

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: P242048

Luminaire Tested: **PRS410D010-S4M12-41SWWMB-4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P242048
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1802-584-64)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PRS410D010-S4M12-41SWWMB-4000K
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, WITH 4" WALL WASH DISTRIBUTION, WW TRIM MATTE BLACK
Light Source: ARRAYS OF HIGH LUMEN LEDS 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 461.5 lumens
Efficiency: N/A
Efficacy: 46.2 lumens/watt
Spacing Criteria (0/90/45): 0.96 / 0.94 / 1.03
Luminous Opening: Rectangular (W 0.38' x L: 0.38' x H: 0')
CIE Type: Direct

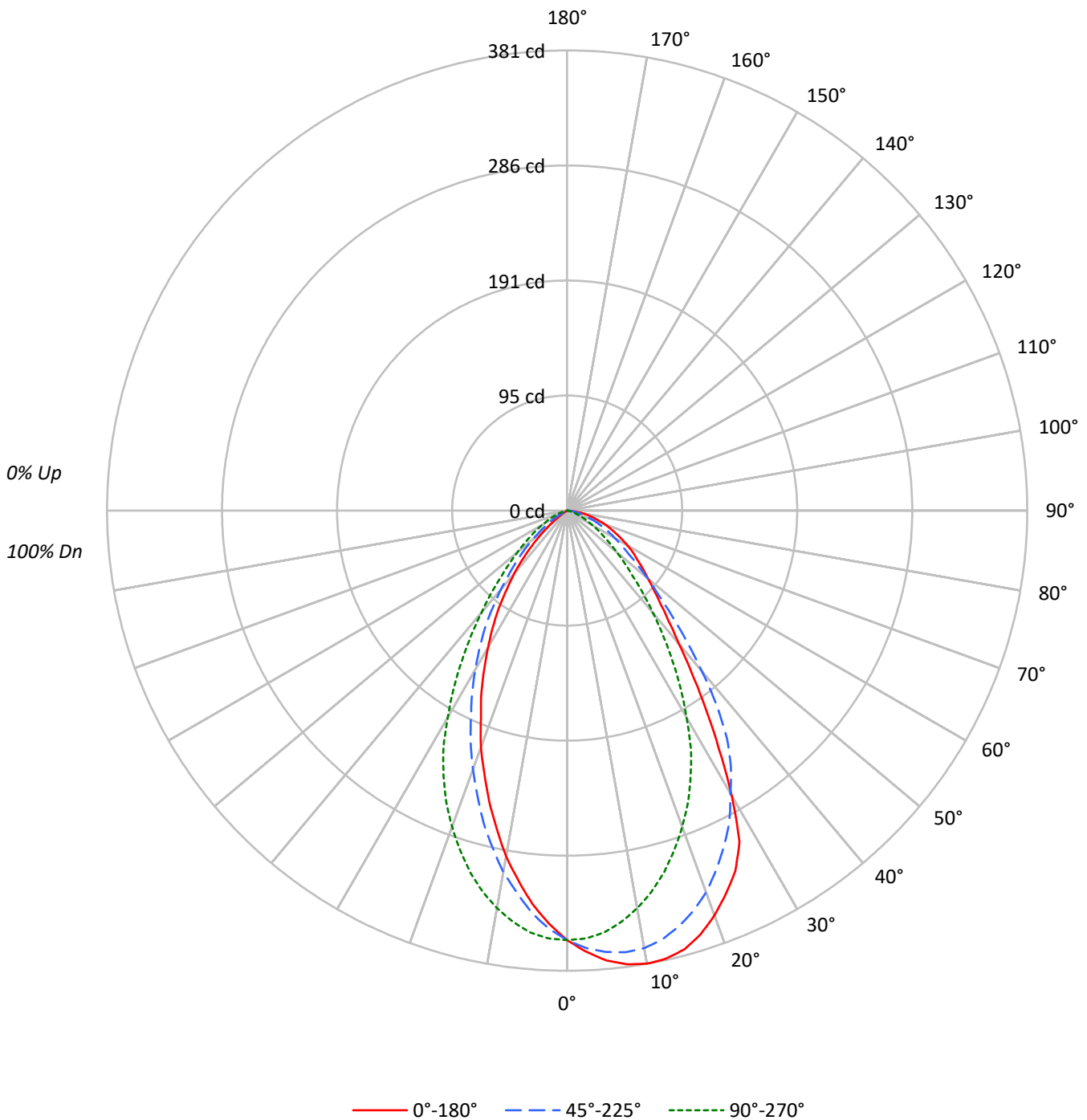
Input Watts (W): 10
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	112	108	105	103	109	106	104	101	102	100	98	98	97	95	95	93	92	90
2	105	99	94	89	102	97	92	88	93	90	86	90	87	84	88	85	83	81
3	98	90	84	79	96	88	83	78	86	81	77	83	79	76	81	77	74	73
4	91	82	75	70	89	81	75	70	79	73	69	77	72	68	75	71	67	65
5	86	76	68	63	84	74	68	63	73	67	62	71	66	62	69	65	61	59
6	80	70	62	57	79	69	62	57	67	61	57	66	60	56	64	59	56	54
7	76	64	57	52	74	64	57	52	62	56	52	61	56	51	60	55	51	50
8	71	60	53	48	70	59	53	48	58	52	48	57	51	47	56	51	47	46
9	67	56	49	44	66	55	49	44	54	48	44	53	48	44	52	47	44	42
10	64	52	46	41	62	52	45	41	51	45	41	50	45	41	49	44	41	39

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	27219	27219	27219
5°	28729	26939	25141
10°	29605	25983	22602
15°	29788	24566	19747
20°	29047	22694	17000
25°	27811	20447	14206
30°	24085	17465	11552
35°	18651	14203	9185
40°	14379	11031	6785
45°	11842	8335	4492
50°	10372	6395	2286
55°	9462	4871	547
60°	8833	3720	153
65°	8078	2753	0
70°	7475	1813	0
75°	6595	1213	0
80°	5819	441	0
85°	3601	0	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	33.0	7.1
10°-20°	87.2	18.9
20°-30°	112.7	24.4
30°-40°	100.1	21.7
40°-50°	65.1	14.1
50°-60°	36.2	7.8
60°-70°	18.3	4.0
70°-80°	7.7	1.7
80°-90°	1.4	0.3
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°	232.9	50.5
0°-40°	333.0	72.1
0°-60°	434.2	94.1
