

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: P709117

Luminaire Tested: **4APN-28L835-X-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709117
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-28L835-X-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient Light
Light Source: 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

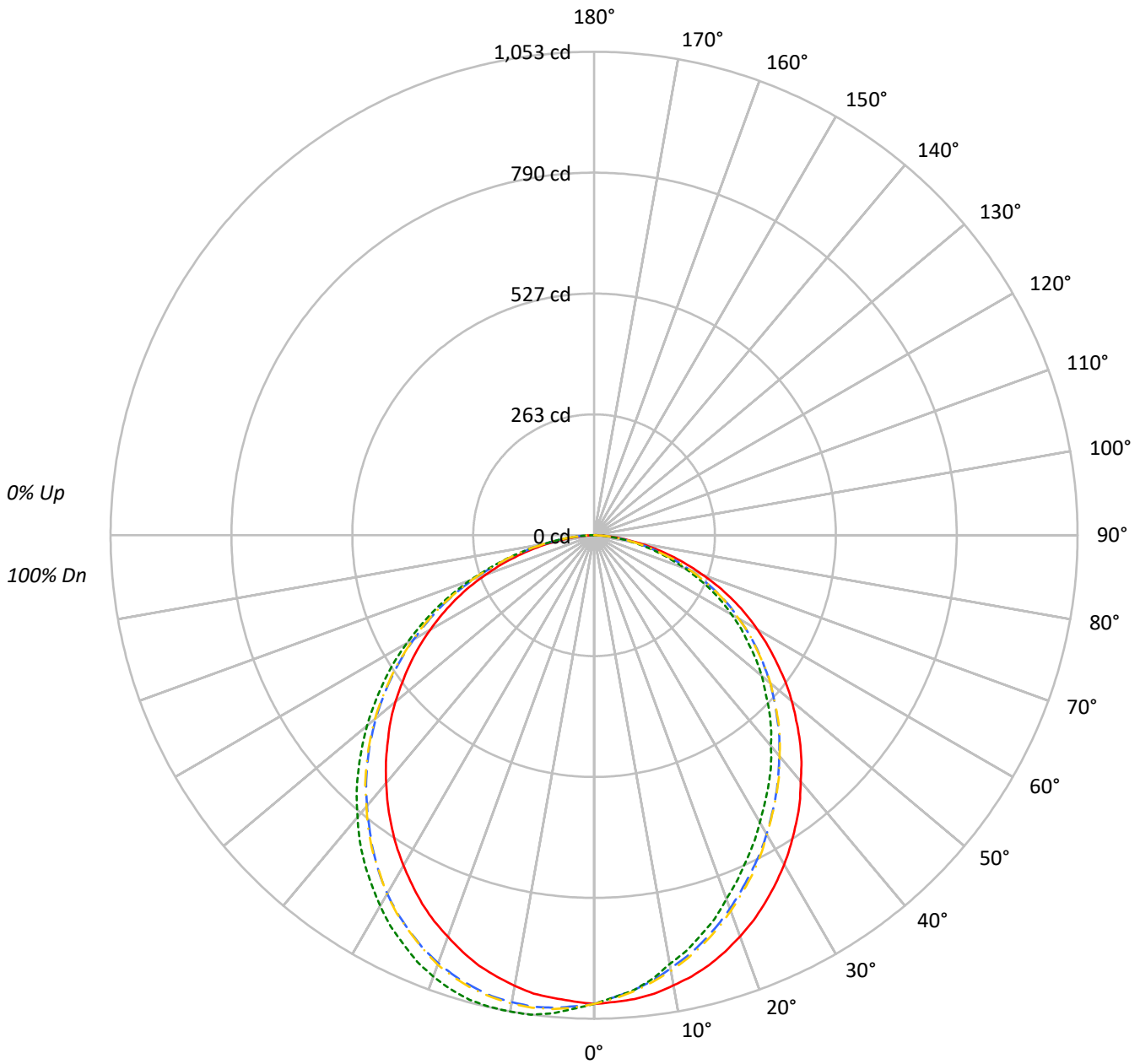
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2738.0 lumens
Efficiency: N/A
Efficacy: 85.0 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	102	102	102	100
1	109	104	100	96	106	102	98	95	98	94	92	94	91	89	90	88	86	86	86	86	84
2	99	91	84	78	96	89	83	77	85	80	76	82	78	74	79	76	72	72	72	72	70
3	90	80	72	65	88	78	71	65	75	69	64	73	67	62	70	65	61	61	61	61	59
4	83	71	62	55	81	70	61	55	67	60	54	65	59	54	63	57	53	53	53	53	51
5	76	63	54	48	74	62	54	48	60	53	47	58	52	47	56	51	46	46	46	46	44
6	70	57	48	42	68	56	48	42	54	47	41	53	46	41	51	45	41	41	41	41	38
7	65	52	43	37	64	51	43	37	49	42	37	48	41	36	47	41	36	36	36	36	34
8	61	47	39	33	59	47	39	33	45	38	33	44	37	33	43	37	32	32	32	32	30
9	57	43	35	30	55	43	35	30	42	35	30	41	34	29	40	34	29	29	29	29	27
10	53	40	32	27	52	40	32	27	39	32	27	38	31	27	37	31	27	27	27	27	25

