

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: P709111

Luminaire Tested: **4APN-28L830-X-UNV**

Issue Date: 09/12/2023



Test Information

Test Method: LM-79-08
Report Number: P709111
Test Lab: INNOVATION CENTER(G2)
Issue Date: 09/12/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APN-28L830-X-UNV
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient Light
Light Source: 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

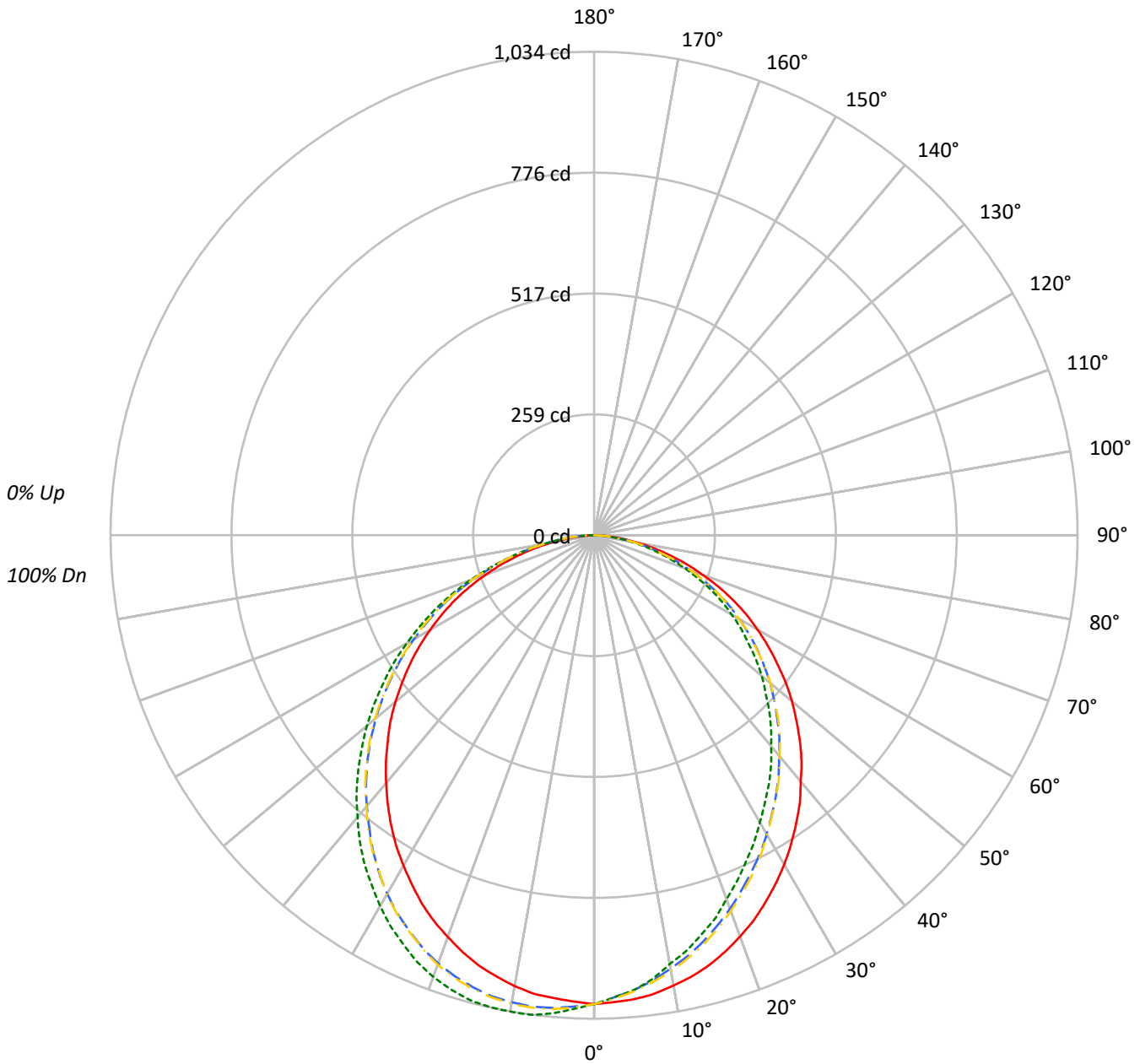
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2689.3 lumens
Efficiency: N/A
Efficacy: 83.5 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				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°	9251	9251	9251	9251
5°	9223	9045	9203	9508
10°	9161	8725	9171	9692
15°	9090	8451	9101	9827
20°	8965	8130	8977	9867
25°	8822	7829	8857	9827
30°	8664	7552	8689	9752
35°	8483	7333	8522	9646
40°	8279	7090	8333	9481
45°	8125	6911	8141	9310
50°	7929	6725	7962	9102
55°	7681	6478	7735	8849
60°	7451	6279	7471	8540
65°	7156	6017	7156	8171
70°	6671	5568	6639	7618
75°	6064	5055	5985	6834
80°	5244	4341	5063	5844
85°	4086	3239	3843	4806



