

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: P345459

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSMMS 3000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345459
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-8)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW9FSMMS 3000Lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1918.7 lumens
Efficiency: N/A
Efficacy: 67.3 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.38' x H: 0')
CIE Type: Direct

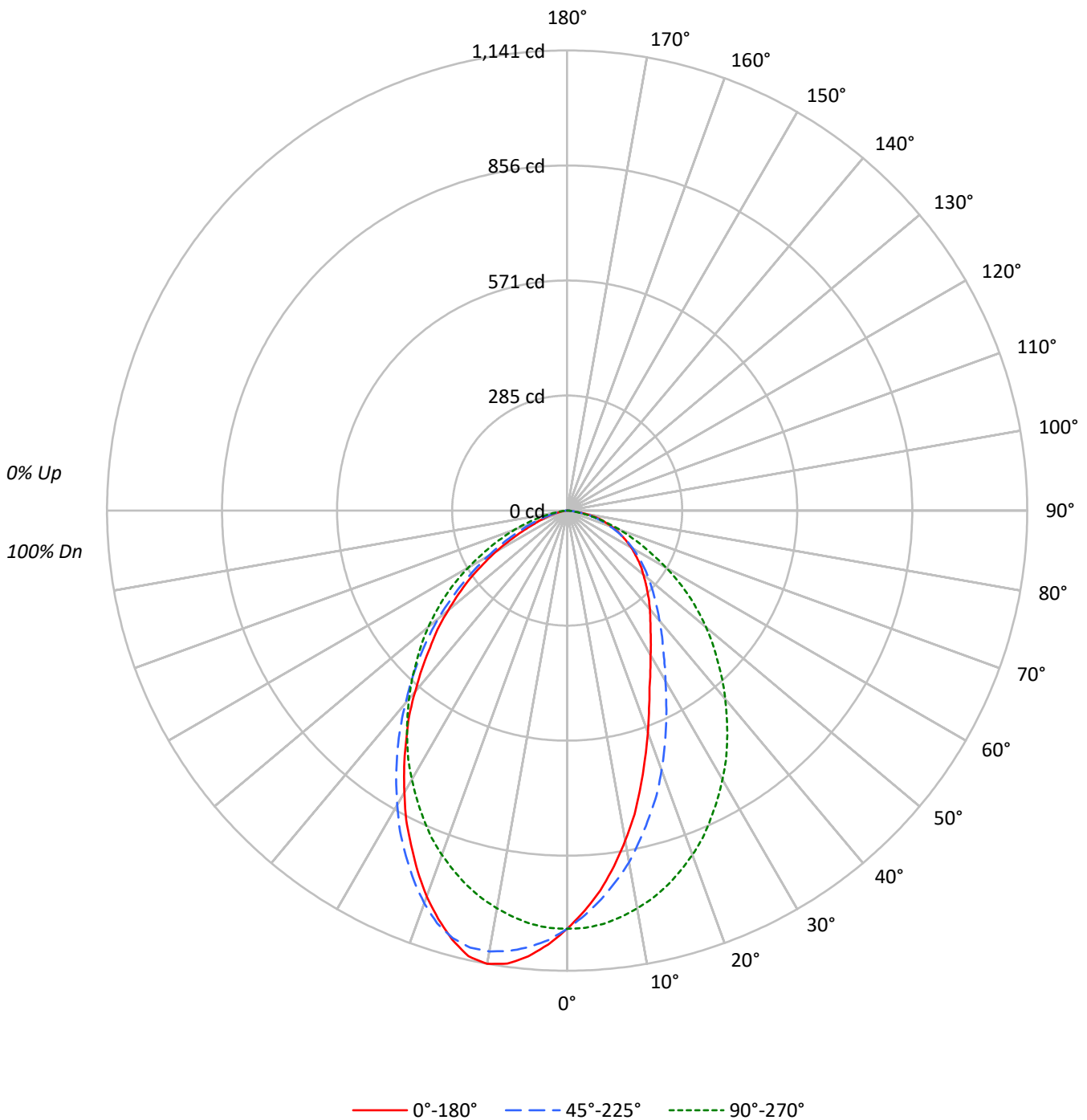
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	106	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75
3	94	85	77	72	92	83	76	71	80	75	70	78	73	69	75	71	68	66
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53	51
6	75	63	54	49	73	62	54	48	60	53	48	58	52	48	57	51	47	45
7	70	57	49	44	68	57	49	43	55	48	43	54	47	43	52	47	43	41
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37
9	61	49	41	36	60	48	41	36	47	40	36	46	40	36	45	39	35	34
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	37	32	31

