

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: P709129

Luminaire Tested: **4APN-28L850-X-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709129
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-28L850-X-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient Light
Light Source: 5000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

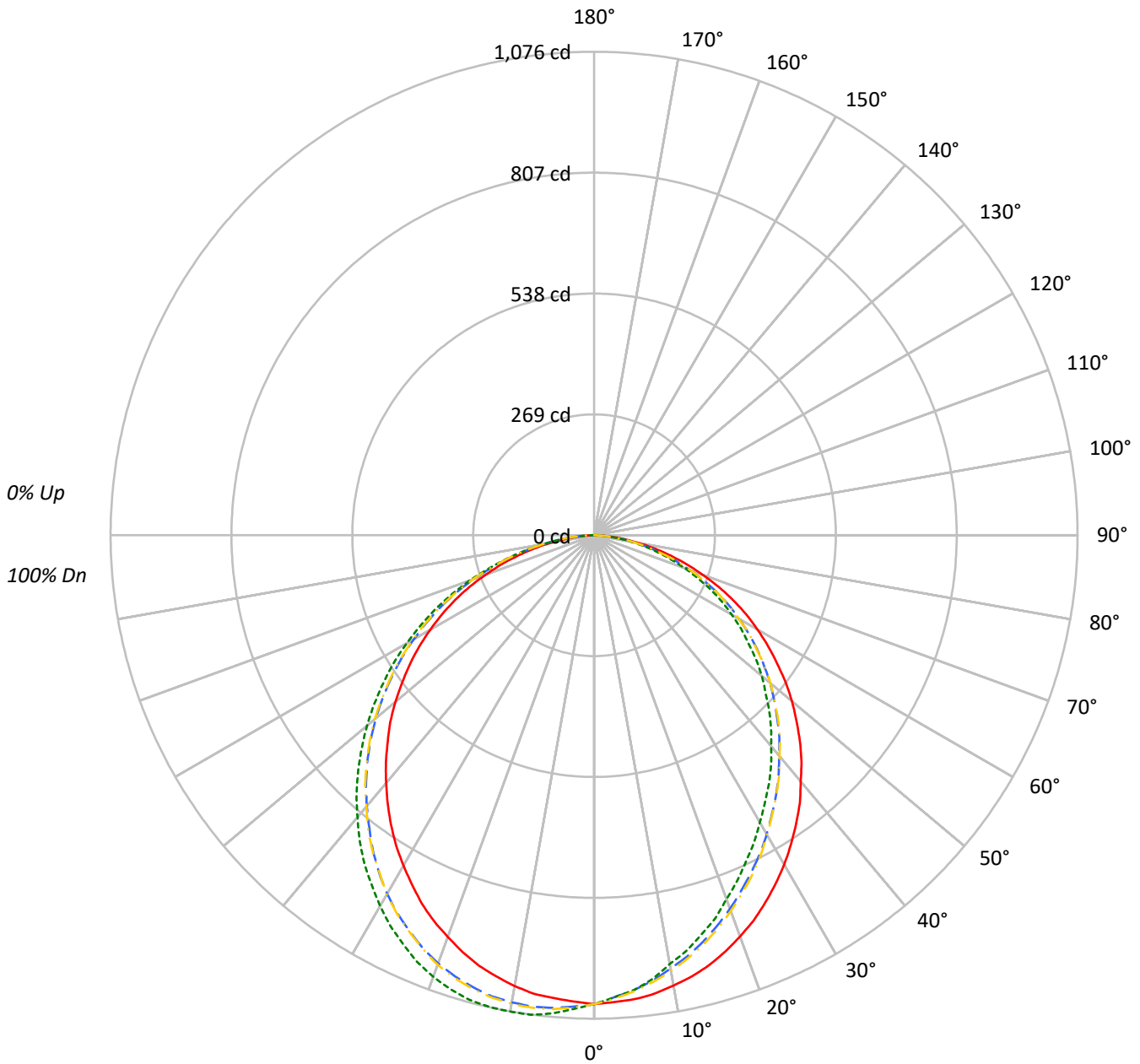
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2798.5 lumens
Efficiency: N/A
Efficacy: 86.9 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				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°	9628	9628	9628	9628
5°	9599	9412	9576	9894
10°	9532	9079	9544	10085
15°	9459	8794	9470	10226
20°	9329	8460	9341	10268
25°	9180	8147	9217	10226
30°	9016	7859	9042	10149
35°	8828	7631	8867	10038
40°	8615	7378	8672	9866
45°	8455	7192	8471	9688
50°	8252	6997	8285	9470
55°	7993	6740	8051	9209
60°	7754	6534	7776	8887
65°	7447	6261	7447	8503
70°	6941	5794	6908	7928
75°	6313	5258	6228	7112
80°	5457	4516	5271	6084
85°	4245	3377	4001	4997



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	98.6	3.5
10°-20°	279.8	10.0
20°-30°	416.0	14.9
30°-40°	490.3	17.5
40°-50°	499.2	17.8
50°-60°	444.7	15.9
60°-70°	335.1	12.0
70°-80°	186.3	6.7
80°-90°	48.4	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°	794.4	28.4
0°-40°	1284.7	45.9
0°-60°	2228.7	79.6
0°-90°	2798.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2798.5	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1044	1044	1044	1044	1044	
5°	1036	1016	1034	1068	1036	98
15°	990	921	992	1071	990	279
25°	902	800	905	1004	902	415
35°	784	678	787	891	784	490
45°	648	551	649	742	648	499
55°	497	419	500	572	497	445
65°	341	287	341	390	341	337
75°	177	148	175	200	177	188
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°	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5
2.5°	1039.9	1039.9	1041.1	1036.4	1030.5	1028.1	1026.9	1025.8	1028.1	1029.3	1028.1
5°	1036.4	1034.0	1031.7	1025.8	1018.7	1014.0	1011.6	1010.4	1012.8	1016.3	1012.8
7.5°	1029.3	1024.6	1019.9	1011.6	1003.3	996.2	992.7	990.3	992.7	996.2	993.9
10°	1017.5	1011.6	1004.5	995.1	983.3	975.0	971.5	967.9	969.1	969.1	969.1