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	94.8	3.5
10°-20°	268.9	10.0
20°-30°	399.8	14.9
30°-40°	471.2	17.5
40°-50°	479.7	17.8
50°-60°	427.4	15.9
60°-70°	322.0	12.0
70°-80°	179.1	6.7
80°-90°	46.5	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°	763.4	28.4
0°-40°	1234.6	45.9
0°-60°	2141.7	79.6
0°-90°	2689.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2689.3	100.0

CANDELA DISTRIBUTION:

	0°	90°	180°	270°	360°	Flux
0°	1003	1003	1003	1003	1003	
5°	996	977	994	1027	996	95
15°	952	885	953	1029	952	268
25°	867	769	870	965	867	399
35°	753	651	757	856	753	471
45°	623	530	624	714	623	480
55°	478	403	481	550	478	428
65°	328	276	328	374	328	324
75°	170	142	168	192	170	181
85°	39	31	36	45	39	46
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°	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7
2.5°	999.3	999.3	1000.5	995.9	990.3	988.0	986.9	985.7	988.0	989.1	988.0
5°	995.9	993.7	991.4	985.7	978.9	974.4	972.1	971.0	973.2	976.6	973.2
7.5°	989.1	984.6	980.0	972.1	964.2	957.4	954.0	951.7	954.0	957.4	955.1
10°	977.8	972.1	965.3	956.2	944.9	936.9	933.5	930.1	931.3	931.3	931.3
12.5°	966.4	958.5	950.6	939.2	926.7	917.7	912.0	907.5	909.7	910.9	910.9
15°	951.7	941.5	930.1	917.7	905.2	895.0	888.2	883.6	884.8	884.8	885.9
17.5°	933.5	922.2	910.9	896.1	881.4	870.0	862.1	856.4	858.7	859.8	860.9
20°	913.1	900.6	888.2	872.3	856.4	843.9	836.0	829.2	828.0	828.0	829.2
22.5°	891.6	878.0	863.2	846.2	829.2	815.6	807.6	800.8	799.7	799.7	800.8
25°	866.6	851.9	837.1	820.1	802.0	788.3	778.1	771.3	770.2	769.1	771.3
27.5°	840.5	825.8	811.0	794.0	774.7	761.1	750.9	744.1	741.8	740.7	743.0
30°	813.3	796.3	780.4	762.3	745.2	731.6	721.4	713.5	711.2	708.9	711.2
32.5°	783.8	766.8	749.8	731.6	714.6	701.0	690.8	682.9	680.6	679.5	681.7
35°	753.2	736.2	720.3	702.1	685.1	671.5	661.3	654.5	652.2	651.1	652.2
37.5°	722.6	705.5	689.7	671.5	654.5	640.9	630.7	623.9	622.7	621.6	622.7
40°	687.4	672.6	656.8	639.8	622.7	609.1	601.2	593.2	591.0	588.7	592.1
42.5°	656.8	642.0	626.1	610.3	593.2	579.6	570.6	563.8	561.5	560.4	561.5
45°	622.7	606.9	591.0	576.2	560.4	547.9	538.8	532.0	530.9	529.7	530.9
47.5°	586.4	572.8	559.2	544.5	528.6	516.1	508.2	501.4	499.1	496.8	499.1
50°	552.4	538.8	525.2	511.6	496.8	485.5	477.5	470.7	469.6	468.5	469.6
52.5°	516.1	502.5	490.0	476.4	463.9	452.6	444.7	439.0	437.8	436.7	437.8
55°	477.5	466.2	454.9	443.5	431.0	420.8	414.0	407.2	404.9	402.7	404.9
57.5°	441.2	431.0	419.7	408.4	397.0	387.9	381.1	375.5	374.3	373.2	374.3
60°	403.8	394.7	384.5	374.3	363.0	353.9	348.2	343.7	341.4	340.3	341.4
62.5°	366.4	357.3	349.4	339.2	329.0	322.1	316.5	311.9	309.7	308.5	309.7
65°	327.8	319.9	311.9	302.9	294.9	288.1	282.4	277.9	276.8	275.6	275.6
67.5°	288.1	281.3	274.5	266.6	257.5	250.7	245.0	241.6	240.5	239.3	240.5
70°	247.3	241.6	234.8	228.0	221.2	215.5	212.1	208.7	207.6	206.4	206.4
72.5°	208.7	204.2	198.5	192.8	187.2	181.5	178.1	175.8	174.7	173.5	173.5
75°	170.1	165.6	162.2	157.7	152.0	148.6	145.2	142.9	141.8	141.8	141.8
