

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: P709113

Luminaire Tested: **4APN-20L830-X-UNV**

Issue Date: 09/12/2023



**Test Information**

Test Method: LM-79-08  
Report Number: P709113  
Test Lab: INNOVATION CENTER(G2)  
Issue Date: 09/12/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: FAIL-SAFE  
Catalog Number: 4APN-20L830-X-UNV  
Description: ArcMed Patient Recessed 4 FT x6 IN Fixture Ambient Light  
Light Source: 3000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

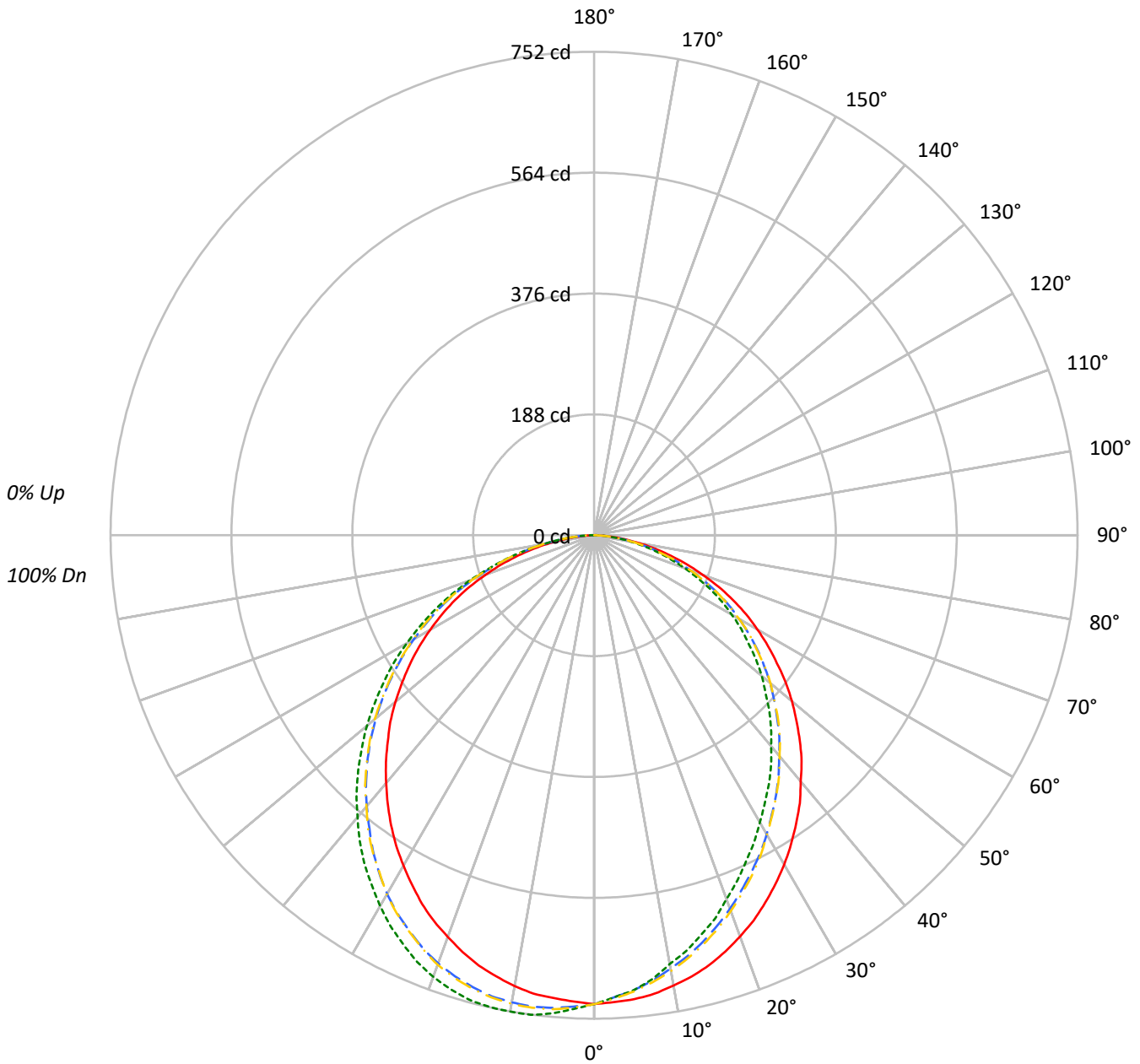
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1955.9 lumens  
Efficiency: N/A  
Efficacy: 82.2 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): 23.8  
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°	6729	6729	6729	6729
5°	6708	6578	6693	6915
10°	6662	6345	6670	7049
15°	6612	6146	6619	7148
20°	6520	5913	6528	7176
25°	6416	5694	6442	7147
30°	6302	5493	6320	7093
35°	6170	5333	6198	7016
40°	6021	5157	6061	6895
45°	5909	5027	5920	6771
50°	5767	4890	5790	6620
55°	5586	4711	5627	6436
60°	5419	4567	5434	6211
65°	5205	4377	5205	5942
70°	4850	4049	4829	5541
75°	4410	3675	4353	4969
80°	3815	3156	3682	4251
85°	2964	2361	2795	3493



