

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: FAIL-SAFE

Report Number: P709123

Luminaire Tested: **4APN-28L840-X-UNV**

Issue Date: 09/12/2023



**Test Information**

Test Method: LM-79-08  
Report Number: P709123  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 09/12/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: 4APN-28L840-X-UNV  
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient Light  
Light Source: 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

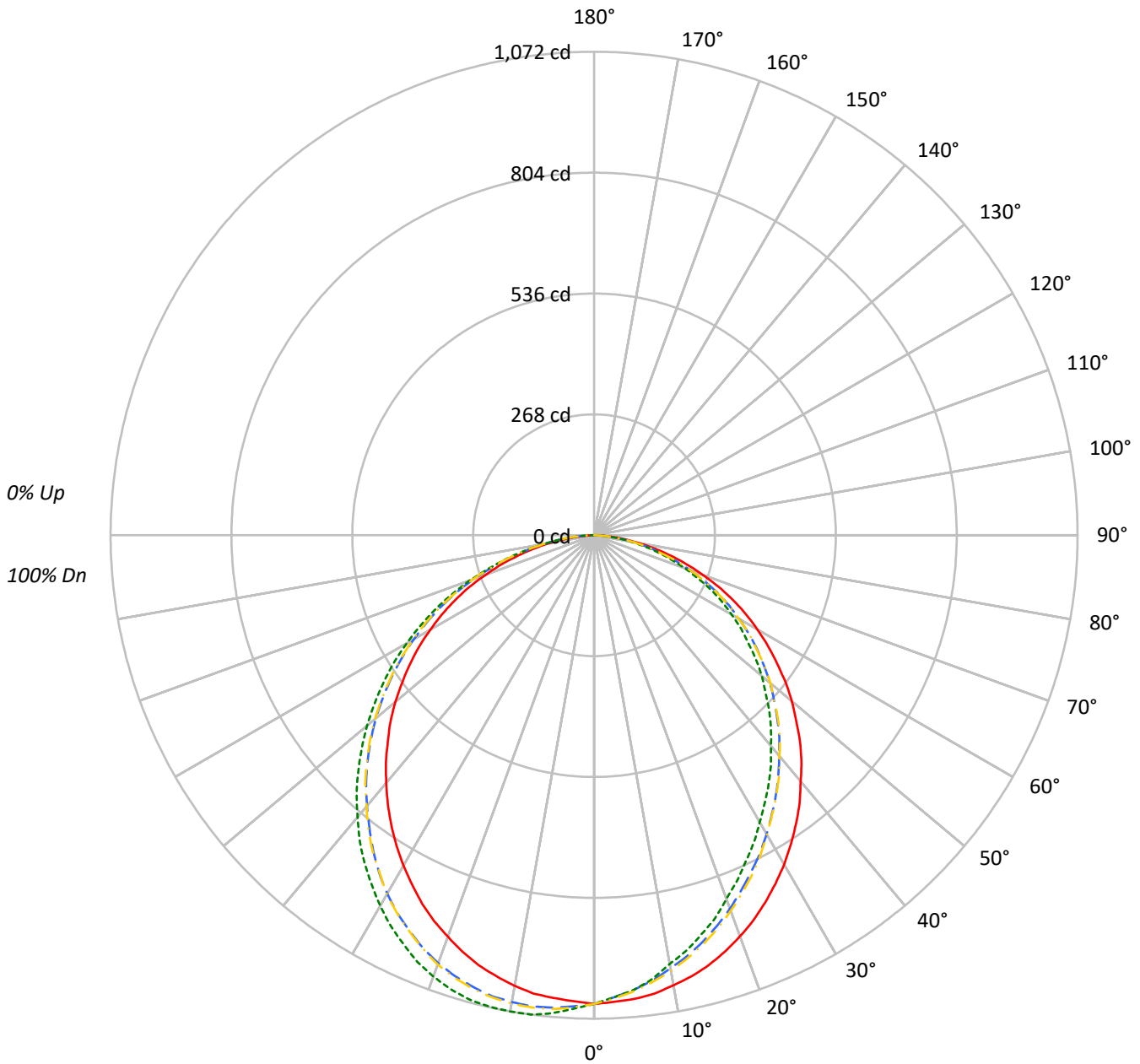
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2786.8 lumens  
Efficiency: N/A  
Efficacy: 86.5 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.21 / 1.33  
Luminous Opening: Rectangular (W 0.29' x L: 4' x H: 0')  
CIE Type: Direct

