

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: HALO COMMERCIAL

Report Number: P345489

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSBZ 2000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345489
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-9)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW9FSBZ 2000lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1483.5 lumens
Efficiency: N/A
Efficacy: 67.4 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.4' x H: 0')
CIE Type: Direct

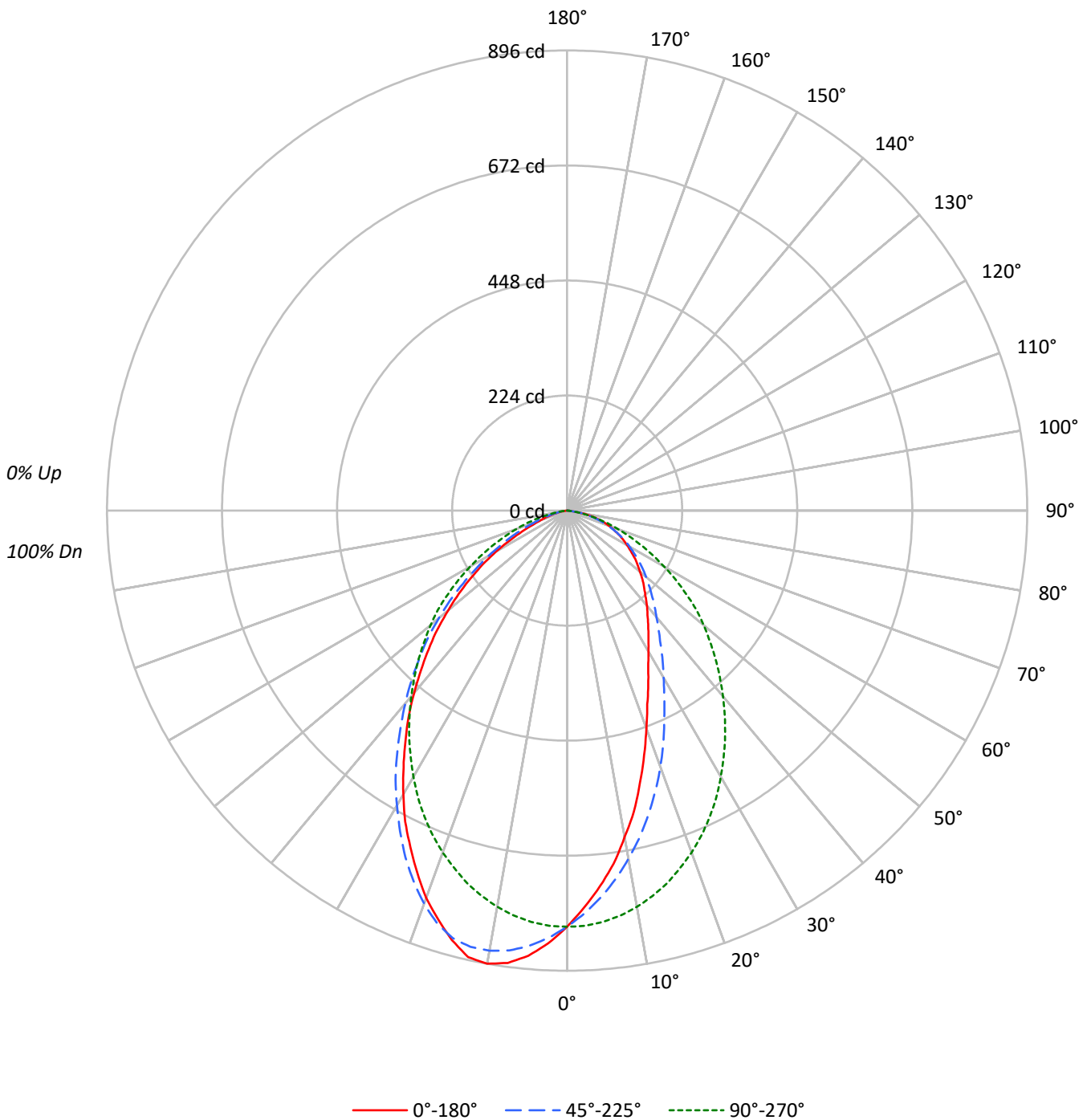
Input Watts (W): 22
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	84	80	78	76
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66
4	87	76	69	63	85	75	68	62	73	66	61	70	65	61	68	64	60	58
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53	51
6	75	63	55	49	73	62	54	49	60	53	48	59	53	48	57	52	48	46
7	70	58	50	44	68	57	49	44	55	48	43	54	48	43	53	47	43	41
8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37
9	61	49	41	36	60	48	41	36	47	41	36	46	40	36	45	40	36	34
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	42	37	33	31

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	70876	70876	70876
5°	64474	70577	76407
10°	57324	69590	79573
15°	49624	68043	78412
20°	41943	65959	74727
25°	36057	63428	69730
30°	31997	60429	64429
35°	29375	57266	58633
40°	27621	53894	52924
45°	26212	50581	47142
50°	25202	47192	41068
55°	24491	43096	34770
60°	23599	38014	27903
65°	23036	32784	20159
70°	22173	26827	13964
75°	20615	20244	9767
80°	14003	10780	4836
85°	1104	4315	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	75.9	5.1
10°-20°	205.3	13.8
20°-30°	276.3	18.6
30°-40°	289.5	19.5
40°-50°	259.6	17.5
50°-60°	198.7	13.4
60°-70°	121.0	8.2
70°-80°	51.4	3.5
80°-90°	5.8	0.4
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°	557.5	37.6
0°-40°	847.0	57.1
0°-60°	1305.3	88.0
0°-90°	1483.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1483.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	810	810	810	810	810	
5°	734	756	804	851	870	67
15°	548	612	751	862	866	153
25°	374	447	657	745	722	173
35°	275	317	536	577	549	173
45°	212	233	409	407	381	164
55°	161	170	283	247	228	143
65°	111	112	158	118	97	110
75°	61	55	60	36	29	63
85°	1	2	4	1	0	7
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3