0°-90°	461.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	461.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	356	356	356	356	356	
5°	374	367	351	334	327	36
15°	376	357	310	268	249	105
25°	329	307	242	188	168	149
35°	200	231	152	118	98	126
45°	109	122	77	59	42	86
55°	71	62	36	21	4	64
65°	45	32	15	1	0	44
75°	22	14	4	0	0	24
85°	4	2	0	0	0	5
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°	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6
2.5°	365.7	364.7	365.7	364.7	364.7	364.7	364.7	363.7	363.7	362.7	362.7
5°	373.9	373.9	372.8	372.8	371.8	371.8	371.8	370.8	369.8	368.8	366.8
7.5°	378.9	378.9	377.9	377.9	376.9	375.9	375.9	373.9	372.8	370.8	368.8
10°	380.9	380.9	379.9	378.9	377.9	376.9	376.9	374.9	372.8	369.8	367.8
12.5°	379.9	379.9	378.9	377.9	376.9	375.9	374.9	372.8	369.8	366.8	363.7
15°	375.9	375.9	374.9	373.9	371.8	370.8	369.8	367.8	364.7	360.7	356.6
17.5°	367.8	367.8	366.8	365.7	364.7	363.7	361.7	359.7	355.6	351.6	347.5
20°	356.6	356.6	356.6	355.6	353.6	352.6	351.6	348.5	345.5	341.4	336.4
22.5°	343.5	343.5	342.4	341.4	339.4	339.4	337.4	334.3	331.3	327.2	322.2
25°	329.3	328.3	327.2	327.2	324.2	323.2	322.2	319.1	316.1	312.1	307.0
27.5°	309.0	308.0	309.0	309.0	308.0	307.0	306.0	302.9	297.9	293.8	290.8
30°	272.5	273.6	273.6	275.6	279.6	282.7	284.7	284.7	280.6	276.6	270.5
32.5°	234.0	236.1	237.1	241.1	245.2	248.2	250.2	254.3	259.4	258.4	252.3
35°	199.6	201.6	202.6	205.7	210.7	212.8	215.8	221.9	228.0	233.0	231.0
37.5°	169.2	169.2	172.2	175.3	179.3	182.4	185.4	190.5	198.6	202.6	203.6
40°	143.9	144.9	145.9	149.9	153.0	156.0	158.1	163.1	170.2	173.2	173.2
42.5°	124.6	124.6	125.6	127.7	131.7	132.7	134.7	138.8	142.9	144.9	145.9
45°	109.4	109.4	109.4	111.4	113.5	114.5	116.5	119.6	120.6	121.6	121.6
47.5°	97.3	97.3	97.3	98.3	99.3	100.3	101.3	102.3	103.3	103.3	101.3
50°	87.1	87.1	88.1	88.1	88.1	89.2	89.2	89.2	88.1	87.1	86.1
52.5°	79.0	79.0	79.0	79.0	79.0	79.0	79.0	78.0	76.0	75.0	72.9
55°	70.9	71.9	71.9	71.9	70.9	70.9	69.9	68.9	65.9	63.8	61.8
57.5°	64.8	64.8	64.8	63.8	63.8	62.8	61.8	59.8	57.7	55.7	52.7
60°	57.7	57.7	57.7	56.7	56.7	55.7	54.7	52.7	50.7	47.6	45.6
62.5°	50.7	50.7	50.7	50.7	49.6	48.6	47.6	45.6	43.6	41.5	39.5