Input Watts (W): 32.2  
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



— 0°-180°    - - 45°-225°    - · - 90°-270°    - - - 135°-315°



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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	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	100	100	100
1	109	104	100	96	106	102	98	95	98	94	92	94	91	89	90	88	86	84	84	84	84
2	99	91	84	78	96	89	83	77	85	80	76	82	78	74	79	76	72	70	70	70	70
3	90	80	72	65	88	78	71	65	75	69	64	73	67	62	70	65	61	59	59	59	59
4	83	71	62	55	81	70	61	55	67	60	54	65	59	54	63	57	53	51	51	51	51
5	76	63	54	48	74	62	54	48	60	53	47	58	52	47	56	51	46	44	44	44	44
6	70	57	48	42	68	56	48	42	54	47	41	53	46	41	51	45	41	38	38	38	38
7	65	52	43	37	64	51	43	37	49	42	37	48	41	36	47	41	36	34	34	34	34
8	61	47	39	33	59	47	39	33	45	38	33	44	37	33	43	37	32	30	30	30	30
9	57	43	35	30	55	43	35	30	42	35	30	41	34	29	40	34	29	27	27	27	27
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	25	25	25	25

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

	0°	90°	180°	270°
0°	9587	9587	9587	9587
5°	9558	9374	9537	9852
10°	9492	9041	9503	10043
15°	9420	8758	9431	10183
20°	9290	8425	9302	10226
25°	9142	8113	9178	10183
30°	8979	7827	9004	10106
35°	8791	7599	8830	9996
40°	8579	7348	8636	9825
45°	8420	7162	8435	9648
50°	8216	6969	8250	9432
55°	7961	6712	8017	9170
60°	7722	6506	7743	8850
65°	7416	6235	7416	8468
70°	6911	5770	6881	7896
75°	6285	5237	6203	7083
80°	5435	4495	5244	6057
85°	4234	3356	3980	4975



