

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: P709110

Luminaire Tested: **4APN-32L830-X-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709110
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-32L830-X-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient Light
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

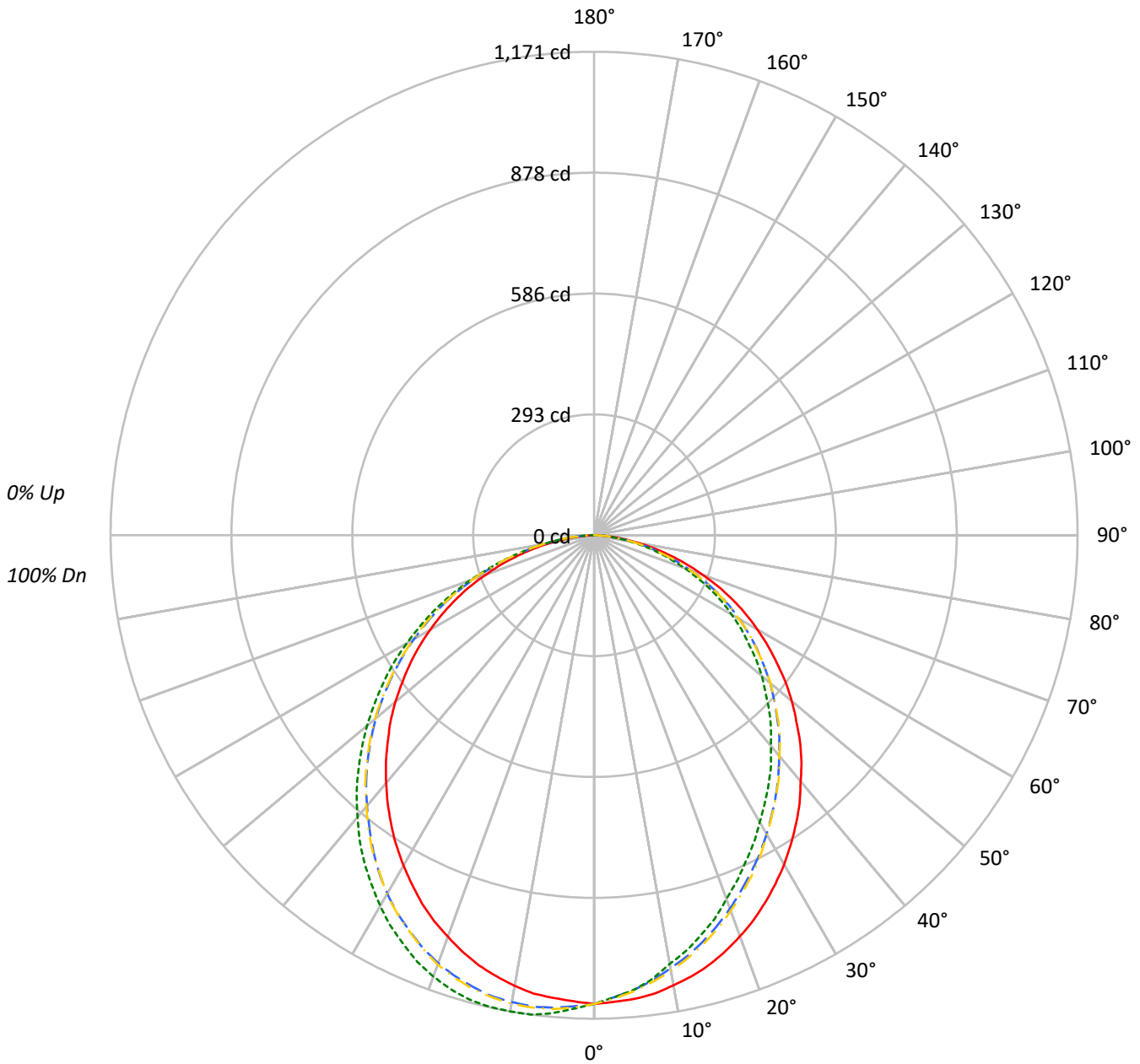
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3044.4 lumens
Efficiency: N/A
Efficacy: 83.6 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): 36.4
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