12.5°	1005.7	997.4	989.2	977.4	964.4	954.9	949.0	944.3	946.7	947.9	947.9
15°	990.3	979.7	967.9	954.9	942.0	931.3	924.2	919.5	920.7	920.7	921.9
17.5°	971.5	959.7	947.9	932.5	917.2	905.4	897.1	891.2	893.6	894.7	895.9
20°	950.2	937.2	924.2	907.7	891.2	878.2	869.9	862.9	861.7	861.7	862.9
22.5°	927.8	913.6	898.3	880.6	862.9	848.7	840.4	833.4	832.2	832.2	833.4
25°	901.8	886.5	871.1	853.4	834.5	820.4	809.7	802.7	801.5	800.3	802.7
27.5°	874.7	859.3	844.0	826.3	806.2	792.0	781.4	774.3	772.0	770.8	773.2
30°	846.3	828.6	812.1	793.2	775.5	761.4	750.7	742.5	740.1	737.7	740.1
32.5°	815.6	797.9	780.2	761.4	743.6	729.5	718.9	710.6	708.2	707.1	709.4
35°	783.8	766.1	749.5	730.7	713.0	698.8	688.2	681.1	678.7	677.5	678.7
37.5°	751.9	734.2	717.7	698.8	681.1	666.9	656.3	649.2	648.0	646.9	648.0
40°	715.3	700.0	683.4	665.7	648.0	633.9	625.6	617.3	615.0	612.6	616.2
42.5°	683.4	668.1	651.6	635.0	617.3	603.2	593.7	586.7	584.3	583.1	584.3
45°	648.0	631.5	615.0	599.6	583.1	570.1	560.7	553.6	552.4	551.2	552.4
47.5°	610.3	596.1	581.9	566.6	550.1	537.1	528.8	521.7	519.4	517.0	519.4
50°	574.9	560.7	546.5	532.4	517.0	505.2	496.9	489.9	488.7	487.5	488.7
52.5°	537.1	522.9	509.9	495.8	482.8	471.0	462.7	456.8	455.6	454.5	455.6
55°	496.9	485.1	473.3	461.5	448.5	437.9	430.8	423.8	421.4	419.0	421.4
57.5°	459.2	448.5	436.7	424.9	413.1	403.7	396.6	390.7	389.5	388.3	389.5
60°	420.2	410.8	400.2	389.5	377.7	368.3	362.4	357.7	355.3	354.1	355.3
62.5°	381.3	371.8	363.6	352.9	342.3	335.2	329.3	324.6	322.2	321.1	322.2
65°	341.1	332.9	324.6	315.2	306.9	299.8	293.9	289.2	288.0	286.8	286.8
67.5°	299.8	292.7	285.7	277.4	267.9	260.9	255.0	251.4	250.2	249.1	250.2
70°	257.3	251.4	244.3	237.3	230.2	224.3	220.7	217.2	216.0	214.8	214.8
72.5°	217.2	212.5	206.6	200.7	194.8	188.9	185.3	183.0	181.8	180.6	180.6
75°	177.1	172.3	168.8	164.1	158.2	154.6	151.1	148.7	147.5	147.5	147.5
77.5°	139.3	135.7	132.2	127.5	123.9	120.4	118.0	116.9	115.7	115.7	115.7
80°	102.7	100.3	98.0	95.6	92.1	88.5	87.3	86.2	85.0	85.0	85.0
82.5°	69.6	68.5	66.1	63.7	61.4	60.2	59.0	57.8	57.8	57.8	57.8
85°	40.1	39.0	37.8	36.6	35.4	35.4	34.2	33.1	31.9	31.9	31.9
87.5°	16.5	16.5	16.5	15.3	14.2	14.2	14.2	14.2	14.2	14.2	14.2