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	98.2	3.5
10°-20°	278.6	10.0
20°-30°	414.3	14.9
30°-40°	488.3	17.5
40°-50°	497.1	17.8
50°-60°	442.9	15.9
60°-70°	333.7	12.0
70°-80°	185.6	6.7
80°-90°	48.2	1.7
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°	791.1	28.4
0°-40°	1279.3	45.9
0°-60°	2219.4	79.6
0°-90°	2786.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2786.8	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	1039	1039	1039	1039	1039	
5°	1032	1012	1030	1064	1032	98
15°	986	917	987	1066	986	278
25°	898	797	902	1000	898	414
35°	780	675	784	888	780	488
45°	645	549	646	739	645	497
55°	495	417	498	570	495	443
65°	340	286	340	388	340	335
75°	176	147	174	199	176	187
85°	40	32	38	47	40	48
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
0°	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1
2.5°	1035.6	1035.6	1036.7	1032.0	1026.2	1023.8	1022.6	1021.5	1023.8	1025.0	1023.8
5°	1032.0	1029.7	1027.3	1021.5	1014.4	1009.7	1007.4	1006.2	1008.5	1012.1	1008.5
7.5°	1025.0	1020.3	1015.6	1007.4	999.1	992.1	988.6	986.2	988.6	992.1	989.7
10°	1013.2	1007.4	1000.3	990.9	979.2	970.9	967.4	963.9	965.0	965.0	965.0
12.5°	1001.5	993.3	985.0	973.3	960.3	950.9	945.1	940.4	942.7	943.9	943.9
15°	986.2	975.6	963.9	950.9	938.0	927.4	920.4	915.7	916.9	916.9	918.0
17.5°	967.4	955.6	943.9	928.6	913.3	901.6	893.3	887.5	889.8	891.0	892.2
20°	946.2	933.3	920.4	903.9	887.5	874.5	866.3	859.3	858.1	858.1	859.3
22.5°	923.9	909.8	894.5	876.9	859.3	845.2	836.9	829.9	828.7	828.7	829.9
25°	898.0	882.8	867.5	849.9	831.0	816.9	806.4	799.3	798.1	797.0	799.3
27.5°	871.0	855.7	840.4	822.8	802.8	788.7	778.2	771.1	768.7	767.6	769.9
30°	842.8	825.2	808.7	789.9	772.3	758.2	747.6	739.4	737.0	734.7	737.0
32.5°	812.2	794.6	777.0	758.2	740.5	726.4	715.9	707.6	705.3	704.1	706.4
35°	780.5	762.9	746.4	727.6	710.0	695.9	685.3	678.2	675.9	674.7	675.9
37.5°	748.8	731.1	714.7	695.9	678.2	664.1	653.6	646.5	645.3	644.1	645.3
40°	712.3	697.0	680.6	663.0	645.3	631.2	623.0	614.8	612.4	610.1	613.6
42.5°	680.6	665.3	648.9	632.4	614.8	600.7	591.3	584.2	581.8	580.7	581.8
45°	645.3	628.9	612.4	597.1	580.7	567.7	558.3	551.3	550.1	548.9	550.1
47.5°	607.7	593.6	579.5	564.2	547.8	534.8	526.6	519.6	517.2	514.8	517.2
50°	572.4	558.3	544.2	530.1	514.8	503.1	494.9	487.8	486.6	485.5	486.6
52.5°	534.8	520.7	507.8	493.7	480.8	469.0	460.8	454.9	453.7	452.5	453.7
55°	494.9	483.1	471.4	459.6	446.7	436.1	429.0	422.0	419.6	417.3	419.6
57.5°	457.3	446.7	434.9	423.2	411.4	402.0	395.0	389.1	387.9	386.7	387.9
60°	418.5	409.1	398.5	387.9	376.1	366.7	360.9	356.2	353.8	352.6	353.8
62.5°	379.7	370.3	362.0	351.5	340.9	333.8	328.0	323.2	320.9	319.7	320.9
65°	339.7	331.5	323.2	313.8	305.6	298.6	292.7	288.0	286.8	285.6	285.6
67.5°	298.6	291.5	284.5	276.2	266.8	259.8	253.9	250.4	249.2	248.0	249.2
70°	256.2	250.4	243.3	236.3	229.2	223.3	219.8	216.3	215.1	213.9	213.9
72.5°	216.3	211.6	205.7	199.8	193.9	188.1	184.5	182.2	181.0	179.8	179.8
75°	176.3	171.6	168.1	163.4	157.5	154.0	150.5	148.1	146.9	146.9	146.9
77.5°	138.7	135.2	131.7	126.9	123.4	119.9	117.5	116.4	115.2	115.2	115.2
80°	102.3	99.9	97.6	95.2	91.7	88.2	87.0	85.8	84.6	84.6	84.6
82.5°	69.4	68.2	65.8	63.5	61.1	59.9	58.8	57.6	57.6	57.6	57.6
85°	40.0	38.8	37.6	36.4	35.3	35.3	34.1	32.9	31.7	31.7	31.7
87.5°	16.5	16.5	16.5	15.3	14.1	14.1	14.1	14.1	14.1	14.1	14.1
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°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1
2.5°	1021.5	1023.8	1026.2	1029.7	1033.2	1036.7	1035.6	1034.4	1039.1	1045.0	1046.2
5°	1006.2	1008.5	1012.1	1017.9	1023.8	1028.5	1029.7	1029.7	1039.1	1047.3	1049.7
7.5°	987.4	990.9	995.6	1001.5	1009.7	1016.8	1020.3	1025.0	1034.4	1045.0	1049.7
10°	963.9	969.7	976.8	985.0	993.3	1001.5	1008.5	1014.4	1026.2	1037.9	1045.0
12.5°	942.7	948.6	955.6	965.0	975.6	986.2	993.3	1001.5	1015.6	1029.7	1037.9
15°	919.2	925.1	933.3	942.7	954.5	966.2	976.8	987.4	1001.5	1016.8	1026.2
17.5°	893.3	899.2	907.5	919.2	932.1	945.1	956.8	968.6	985.0	1001.5	1012.1
20°	861.6	869.8	880.4	892.2	907.5	922.7	934.5	947.4	965.0	982.7	994.4
22.5°	831.0	839.3	851.0	865.1	881.6	898.0	912.2	926.3	945.1	962.7	975.6
25°	801.7	811.1	822.8	836.9	852.2	868.7	885.1	901.6	920.4	939.2	952.1
27.5°	772.3	780.5	792.3	806.4	824.0	840.4	856.9	873.4	893.3	913.3	927.4
30°	739.4	748.8	759.3	773.4	792.3	811.1	827.5	845.2	865.1	885.1	899.2
32.5°	708.8	717.0	727.6	741.7	760.5	779.3	797.0	815.8	834.6	854.6	868.7
35°	678.2	686.5	697.0	711.1	730.0	748.8	766.4	784.0	802.8	821.6	835.7
37.5°	647.7	655.9	666.5	680.6	698.2	717.0	733.5	751.1	769.9	788.7	801.7
40°	615.9	624.2	632.4	646.5	664.1	682.9	699.4	717.0	735.8	754.6	767.6
42.5°	584.2	592.4	603.0	617.1	633.6	650.0	666.5	682.9	700.6	718.2	731.1
45°	552.5	559.5	570.1	583.0	599.5	614.8	631.2	646.5	664.1	680.6	693.5
47.5°	519.6	526.6	534.8	547.8	564.2	580.7	597.1	612.4	627.7	644.1	655.9
50°	487.8	494.9	504.3	516.0	531.3	546.6	560.7	574.8	590.1	605.4	615.9
52.5°	454.9	462.0	470.2	481.9	494.9	509.0	521.9	536.0	550.1	564.2	574.8
55°	422.0	426.7	433.7	444.3	458.4	472.5	485.5	498.4	511.3	523.1	533.7
57.5°	389.1	395.0	403.2	412.6	424.3	436.1	447.8	459.6	471.4	483.1	492.5
60°	356.2	360.9	366.7	375.0	386.7	397.3	409.1	419.6	430.2	440.8	449.0
62.5°	322.1	326.8	332.7	340.9	350.3	359.7	370.3	379.7	389.1	398.5	406.7
65°	286.8	291.5	297.4	304.4	312.7	320.9	330.3	339.7	346.8	353.8	362.0
67.5°	250.4	255.1	261.0	266.8	273.9	282.1	290.3	298.6	305.6	312.7	318.5
70°	215.1	218.6	224.5	229.2	235.1	241.0	248.0	255.1	259.8	265.7	272.7
72.5°	181.0	184.5	189.2	193.9	197.5	202.2	209.2	215.1	221.0	228.0	231.6
75°	148.1	150.5	154.0	157.5	161.0	164.6	169.3	174.0	178.7	182.2	186.9
77.5°	115.2	117.5	121.1	123.4	125.8	128.1	131.7	135.2	138.7	141.1	145.8
80°	84.6	87.0	89.3	91.7	94.0	96.4	97.6	98.7	103.4	107.0	109.3
82.5°	57.6	58.8	59.9	62.3	63.5	64.6	65.8	65.8	68.2	70.5	74.1
85°	32.9	34.1	35.3	35.3	35.3	35.3	36.4	37.6	38.8	41.1	43.5
87.5°	12.9	12.9	14.1	14.1	14.1	14.1	14.1	14.1	15.3	17.6	18.8
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):**