TEST NUMBER: P709110
CATALOG NUMBER: 4APN-32L830-X-UNV

Luminous Intensity Polar Plot



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



TEST NUMBER: P709110
 CATALOG NUMBER: 4APN-32L830-X-UNV

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

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	10473	10473	10473	10473
5°	10441	10239	10418	10763
10°	10370	9876	10382	10971
15°	10291	9567	10302	11125
20°	10149	9204	10162	11170
25°	9987	8863	10026	11125
30°	9809	8550	9836	11040
35°	9603	8302	9647	10920
40°	9373	8026	9434	10734
45°	9199	7825	9214	10539
50°	8977	7612	9013	10303
55°	8696	7333	8758	10018
60°	8435	7108	8459	9667
65°	8102	6811	8102	9250
70°	7550	6304	7515	8624
75°	6866	5721	6773	7735
80°	5935	4915	5733	6620
85°	4626	3673	4351	5441



TEST NUMBER: P709110
 CATALOG NUMBER: 4APN-32L830-X-UNV

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	107.3	3.5
10°-20°	304.4	10.0
20°-30°	452.5	14.9
30°-40°	533.4	17.5
40°-50°	543.1	17.8
50°-60°	483.8	15.9
60°-70°	364.5	12.0
70°-80°	202.7	6.7
80°-90°	52.7	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°	864.2	28.4
0°-40°	1397.6	45.9
0°-60°	2424.5	79.6
0°-90°	3044.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3044.4	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1135	1135	1135	1135	1135	
5°	1127	1106	1125	1162	1127	107
15°	1077	1002	1079	1165	1077	304
25°	981	871	985	1093	981	452
35°	853	737	856	970	853	533
45°	705	600	706	808	705	543
55°	541	456	544	623	541	484
65°	371	312	371	424	371	366
75°	193	160	190	217	193	205
85°	44	35	41	51	44	53
90°	0	0	0	0	0	



TEST NUMBER: P709110

CATALOG NUMBER: 4APN-32L830-X-UNV

CANDELA DISTRIBUTION (FULL):

	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
0°	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1
2.5°	1131.3	1131.3	1132.6	1127.4	1121.0	1118.4	1117.2	1115.9	1118.4	1119.7	1118.4
5°	1127.4	1124.9	1122.3	1115.9	1108.2	1103.0	1100.5	1099.2	1101.7	1105.6	1101.7
7.5°	1119.7	1114.6	1109.5	1100.5	1091.5	1083.8	1079.9	1077.4	1079.9	1083.8	1081.2
10°	1106.9	1100.5	1092.8	1082.5	1069.6	1060.7	1056.8	1053.0	1054.2	1054.2	1054.2
12.5°	1094.0	1085.1	1076.1	1063.2	1049.1	1038.8	1032.4	1027.3	1029.8	1031.1	1031.1
15°	1077.4	1065.8	1053.0	1038.8	1024.7	1013.1	1005.4	1000.3	1001.6	1001.6	1002.9
17.5°	1056.8	1044.0	1031.1	1014.4	997.7	984.9	975.9	969.5	972.1	973.3	974.6
20°	1033.7	1019.6	1005.4	987.5	969.5	955.4	946.4	938.7	937.4	937.4	938.7
22.5°	1009.3	993.9	977.2	957.9	938.7	923.3	914.3	906.6	905.3	905.3	906.6
25°	981.0	964.4	947.7	928.4	907.9	892.4	880.9	873.2	871.9	870.6	873.2
27.5°	951.5	934.8	918.1	898.9	877.0	861.6	850.1	842.4	839.8	838.5	841.1
30°	920.7	901.4	883.5	862.9	843.6	828.2	816.7	807.7	805.1	802.6	805.1
32.5°	887.3	868.0	848.8	828.2	809.0	793.6	782.0	773.0	770.5	769.2	771.7
35°	852.6	833.4	815.4	794.9	775.6	760.2	748.6	740.9	738.4	737.1	738.4
37.5°	818.0	798.7	780.7	760.2	740.9	725.5	714.0	706.2	705.0	703.7	705.0
40°	778.2	761.5	743.5	724.2	705.0	689.6	680.6	671.6	669.0	666.4	670.3
42.5°	743.5	726.8	708.8	690.8	671.6	656.2	645.9	638.2	635.6	634.3	635.6
45°	705.0	687.0	669.0	652.3	634.3	620.2	609.9	602.2	601.0	599.7	601.0
47.5°	663.9	648.5	633.1	616.4	598.4	584.3	575.3	567.6	565.0	562.4	565.0
50°	625.4	609.9	594.5	579.1	562.4	549.6	540.6	532.9	531.6	530.3	531.6
52.5°	584.3	568.9	554.7	539.3	525.2	512.4	503.4	496.9	495.7	494.4	495.7
55°	540.6	527.8	514.9	502.1	488.0	476.4	468.7	461.0	458.4	455.9	458.4
57.5°	499.5	488.0	475.1	462.3	449.4	439.2	431.5	425.0	423.7	422.5	423.7
60°	457.1	446.9	435.3	423.7	410.9	400.6	394.2	389.1	386.5	385.2	386.5
62.5°	414.8	404.5	395.5	383.9	372.4	364.7	358.3	353.1	350.6	349.3	350.6
65°	371.1	362.1	353.1	342.9	333.9	326.2	319.7	314.6	313.3	312.0	312.0
67.5°	326.2	318.5	310.7	301.8	291.5	283.8	277.4	273.5	272.2	270.9	272.2
70°	279.9	273.5	265.8	258.1	250.4	244.0	240.1	236.3	235.0	233.7	233.7
72.5°	236.3	231.1	224.7	218.3	211.9	205.5	201.6	199.0	197.7	196.5	196.5
75°	192.6	187.5	183.6	178.5	172.1	168.2	164.4	161.8	160.5	160.5	160.5
77.5°	151.5	147.7	143.8	138.7	134.8	131.0	128.4	127.1	125.8	125.8	125.8
80°	111.7	109.1	106.6	104.0	100.2	96.3	95.0	93.7	92.5	92.5	92.5
82.5°	75.8	74.5	71.9	69.3	66.8	65.5	64.2	62.9	62.9	62.9	62.9
85°	43.7	42.4	41.1	39.8	38.5	38.5	37.2	36.0	34.7	34.7	34.7
87.5°	18.0	18.0	18.0	16.7	15.4	15.4	15.4	15.4	15.4	15.4	15.4
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: P709110