77.5°	133.8	130.4	127.0	122.5	119.1	115.7	113.4	112.3	111.2	111.2	111.2
80°	98.7	96.4	94.1	91.9	88.5	85.1	83.9	82.8	81.7	81.7	81.7
82.5°	66.9	65.8	63.5	61.3	59.0	57.8	56.7	55.6	55.6	55.6	55.6
85°	38.6	37.4	36.3	35.2	34.0	34.0	32.9	31.8	30.6	30.6	30.6
87.5°	15.9	15.9	15.9	14.7	13.6	13.6	13.6	13.6	13.6	13.6	13.6
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°	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7
2.5°	985.7	988.0	990.3	993.7	997.1	1000.5	999.3	998.2	1002.7	1008.4	1009.5
5°	971.0	973.2	976.6	982.3	988.0	992.5	993.7	993.7	1002.7	1010.7	1012.9
7.5°	952.8	956.2	960.8	966.4	974.4	981.2	984.6	989.1	998.2	1008.4	1012.9
10°	930.1	935.8	942.6	950.6	958.5	966.4	973.2	978.9	990.3	1001.6	1008.4
12.5°	909.7	915.4	922.2	931.3	941.5	951.7	958.5	966.4	980.0	993.7	1001.6
15°	887.0	892.7	900.6	909.7	921.1	932.4	942.6	952.8	966.4	981.2	990.3
17.5°	862.1	867.7	875.7	887.0	899.5	912.0	923.3	934.7	950.6	966.4	976.6
20°	831.5	839.4	849.6	860.9	875.7	890.4	901.8	914.3	931.3	948.3	959.6
22.5°	802.0	809.9	821.2	834.9	850.7	866.6	880.2	893.8	912.0	929.0	941.5
25°	773.6	782.7	794.0	807.6	822.4	838.3	854.1	870.0	888.2	906.3	918.8
27.5°	745.2	753.2	764.5	778.1	795.2	811.0	826.9	842.8	862.1	881.4	895.0
30°	713.5	722.6	732.8	746.4	764.5	782.7	798.6	815.6	834.9	854.1	867.7
32.5°	684.0	691.9	702.1	715.8	733.9	752.0	769.1	787.2	805.4	824.6	838.3
35°	654.5	662.4	672.6	686.3	704.4	722.6	739.6	756.6	774.7	792.9	806.5
37.5°	625.0	632.9	643.2	656.8	673.8	691.9	707.8	724.8	743.0	761.1	773.6
40°	594.4	602.3	610.3	623.9	640.9	659.0	674.9	691.9	710.1	728.2	740.7
42.5°	563.8	571.7	581.9	595.5	611.4	627.3	643.2	659.0	676.1	693.1	705.5
45°	533.1	539.9	550.1	562.6	578.5	593.2	609.1	623.9	640.9	656.8	669.2
47.5°	501.4	508.2	516.1	528.6	544.5	560.4	576.2	591.0	605.7	621.6	632.9
50°	470.7	477.5	486.6	498.0	512.7	527.5	541.1	554.7	569.4	584.2	594.4
52.5°	439.0	445.8	453.7	465.1	477.5	491.2	503.6	517.2	530.9	544.5	554.7
55°	407.2	411.8	418.6	428.8	442.4	456.0	468.5	480.9	493.4	504.8	515.0
57.5°	375.5	381.1	389.1	398.1	409.5	420.8	432.2	443.5	454.9	466.2	475.3
60°	343.7	348.2	353.9	361.8	373.2	383.4	394.7	404.9	415.2	425.4	433.3
62.5°	310.8	315.3	321.0	329.0	338.0	347.1	357.3	366.4	375.5	384.5	392.5
65°	276.8	281.3	287.0	293.8	301.7	309.7	318.7	327.8	334.6	341.4	349.4
67.5°	241.6	246.1	251.8	257.5	264.3	272.2	280.2	288.1	294.9	301.7	307.4
70°	207.6	211.0	216.7	221.2	226.9	232.5	239.3	246.1	250.7	256.4	263.2
72.5°	174.7	178.1	182.6	187.2	190.6	195.1	201.9	207.6	213.3	220.1	223.5
75°	142.9	145.2	148.6	152.0	155.4	158.8	163.3	167.9	172.4	175.8	180.4
77.5°	111.2	113.4	116.8	119.1	121.4	123.6	127.0	130.4	133.8	136.1	140.7
80°	81.7	83.9	86.2	88.5	90.7	93.0	94.1	95.3	99.8	103.2	105.5
82.5°	55.6	56.7	57.8	60.1	61.3	62.4	63.5	63.5	65.8	68.1	71.5
85°	31.8	32.9	34.0	34.0	34.0	34.0	35.2	36.3	37.4	39.7	42.0
87.5°	12.5	12.5	13.6	13.6	13.6	13.6	13.6	13.6	14.7	17.0	18.1
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):