2.5°	772.8	773.9	776.0	774.9	777.1	777.1	777.1	779.2	781.4	782.4	784.6
5°	734.3	735.3	736.4	738.6	739.6	738.6	741.8	745.0	748.2	752.5	755.7
7.5°	693.6	693.6	692.5	695.7	700.0	701.1	703.2	706.4	710.7	717.1	723.6
10°	645.4	646.5	648.6	649.7	656.1	657.2	660.4	664.7	672.2	679.7	688.2
12.5°	600.5	599.4	600.5	603.7	608.0	613.3	616.5	621.9	631.5	641.2	651.9
15°	548.0	549.1	552.3	555.5	561.9	565.2	570.5	580.1	589.8	599.4	612.3
17.5°	498.8	497.7	502.0	507.4	512.7	518.1	522.3	530.9	543.7	557.7	571.6
20°	450.6	449.6	452.8	457.0	465.6	468.8	474.2	487.0	498.8	513.8	530.9
22.5°	407.8	407.8	411.0	416.4	421.7	424.9	430.3	441.0	454.9	472.0	489.2
25°	373.6	373.6	375.7	378.9	385.3	388.5	393.9	401.4	414.2	430.3	447.4
27.5°	341.4	343.6	344.7	347.9	353.2	356.4	359.6	368.2	378.9	392.8	408.9
30°	316.8	317.9	319.0	321.1	325.4	327.5	331.8	339.3	348.9	360.7	375.7
32.5°	294.4	295.4	295.4	298.6	301.8	305.1	307.2	313.6	320.0	331.8	345.7
35°	275.1	275.1	277.2	278.3	280.4	282.6	284.7	290.1	297.6	306.1	316.8
37.5°	256.9	256.9	258.0	260.1	262.2	264.4	265.5	269.7	276.2	283.6	292.2
40°	241.9	241.9	241.9	244.0	246.2	247.3	248.3	252.6	258.0	263.3	270.8
42.5°	225.8	226.9	228.0	229.1	230.1	232.3	233.3	235.5	239.8	244.0	251.5
45°	211.9	213.0	213.0	214.1	216.2	216.2	217.3	220.5	223.7	228.0	233.3
47.5°	199.1	199.1	199.1	200.2	201.2	202.3	203.4	205.5	208.7	210.9	216.2
50°	185.2	185.2	186.2	187.3	188.4	188.4	189.5	190.5	193.7	195.9	200.2
52.5°	172.3	172.3	173.4	173.4	174.5	174.5	175.5	177.7	178.8	182.0	185.2
55°	160.6	159.5	160.6	160.6	160.6	161.6	161.6	163.8	165.9	167.0	170.2
57.5°	146.6	147.7	147.7	148.8	148.8	148.8	149.9	149.9	152.0	153.1	154.1
60°	134.9	135.9	135.9	135.9	135.9	135.9	137.0	137.0	138.1	139.1	140.2
62.5°	123.1	123.1	123.1	123.1	123.1	124.2	124.2	124.2	124.2	125.2	126.3
65°	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	111.3	112.4
67.5°	98.5	98.5	98.5	99.5	98.5	98.5	98.5	98.5	98.5	98.5	97.4
70°	86.7	86.7	86.7	86.7	86.7	85.6	85.6	84.6	84.6	83.5	83.5
72.5°	73.9	73.9	73.9	72.8	72.8	72.8	71.7	70.6	69.6	69.6	69.6
75°	61.0	61.0	59.9	59.9	58.9	58.9	57.8	56.7	55.7	54.6	54.6
77.5°	46.0	46.0	46.0	46.0	45.0	43.9	43.9	42.8	41.7	41.7	40.7
80°	27.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	25.7	25.7
82.5°	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