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°	270°
0°	9419	9419	9419	9419
5°	9391	9210	9370	9680
10°	9326	8883	9338	9868
15°	9255	8604	9266	10005
20°	9128	8278	9139	10046
25°	8982	7971	9017	10005
30°	8822	7690	8847	9929
35°	8637	7466	8676	9820
40°	8430	7219	8485	9653
45°	8272	7037	8288	9478
50°	8072	6847	8105	9267
55°	7821	6595	7877	9009
60°	7586	6394	7608	8695
65°	7287	6126	7287	8320
70°	6792	5670	6760	7758
75°	6174	5147	6092	6958
80°	5340	4421	5154	5951
85°	4160	3303	3917	4891



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	96.5	3.5
10°-20°	273.8	10.0
20°-30°	407.0	14.9
30°-40°	479.7	17.5
40°-50°	488.4	17.8
50°-60°	435.1	15.9
60°-70°	327.8	12.0
70°-80°	182.3	6.7
80°-90°	47.4	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°	777.2	28.4
0°-40°	1257.0	45.9
0°-60°	2180.5	79.6
0°-90°	2738.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2738.0	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1021	1021	1021	1021	1021	
5°	1014	994	1012	1045	1014	96
15°	969	901	970	1048	969	273
25°	882	783	886	983	882	406
35°	767	663	770	872	767	480
45°	634	539	635	726	634	489
55°	486	410	490	560	486	436
65°	334	281	334	381	334	329
75°	173	144	171	195	173	184
85°	39	31	37	46	39	47
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°	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9
2.5°	1017.5	1017.5	1018.6	1014.0	1008.2	1005.9	1004.7	1003.6	1005.9	1007.1	1005.9
5°	1014.0	1011.7	1009.4	1003.6	996.7	992.0	989.7	988.6	990.9	994.4	990.9
7.5°	1007.1	1002.4	997.8	989.7	981.7	974.7	971.3	968.9	971.3	974.7	972.4
10°	995.5	989.7	982.8	973.6	962.0	953.9	950.5	947.0	948.2	948.2	948.2
12.5°	984.0	975.9	967.8	956.2	943.5	934.3	928.5	923.9	926.2	927.4	927.4
15°	968.9	958.6	947.0	934.3	921.6	911.2	904.3	899.7	900.8	900.8	902.0
17.5°	950.5	938.9	927.4	912.4	897.3	885.8	877.7	871.9	874.2	875.4	876.6
20°	929.7	917.0	904.3	888.1	871.9	859.2	851.1	844.2	843.1	843.1	844.2
22.5°	907.7	893.9	878.9	861.5	844.2	830.4	822.3	815.3	814.2	814.2	815.3
25°	882.3	867.3	852.3	835.0	816.5	802.6	792.2	785.3	784.2	783.0	785.3
27.5°	855.8	840.8	825.7	808.4	788.8	774.9	764.5	757.6	755.3	754.1	756.4
30°	828.1	810.7	794.6	776.1	758.8	744.9	734.5	726.4	724.1	721.8	724.1
32.5°	798.0	780.7	763.4	744.9	727.6	713.7	703.3	695.2	692.9	691.8	694.1
35°	766.8	749.5	733.4	714.9	697.5	683.7	673.3	666.4	664.1	662.9	664.1
37.5°	735.7	718.3	702.2	683.7	666.4	652.5	642.1	635.2	634.0	632.9	634.0
40°	699.9	684.8	668.7	651.4	634.0	620.2	612.1	604.0	601.7	599.4	602.8
42.5°	668.7	653.7	637.5	621.3	604.0	590.1	580.9	574.0	571.7	570.5	571.7
45°	634.0	617.9	601.7	586.7	570.5	557.8	548.6	541.6	540.5	539.3	540.5
47.5°	597.1	583.2	569.4	554.3	538.2	525.5	517.4	510.5	508.1	505.8	508.1
50°	562.4	548.6	534.7	520.9	505.8	494.3	486.2	479.3	478.1	477.0	478.1
52.5°	525.5	511.6	498.9	485.1	472.3	460.8	452.7	446.9	445.8	444.6	445.8
55°	486.2	474.7	463.1	451.6	438.9	428.5	421.5	414.6	412.3	410.0	412.3
57.5°	449.2	438.9	427.3	415.8	404.2	395.0	388.0	382.3	381.1	380.0	381.1
60°	411.1	401.9	391.5	381.1	369.6	360.3	354.5	349.9	347.6	346.5	347.6
62.5°	373.0	363.8	355.7	345.3	334.9	328.0	322.2	317.6	315.3	314.1	315.3
65°	333.8	325.7	317.6	308.4	300.3	293.3	287.6	282.9	281.8	280.6	280.6
67.5°	293.3	286.4	279.5	271.4	262.2	255.2	249.5	246.0	244.8	243.7	244.8
70°	251.8	246.0	239.1	232.1	225.2	219.4	216.0	212.5	211.3	210.2	210.2
72.5°	212.5	207.9	202.1	196.3	190.6	184.8	181.3	179.0	177.9	176.7	176.7
75°	173.2	168.6	165.1	160.5	154.8	151.3	147.8	145.5	144.4	144.4	144.4
77.5°	136.3	132.8	129.3	124.7	121.3	117.8	115.5	114.3	113.2	113.2	113.2
80°	100.5	98.2	95.9	93.5	90.1	86.6	85.5	84.3	83.2	83.2	83.2
82.5°	68.1	67.0	64.7	62.4	60.1	58.9	57.7	56.6	56.6	56.6	56.6
85°	39.3	38.1	37.0	35.8	34.6	34.6	33.5	32.3	31.2	31.2	31.2
87.5°	16.2	16.2	16.2	15.0	13.9	13.9	13.9	13.9	13.9	13.9	13.9
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):