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	101074	101074	101074
5°	92479	100658	108572
10°	82168	99110	112945
15°	71192	97042	111137
20°	60672	94213	105580
25°	52003	90607	98414
30°	46567	86652	90816
35°	42866	82318	82806
40°	40609	77568	74603
45°	38715	72703	66281
50°	37389	68137	58373
55°	36548	62613	49818
60°	35787	55278	39782
65°	34752	47389	28434
70°	33966	39437	20288
75°	32496	30425	14459
80°	23067	17679	8475
85°	6150	9169	1565



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	97.1	5.1
10°-20°	262.7	13.7
20°-30°	353.9	18.4
30°-40°	371.7	19.4
40°-50°	334.9	17.5
50°-60°	258.7	13.5
60°-70°	159.2	8.3
70°-80°	70.2	3.7
80°-90°	10.3	0.5
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°	713.7	37.2
0°-40°	1085.4	56.6
0°-60°	1679.0	87.5
0°-90°	1918.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1918.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1037	1037	1037	1037	1037	
5°	945	967	1029	1086	1110	87
15°	706	786	962	1097	1102	197
25°	484	581	843	945	915	224
35°	360	414	692	734	696	227
45°	281	307	528	519	481	217
55°	215	226	368	316	293	192
65°	151	151	206	152	123	150
75°	86	77	81	48	38	88
85°	6	7	8	4	1	13
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°	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1
2.5°	993.3	991.9	990.6	993.3	993.3	994.7	994.7	997.4	997.4	1000.2	1004.3
5°	945.3	942.6	944.0	944.0	948.1	948.1	950.8	953.6	957.7	963.2	967.3
7.5°	889.2	889.2	890.5	893.3	897.4	897.4	901.5	905.6	912.5	919.3	927.5
10°	830.3	833.0	834.4	837.1	844.0	846.7	848.1	854.9	864.5	871.4	885.1
12.5°	771.3	771.3	774.1	779.6	785.0	789.2	791.9	801.5	811.1	823.4	835.7
15°	705.6	707.0	711.1	716.5	726.1	728.9	734.4	745.3	759.0	774.1	786.4
17.5°	642.6	645.3	648.0	656.3	663.1	667.2	675.4	687.8	702.8	719.3	738.5
20°	585.0	580.9	586.4	591.9	598.7	608.3	613.8	627.5	643.9	665.9	685.0
22.5°	530.2	530.2	534.3	538.4	545.3	552.1	559.0	569.9	587.8	609.7	631.6
25°	483.6	485.0	489.1	493.2	500.1	504.2	511.0	522.0	539.8	556.2	580.9
27.5°	446.6	448.0	449.4	454.9	460.3	464.5	468.6	479.5	493.2	511.0	531.6
30°	413.8	413.8	415.1	420.6	423.4	428.8	431.6	441.2	453.5	468.6	487.7
32.5°	386.4	386.4	387.7	390.5	396.0	398.7	400.1	409.7	419.2	434.3	449.4
35°	360.3	360.3	361.7	364.4	368.5	369.9	374.0	379.5	389.1	400.1	413.8
37.5°	338.4	338.4	339.8	341.1	343.9	346.6	349.4	354.8	360.3	371.3	385.0
40°	319.2	317.9	319.2	320.6	324.7	324.7	326.1	331.6	337.0	345.3	356.2
42.5°	300.0	300.0	300.0	301.4	304.2	305.5	306.9	309.6	315.1	322.0	330.2
45°	280.9	280.9	282.2	283.6	285.0	286.3	289.1	291.8	294.6	298.7	306.9
47.5°	263.1	264.4	264.4	265.8	267.2	268.5	269.9	272.6	275.4	279.5	285.0
50°	246.6	248.0	248.0	249.4	250.7	250.7	252.1	254.8	257.6	260.3	264.4
52.5°	231.5	231.5	230.2	231.5	232.9	232.9	234.3	235.7	238.4	242.5	245.2
55°	215.1	215.1	215.1	216.5	216.5	216.5	217.8	219.2	220.6	222.0	226.1
57.5°	198.7	198.7	200.0	198.7	200.0	200.0	200.0	201.4	202.8	205.5	206.9
60°	183.6	183.6	183.6	183.6	183.6	183.6	185.0	185.0	185.0	186.3	187.7
62.5°	167.1	167.1	167.1	167.1	167.1	167.1	167.1	167.1	168.5	168.5	169.9
65°	150.7	150.7	152.1	150.7	150.7	150.7	150.7	150.7	150.7	150.7	150.7
67.5°	135.6	134.3	135.6	134.3	134.3	134.3	134.3	132.9	132.9	132.9	131.5