85°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	2.1
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	2.1
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3
2.5°	786.7	788.9	792.1	794.2	795.3	796.4	799.6	802.8	806.0	809.2	811.3
5°	761.0	765.3	769.6	774.9	777.1	780.3	786.7	792.1	797.4	803.8	809.2
7.5°	730.0	737.5	745.0	753.5	756.8	760.0	768.5	778.2	785.7	795.3	803.8
10°	697.9	706.4	716.1	727.9	733.2	738.6	749.3	761.0	771.7	783.5	794.2
12.5°	661.5	675.4	688.2	701.1	706.4	712.9	726.8	740.7	754.6	768.5	781.4
15°	625.1	639.0	655.1	670.1	677.5	686.1	702.2	719.3	735.3	751.4	766.4
17.5°	588.7	602.6	619.7	639.0	648.6	657.2	674.3	693.6	712.9	730.0	749.3
20°	548.0	566.2	586.6	606.9	616.5	627.2	647.6	667.9	689.3	708.6	728.9
22.5°	508.4	527.7	552.3	572.6	583.4	594.1	617.6	641.2	662.6	684.0	704.3
25°	468.8	491.3	514.8	539.5	551.2	563.0	587.6	610.1	634.7	657.2	680.8
27.5°	430.3	453.8	478.5	504.1	517.0	529.8	554.5	580.1	604.8	629.4	652.9
30°	393.9	416.4	443.1	469.9	482.7	496.7	522.3	549.1	573.7	598.3	624.0
32.5°	361.8	381.1	407.8	434.6	448.5	462.4	490.2	517.0	541.6	567.3	594.1
35°	331.8	350.0	373.6	401.4	415.3	429.2	457.0	484.9	511.6	536.3	561.9
37.5°	306.1	322.2	342.5	367.1	383.2	397.1	424.9	452.8	478.5	504.1	528.8
40°	281.5	295.4	314.7	338.2	351.1	365.0	392.8	421.7	447.4	472.0	496.7
42.5°	260.1	271.9	287.9	308.3	322.2	334.0	362.9	390.7	415.3	439.9	464.5
45°	240.8	250.5	263.3	280.4	292.2	307.2	334.0	359.6	384.3	408.9	432.4
47.5°	221.6	230.1	240.8	256.9	266.5	278.3	305.1	329.7	354.3	376.8	399.2
50°	205.5	211.9	220.5	233.3	243.0	251.5	276.2	301.8	324.3	346.8	367.1
52.5°	189.5	193.7	201.2	213.0	219.4	228.0	249.4	272.9	295.4	316.8	335.0
55°	173.4	177.7	183.0	191.6	198.0	204.4	222.6	245.1	265.5	282.6	300.8
57.5°	157.3	160.6	164.8	172.3	176.6	182.0	196.9	215.1	233.3	250.5	264.4
60°	143.4	145.6	148.8	153.1	156.3	159.5	170.2	187.3	204.4	217.3	230.1
62.5°	127.4	128.4	130.6	134.9	137.0	139.1	146.6	161.6	175.5	187.3	198.0
65°	112.4	113.5	114.5	116.7	118.8	119.9	126.3	137.0	148.8	158.4	165.9
67.5°	97.4	98.5	98.5	100.6	100.6	102.8	106.0	112.4	123.1	130.6	137.0
70°	82.4	83.5	83.5	84.6	83.5	84.6	87.8	92.1	98.5	104.9	109.2
72.5°	68.5	67.4	67.4	67.4	67.4	68.5	69.6	71.7	77.1	82.4	83.5
75°	53.5	53.5	52.4	52.4	52.4	52.4	52.4	53.5	56.7	59.9	61.0
77.5°	39.6	38.5	38.5	37.5	37.5	37.5	36.4	36.4	37.5	39.6	39.6