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	68.9	3.5
10°-20°	195.6	10.0
20°-30°	290.7	14.9
30°-40°	342.7	17.5
40°-50°	348.9	17.8
50°-60°	310.8	15.9
60°-70°	234.2	12.0
70°-80°	130.2	6.7
80°-90°	33.8	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°	555.2	28.4
0°-40°	897.9	45.9
0°-60°	1557.6	79.6
0°-90°	1955.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1955.9	100.0

**CANDELA DISTRIBUTION:**

	0°	90°	180°	270°	360°	Flux
0°	729	729	729	729	729	
5°	724	710	723	747	724	69
15°	692	644	693	748	692	195
25°	630	559	633	702	630	290
35°	548	474	550	623	548	343
45°	453	385	454	519	453	349
55°	347	293	350	400	347	311
65°	238	200	238	272	238	235
75°	124	103	122	139	124	131
85°	28	22	26	33	28	34
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°	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3
2.5°	726.8	726.8	727.6	724.3	720.2	718.6	717.7	716.9	718.6	719.4	718.6
5°	724.3	722.7	721.0	716.9	712.0	708.7	707.0	706.2	707.8	710.3	707.8
7.5°	719.4	716.1	712.8	707.0	701.2	696.3	693.8	692.2	693.8	696.3	694.6
10°	711.1	707.0	702.1	695.5	687.2	681.4	679.0	676.5	677.3	677.3	677.3
12.5°	702.9	697.1	691.3	683.1	674.0	667.4	663.3	660.0	661.6	662.5	662.5
15°	692.2	684.7	676.5	667.4	658.3	650.9	646.0	642.7	643.5	643.5	644.3
17.5°	679.0	670.7	662.5	651.7	641.0	632.8	627.0	622.9	624.5	625.3	626.2
20°	664.1	655.0	646.0	634.4	622.9	613.8	608.0	603.1	602.2	602.2	603.1
22.5°	648.4	638.5	627.8	615.4	603.1	593.2	587.4	582.4	581.6	581.6	582.4
25°	630.3	619.6	608.8	596.5	583.3	573.4	565.9	561.0	560.2	559.3	561.0
27.5°	611.3	600.6	589.9	577.5	563.5	553.6	546.1	541.2	539.5	538.7	540.4
30°	591.5	579.1	567.6	554.4	542.0	532.1	524.7	518.9	517.3	515.6	517.3
32.5°	570.1	557.7	545.3	532.1	519.7	509.8	502.4	496.6	495.0	494.2	495.8
35°	547.8	535.4	523.9	510.7	498.3	488.4	481.0	476.0	474.4	473.5	474.4
37.5°	525.5	513.1	501.6	488.4	476.0	466.1	458.7	453.7	452.9	452.1	452.9
40°	499.9	489.2	477.7	465.3	452.9	443.0	437.2	431.5	429.8	428.2	430.6
42.5°	477.7	466.9	455.4	443.8	431.5	421.6	415.0	410.0	408.4	407.5	408.4
45°	452.9	441.4	429.8	419.1	407.5	398.5	391.9	386.9	386.1	385.3	386.1
47.5°	426.5	416.6	406.7	396.0	384.4	375.4	369.6	364.6	363.0	361.3	363.0
50°	401.8	391.9	382.0	372.1	361.3	353.1	347.3	342.4	341.5	340.7	341.5
52.5°	375.4	365.5	356.4	346.5	337.4	329.2	323.4	319.3	318.4	317.6	318.4
55°	347.3	339.1	330.8	322.6	313.5	306.1	301.1	296.2	294.5	292.9	294.5
57.5°	320.9	313.5	305.2	297.0	288.7	282.1	277.2	273.1	272.2	271.4	272.2
60°	293.7	287.1	279.7	272.2	264.0	257.4	253.3	250.0	248.3	247.5	248.3
62.5°	266.5	259.9	254.1	246.7	239.2	234.3	230.2	226.9	225.2	224.4	225.2
65°	238.4	232.6	226.9	220.3	214.5	209.5	205.4	202.1	201.3	200.5	200.5
67.5°	209.5	204.6	199.6	193.9	187.3	182.3	178.2	175.7	174.9	174.1	174.9
70°	179.8	175.7	170.8	165.8	160.9	156.7	154.3	151.8	151.0	150.1	150.1
72.5°	151.8	148.5	144.4	140.2	136.1	132.0	129.5	127.9	127.0	126.2	126.2
75°	123.7	120.4	118.0	114.7	110.5	108.1	105.6	103.9	103.1	103.1	103.1
