

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: P242113

Luminaire Tested: **S121DR-S490D927-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242113  
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-S490D927-X4F0-XX-UDD-A-W  
Description: DEFINE 1 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER  
STANDARD LIGHT ENGINE  
Light Source: (92) 2700K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1628.8 lumens  
Efficiency: N/A  
Efficacy: 86.6 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

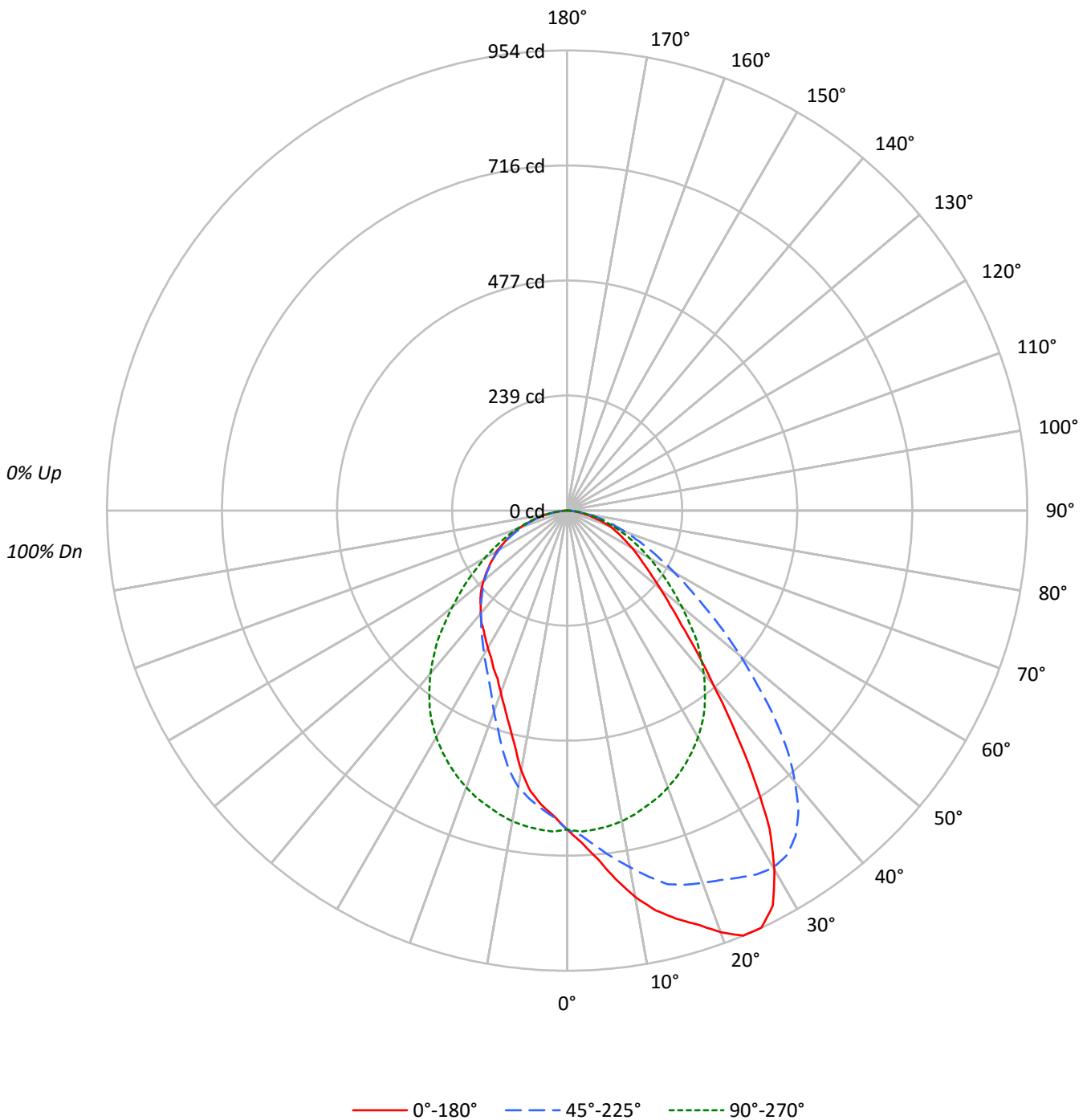
Input Watts (W): 18.8  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P242113