	110°	120°	130°	140°	150°	160°	170°	180°	190°	200°	210°
0°	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9
2.5°	1003.6	1005.9	1008.2	1011.7	1015.1	1018.6	1017.5	1016.3	1020.9	1026.7	1027.8
5°	988.6	990.9	994.4	1000.1	1005.9	1010.5	1011.7	1011.7	1020.9	1029.0	1031.3
7.5°	970.1	973.6	978.2	984.0	992.0	999.0	1002.4	1007.1	1016.3	1026.7	1031.3
10°	947.0	952.8	959.7	967.8	975.9	984.0	990.9	996.7	1008.2	1019.8	1026.7
12.5°	926.2	932.0	938.9	948.2	958.6	968.9	975.9	984.0	997.8	1011.7	1019.8
15°	903.1	908.9	917.0	926.2	937.8	949.3	959.7	970.1	984.0	999.0	1008.2
17.5°	877.7	883.5	891.6	903.1	915.8	928.5	940.1	951.6	967.8	984.0	994.4
20°	846.5	854.6	865.0	876.6	891.6	906.6	918.1	930.8	948.2	965.5	977.0
22.5°	816.5	824.6	836.1	850.0	866.2	882.3	896.2	910.0	928.5	945.8	958.6
25°	787.6	796.9	808.4	822.3	837.3	853.5	869.6	885.8	904.3	922.8	935.5
27.5°	758.8	766.8	778.4	792.2	809.6	825.7	841.9	858.1	877.7	897.3	911.2
30°	726.4	735.7	746.1	759.9	778.4	796.9	813.0	830.4	850.0	869.6	883.5
32.5°	696.4	704.5	714.9	728.7	747.2	765.7	783.0	801.5	820.0	839.6	853.5
35°	666.4	674.5	684.8	698.7	717.2	735.7	753.0	770.3	788.8	807.3	821.1
37.5°	636.3	644.4	654.8	668.7	686.0	704.5	720.6	738.0	756.4	774.9	787.6
40°	605.2	613.2	621.3	635.2	652.5	671.0	687.2	704.5	723.0	741.4	754.1
42.5°	574.0	582.1	592.5	606.3	622.5	638.7	654.8	671.0	688.3	705.6	718.3
45°	542.8	549.7	560.1	572.8	589.0	604.0	620.2	635.2	652.5	668.7	681.4
47.5°	510.5	517.4	525.5	538.2	554.3	570.5	586.7	601.7	616.7	632.9	644.4
50°	479.3	486.2	495.4	507.0	522.0	537.0	550.9	564.7	579.8	594.8	605.2
52.5°	446.9	453.9	462.0	473.5	486.2	500.1	512.8	526.6	540.5	554.3	564.7
55°	414.6	419.2	426.2	436.5	450.4	464.3	477.0	489.7	502.4	513.9	524.3
57.5°	382.3	388.0	396.1	405.4	416.9	428.5	440.0	451.6	463.1	474.7	483.9
60°	349.9	354.5	360.3	368.4	380.0	390.4	401.9	412.3	422.7	433.1	441.2
62.5°	316.4	321.1	326.8	334.9	344.2	353.4	363.8	373.0	382.3	391.5	399.6
65°	281.8	286.4	292.2	299.1	307.2	315.3	324.5	333.8	340.7	347.6	355.7
67.5°	246.0	250.6	256.4	262.2	269.1	277.2	285.3	293.3	300.3	307.2	313.0
70°	211.3	214.8	220.6	225.2	231.0	236.8	243.7	250.6	255.2	261.0	267.9
72.5°	177.9	181.3	185.9	190.6	194.0	198.6	205.6	211.3	217.1	224.0	227.5
75°	145.5	147.8	151.3	154.8	158.2	161.7	166.3	170.9	175.5	179.0	183.6
77.5°	113.2	115.5	119.0	121.3	123.6	125.9	129.3	132.8	136.3	138.6	143.2
80°	83.2	85.5	87.8	90.1	92.4	94.7	95.9	97.0	101.6	105.1	107.4
82.5°	56.6	57.7	58.9	61.2	62.4	63.5	64.7	64.7	67.0	69.3	72.8
85°	32.3	33.5	34.6	34.6	34.6	34.6	35.8	37.0	38.1	40.4	42.7
87.5°	12.7	12.7	13.9	13.9	13.9	13.9	13.9	13.9	15.0	17.3	18.5
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°	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9	1020.9