77.5°	97.3	94.9	92.4	89.1	86.6	84.1	82.5	81.7	80.8	80.8	80.8
80°	71.8	70.1	68.5	66.8	64.3	61.9	61.0	60.2	59.4	59.4	59.4
82.5°	48.7	47.8	46.2	44.5	42.9	42.1	41.2	40.4	40.4	40.4	40.4
85°	28.0	27.2	26.4	25.6	24.7	24.7	23.9	23.1	22.3	22.3	22.3
87.5°	11.5	11.5	11.5	10.7	9.9	9.9	9.9	9.9	9.9	9.9	9.9
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°	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3
2.5°	716.9	718.6	720.2	722.7	725.2	727.6	726.8	726.0	729.3	733.4	734.2
5°	706.2	707.8	710.3	714.4	718.6	721.9	722.7	722.7	729.3	735.1	736.7
7.5°	693.0	695.5	698.8	702.9	708.7	713.6	716.1	719.4	726.0	733.4	736.7
10°	676.5	680.6	685.6	691.3	697.1	702.9	707.8	712.0	720.2	728.5	733.4
12.5°	661.6	665.8	670.7	677.3	684.7	692.2	697.1	702.9	712.8	722.7	728.5
15°	645.1	649.3	655.0	661.6	669.9	678.1	685.6	693.0	702.9	713.6	720.2
17.5°	627.0	631.1	636.9	645.1	654.2	663.3	671.5	679.8	691.3	702.9	710.3
20°	604.7	610.5	617.9	626.2	636.9	647.6	655.9	664.9	677.3	689.7	697.9
22.5°	583.3	589.0	597.3	607.2	618.7	630.3	640.2	650.1	663.3	675.7	684.7
25°	562.6	569.2	577.5	587.4	598.1	609.7	621.2	632.8	646.0	659.2	668.2
27.5°	542.0	547.8	556.0	565.9	578.3	589.9	601.4	613.0	627.0	641.0	650.9
30°	518.9	525.5	532.9	542.8	556.0	569.2	580.8	593.2	607.2	621.2	631.1
32.5°	497.5	503.2	510.7	520.6	533.8	547.0	559.3	572.5	585.7	599.8	609.7
35°	476.0	481.8	489.2	499.1	512.3	525.5	537.9	550.3	563.5	576.7	586.6
37.5°	454.6	460.3	467.8	477.7	490.0	503.2	514.8	527.2	540.4	553.6	562.6
40°	432.3	438.1	443.8	453.7	466.1	479.3	490.9	503.2	516.4	529.6	538.7
42.5°	410.0	415.8	423.2	433.1	444.7	456.2	467.8	479.3	491.7	504.1	513.1
45°	387.7	392.7	400.1	409.2	420.7	431.5	443.0	453.7	466.1	477.7	486.7
47.5°	364.6	369.6	375.4	384.4	396.0	407.5	419.1	429.8	440.5	452.1	460.3
50°	342.4	347.3	353.9	362.2	372.9	383.6	393.5	403.4	414.1	424.9	432.3
52.5°	319.3	324.2	330.0	338.2	347.3	357.2	366.3	376.2	386.1	396.0	403.4
55°	296.2	299.5	304.4	311.8	321.7	331.6	340.7	349.8	358.9	367.1	374.5
57.5°	273.1	277.2	283.0	289.6	297.8	306.1	314.3	322.6	330.8	339.1	345.7
60°	250.0	253.3	257.4	263.2	271.4	278.8	287.1	294.5	301.9	309.4	315.1
62.5°	226.0	229.3	233.5	239.2	245.8	252.4	259.9	266.5	273.1	279.7	285.4
65°	201.3	204.6	208.7	213.7	219.4	225.2	231.8	238.4	243.4	248.3	254.1
67.5°	175.7	179.0	183.1	187.3	192.2	198.0	203.8	209.5	214.5	219.4	223.6
70°	151.0	153.4	157.6	160.9	165.0	169.1	174.1	179.0	182.3	186.4	191.4
72.5°	127.0	129.5	132.8	136.1	138.6	141.9	146.8	151.0	155.1	160.0	162.5
75°	103.9	105.6	108.1	110.5	113.0	115.5	118.8	122.1	125.4	127.9	131.2
77.5°	80.8	82.5	85.0	86.6	88.3	89.9	92.4	94.9	97.3	99.0	102.3
80°	59.4	61.0	62.7	64.3	66.0	67.6	68.5	69.3	72.6	75.1	76.7
82.5°	40.4	41.2	42.1	43.7	44.5	45.4	46.2	46.2	47.8	49.5	52.0
85°	23.1	23.9	24.7	24.7	24.7	24.7	25.6	26.4	27.2	28.9	30.5
87.5°	9.1	9.1	9.9	9.9	9.9	9.9	9.9	9.9	10.7	12.4	13.2
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):**