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°	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5
2.5°	1025.8	1028.1	1030.5	1034.0	1037.6	1041.1	1039.9	1038.7	1043.5	1049.4	1050.5
5°	1010.4	1012.8	1016.3	1022.2	1028.1	1032.8	1034.0	1034.0	1043.5	1051.7	1054.1
7.5°	991.5	995.1	999.8	1005.7	1014.0	1021.0	1024.6	1029.3	1038.7	1049.4	1054.1
10°	967.9	973.8	980.9	989.2	997.4	1005.7	1012.8	1018.7	1030.5	1042.3	1049.4
12.5°	946.7	952.6	959.7	969.1	979.7	990.3	997.4	1005.7	1019.9	1034.0	1042.3
15°	923.1	929.0	937.2	946.7	958.5	970.3	980.9	991.5	1005.7	1021.0	1030.5
17.5°	897.1	903.0	911.3	923.1	936.0	949.0	960.8	972.6	989.2	1005.7	1016.3
20°	865.2	873.5	884.1	895.9	911.3	926.6	938.4	951.4	969.1	986.8	998.6
22.5°	834.5	842.8	854.6	868.8	885.3	901.8	916.0	930.1	949.0	966.7	979.7
25°	805.0	814.5	826.3	840.4	855.8	872.3	888.8	905.4	924.2	943.1	956.1
27.5°	775.5	783.8	795.6	809.7	827.5	844.0	860.5	877.0	897.1	917.2	931.3
30°	742.5	751.9	762.5	776.7	795.6	814.5	831.0	848.7	868.8	888.8	903.0
32.5°	711.8	720.0	730.7	744.8	763.7	782.6	800.3	819.2	838.1	858.1	872.3
35°	681.1	689.3	700.0	714.1	733.0	751.9	769.6	787.3	806.2	825.1	839.3
37.5°	650.4	658.7	669.3	683.4	701.2	720.0	736.6	754.3	773.2	792.0	805.0
40°	618.5	626.8	635.0	649.2	666.9	685.8	702.3	720.0	738.9	757.8	770.8
42.5°	586.7	594.9	605.5	619.7	636.2	652.8	669.3	685.8	703.5	721.2	734.2
45°	554.8	561.9	572.5	585.5	602.0	617.3	633.9	649.2	666.9	683.4	696.4
47.5°	521.7	528.8	537.1	550.1	566.6	583.1	599.6	615.0	630.3	646.9	658.7
50°	489.9	496.9	506.4	518.2	533.5	548.9	563.0	577.2	592.6	607.9	618.5
52.5°	456.8	463.9	472.2	484.0	496.9	511.1	524.1	538.3	552.4	566.6	577.2
55°	423.8	428.5	435.6	446.2	460.4	474.5	487.5	500.5	513.5	525.3	535.9
57.5°	390.7	396.6	404.9	414.3	426.1	437.9	449.7	461.5	473.3	485.1	494.6
60°	357.7	362.4	368.3	376.5	388.3	399.0	410.8	421.4	432.0	442.6	450.9
62.5°	323.4	328.1	334.1	342.3	351.8	361.2	371.8	381.3	390.7	400.2	408.4
65°	288.0	292.7	298.6	305.7	314.0	322.2	331.7	341.1	348.2	355.3	363.6
67.5°	251.4	256.1	262.0	267.9	275.0	283.3	291.6	299.8	306.9	314.0	319.9
70°	216.0	219.6	225.5	230.2	236.1	242.0	249.1	256.1	260.9	266.8	273.9
72.5°	181.8	185.3	190.0	194.8	198.3	203.0	210.1	216.0	221.9	229.0	232.5