65°	44.6	44.6	44.6	44.6	42.6	41.5	40.5	38.5	36.5	34.4	32.4
67.5°	38.5	38.5	38.5	37.5	36.5	35.5	34.4	33.4	31.4	29.4	27.4
70°	33.4	33.4	32.4	31.4	30.4	30.4	29.4	27.4	26.3	24.3	22.3
72.5°	27.4	27.4	27.4	26.3	25.3	24.3	23.3	22.3	21.3	19.2	18.2
75°	22.3	22.3	22.3	21.3	20.3	19.2	19.2	17.2	16.2	15.2	14.2
77.5°	17.2	17.2	17.2	16.2	15.2	15.2	14.2	13.2	12.2	11.1	10.1
80°	13.2	13.2	12.2	12.2	11.1	11.1	10.1	10.1	9.1	8.1	7.1
82.5°	8.1	8.1	8.1	8.1	7.1	7.1	7.1	6.1	6.1	5.1	4.1
85°	4.1	4.1	4.1	4.1	3.0	3.0	3.0	3.0	3.0	2.0	2.0
87.5°	0.0	0.0	0.0	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	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°	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6
2.5°	361.7	360.7	359.7	358.7	358.7	357.6	357.6	356.6	355.6	354.6	353.6
5°	365.7	363.7	361.7	360.7	359.7	358.7	356.6	354.6	352.6	350.6	348.5
7.5°	365.7	363.7	360.7	358.7	356.6	355.6	352.6	349.5	346.5	343.5	340.4
10°	364.7	360.7	357.6	354.6	351.6	349.5	346.5	342.4	338.4	334.3	330.3
12.5°	359.7	355.6	351.6	347.5	344.5	342.4	337.4	332.3	328.3	323.2	318.1
15°	352.6	348.5	343.5	337.4	335.4	332.3	327.2	321.2	316.1	310.0	305.0
17.5°	343.5	337.4	332.3	326.2	323.2	320.2	314.1	307.0	301.9	294.8	288.7
20°	331.3	326.2	318.1	313.1	309.0	306.0	298.9	291.8	284.7	278.6	270.5
22.5°	317.1	311.0	303.9	296.9	293.8	289.8	282.7	274.6	268.5	261.4	253.3
25°	301.9	294.8	287.7	279.6	276.6	273.6	265.4	258.4	250.2	242.1	236.1
27.5°	283.7	277.6	270.5	262.4	259.4	255.3	246.2	238.1	230.0	221.9	214.8
30°	265.4	260.4	251.3	242.1	237.1	232.0	222.9	213.8	204.7	197.6	191.5
32.5°	247.2	237.1	226.9	216.8	210.7	205.7	197.6	189.5	181.4	175.3	168.2
35°	222.9	212.8	201.6	191.5	186.4	182.4	173.2	165.1	158.1	152.0	145.9
37.5°	197.6	187.4	177.3	167.2	163.1	159.1	149.9	142.9	135.8	130.7	124.6
40°	170.2	165.1	154.0	144.9	140.8	136.8	129.7	121.6	116.5	110.4	105.4
42.5°	144.9	139.8	131.7	123.6	119.6	116.5	109.4	103.3	98.3	93.2	89.2
45°	121.6	117.5	111.4	105.4	101.3	98.3	91.2	86.1	82.1	77.0	74.0
47.5°	101.3	98.3	94.2	88.1	85.1	82.1	76.0	71.9	67.9	64.8	61.8
50°	84.1	82.1	78.0	74.0	70.9	68.9	63.8	59.8	56.7	53.7	51.7
52.5°	70.9	67.9	64.8	60.8	58.8	56.7	53.7	49.6	47.6	44.6	42.6