CATALOG NUMBER: S121DR-S490D927-X4F0-XX-UDD-A-W

### Luminous Intensity Polar Plot





TEST NUMBER: P242113

CATALOG NUMBER: S121DR-S490D927-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	110	105	102	98	107	103	100	96	99	96	93	95	93	91	92	90	88	86
2	101	93	87	82	98	91	85	81	88	83	79	85	80	77	82	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	73	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	52	45	40	51	45	40	50	44	40	38
8	63	50	42	36	62	50	42	36	48	41	36	47	41	36	46	40	36	34
9	59	46	38	33	58	46	38	33	44	38	33	43	37	33	42	37	32	31
10	56	43	35	30	54	42	35	30	41	34	30	40	34	30	39	34	30	28

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

	0°	90°	180°
0°	19585	19585	19585
5°	21555	19743	18206
10°	24473	19674	16463
15°	26871	19454	14150
20°	29324	19262	12663
25°	31186	18959	11789
30°	29406	18568	11249
35°	24300	17984	10924
40°	18218	17050	10780
45°	14037	15898	10656
50°	11644	14303	10408
55°	10047	12987	10109
60°	9239	11716	9979
65°	8532	10587	9409
70°	8083	9512	9018
75°	6640	8403	8014
80°	5238	6842	6603
85°	4046	5031	4454



TEST NUMBER: P242113

CATALOG NUMBER: S121DR-S490D927-X4F0-XX-UDD-A-W

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	63.6	3.9
10°-20°	185.4	11.4
20°-30°	283.9	17.4
30°-40°	323.9	19.9
40°-50°	290.6	17.8
50°-60°	228.0	14.0
60°-70°	155.1	9.5
70°-80°	79.9	4.9
80°-90°	18.4	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°	532.8	32.7
0°-40°	856.7	52.6
0°-60°	1375.4	84.4
0°-90°	1628.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1628.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	661	661	661	661	661	
5°	725	699	664	620	612	72
15°	876	802	634	515	461	249
25°	954	840	580	385	361	430
35°	672	825	497	309	302	416
45°	335	609	379	250	254	266
55°	194	347	251	193	196	177
65°	122	185	151	132	134	121
75°	58	81	73	67	70	63
85°	12	16	15	14	13	14
90°	0	0	0	0	0	