	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°
0°	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1	1039.1
2.5°	1045.0	1046.2	1048.5	1049.7	1050.9	1050.9	1052.0	1053.2	1050.9	1048.5	1047.3
5°	1050.9	1052.0	1055.6	1059.1	1061.4	1063.8	1062.6	1061.4	1059.1	1055.6	1053.2
7.5°	1052.0	1055.6	1059.1	1063.8	1067.3	1072.0	1069.7	1067.3	1062.6	1057.9	1054.4
10°	1048.5	1053.2	1059.1	1065.0	1068.5	1072.0	1069.7	1067.3	1062.6	1056.7	1052.0
12.5°	1043.8	1049.7	1056.7	1062.6	1066.1	1070.8	1067.3	1063.8	1057.9	1052.0	1046.2
15°	1033.2	1040.3	1048.5	1055.6	1061.4	1066.1	1062.6	1060.3	1053.2	1045.0	1036.7
17.5°	1020.3	1029.7	1037.9	1046.2	1050.9	1055.6	1053.2	1050.9	1042.6	1033.2	1023.8
20°	1005.0	1014.4	1022.6	1030.9	1036.7	1041.5	1037.9	1034.4	1026.2	1017.9	1008.5
22.5°	986.2	995.6	1005.0	1013.2	1019.1	1023.8	1019.1	1013.2	1005.0	996.8	987.4
25°	962.7	973.3	983.9	992.1	995.6	1000.3	995.6	990.9	982.7	974.5	963.9
27.5°	939.2	949.8	960.3	968.6	972.1	976.8	972.1	967.4	959.2	950.9	940.4
30°	912.2	922.7	933.3	941.5	945.1	948.6	943.9	939.2	932.1	923.9	913.3
32.5°	881.6	892.2	900.4	908.6	913.3	918.0	913.3	909.8	901.6	891.0	880.4
35°	848.7	859.3	869.8	878.1	882.8	887.5	881.6	875.7	868.7	860.4	851.0
37.5°	812.2	824.0	835.7	845.2	848.7	853.4	848.7	842.8	835.7	827.5	816.9
40°	778.2	788.7	799.3	808.7	812.2	815.8	811.1	806.4	798.1	789.9	779.3
42.5°	742.9	753.5	762.9	771.1	774.6	779.3	774.6	768.7	762.9	755.8	746.4
45°	705.3	715.9	724.1	732.3	735.8	739.4	734.7	728.8	722.9	717.0	707.6
47.5°	666.5	675.9	684.1	692.3	694.7	698.2	693.5	690.0	684.1	678.2	670.0
50°	626.5	635.9	644.1	651.2	653.6	657.1	652.4	647.7	643.0	638.3	631.2
52.5°	585.4	593.6	601.8	608.9	611.2	613.6	608.9	604.2	599.5	594.8	587.7
55°	543.1	551.3	559.5	565.4	567.7	570.1	565.4	561.9	557.2	553.6	546.6
57.5°	500.7	509.0	516.0	521.9	524.3	526.6	521.9	517.2	513.7	510.1	504.3
60°	457.3	465.5	471.4	476.1	478.4	479.6	474.9	471.4	469.0	466.7	460.8
62.5°	414.9	420.8	426.7	430.2	432.6	433.7	430.2	427.9	425.5	423.2	418.5
65°	370.3	377.3	382.0	385.5	386.7	387.9	384.4	382.0	379.7	377.3	373.8
67.5°	325.6	331.5	335.0	338.5	339.7	339.7	339.7	338.5	336.2	332.7	329.1
70°	280.9	285.6	289.2	291.5	292.7	292.7	290.3	288.0	288.0	286.8	284.5
72.5°	235.1	238.6	241.0	243.3	243.3	243.3	243.3	244.5	243.3	241.0	237.4
75°	191.6	195.1	197.5	198.7	198.7	198.7	198.7	199.8	198.7	197.5	195.1
77.5°	150.5	152.8	154.0	155.2	155.2	155.2	156.3	157.5	156.3	155.2	154.0
80°	111.7	112.8	114.0	115.2	114.0	114.0	115.2	117.5	116.4	115.2	114.0
82.5°	76.4	77.6	78.8	78.8	79.9	81.1	81.1	81.1	81.1	79.9	78.8
85°	45.8	47.0	47.0	47.0	47.0	47.0	48.2	49.4	49.4	48.2	48.2
87.5°	21.2	22.3	21.2	20.0	18.8	18.8	21.2	23.5	23.5	22.3	22.3
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: P709123