	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°
0°	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7	1002.7
2.5°	1008.4	1009.5	1011.8	1012.9	1014.1	1014.1	1015.2	1016.3	1014.1	1011.8	1010.7
5°	1014.1	1015.2	1018.6	1022.0	1024.3	1026.6	1025.4	1024.3	1022.0	1018.6	1016.3
7.5°	1015.2	1018.6	1022.0	1026.6	1030.0	1034.5	1032.2	1030.0	1025.4	1020.9	1017.5
10°	1011.8	1016.3	1022.0	1027.7	1031.1	1034.5	1032.2	1030.0	1025.4	1019.7	1015.2
12.5°	1007.3	1012.9	1019.7	1025.4	1028.8	1033.4	1030.0	1026.6	1020.9	1015.2	1009.5
15°	997.1	1003.9	1011.8	1018.6	1024.3	1028.8	1025.4	1023.1	1016.3	1008.4	1000.5
17.5°	984.6	993.7	1001.6	1009.5	1014.1	1018.6	1016.3	1014.1	1006.1	997.1	988.0
20°	969.8	978.9	986.9	994.8	1000.5	1005.0	1001.6	998.2	990.3	982.3	973.2
22.5°	951.7	960.8	969.8	977.8	983.4	988.0	983.4	977.8	969.8	961.9	952.8
25°	929.0	939.2	949.4	957.4	960.8	965.3	960.8	956.2	948.3	940.3	930.1
27.5°	906.3	916.5	926.7	934.7	938.1	942.6	938.1	933.5	925.6	917.7	907.5
30°	880.2	890.4	900.6	908.6	912.0	915.4	910.9	906.3	899.5	891.6	881.4
32.5°	850.7	860.9	868.9	876.8	881.4	885.9	881.4	878.0	870.0	859.8	849.6
35°	819.0	829.2	839.4	847.3	851.9	856.4	850.7	845.1	838.3	830.3	821.2
37.5°	783.8	795.2	806.5	815.6	819.0	823.5	819.0	813.3	806.5	798.6	788.3
40°	750.9	761.1	771.3	780.4	783.8	787.2	782.7	778.1	770.2	762.3	752.0
42.5°	716.9	727.1	736.2	744.1	747.5	752.0	747.5	741.8	736.2	729.4	720.3
45°	680.6	690.8	698.7	706.7	710.1	713.5	708.9	703.3	697.6	691.9	682.9
47.5°	643.2	652.2	660.2	668.1	670.4	673.8	669.2	665.8	660.2	654.5	646.6
50°	604.6	613.7	621.6	628.4	630.7	634.1	629.5	625.0	620.5	615.9	609.1
52.5°	564.9	572.8	580.8	587.6	589.8	592.1	587.6	583.0	578.5	574.0	567.2
55°	524.1	532.0	539.9	545.6	547.9	550.1	545.6	542.2	537.7	534.3	527.5
57.5°	483.2	491.2	498.0	503.6	505.9	508.2	503.6	499.1	495.7	492.3	486.6
60°	441.2	449.2	454.9	459.4	461.7	462.8	458.3	454.9	452.6	450.3	444.7
62.5°	400.4	406.1	411.8	415.2	417.4	418.6	415.2	412.9	410.6	408.4	403.8
65°	357.3	364.1	368.7	372.1	373.2	374.3	370.9	368.7	366.4	364.1	360.7
67.5°	314.2	319.9	323.3	326.7	327.8	327.8	327.8	326.7	324.4	321.0	317.6
70°	271.1	275.6	279.0	281.3	282.4	282.4	280.2	277.9	277.9	276.8	274.5
72.5°	226.9	230.3	232.5	234.8	234.8	234.8	234.8	235.9	234.8	232.5	229.1
75°	184.9	188.3	190.6	191.7	191.7	191.7	191.7	192.8	191.7	190.6	188.3
77.5°	145.2	147.5	148.6	149.7	149.7	149.7	150.9	152.0	150.9	149.7	148.6
80°	107.8	108.9	110.0	111.2	110.0	110.0	111.2	113.4	112.3	111.2	110.0
82.5°	73.7	74.9	76.0	76.0	77.1	78.3	78.3	78.3	78.3	77.1	76.0
85°	44.2	45.4	45.4	45.4	45.4	45.4	46.5	47.6	47.6	46.5	46.5
87.5°	20.4	21.6	20.4	19.3	18.1	18.1	20.4	22.7	22.7	21.6	21.6
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):

