5°	940.8	937.4	931.6	924.5	918.1	909.3	905.9	904.6	892.7	883.6	880.5
7.5°	963.4	955.0	945.2	933.7	922.8	910.3	903.9	898.8	883.6	872.4	865.6
10°	987.1	973.6	958.4	941.8	926.9	910.0	899.5	890.7	873.1	857.5	849.7
12.5°	1008.1	989.2	969.9	948.2	927.9	906.6	892.0	880.5	859.9	841.3	831.8
15°	1017.9	997.6	981.7	951.9	924.5	902.9	884.2	867.0	845.0	824.4	809.8
17.5°	1026.4	1004.0	983.1	955.0	923.2	895.1	872.7	850.7	827.1	805.4	787.5
20°	1024.0	1005.1	979.3	949.6	919.4	887.0	861.6	833.5	804.0	782.1	763.1
22.5°	1010.5	994.9	968.2	939.7	910.6	875.8	847.0	816.6	780.4	756.3	735.0
25°	993.2	978.3	951.9	922.5	893.7	859.9	826.0	794.9	756.0	727.2	699.8
27.5°	979.7	957.3	930.9	898.1	870.4	838.2	802.7	771.2	729.3	697.5	665.6
30°	964.1	938.7	906.2	871.4	841.9	812.5	778.0	746.5	700.2	663.9	624.4
32.5°	919.4	919.8	881.2	842.3	810.8	779.3	748.5	715.0	669.0	626.4	585.8
35°	861.2	883.9	855.5	810.8	771.9	742.8	717.4	684.6	633.5	589.5	543.5
37.5°	783.4	823.3	826.7	780.4	737.4	703.2	678.2	650.8	599.3	551.9	506.3
40°	705.6	758.4	779.3	747.2	700.5	661.2	636.2	611.2	562.8	511.7	469.4
42.5°	610.1	695.8	721.8	712.3	662.3	620.0	593.6	570.9	523.8	473.8	431.8
45°	502.5	618.3	656.2	666.0	623.7	578.3	547.9	525.9	484.6	440.6	396.9
47.5°	403.7	531.0	593.6	603.7	581.4	537.4	502.5	479.5	446.7	408.8	365.5
50°	307.9	438.2	527.9	543.5	538.1	493.4	461.2	434.2	409.1	375.3	334.7
52.5°	245.0	350.2	456.8	485.9	487.6	452.4	418.6	393.9	369.5	342.8	305.9
55°	195.6	270.7	378.7	428.1	432.8	408.5	377.3	353.6	335.4	310.3	279.2
57.5°	164.8	209.5	303.2	369.9	371.9	365.1	335.4	315.7	300.5	278.8	251.4
60°	140.8	166.2	233.8	311.7	321.8	321.8	298.1	280.9	266.3	250.1	224.0
62.5°	121.8	135.7	177.3	247.7	273.8	277.8	262.9	247.7	236.9	220.6	196.6
65°	102.5	113.0	137.4	191.5	227.4	234.9	227.4	216.2	207.8	190.9	171.9
67.5°	84.3	94.4	109.6	145.2	184.4	193.6	192.2	186.5	177.7	165.1	145.2
70°	69.7	75.8	87.0	107.6	144.8	158.7	162.8	157.7	149.9	136.4	121.8
72.5°	57.5	62.3	67.7	82.6	108.3	126.6	133.3	130.6	124.9	112.0	99.8
75°	47.0	50.1	53.8	60.9	77.8	98.5	106.3	105.6	99.8	89.0	79.2
77.5°	37.9	38.9	41.6	46.0	54.5	73.1	79.2	81.2	76.8	67.7	59.9
80°	28.4	29.8	31.1	33.5	37.6	48.4	56.2	59.2	55.5	50.1	42.3
82.5°	20.0	20.3	21.7	23.0	25.0	29.4	37.6	40.9	37.6	31.8	29.4
85°	12.5	12.2	12.5	12.9	14.9	15.9	21.0	23.3	22.7	19.3	16.6
87.5°	5.8	5.8	5.4	5.8	5.4	6.4	7.4	10.8	8.1	7.1	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