75°	148.7	151.1	154.6	158.2	161.7	165.3	170.0	174.7	179.4	183.0	187.7
77.5°	115.7	118.0	121.6	123.9	126.3	128.7	132.2	135.7	139.3	141.6	146.4
80°	85.0	87.3	89.7	92.1	94.4	96.8	98.0	99.2	103.9	107.4	109.8
82.5°	57.8	59.0	60.2	62.6	63.7	64.9	66.1	66.1	68.5	70.8	74.4
85°	33.1	34.2	35.4	35.4	35.4	35.4	36.6	37.8	39.0	41.3	43.7
87.5°	13.0	13.0	14.2	14.2	14.2	14.2	14.2	14.2	15.3	17.7	18.9
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°	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5	1043.5
2.5°	1049.4	1050.5	1052.9	1054.1	1055.3	1055.3	1056.4	1057.6	1055.3	1052.9	1051.7
5°	1055.3	1056.4	1060.0	1063.5	1065.9	1068.3	1067.1	1065.9	1063.5	1060.0	1057.6
7.5°	1056.4	1060.0	1063.5	1068.3	1071.8	1076.5	1074.2	1071.8	1067.1	1062.4	1058.8
10°	1052.9	1057.6	1063.5	1069.4	1073.0	1076.5	1074.2	1071.8	1067.1	1061.2	1056.4
12.5°	1048.2	1054.1	1061.2	1067.1	1070.6	1075.3	1071.8	1068.3	1062.4	1056.4	1050.5
15°	1037.6	1044.6	1052.9	1060.0	1065.9	1070.6	1067.1	1064.7	1057.6	1049.4	1041.1
17.5°	1024.6	1034.0	1042.3	1050.5	1055.3	1060.0	1057.6	1055.3	1047.0	1037.6	1028.1
20°	1009.2	1018.7	1026.9	1035.2	1041.1	1045.8	1042.3	1038.7	1030.5	1022.2	1012.8
22.5°	990.3	999.8	1009.2	1017.5	1023.4	1028.1	1023.4	1017.5	1009.2	1001.0	991.5
25°	966.7	977.4	988.0	996.2	999.8	1004.5	999.8	995.1	986.8	978.5	967.9
27.5°	943.1	953.8	964.4	972.6	976.2	980.9	976.2	971.5	963.2	954.9	944.3
30°	916.0	926.6	937.2	945.5	949.0	952.6	947.9	943.1	936.0	927.8	917.2
32.5°	885.3	895.9	904.2	912.4	917.2	921.9	917.2	913.6	905.4	894.7	884.1
35°	852.2	862.9	873.5	881.8	886.5	891.2	885.3	879.4	872.3	864.0	854.6
37.5°	815.6	827.5	839.3	848.7	852.2	857.0	852.2	846.3	839.3	831.0	820.4
40°	781.4	792.0	802.7	812.1	815.6	819.2	814.5	809.7	801.5	793.2	782.6
42.5°	746.0	756.6	766.1	774.3	777.9	782.6	777.9	772.0	766.1	759.0	749.5
45°	708.2	718.9	727.1	735.4	738.9	742.5	737.7	731.8	725.9	720.0	710.6
47.5°	669.3	678.7	687.0	695.2	697.6	701.2	696.4	692.9	687.0	681.1	672.8
50°	629.1	638.6	646.9	653.9	656.3	659.8	655.1	650.4	645.7	641.0	633.9
52.5°	587.8	596.1	604.4	611.4	613.8	616.2	611.4	606.7	602.0	597.3	590.2
55°	545.3	553.6	561.9	567.8	570.1	572.5	567.8	564.2	559.5	556.0	548.9