CATALOG NUMBER: 4APN-32L830-X-UNV

CANDELA DISTRIBUTION (continued):

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1
2.5°	1115.9	1118.4	1121.0	1124.9	1128.7	1132.6	1131.3	1130.0	1135.1	1141.6	1142.8
5°	1099.2	1101.7	1105.6	1112.0	1118.4	1123.6	1124.9	1124.9	1135.1	1144.1	1146.7
7.5°	1078.6	1082.5	1087.6	1094.0	1103.0	1110.7	1114.6	1119.7	1130.0	1141.6	1146.7
10°	1053.0	1059.4	1067.1	1076.1	1085.1	1094.0	1101.7	1108.2	1121.0	1133.9	1141.6
12.5°	1029.8	1036.3	1044.0	1054.2	1065.8	1077.4	1085.1	1094.0	1109.5	1124.9	1133.9
15°	1004.2	1010.6	1019.6	1029.8	1042.7	1055.5	1067.1	1078.6	1094.0	1110.7	1121.0
17.5°	975.9	982.3	991.3	1004.2	1018.3	1032.4	1045.2	1058.1	1076.1	1094.0	1105.6
20°	941.2	950.2	961.8	974.6	991.3	1008.0	1020.9	1035.0	1054.2	1073.5	1086.3
22.5°	907.9	916.8	929.7	945.1	963.1	981.0	996.5	1011.9	1032.4	1051.7	1065.8
25°	875.7	886.0	898.9	914.3	931.0	948.9	966.9	984.9	1005.4	1026.0	1040.1
27.5°	843.6	852.6	865.5	880.9	900.1	918.1	936.1	954.1	975.9	997.7	1013.1
30°	807.7	818.0	829.5	844.9	865.5	886.0	904.0	923.3	945.1	966.9	982.3
32.5°	774.3	783.3	794.9	810.3	830.8	851.4	870.6	891.2	911.7	933.5	948.9
35°	740.9	749.9	761.5	776.9	797.4	818.0	837.2	856.5	877.0	897.6	913.0
37.5°	707.5	716.5	728.1	743.5	762.7	783.3	801.3	820.5	841.1	861.6	875.7
40°	672.9	681.9	690.8	706.2	725.5	746.1	764.0	783.3	803.8	824.4	838.5
42.5°	638.2	647.2	658.7	674.1	692.1	710.1	728.1	746.1	765.3	784.6	798.7
45°	603.5	611.2	622.8	636.9	654.9	671.6	689.6	706.2	725.5	743.5	757.6
47.5°	567.6	575.3	584.3	598.4	616.4	634.3	652.3	669.0	685.7	703.7	716.5
50°	532.9	540.6	550.9	563.7	580.4	597.1	612.5	627.9	644.6	661.3	672.9
52.5°	496.9	504.6	513.6	526.5	540.6	556.0	570.1	585.5	601.0	616.4	627.9
55°	461.0	466.1	473.8	485.4	500.8	516.2	530.3	544.5	558.6	571.4	583.0
57.5°	425.0	431.5	440.4	450.7	463.6	476.4	489.2	502.1	514.9	527.8	538.0
60°	389.1	394.2	400.6	409.6	422.5	434.0	446.9	458.4	470.0	481.5	490.5
62.5°	351.8	357.0	363.4	372.4	382.7	392.9	404.5	414.8	425.0	435.3	444.3
65°	313.3	318.5	324.9	332.6	341.6	350.6	360.8	371.1	378.8	386.5	395.5
67.5°	273.5	278.6	285.1	291.5	299.2	308.2	317.2	326.2	333.9	341.6	348.0
70°	235.0	238.8	245.3	250.4	256.8	263.2	270.9	278.6	283.8	290.2	297.9
72.5°	197.7	201.6	206.7	211.9	215.7	220.9	228.6	235.0	241.4	249.1	253.0
75°	161.8	164.4	168.2	172.1	175.9	179.8	184.9	190.0	195.2	199.0	204.2
77.5°	125.8	128.4	132.3	134.8	137.4	140.0	143.8	147.7	151.5	154.1	159.2
80°	92.5	95.0	97.6	100.2	102.7	105.3	106.6	107.9	113.0	116.9	119.4
82.5°	62.9	64.2	65.5	68.1	69.3	70.6	71.9	71.9	74.5	77.0	80.9
85°	36.0	37.2	38.5	38.5	38.5	38.5	39.8	41.1	42.4	44.9	47.5
87.5°	14.1	14.1	15.4	15.4	15.4	15.4	15.4	15.4	16.7	19.3	20.5
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: P709110