	220°	230°	240°	250°	260°	270°	280°	290°	300°	310°	320°
0°	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3	729.3
2.5°	733.4	734.2	735.9	736.7	737.5	737.5	738.4	739.2	737.5	735.9	735.1
5°	737.5	738.4	740.8	743.3	745.0	746.6	745.8	745.0	743.3	740.8	739.2
7.5°	738.4	740.8	743.3	746.6	749.1	752.4	750.7	749.1	745.8	742.5	740.0
10°	735.9	739.2	743.3	747.4	749.9	752.4	750.7	749.1	745.8	741.7	738.4
12.5°	732.6	736.7	741.7	745.8	748.3	751.6	749.1	746.6	742.5	738.4	734.2
15°	725.2	730.1	735.9	740.8	745.0	748.3	745.8	744.1	739.2	733.4	727.6
17.5°	716.1	722.7	728.5	734.2	737.5	740.8	739.2	737.5	731.8	725.2	718.6
20°	705.4	712.0	717.7	723.5	727.6	730.9	728.5	726.0	720.2	714.4	707.8
22.5°	692.2	698.8	705.4	711.1	715.3	718.6	715.3	711.1	705.4	699.6	693.0
25°	675.7	683.1	690.5	696.3	698.8	702.1	698.8	695.5	689.7	683.9	676.5
27.5°	659.2	666.6	674.0	679.8	682.3	685.6	682.3	679.0	673.2	667.4	660.0
30°	640.2	647.6	655.0	660.8	663.3	665.8	662.5	659.2	654.2	648.4	641.0
32.5°	618.7	626.2	631.9	637.7	641.0	644.3	641.0	638.5	632.8	625.3	617.9
35°	595.6	603.1	610.5	616.3	619.6	622.9	618.7	614.6	609.7	603.9	597.3
37.5°	570.1	578.3	586.6	593.2	595.6	598.9	595.6	591.5	586.6	580.8	573.4
40°	546.1	553.6	561.0	567.6	570.1	572.5	569.2	565.9	560.2	554.4	547.0
42.5°	521.4	528.8	535.4	541.2	543.7	547.0	543.7	539.5	535.4	530.5	523.9
45°	495.0	502.4	508.2	514.0	516.4	518.9	515.6	511.5	507.4	503.2	496.6
47.5°	467.8	474.4	480.1	485.9	487.6	490.0	486.7	484.3	480.1	476.0	470.2
50°	439.7	446.3	452.1	457.0	458.7	461.2	457.9	454.6	451.3	448.0	443.0
52.5°	410.8	416.6	422.4	427.3	429.0	430.6	427.3	424.0	420.7	417.4	412.5
55°	381.1	386.9	392.7	396.8	398.5	400.1	396.8	394.3	391.0	388.6	383.6
57.5°	351.4	357.2	362.2	366.3	367.9	369.6	366.3	363.0	360.5	358.0	353.9
60°	320.9	326.7	330.8	334.1	335.8	336.6	333.3	330.8	329.2	327.5	323.4