2.5°	1026.7	1027.8	1030.2	1031.3	1032.5	1032.5	1033.6	1034.8	1032.5	1030.2	1029.0
5°	1032.5	1033.6	1037.1	1040.5	1042.9	1045.2	1044.0	1042.9	1040.5	1037.1	1034.8
7.5°	1033.6	1037.1	1040.5	1045.2	1048.6	1053.3	1050.9	1048.6	1044.0	1039.4	1035.9
10°	1030.2	1034.8	1040.5	1046.3	1049.8	1053.3	1050.9	1048.6	1044.0	1038.2	1033.6
12.5°	1025.5	1031.3	1038.2	1044.0	1047.5	1052.1	1048.6	1045.2	1039.4	1033.6	1027.8
15°	1015.1	1022.1	1030.2	1037.1	1042.9	1047.5	1044.0	1041.7	1034.8	1026.7	1018.6
17.5°	1002.4	1011.7	1019.8	1027.8	1032.5	1037.1	1034.8	1032.5	1024.4	1015.1	1005.9
20°	987.4	996.7	1004.7	1012.8	1018.6	1023.2	1019.8	1016.3	1008.2	1000.1	990.9
22.5°	968.9	978.2	987.4	995.5	1001.3	1005.9	1001.3	995.5	987.4	979.3	970.1
25°	945.8	956.2	966.6	974.7	978.2	982.8	978.2	973.6	965.5	957.4	947.0
27.5°	922.8	933.1	943.5	951.6	955.1	959.7	955.1	950.5	942.4	934.3	923.9
30°	896.2	906.6	917.0	925.1	928.5	932.0	927.4	922.8	915.8	907.7	897.3
32.5°	866.2	876.6	884.6	892.7	897.3	902.0	897.3	893.9	885.8	875.4	865.0
35°	833.8	844.2	854.6	862.7	867.3	871.9	866.2	860.4	853.5	845.4	836.1
37.5°	798.0	809.6	821.1	830.4	833.8	838.4	833.8	828.1	821.1	813.0	802.6
40°	764.5	774.9	785.3	794.6	798.0	801.5	796.9	792.2	784.2	776.1	765.7
42.5°	729.9	740.3	749.5	757.6	761.1	765.7	761.1	755.3	749.5	742.6	733.4
45°	692.9	703.3	711.4	719.5	723.0	726.4	721.8	716.0	710.3	704.5	695.2
47.5°	654.8	664.1	672.1	680.2	682.5	686.0	681.4	677.9	672.1	666.4	658.3
50°	615.6	624.8	632.9	639.8	642.1	645.6	641.0	636.3	631.7	627.1	620.2
52.5°	575.1	583.2	591.3	598.2	600.5	602.8	598.2	593.6	589.0	584.4	577.4
55°	533.6	541.6	549.7	555.5	557.8	560.1	555.5	552.0	547.4	543.9	537.0
57.5°	492.0	500.1	507.0	512.8	515.1	517.4	512.8	508.1	504.7	501.2	495.4
60°	449.2	457.3	463.1	467.7	470.0	471.2	466.6	463.1	460.8	458.5	452.7
62.5°	407.7	413.4	419.2	422.7	425.0	426.2	422.7	420.4	418.1	415.8	411.1
65°	363.8	370.7	375.3	378.8	380.0	381.1	377.6	375.3	373.0	370.7	367.3
67.5°	319.9	325.7	329.1	332.6	333.8	333.8	333.8	332.6	330.3	326.8	323.4
70°	276.0	280.6	284.1	286.4	287.6	287.6	285.3	282.9	282.9	281.8	279.5
72.5°	231.0	234.4	236.8	239.1	239.1	239.1	239.1	240.2	239.1	236.8	233.3
75°	188.2	191.7	194.0	195.2	195.2	195.2	195.2	196.3	195.2	194.0	191.7
77.5°	147.8	150.1	151.3	152.4	152.4	152.4	153.6	154.8	153.6	152.4	151.3
80°	109.7	110.9	112.0	113.2	112.0	112.0	113.2	115.5	114.3	113.2	112.0
82.5°	75.1	76.2	77.4	77.4	78.5	79.7	79.7	79.7	79.7	78.5	77.4
85°	45.0	46.2	46.2	46.2	46.2	46.2	47.4	48.5	48.5	47.4	47.4
87.5°	20.8	21.9	20.8	19.6	18.5	18.5	20.8	23.1	23.1	21.9	21.9
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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CATALOG NUMBER: 4APN-28L835-X-UNV