CATALOG NUMBER: 4APN-32L830-X-UNV

CANDELA DISTRIBUTION (continued):

	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°
0°	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1	1135.1
2.5°	1141.6	1142.8	1145.4	1146.7	1148.0	1148.0	1149.3	1150.5	1148.0	1145.4	1144.1
5°	1148.0	1149.3	1153.1	1157.0	1159.5	1162.1	1160.8	1159.5	1157.0	1153.1	1150.5
7.5°	1149.3	1153.1	1157.0	1162.1	1166.0	1171.1	1168.5	1166.0	1160.8	1155.7	1151.8
10°	1145.4	1150.5	1157.0	1163.4	1167.2	1171.1	1168.5	1166.0	1160.8	1154.4	1149.3
12.5°	1140.3	1146.7	1154.4	1160.8	1164.7	1169.8	1166.0	1162.1	1155.7	1149.3	1142.8
15°	1128.7	1136.4	1145.4	1153.1	1159.5	1164.7	1160.8	1158.2	1150.5	1141.6	1132.6
17.5°	1114.6	1124.9	1133.9	1142.8	1148.0	1153.1	1150.5	1148.0	1139.0	1128.7	1118.4
20°	1097.9	1108.2	1117.2	1126.1	1132.6	1137.7	1133.9	1130.0	1121.0	1112.0	1101.7
22.5°	1077.4	1087.6	1097.9	1106.9	1113.3	1118.4	1113.3	1106.9	1097.9	1088.9	1078.6
25°	1051.7	1063.2	1074.8	1083.8	1087.6	1092.8	1087.6	1082.5	1073.5	1064.5	1053.0
27.5°	1026.0	1037.5	1049.1	1058.1	1061.9	1067.1	1061.9	1056.8	1047.8	1038.8	1027.3
30°	996.5	1008.0	1019.6	1028.6	1032.4	1036.3	1031.1	1026.0	1018.3	1009.3	997.7
32.5°	963.1	974.6	983.6	992.6	997.7	1002.9	997.7	993.9	984.9	973.3	961.8
35°	927.1	938.7	950.2	959.2	964.4	969.5	963.1	956.6	948.9	940.0	929.7
37.5°	887.3	900.1	913.0	923.3	927.1	932.2	927.1	920.7	913.0	904.0	892.4
40°	850.1	861.6	873.2	883.5	887.3	891.2	886.0	880.9	871.9	862.9	851.4
42.5°	811.5	823.1	833.4	842.4	846.2	851.4	846.2	839.8	833.4	825.7	815.4
45°	770.5	782.0	791.0	800.0	803.8	807.7	802.6	796.1	789.7	783.3	773.0
47.5°	728.1	738.4	747.3	756.3	758.9	762.7	757.6	753.8	747.3	740.9	731.9
50°	684.4	694.7	703.7	711.4	714.0	717.8	712.7	707.5	702.4	697.3	689.6
52.5°	639.5	648.5	657.5	665.2	667.7	670.3	665.2	660.0	654.9	649.7	642.0
55°	593.2	602.2	611.2	617.6	620.2	622.8	617.6	613.8	608.7	604.8	597.1
57.5°	547.0	556.0	563.7	570.1	572.7	575.3	570.1	565.0	561.1	557.3	550.9
60°	499.5	508.5	514.9	520.1	522.6	523.9	518.8	514.9	512.4	509.8	503.4