55°	59.8	57.7	54.7	50.7	48.6	47.6	44.6	41.5	38.5	36.5	34.4
57.5°	50.7	48.6	45.6	42.6	41.5	39.5	36.5	33.4	31.4	30.4	28.4
60°	43.6	40.5	38.5	35.5	33.4	32.4	29.4	27.4	25.3	24.3	22.3
62.5°	36.5	34.4	31.4	28.4	27.4	26.3	24.3	22.3	20.3	19.2	17.2
65°	30.4	28.4	26.3	23.3	22.3	21.3	19.2	17.2	16.2	15.2	14.2
67.5°	25.3	23.3	21.3	19.2	18.2	16.2	15.2	14.2	12.2	11.1	10.1
70°	20.3	18.2	16.2	14.2	14.2	13.2	11.1	10.1	9.1	8.1	7.1
72.5°	16.2	14.2	13.2	11.1	10.1	10.1	9.1	8.1	7.1	6.1	5.1
75°	12.2	11.1	9.1	8.1	7.1	7.1	6.1	5.1	5.1	4.1	3.0
77.5°	9.1	8.1	7.1	6.1	5.1	5.1	4.1	3.0	3.0	2.0	2.0
80°	6.1	5.1	4.1	3.0	3.0	3.0	2.0	2.0	2.0	1.0	1.0
82.5°	3.0	3.0	2.0	2.0	2.0	2.0	1.0	1.0	1.0	1.0	0.0
85°	1.0	1.0	1.0	1.0	1.0	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	0.0	0.0	0.0
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°	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6
2.5°	352.6	351.6	350.6	350.6	349.5	348.5	347.5	347.5	346.5	345.5	345.5
5°	346.5	344.5	342.4	341.4	340.4	338.4	337.4	335.4	334.3	332.3	331.3
7.5°	337.4	334.3	331.3	330.3	329.3	327.2	324.2	321.2	319.1	318.1	316.1
10°	327.2	323.2	319.1	317.1	316.1	312.1	309.0	306.0	303.9	300.9	297.9
12.5°	313.1	309.0	305.0	302.9	300.9	296.9	293.8	289.8	285.7	282.7	279.6
15°	298.9	293.8	288.7	286.7	283.7	279.6	275.6	271.5	267.5	263.4	260.4
17.5°	282.7	277.6	271.5	268.5	266.5	261.4	255.3	252.3	247.2	244.2	240.1
20°	265.4	259.4	253.3	251.3	248.2	242.1	237.1	232.0	228.0	223.9	219.9
22.5°	247.2	240.1	234.0	232.0	229.0	222.9	217.8	213.8	208.7	203.6	199.6
25°	229.0	221.9	215.8	211.7	208.7	203.6	197.6	193.5	188.4	184.4	181.4
27.5°	208.7	201.6	195.5	192.5	190.5	185.4	180.3	175.3	170.2	166.2	162.1
30°	185.4	180.3	175.3	173.2	170.2	166.2	161.1	157.0	152.0	147.9	143.9
32.5°	163.1	158.1	153.0	152.0	149.9	145.9	142.9	138.8	134.7	130.7	127.7
35°	141.8	136.8	133.7	131.7	129.7	126.6	123.6	121.6	118.5	114.5	111.4
37.5°	120.6	118.5	113.5	112.5	111.4	108.4	106.4	104.4	101.3	99.3	96.2
40°	102.3	99.3	96.2	95.2	93.2	91.2	89.2	87.1	85.1	84.1	81.1
42.5°	85.1	83.1	80.0	80.0	78.0	76.0	74.0	72.9	70.9	68.9	67.9
45°	71.9	68.9	67.9	65.9	65.9	63.8	61.8	60.8	58.8	56.7	54.7
47.5°	59.8	57.7	55.7	54.7	54.7	52.7	50.7	48.6	47.6	44.6	42.6