TEST NUMBER: P242221

CATALOG NUMBER: S121RDR-S490D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2	900.2
2.5°	889.7	888.6	885.3	880.5	876.5	869.7	869.7	871.4	871.1	871.7	871.1
5°	875.5	870.7	865.6	859.2	853.1	844.3	843.3	844.0	843.6	843.3	841.3
7.5°	857.2	851.8	845.3	837.2	830.4	822.0	819.6	818.9	816.2	815.2	812.5
10°	839.6	833.2	824.7	814.9	805.7	795.9	789.8	786.5	782.1	777.3	773.3
12.5°	820.0	811.5	800.7	788.8	773.6	762.8	753.6	747.9	741.8	733.7	727.9
15°	799.0	781.7	768.9	749.6	731.0	727.2	713.4	695.1	693.7	654.1	640.3
17.5°	770.9	756.7	732.6	707.6	682.2	661.6	661.9	612.5	597.3	596.9	572.6
20°	741.8	722.2	694.4	669.0	642.3	599.7	565.8	549.6	524.9	515.4	501.5
22.5°	707.6	681.9	649.4	614.9	577.7	543.1	510.0	494.4	481.9	471.4	465.6
25°	667.0	640.9	602.0	559.0	517.4	485.3	467.0	459.9	438.6	431.1	424.0
27.5°	626.0	597.6	546.9	505.6	471.4	449.4	430.4	418.6	408.5	389.5	381.0
30°	587.1	541.4	499.5	461.6	435.9	415.2	401.3	377.3	363.1	354.3	350.6
32.5°	544.8	496.1	458.2	425.4	399.0	381.0	360.4	344.2	337.7	326.2	309.6
35°	501.5	457.2	417.6	391.2	368.5	344.2	331.3	315.7	299.5	290.7	289.3
37.5°	459.6	417.6	389.2	361.4	334.0	319.8	300.8	284.3	278.5	270.4	261.6
40°	421.7	385.8	359.4	327.6	311.0	289.0	274.4	266.0	252.1	249.1	246.4
42.5°	390.5	359.7	329.9	301.5	282.2	264.6	251.8	242.0	237.6	230.1	227.7
45°	359.0	330.6	300.2	277.8	255.8	240.9	232.1	223.7	218.6	216.6	212.5
47.5°	330.6	302.9	274.8	247.4	232.5	222.7	212.9	208.5	205.4	201.0	198.6
50°	303.5	272.8	246.4	229.1	213.2	204.4	198.0	193.9	189.2	184.4	177.7
52.5°	276.1	249.7	224.4	206.1	194.2	188.5	182.4	178.0	168.5	159.4	153.6
55°	248.4	221.3	200.7	186.8	178.3	172.2	165.1	152.3	143.5	138.4	135.7
57.5°	223.3	199.0	180.7	169.2	163.1	153.0	140.4	132.3	127.9	125.9	124.5
60°	196.6	175.6	160.4	151.6	142.1	128.6	121.8	117.8	116.4	115.7	114.7
62.5°	173.6	155.0	143.1	133.3	119.8	112.7	109.0	106.9	106.9	105.9	105.2
65°	149.2	134.7	124.5	110.3	103.2	100.2	98.8	97.8	96.8	96.4	95.1
67.5°	129.3	116.4	103.2	95.8	91.4	89.7	88.3	88.0	86.6	85.6	84.6
70°	109.0	96.4	85.6	82.2	79.9	79.2	77.8	76.5	75.5	74.1	73.4
72.5°	88.7	76.8	73.1	71.4	69.0	68.0	66.3	65.3	63.6	62.9	62.3
75°	67.7	62.9	60.9	59.6	57.9	55.5	54.8	53.8	53.1	52.1	51.1
77.5°	53.8	51.1	48.7	47.0	45.7	44.0	42.6	42.3	41.6	40.6	40.3
80°	40.3	38.2	37.2	35.5	33.8	32.8	32.1	31.8	30.8	30.5	30.1
82.5°	27.7	26.1	25.4	23.3	22.7	22.7	22.3	21.7	21.0	20.6	20.3
85°	15.6	14.9	13.9	14.2	13.2	13.2	12.9	12.5	12.2	11.8	11.5
87.5°	6.1	5.8	5.4	5.1	5.1	4.1	4.1	4.1	4.4	4.1	3.7
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: P242221

CATALOG NUMBER: S121RDR-S490D830-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	900.2	900.2	900.2	900.2
2.5°	872.1	872.7	870.4	869.0
5°	841.3	840.3	838.9	837.9
7.5°	809.8	808.8	808.8	804.7
10°	771.6	768.9	766.8	763.4
12.5°	722.8	718.8	717.4	713.4
15°	630.8	622.3	616.6	626.7
17.5°	566.8	544.8	546.5	538.1
20°	501.2	492.4	496.8	483.9
22.5°	458.5	453.1	448.0	445.3
25°	418.9	412.5	404.7	407.4
27.5°	369.2	369.2	364.1	366.2
30°	343.8	341.1	332.7	334.3
32.5°	304.2	300.8	299.8	300.5
35°	285.3	279.9	278.2	276.1
37.5°	258.9	256.8	257.2	255.8
40°	241.3	239.6	237.6	238.2
42.5°	226.1	225.0	223.0	223.3
45°	211.2	210.1	209.1	209.1
47.5°	194.6	192.6	190.9	188.8
50°	172.9	168.9	165.8	164.5
52.5°	149.6	147.5	145.5	145.5
55°	134.7	133.7	133.0	132.7
57.5°	124.2	123.5	123.5	122.5
60°	114.7	114.7	114.4	115.1
62.5°	105.6	104.6	104.9	104.9
65°	95.1	94.8	94.4	94.1
67.5°	83.9	83.6	83.9	83.2
70°	72.8	72.8	72.4	71.7
72.5°	61.3	61.9	61.3	60.9
75°	50.4	50.1	50.4	49.4
77.5°	40.3	38.9	39.6	39.9
80°	29.8	29.8	29.4	29.1
82.5°	20.0	20.3	19.6	19.6
85°	11.5	11.5	10.8	11.5
87.5°	3.4	3.4	3.4	4.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)