TEST NUMBER: P242113

CATALOG NUMBER: S121DR-S490D927-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0
2.5°	688.8	688.8	690.0	689.7	688.6	686.6	684.9	682.9	677.8	674.3	677.5
5°	724.7	726.1	727.5	727.2	723.0	719.3	713.9	712.5	703.4	699.1	697.7
7.5°	770.2	769.9	770.5	765.6	761.9	758.2	751.1	742.3	731.5	725.5	719.8
10°	813.4	816.0	814.8	808.9	803.2	799.2	787.8	777.0	763.6	750.8	743.7
12.5°	848.7	847.3	852.1	846.4	839.6	832.2	821.1	811.4	794.1	776.7	762.2
15°	876.0	874.6	875.1	870.9	863.8	857.2	845.8	835.6	819.1	801.8	786.4
17.5°	899.9	901.3	898.7	893.6	884.0	876.3	862.1	848.1	830.8	813.4	798.3
20°	930.0	931.5	926.6	919.2	909.8	896.8	882.0	862.1	842.7	821.4	802.6
22.5°	953.9	953.1	951.4	944.2	934.3	922.1	900.7	878.8	855.8	829.3	805.2
25°	953.9	955.1	955.9	952.2	945.7	935.4	920.9	897.9	872.0	839.6	805.7
27.5°	923.2	928.3	932.0	932.0	930.6	930.3	921.8	907.3	883.1	850.4	812.9
30°	859.5	866.3	872.0	880.8	891.3	898.2	900.7	895.0	882.5	854.9	816.0
32.5°	781.0	780.4	792.1	806.3	827.1	841.6	856.1	864.6	864.0	847.5	815.1
35°	671.8	679.7	693.7	713.6	740.3	764.2	795.8	812.3	825.4	824.8	804.0
37.5°	565.4	566.5	582.2	609.5	633.1	670.1	711.3	745.7	777.3	787.5	780.7
40°	471.0	479.0	489.5	512.2	535.8	568.3	620.6	666.7	705.6	735.8	744.0
42.5°	398.2	402.4	412.7	432.6	453.6	492.3	530.7	579.9	629.1	677.2	701.9
45°	335.0	339.0	348.4	362.3	382.0	412.4	451.9	499.7	552.3	608.6	643.9
47.5°	289.0	290.4	297.5	308.0	326.5	348.7	380.5	426.9	480.1	535.0	586.7
50°	252.6	254.8	259.7	267.9	281.6	302.3	327.6	362.6	411.8	468.7	521.3
52.5°	220.7	222.4	228.1	232.6	243.2	260.8	282.7	314.6	356.1	407.3	461.6
55°	194.5	196.2	199.1	204.2	212.5	224.4	243.2	268.5	304.0	347.3	398.2
57.5°	174.6	175.5	176.1	179.5	186.0	195.7	211.6	231.5	259.1	298.6	343.9
60°	155.9	155.6	157.8	160.4	164.4	170.4	182.0	199.9	224.7	256.8	298.9
62.5°	137.1	138.5	139.9	141.9	144.5	147.9	157.3	170.6	190.3	217.9	252.6
65°	121.7	122.0	123.2	123.4	126.6	130.0	137.1	146.2	162.4	184.9	213.6
67.5°	106.9	107.2	106.9	107.8	109.2	112.1	115.8	123.2	135.7	153.9	178.9
70°	93.3	92.4	91.3	92.7	94.1	95.6	98.1	103.8	113.2	126.8	147.6
72.5°	75.1	75.7	76.2	76.8	77.1	79.1	81.3	85.3	92.7	103.2	119.2
75°	58.0	58.0	58.9	59.4	62.0	62.6	65.1	68.0	73.9	81.3	93.9
77.5°	42.7	42.4	43.8	44.1	45.5	47.2	48.6	51.5	56.0	62.3	70.5
80°	30.7	31.0	30.7	30.7	31.6	32.7	34.7	36.1	39.2	43.2	49.2
82.5°	20.5	20.5	20.8	20.8	21.6	21.6	22.8	23.9	25.9	28.4	32.7
85°	11.9	11.9	11.7	11.7	11.9	11.9	13.1	13.9	14.2	15.9	17.3
87.5°	5.1	5.1	4.8	5.1	4.8	5.1	4.8	5.4	5.7	6.0	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: P242113