50°	49.6	47.6	46.6	45.6	44.6	43.6	41.5	39.5	37.5	35.5	32.4
52.5°	40.5	39.5	37.5	37.5	36.5	34.4	32.4	30.4	28.4	26.3	23.3
55°	33.4	31.4	30.4	29.4	28.4	27.4	25.3	23.3	21.3	18.2	16.2
57.5°	26.3	25.3	23.3	23.3	22.3	20.3	18.2	16.2	14.2	11.1	9.1
60°	21.3	19.2	18.2	17.2	16.2	15.2	12.2	10.1	8.1	6.1	3.0
62.5°	16.2	15.2	13.2	13.2	12.2	10.1	8.1	6.1	3.0	1.0	0.0
65°	12.2	11.1	10.1	9.1	8.1	6.1	4.1	2.0	1.0	0.0	0.0
67.5°	9.1	8.1	6.1	6.1	5.1	3.0	1.0	0.0	0.0	0.0	0.0
70°	6.1	5.1	4.1	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0
72.5°	4.1	3.0	2.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	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	0.0	0.0	0.0
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°	355.6	355.6	355.6	355.6	355.6	355.6	355.6	355.6
2.5°	344.5	343.5	344.5	343.5	343.5	342.4	343.5	342.4
5°	330.3	329.3	329.3	328.3	328.3	328.3	327.2	327.2
7.5°	314.1	313.1	312.1	312.1	311.0	310.0	310.0	309.0
10°	296.9	294.8	292.8	293.8	291.8	291.8	290.8	290.8
12.5°	277.6	275.6	275.6	273.6	271.5	271.5	269.5	269.5
15°	258.4	256.3	254.3	253.3	251.3	251.3	250.2	249.2
17.5°	237.1	235.1	233.0	232.0	231.0	230.0	229.0	228.0
20°	216.8	213.8	212.8	211.7	209.7	208.7	207.7	208.7
22.5°	197.6	193.5	192.5	191.5	190.5	188.4	187.4	186.4
25°	177.3	174.3	172.2	172.2	170.2	169.2	167.2	168.2
27.5°	158.1	156.0	154.0	153.0	151.0	149.9	148.9	148.9
30°	140.8	137.8	136.8	134.7	133.7	131.7	130.7	130.7
32.5°	123.6	120.6	119.6	118.5	116.5	114.5	114.5	114.5
35°	108.4	105.4	104.4	102.3	100.3	98.3	98.3	98.3
37.5°	93.2	90.2	88.1	87.1	85.1	84.1	82.1	82.1
40°	79.0	76.0	74.0	72.9	70.9	68.9	67.9	67.9
42.5°	64.8	62.8	60.8	59.8	57.7	55.7	54.7	54.7
45°	51.7	49.6	48.6	47.6	45.6	42.6	41.5	41.5
47.5°	40.5	38.5	37.5	35.5	33.4	31.4	29.4	29.4
50°	30.4	28.4	26.3	25.3	23.3	21.3	19.2	19.2
52.5°	21.3	19.2	18.2	16.2	14.2	12.2	11.1	10.1
55°	13.2	11.1	10.1	9.1	7.1	6.1	4.1	4.1
57.5°	7.1	5.1	4.1	3.0	2.0	1.0	1.0	1.0
60°	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
62.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
65°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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

(END OF REPORT)