57.5°	502.8	511.1	518.2	524.1	526.5	528.8	524.1	519.4	515.8	512.3	506.4
60°	459.2	467.4	473.3	478.1	480.4	481.6	476.9	473.3	471.0	468.6	462.7
62.5°	416.7	422.6	428.5	432.0	434.4	435.6	432.0	429.7	427.3	424.9	420.2
65°	371.8	378.9	383.6	387.2	388.3	389.5	386.0	383.6	381.3	378.9	375.4
67.5°	327.0	332.9	336.4	340.0	341.1	341.1	341.1	340.0	337.6	334.1	330.5
70°	282.1	286.8	290.4	292.7	293.9	293.9	291.6	289.2	289.2	288.0	285.7
72.5°	236.1	239.6	242.0	244.3	244.3	244.3	244.3	245.5	244.3	242.0	238.4
75°	192.4	195.9	198.3	199.5	199.5	199.5	199.5	200.7	199.5	198.3	195.9
77.5°	151.1	153.5	154.6	155.8	155.8	155.8	157.0	158.2	157.0	155.8	154.6
80°	112.1	113.3	114.5	115.7	114.5	114.5	115.7	118.0	116.9	115.7	114.5
82.5°	76.7	77.9	79.1	79.1	80.3	81.4	81.4	81.4	81.4	80.3	79.1
85°	46.0	47.2	47.2	47.2	47.2	47.2	48.4	49.6	49.6	48.4	48.4
87.5°	21.2	22.4	21.2	20.1	18.9	18.9	21.2	23.6	23.6	22.4	22.4
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: P709129
 CATALOG NUMBER: 4APN-28L850-X-UNV

CANDELA DISTRIBUTION (continued):

	330°	340°	350°	360°
0°	1043.5	1043.5	1043.5	1043.5
2.5°	1052.9	1051.7	1045.8	1039.9
5°	1056.4	1052.9	1044.6	1036.4
7.5°	1056.4	1051.7	1039.9	1029.3
10°	1050.5	1043.5	1030.5	1017.5
12.5°	1043.5	1035.2	1019.9	1005.7
15°	1032.8	1023.4	1006.9	990.3
17.5°	1017.5	1005.7	989.2	971.5
20°	1002.2	989.2	969.1	950.2
22.5°	980.9	969.1	947.9	927.8
25°	957.3	944.3	923.1	901.8
27.5°	932.5	917.2	895.9	874.7
30°	904.2	888.8	867.6	846.3
32.5°	873.5	859.3	838.1	815.6
35°	842.8	827.5	806.2	783.8
37.5°	808.6	794.4	773.2	751.9
40°	772.0	757.8	736.6	715.3
42.5°	737.7	724.8	703.5	683.4
45°	700.0	687.0	666.9	648.0
47.5°	661.0	648.0	629.1	610.3
50°	623.2	610.3	592.6	574.9
52.5°	580.8	570.1	553.6	537.1
55°	539.4	528.8	512.3	496.9
57.5°	498.1	488.7	473.3	459.2
60°	454.5	445.0	433.2	420.2
62.5°	413.1	404.9	393.1	381.3
65°	369.5	362.4	351.8	341.1
67.5°	324.6	318.7	309.3	299.8
70°	279.8	272.7	265.6	257.3
72.5°	234.9	231.4	224.3	217.2
75°	192.4	188.9	183.0	177.1
77.5°	152.3	148.7	144.0	139.3
80°	112.1	109.8	106.2	102.7
82.5°	77.9	75.5	73.2	69.6
85°	47.2	44.9	42.5	40.1
87.5°	21.2	20.1	17.7	16.5
90°	0.0	0.0	0.0	0.0

(END OF REPORT)