80°	25.7	24.6	23.5	24.6	22.5	23.5	22.5	21.4	21.4	21.4	20.3
82.5°	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	9.6	9.6	9.6
85°	2.1	2.1	3.2	3.2	3.2	3.2	3.2	3.2	4.3	4.3	3.2
87.5°	2.1	2.1	2.1	3.2	3.2	3.2	3.2	3.2	4.3	4.3	4.3
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3
2.5°	814.6	817.8	821.0	822.0	823.1	826.3	828.5	831.7	832.7	834.9	837.0
5°	814.6	821.0	826.3	829.5	831.7	837.0	842.4	845.6	850.9	854.2	857.4
7.5°	812.4	821.0	828.5	832.7	837.0	843.5	850.9	857.4	863.8	868.1	873.4
10°	806.0	816.7	826.3	831.7	837.0	846.7	855.2	862.7	870.2	876.6	882.0
12.5°	796.4	809.2	821.0	827.4	832.7	844.5	854.2	862.7	870.2	875.6	879.8
15°	782.4	798.5	812.4	818.8	825.3	838.1	847.7	855.2	861.6	864.9	868.1
17.5°	766.4	783.5	799.6	807.1	813.5	825.3	833.8	839.2	842.4	844.5	843.5
20°	748.2	766.4	782.4	789.9	797.4	807.1	813.5	815.6	814.6	813.5	811.3
22.5°	725.7	745.0	762.1	768.5	774.9	782.4	784.6	783.5	781.4	779.2	776.0
25°	702.2	721.4	737.5	742.8	748.2	751.4	750.3	748.2	745.0	741.8	736.4
27.5°	675.4	695.7	708.6	715.0	716.1	716.1	712.9	709.7	704.3	700.0	694.7
30°	647.6	664.7	677.5	679.7	680.8	678.6	675.4	670.1	662.6	659.3	654.0
32.5°	615.5	633.7	643.3	643.3	641.2	637.9	631.5	626.2	621.9	614.4	609.0
35°	585.5	599.4	604.8	604.8	601.5	596.2	590.8	583.4	576.9	572.6	565.2
37.5°	551.2	565.2	567.3	564.1	561.9	555.5	547.0	540.5	533.0	527.7	522.3
40°	519.1	528.8	526.6	523.4	521.3	514.8	505.2	497.7	490.2	483.8	478.5
42.5°	482.7	489.2	485.9	483.8	479.5	472.0	463.5	456.0	448.5	442.1	436.7
45°	449.6	452.8	447.4	443.1	439.9	431.4	424.9	414.2	406.7	400.3	396.0
47.5°	414.2	414.2	408.9	404.6	399.2	390.7	383.2	372.5	368.2	359.6	355.4
50°	380.0	376.8	370.3	365.0	360.7	351.1	341.4	334.0	326.5	320.0	315.8
52.5°	343.6	339.3	330.7	325.4	323.3	311.5	302.9	293.3	286.9	279.4	275.1
55°	307.2	300.8	291.1	286.9	282.6	272.9	263.3	253.7	247.3	241.9	237.6
57.5°	269.7	262.2	253.7	248.3	243.0	233.3	223.7	215.1	209.8	204.4	201.2
60°	231.2	225.8	217.3	211.9	206.6	198.0	187.3	180.9	176.6	170.2	169.1
62.5°	198.0	190.5	180.9	176.6	172.3	163.8	155.2	149.9	144.5	141.3	137.0
65°	164.8	157.3	148.8	144.5	141.3	133.8	127.4	122.0	117.7	113.5	110.2
67.5°	132.7	127.4	119.9	116.7	112.4	106.0	100.6	96.3	92.1	87.8	84.6
70°	106.0	99.5	93.1	91.0	88.8	82.4	78.1	73.9	69.6	66.4	63.2