CATALOG NUMBER: 4APN-28L840-X-UNV

**CANDELA DISTRIBUTION (continued):**

	330°	340°	350°	360°
0°	1039.1	1039.1	1039.1	1039.1
2.5°	1048.5	1047.3	1041.5	1035.6
5°	1052.0	1048.5	1040.3	1032.0
7.5°	1052.0	1047.3	1035.6	1025.0
10°	1046.2	1039.1	1026.2	1013.2
12.5°	1039.1	1030.9	1015.6	1001.5
15°	1028.5	1019.1	1002.7	986.2
17.5°	1013.2	1001.5	985.0	967.4
20°	998.0	985.0	965.0	946.2
22.5°	976.8	965.0	943.9	923.9
25°	953.3	940.4	919.2	898.0
27.5°	928.6	913.3	892.2	871.0
30°	900.4	885.1	864.0	842.8
32.5°	869.8	855.7	834.6	812.2
35°	839.3	824.0	802.8	780.5
37.5°	805.2	791.1	769.9	748.8
40°	768.7	754.6	733.5	712.3
42.5°	734.7	721.7	700.6	680.6
45°	697.0	684.1	664.1	645.3
47.5°	658.3	645.3	626.5	607.7
50°	620.6	607.7	590.1	572.4
52.5°	578.3	567.7	551.3	534.8
55°	537.2	526.6	510.1	494.9
57.5°	496.0	486.6	471.4	457.3
60°	452.5	443.1	431.4	418.5
62.5°	411.4	403.2	391.4	379.7
65°	367.9	360.9	350.3	339.7
67.5°	323.2	317.4	308.0	298.6
70°	278.6	271.5	264.5	256.2
72.5°	233.9	230.4	223.3	216.3
75°	191.6	188.1	182.2	176.3
77.5°	151.6	148.1	143.4	138.7
80°	111.7	109.3	105.8	102.3
82.5°	77.6	75.2	72.9	69.4
85°	47.0	44.7	42.3	40.0
87.5°	21.2	20.0	17.6	16.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)