CATALOG NUMBER: S121DR-S490D927-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0
2.5°	676.6	675.8	675.5	672.4	669.2	665.5	665.0	666.1	661.3	655.3	655.0
5°	694.3	691.1	686.6	680.6	675.5	668.7	665.2	663.8	656.4	647.9	646.2
7.5°	713.9	706.2	697.9	688.8	679.7	669.8	663.5	659.8	649.6	639.1	634.8
10°	732.6	722.7	710.2	696.2	683.4	669.8	660.4	653.9	641.4	628.3	621.7
12.5°	754.3	737.8	720.1	702.8	687.1	669.5	655.3	645.3	630.8	616.9	607.2
15°	769.9	746.0	732.4	707.6	688.0	666.7	649.3	634.2	618.3	603.0	593.3
17.5°	782.1	763.4	739.5	712.2	685.7	662.7	641.1	624.3	603.2	586.5	575.9
20°	786.1	767.1	742.6	712.7	686.3	656.7	631.1	610.9	588.4	568.0	553.5
22.5°	784.7	763.1	738.1	708.8	682.0	647.0	620.3	596.1	571.1	549.2	529.3
25°	781.6	756.5	728.9	701.4	671.5	637.1	606.4	579.9	549.8	525.9	502.0
27.5°	779.9	747.2	716.2	686.3	657.8	624.6	591.6	562.0	528.7	499.7	469.0
30°	779.3	740.3	701.4	666.7	640.5	606.7	573.9	542.7	503.7	471.0	439.7
32.5°	778.2	734.6	688.8	647.3	617.5	587.0	552.3	521.3	477.2	443.1	409.6
35°	770.5	724.7	674.3	627.1	592.1	560.6	529.6	497.2	451.4	414.7	382.5
37.5°	754.0	713.9	660.1	606.9	565.1	533.0	504.3	469.0	424.6	384.5	354.7
40°	729.5	696.8	644.8	587.0	537.8	502.6	472.1	440.8	395.0	356.7	329.6
42.5°	697.7	672.4	623.4	563.7	511.4	471.8	440.8	409.8	367.7	330.8	306.6
45°	655.9	640.2	597.3	538.4	485.8	440.0	406.4	379.4	340.4	306.6	284.4
47.5°	609.5	602.7	566.8	510.2	454.8	410.4	371.2	342.7	312.3	283.6	263.9
50°	553.5	558.9	530.7	478.7	424.9	379.4	341.0	310.3	283.8	261.7	244.3
52.5°	501.1	513.9	491.2	441.7	393.6	346.4	307.7	279.6	258.8	240.6	225.5
55°	442.8	461.3	447.7	405.0	357.2	315.4	276.7	251.4	233.5	219.6	206.8
57.5°	386.8	413.0	403.0	364.6	323.9	283.3	246.9	221.8	209.0	198.8	188.0
60°	337.0	360.9	359.5	326.8	286.1	250.0	220.1	197.7	186.3	179.5	170.1
62.5°	292.4	316.6	314.3	284.7	252.6	219.0	193.7	173.2	165.0	157.6	151.6
65°	246.9	267.6	268.8	246.9	215.9	188.8	167.2	151.0	143.6	139.1	134.8
67.5°	205.6	225.8	227.8	210.5	183.2	159.8	143.6	130.0	123.4	119.5	116.3
70°	169.5	186.0	189.7	175.2	152.2	134.0	120.3	109.8	105.5	101.5	100.4
72.5°	137.4	150.7	153.3	139.9	122.9	109.2	98.7	90.7	87.6	83.6	82.8
75°	109.2	118.6	118.9	110.1	97.3	86.7	78.2	73.4	70.0	67.1	66.6
77.5°	79.4	87.6	90.2	83.6	73.1	64.3	59.4	55.7	53.5	52.0	51.8
80°	57.5	62.9	64.0	58.3	52.0	46.6	43.2	40.1	38.7	37.3	36.7
82.5°	35.8	40.7	41.0	37.0	33.8	30.1	27.3	26.2	25.3	24.5	24.5
85°	19.3	21.9	21.6	19.9	18.5	16.5	15.4	14.8	14.2	13.7	13.7
87.5°	7.4	8.2	8.2	8.5	7.4	6.5	6.0	6.3	6.0	6.0	6.0
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: P242113