CANDELA DISTRIBUTION (continued):

	330°	340°	350°	360°
0°	1020.9	1020.9	1020.9	1020.9
2.5°	1030.2	1029.0	1023.2	1017.5
5°	1033.6	1030.2	1022.1	1014.0
7.5°	1033.6	1029.0	1017.5	1007.1
10°	1027.8	1020.9	1008.2	995.5
12.5°	1020.9	1012.8	997.8	984.0
15°	1010.5	1001.3	985.1	968.9
17.5°	995.5	984.0	967.8	950.5
20°	980.5	967.8	948.2	929.7
22.5°	959.7	948.2	927.4	907.7
25°	936.6	923.9	903.1	882.3
27.5°	912.4	897.3	876.6	855.8
30°	884.6	869.6	848.8	828.1
32.5°	854.6	840.8	820.0	798.0
35°	824.6	809.6	788.8	766.8
37.5°	791.1	777.2	756.4	735.7
40°	755.3	741.4	720.6	699.9
42.5°	721.8	709.1	688.3	668.7
45°	684.8	672.1	652.5	634.0
47.5°	646.7	634.0	615.6	597.1
50°	609.8	597.1	579.8	562.4
52.5°	568.2	557.8	541.6	525.5
55°	527.8	517.4	501.2	486.2
57.5°	487.4	478.1	463.1	449.2
60°	444.6	435.4	423.8	411.1
62.5°	404.2	396.1	384.6	373.0
65°	361.5	354.5	344.2	333.8
67.5°	317.6	311.8	302.6	293.3
70°	273.7	266.8	259.8	251.8
72.5°	229.8	226.4	219.4	212.5
75°	188.2	184.8	179.0	173.2
77.5°	149.0	145.5	140.9	136.3
80°	109.7	107.4	103.9	100.5
82.5°	76.2	73.9	71.6	68.1
85°	46.2	43.9	41.6	39.3
87.5°	20.8	19.6	17.3	16.2
90°	0.0	0.0	0.0	0.0

(END OF REPORT)