62.5°	453.3	459.7	466.1	470.0	472.5	473.8	470.0	467.4	464.8	462.3	457.1
65°	404.5	412.2	417.3	421.2	422.5	423.7	419.9	417.3	414.8	412.2	408.3
67.5°	355.7	362.1	366.0	369.8	371.1	371.1	371.1	369.8	367.2	363.4	359.5
70°	306.9	312.0	315.9	318.5	319.7	319.7	317.2	314.6	314.6	313.3	310.7
72.5°	256.8	260.7	263.2	265.8	265.8	265.8	265.8	267.1	265.8	263.2	259.4
75°	209.3	213.2	215.7	217.0	217.0	217.0	217.0	218.3	217.0	215.7	213.2
77.5°	164.4	166.9	168.2	169.5	169.5	169.5	170.8	172.1	170.8	169.5	168.2
80°	122.0	123.3	124.6	125.8	124.6	124.6	125.8	128.4	127.1	125.8	124.6
82.5°	83.5	84.7	86.0	86.0	87.3	88.6	88.6	88.6	88.6	87.3	86.0
85°	50.1	51.4	51.4	51.4	51.4	51.4	52.6	53.9	53.9	52.6	52.6
87.5°	23.1	24.4	23.1	21.8	20.5	20.5	23.1	25.7	25.7	24.4	24.4
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: P709110
 CATALOG NUMBER: 4APN-32L830-X-UNV

CANDELA DISTRIBUTION (continued):

	330°	340°	350°	360°
0°	1135.1	1135.1	1135.1	1135.1
2.5°	1145.4	1144.1	1137.7	1131.3
5°	1149.3	1145.4	1136.4	1127.4
7.5°	1149.3	1144.1	1131.3	1119.7
10°	1142.8	1135.1	1121.0	1106.9
12.5°	1135.1	1126.1	1109.5	1094.0
15°	1123.6	1113.3	1095.3	1077.4
17.5°	1106.9	1094.0	1076.1	1056.8
20°	1090.2	1076.1	1054.2	1033.7
22.5°	1067.1	1054.2	1031.1	1009.3
25°	1041.4	1027.3	1004.2	981.0
27.5°	1014.4	997.7	974.6	951.5
30°	983.6	966.9	943.8	920.7
32.5°	950.2	934.8	911.7	887.3
35°	916.8	900.1	877.0	852.6
37.5°	879.6	864.2	841.1	818.0
40°	839.8	824.4	801.3	778.2
42.5°	802.6	788.4	765.3	743.5
45°	761.5	747.3	725.5	705.0
47.5°	719.1	705.0	684.4	663.9
50°	678.0	663.9	644.6	625.4
52.5°	631.8	620.2	602.2	584.3
55°	586.8	575.3	557.3	540.6
57.5°	541.9	531.6	514.9	499.5
60°	494.4	484.1	471.3	457.1
62.5°	449.4	440.4	427.6	414.8
65°	401.9	394.2	382.7	371.1
67.5°	353.1	346.7	336.4	326.2
70°	304.3	296.6	288.9	279.9
72.5°	255.5	251.7	244.0	236.3
75°	209.3	205.5	199.0	192.6
77.5°	165.6	161.8	156.7	151.5
80°	122.0	119.4	115.6	111.7
82.5°	84.7	82.2	79.6	75.8
85°	51.4	48.8	46.2	43.7
87.5°	23.1	21.8	19.3	18.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)