62.5°	291.2	295.3	299.5	301.9	303.6	304.4	301.9	300.3	298.6	297.0	293.7
65°	259.9	264.8	268.1	270.6	271.4	272.2	269.8	268.1	266.5	264.8	262.3
67.5°	228.5	232.6	235.1	237.6	238.4	238.4	238.4	237.6	235.9	233.5	231.0
70°	197.2	200.5	202.9	204.6	205.4	205.4	203.8	202.1	202.1	201.3	199.6
72.5°	165.0	167.5	169.1	170.8	170.8	170.8	170.8	171.6	170.8	169.1	166.6
75°	134.5	136.9	138.6	139.4	139.4	139.4	139.4	140.2	139.4	138.6	136.9
77.5°	105.6	107.2	108.1	108.9	108.9	108.9	109.7	110.5	109.7	108.9	108.1
80°	78.4	79.2	80.0	80.8	80.0	80.0	80.8	82.5	81.7	80.8	80.0
82.5°	53.6	54.4	55.3	55.3	56.1	56.9	56.9	56.9	56.9	56.1	55.3
85°	32.2	33.0	33.0	33.0	33.0	33.0	33.8	34.6	34.6	33.8	33.8
87.5°	14.8	15.7	14.8	14.0	13.2	13.2	14.8	16.5	16.5	15.7	15.7
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°	729.3	729.3	729.3	729.3
2.5°	735.9	735.1	730.9	726.8
5°	738.4	735.9	730.1	724.3
7.5°	738.4	735.1	726.8	719.4
10°	734.2	729.3	720.2	711.1
12.5°	729.3	723.5	712.8	702.9
15°	721.9	715.3	703.7	692.2
17.5°	711.1	702.9	691.3	679.0
20°	700.4	691.3	677.3	664.1
22.5°	685.6	677.3	662.5	648.4
25°	669.1	660.0	645.1	630.3
27.5°	651.7	641.0	626.2	611.3
30°	631.9	621.2	606.4	591.5
32.5°	610.5	600.6	585.7	570.1
35°	589.0	578.3	563.5	547.8
37.5°	565.1	555.2	540.4	525.5
40°	539.5	529.6	514.8	499.9
42.5°	515.6	506.5	491.7	477.7
45°	489.2	480.1	466.1	452.9
47.5°	462.0	452.9	439.7	426.5
50°	435.6	426.5	414.1	401.8
52.5°	405.9	398.5	386.9	375.4
55°	377.0	369.6	358.0	347.3
57.5°	348.1	341.5	330.8	320.9
60°	317.6	311.0	302.8	293.7
62.5°	288.7	283.0	274.7	266.5
65°	258.2	253.3	245.8	238.4
67.5°	226.9	222.7	216.1	209.5
70°	195.5	190.6	185.6	179.8
72.5°	164.2	161.7	156.7	151.8
75°	134.5	132.0	127.9	123.7
77.5°	106.4	103.9	100.6	97.3
80°	78.4	76.7	74.2	71.8
82.5°	54.4	52.8	51.1	48.7
85°	33.0	31.3	29.7	28.0
87.5°	14.8	14.0	12.4	11.5
90°	0.0	0.0	0.0	0.0

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