72.5°	81.3	76.0	70.6	67.4	65.3	62.1	58.9	54.6	51.4	48.2	46.0
75°	57.8	54.6	50.3	48.2	46.0	43.9	39.6	37.5	36.4	34.3	32.1
77.5°	37.5	34.3	32.1	30.0	30.0	27.8	25.7	24.6	22.5	22.5	21.4
80°	19.3	18.2	17.1	17.1	17.1	15.0	13.9	13.9	12.8	11.8	11.8
82.5°	8.6	8.6	7.5	7.5	7.5	6.4	6.4	5.4	5.4	4.3	4.3
85°	3.2	3.2	3.2	3.2	3.2	2.1	2.1	2.1	1.1	1.1	1.1
87.5°	3.2	3.2	3.2	3.2	3.2	2.1	2.1	2.1	1.1	1.1	1.1
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):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	810.3	810.3	810.3	810.3	810.3	810.3	810.3	810.3
2.5°	838.1	840.2	840.2	841.3	842.4	843.5	842.4	843.5
5°	860.6	863.8	864.9	864.9	867.0	868.1	870.2	870.2
7.5°	877.7	880.9	883.1	884.1	886.3	888.4	888.4	888.4
10°	886.3	889.5	890.5	892.7	893.8	894.8	895.9	895.9
12.5°	883.1	886.3	887.3	887.3	889.5	889.5	889.5	890.5
15°	869.1	868.1	868.1	868.1	867.0	867.0	867.0	865.9
17.5°	841.3	840.2	840.2	840.2	839.2	838.1	837.0	834.9
20°	810.3	808.1	806.0	807.1	804.9	803.8	802.8	802.8
22.5°	773.9	770.7	769.6	768.5	766.4	765.3	763.2	763.2
25°	734.3	732.1	728.9	727.9	726.8	724.6	722.5	722.5
27.5°	692.5	689.3	688.2	686.1	685.0	682.9	681.8	682.9
30°	649.7	646.5	645.4	643.3	639.0	641.2	639.0	637.9
32.5°	604.8	601.5	599.4	597.3	597.3	594.1	594.1	593.0
35°	560.9	557.7	555.5	554.5	552.3	552.3	550.2	549.1
37.5°	518.1	514.8	512.7	511.6	509.5	507.4	506.3	507.4
40°	474.2	471.0	468.8	467.8	465.6	463.5	463.5	463.5
42.5°	431.4	428.1	428.1	426.0	422.8	421.7	420.7	420.7
45°	391.8	387.5	386.4	384.3	384.3	382.1	381.1	381.1
47.5°	350.0	346.8	345.7	344.7	343.6	342.5	342.5	342.5
50°	311.5	307.2	307.2	305.1	304.0	305.1	302.9	301.8
52.5°	272.9	269.7	268.7	268.7	266.5	266.5	266.5	265.5
55°	234.4	232.3	232.3	231.2	229.1	230.1	230.1	228.0
57.5°	199.1	195.9	195.9	194.8	194.8	194.8	192.7	194.8
60°	165.9	163.8	162.7	161.6	160.6	160.6	160.6	159.5
62.5°	134.9	132.7	131.7	130.6	128.4	128.4	126.3	125.2
65°	107.0	104.9	102.8	101.7	99.5	98.5	98.5	97.4
67.5°	81.3	79.2	77.1	76.0	73.9	72.8	71.7	71.7
70°	61.0	57.8	57.8	56.7	55.7	55.7	54.6	54.6
72.5°	43.9	43.9	42.8	42.8	41.7	41.7	41.7	41.7
75°	31.0	31.0	31.0	31.0	30.0	30.0	28.9	28.9
77.5°	20.3	20.3	20.3	19.3	19.3	19.3	19.3	19.3
80°	10.7	10.7	10.7	10.7	10.7	9.6	10.7	9.6
82.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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