CATALOG NUMBER: S121DR-S490D927-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0	661.0
2.5°	653.0	651.9	649.0	644.5	641.9	636.2	636.5	637.7	637.9	637.1	636.8
5°	641.4	637.9	633.4	627.7	623.7	619.5	616.6	618.3	617.5	617.2	615.8
7.5°	628.6	624.0	618.3	612.6	608.1	602.4	600.1	598.1	595.8	595.6	594.4
10°	615.8	610.1	603.5	595.3	589.0	581.9	575.1	571.4	567.1	564.0	557.4
12.5°	600.7	591.0	583.6	575.1	563.7	552.3	544.7	534.1	528.4	522.8	515.1
15°	583.3	570.8	558.0	541.0	531.0	515.1	503.7	496.0	487.2	481.5	475.0
17.5°	558.6	545.5	529.3	510.0	492.3	476.1	467.9	457.9	454.2	441.7	440.6
20°	534.1	514.5	494.3	474.7	455.1	443.4	432.9	426.3	419.5	411.5	409.0
22.5°	506.5	480.9	459.6	441.4	423.5	410.7	405.6	398.2	391.6	387.1	382.8
25°	473.0	449.4	427.8	410.7	394.5	384.8	378.3	372.9	370.0	364.9	363.2
27.5°	442.0	418.4	401.0	385.1	372.0	363.5	357.8	353.0	349.3	348.4	346.4
30°	410.4	390.2	373.7	360.1	348.4	343.9	338.5	336.2	333.9	332.8	330.5
32.5°	382.0	364.0	349.5	336.5	329.6	325.4	322.5	320.2	318.5	318.0	317.4
35°	356.1	339.6	327.6	318.3	313.1	308.6	307.2	305.2	304.3	304.0	303.8
37.5°	333.3	318.0	308.9	300.6	296.9	292.7	292.9	292.1	291.5	289.8	291.0
40°	310.3	298.3	289.0	282.4	279.9	278.4	277.9	277.3	277.6	277.6	277.3
42.5°	289.2	278.7	272.8	266.5	265.4	264.2	264.2	263.4	263.7	265.1	265.6
45°	270.2	261.9	256.5	251.4	251.4	250.0	251.1	250.9	251.7	252.6	253.1
47.5°	251.1	243.7	239.8	237.2	236.1	236.1	236.9	238.3	238.9	239.2	239.8
50°	232.1	226.7	223.3	221.8	221.6	223.0	223.8	223.5	224.4	225.5	226.4
52.5°	215.3	210.5	208.2	207.6	207.6	208.8	209.0	209.9	210.5	210.5	211.6
55°	198.0	194.5	192.8	192.5	192.8	193.4	194.5	195.1	194.8	195.4	195.4
57.5°	180.6	178.0	177.2	178.0	178.0	179.2	179.2	179.2	178.9	180.0	179.7
60°	164.4	161.5	162.4	162.1	163.0	163.0	163.8	163.8	163.0	164.1	164.7
62.5°	148.2	147.6	146.5	146.5	147.3	147.6	146.8	147.6	147.9	148.7	149.3
65°	131.1	129.1	130.0	129.7	130.5	132.0	130.8	130.8	131.7	132.8	133.4
67.5°	114.9	113.2	114.0	114.3	114.3	114.9	114.0	114.6	115.8	117.2	118.0
70°	98.4	97.8	98.1	97.8	97.8	99.3	99.5	99.3	100.4	101.8	102.1
72.5°	81.6	82.2	81.6	82.2	82.8	81.9	82.2	83.0	84.2	85.0	86.5
75°	66.3	65.4	65.7	67.1	66.8	67.4	67.1	68.0	70.0	69.4	69.7
77.5°	51.2	50.9	51.2	51.5	51.8	52.6	52.3	53.8	54.0	54.3	54.9
80°	36.4	36.7	37.0	37.5	38.4	38.1	38.7	39.0	40.1	39.0	39.8
82.5°	24.7	24.5	25.0	25.0	25.9	26.5	25.6	25.6	25.6	25.3	25.3
85°	13.7	14.5	14.5	14.5	13.9	13.9	14.2	13.9	13.9	13.9	13.7
87.5°	6.0	6.0	5.7	5.4	5.7	5.4	5.4	5.1	4.8	4.8	4.6
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: P242113

CATALOG NUMBER: S121DR-S490D927-X4F0-XX-UDD-A-W

**CANDELA DISTRIBUTION (continued):**

	165°	170°	175°	180°
0°	661.0	661.0	661.0	661.0
2.5°	635.1	636.5	634.8	633.7
5°	614.3	614.3	612.6	612.1
7.5°	591.0	591.3	588.2	585.9
10°	556.0	554.3	549.8	547.2
12.5°	509.4	511.9	505.1	500.0
15°	468.7	461.6	464.4	461.3
17.5°	434.6	432.3	429.2	429.5
20°	404.7	403.0	401.3	401.6
22.5°	381.1	379.7	379.1	377.1
25°	361.5	362.1	360.6	360.6
27.5°	345.3	344.4	343.6	342.4
30°	329.9	330.2	329.3	328.8
32.5°	316.3	316.6	316.0	315.1
35°	302.9	302.6	302.9	302.0
37.5°	290.7	290.4	290.7	291.8
40°	278.2	278.4	277.6	278.7
42.5°	265.9	266.2	266.2	265.6
45°	252.6	253.4	253.7	254.3
47.5°	239.5	240.9	240.3	240.6
50°	226.4	226.1	226.1	225.8
52.5°	211.9	211.0	210.7	211.0
55°	194.5	195.7	195.7	195.7
57.5°	180.3	180.6	181.5	180.3
60°	165.8	165.8	166.1	168.4
62.5°	149.6	149.9	150.5	150.7
65°	134.0	134.8	134.5	134.2
67.5°	118.6	118.6	118.9	118.3
70°	102.7	102.7	102.7	104.1
72.5°	86.2	86.2	86.5	87.0
75°	70.8	70.8	70.8	70.0
77.5°	54.0	54.3	54.3	54.6
80°	39.2	39.0	39.0	38.7
82.5°	24.7	25.0	24.7	24.5
85°	13.7	13.9	13.1	13.1
87.5°	4.8	4.8	4.6	5.1
90°	0.0	0.0	0.0	0.0

(END OF REPORT)