	330°	340°	350°	360°
0°	1002.7	1002.7	1002.7	1002.7
2.5°	1011.8	1010.7	1005.0	999.3
5°	1015.2	1011.8	1003.9	995.9
7.5°	1015.2	1010.7	999.3	989.1
10°	1009.5	1002.7	990.3	977.8
12.5°	1002.7	994.8	980.0	966.4
15°	992.5	983.4	967.6	951.7
17.5°	977.8	966.4	950.6	933.5
20°	963.0	950.6	931.3	913.1
22.5°	942.6	931.3	910.9	891.6
25°	919.9	907.5	887.0	866.6
27.5°	896.1	881.4	860.9	840.5
30°	868.9	854.1	833.7	813.3
32.5°	839.4	825.8	805.4	783.8
35°	809.9	795.2	774.7	753.2
37.5°	777.0	763.4	743.0	722.6
40°	741.8	728.2	707.8	687.4
42.5°	708.9	696.5	676.1	656.8
45°	672.6	660.2	640.9	622.7
47.5°	635.2	622.7	604.6	586.4
50°	598.9	586.4	569.4	552.4
52.5°	558.1	547.9	532.0	516.1
55°	518.4	508.2	492.3	477.5
57.5°	478.7	469.6	454.9	441.2
60°	436.7	427.6	416.3	403.8
62.5°	397.0	389.1	377.7	366.4
65°	355.0	348.2	338.0	327.8
67.5°	311.9	306.3	297.2	288.1
70°	268.8	262.0	255.2	247.3
72.5°	225.7	222.3	215.5	208.7
75°	184.9	181.5	175.8	170.1
77.5°	146.3	142.9	138.4	133.8
80°	107.8	105.5	102.1	98.7
82.5°	74.9	72.6	70.3	66.9
85°	45.4	43.1	40.8	38.6
87.5°	20.4	19.3	17.0	15.9
90°	0.0	0.0	0.0	0.0

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