70°	119.2	117.8	117.8	117.8	117.8	116.5	117.8	116.5	115.1	113.7	112.3
72.5°	101.4	101.4	101.4	101.4	101.4	100.0	98.6	98.6	97.3	95.9	94.5
75°	86.3	86.3	84.9	83.6	82.2	82.2	82.2	80.8	79.5	78.1	76.7
77.5°	67.1	65.8	65.8	64.4	63.0	61.7	63.0	61.7	60.3	58.9	57.5
80°	41.1	41.1	41.1	41.1	41.1	41.1	39.7	41.1	39.7	38.4	38.4
82.5°	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
85°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	6.9	6.9
87.5°	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	4.1	4.1	4.1
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°	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1
2.5°	1007.0	1009.7	1013.9	1016.6	1018.0	1019.3	1023.4	1027.6	1031.7	1035.8	1038.5
5°	974.1	981.0	985.1	991.9	996.0	1000.2	1007.0	1013.9	1020.7	1028.9	1035.8
7.5°	934.4	945.3	953.6	963.2	968.6	974.1	983.7	994.7	1005.6	1016.6	1027.6
10°	896.0	905.6	920.7	934.4	938.5	946.7	961.8	974.1	989.2	1001.5	1016.6
12.5°	852.2	864.5	881.0	897.4	907.0	915.2	933.0	949.5	967.3	983.7	1001.5
15°	804.2	823.4	841.2	860.4	872.7	881.0	901.5	922.1	941.2	961.8	982.3
17.5°	756.3	778.2	800.1	823.4	833.0	845.3	868.6	890.5	913.8	935.8	959.0
20°	708.3	731.6	754.9	780.9	794.6	807.0	831.6	857.7	883.7	908.4	933.0
22.5°	657.6	682.3	709.7	738.5	753.5	764.5	793.3	822.0	849.4	878.2	904.2
25°	606.9	635.7	664.5	694.6	709.7	726.1	754.9	785.0	813.8	842.6	872.7
27.5°	557.6	587.8	617.9	652.2	667.2	683.7	715.2	745.3	776.8	807.0	837.1
30°	512.4	541.2	574.1	608.3	624.8	641.2	674.1	707.0	738.5	770.0	798.8
32.5°	471.3	496.0	530.2	564.5	582.3	598.7	633.0	667.2	700.1	733.0	761.8
35°	432.9	456.2	485.0	522.0	538.4	556.2	591.9	624.8	659.0	691.9	722.0
37.5°	398.7	420.6	446.6	478.2	498.7	515.1	550.8	585.0	617.9	650.8	680.9
40°	368.5	387.7	409.7	438.4	457.6	475.4	511.0	545.3	578.2	609.7	639.8
42.5°	341.1	356.2	376.8	402.8	417.9	435.7	472.7	505.6	538.4	569.9	597.4
45°	315.1	327.4	345.3	368.5	380.9	400.1	434.3	467.2	498.7	527.5	557.6
47.5°	291.8	302.8	316.5	335.7	348.0	363.1	397.3	430.2	460.3	489.1	515.1
50°	271.3	279.5	291.8	308.3	317.9	328.8	363.1	394.6	422.0	449.4	474.0
52.5°	250.7	256.2	265.8	279.5	289.1	298.7	327.4	357.6	385.0	408.3	434.3
55°	228.8	235.7	243.9	253.5	260.3	268.5	291.8	320.6	343.9	368.5	389.1
57.5°	209.6	213.7	219.2	227.4	232.9	239.8	257.6	282.2	305.5	326.1	346.6
60°	190.4	193.2	197.3	202.8	206.9	212.4	224.7	246.6	267.2	283.6	301.4
62.5°	171.3	171.3	174.0	178.1	180.8	185.0	195.9	212.4	230.2	242.5	257.6
65°	150.7	152.1	153.4	156.2	157.6	160.3	167.1	179.5	193.2	205.5	216.5
67.5°	131.5	131.5	132.9	134.3	134.3	135.6	139.7	148.0	161.7	169.9	178.1
70°	112.3	112.3	112.3	112.3	113.7	112.3	115.1	120.6	130.2	138.4	142.5
72.5°	94.5	93.2	91.8	91.8	91.8	91.8	93.2	97.3	102.8	106.9	112.3
75°	75.4	74.0	72.6	71.2	72.6	72.6	72.6	74.0	76.7	80.8	82.2
77.5°	56.2	56.2	53.4	52.1	53.4	52.1	50.7	50.7	52.1	53.4	53.4
80°	38.4	37.0	35.6	34.3	34.3	34.3	32.9	31.5	31.5	31.5	30.1
82.5°	19.2	19.2	17.8	17.8	17.8	17.8	17.8	16.4	16.4	15.1	15.1
85°	6.9	6.9	6.9	6.9	8.2	6.9	8.2	8.2	8.2	8.2	8.2
87.5°	4.1	4.1	5.5	5.5	5.5	5.5	5.5	6.9	6.9	6.9	5.5
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):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1
2.5°	1042.6	1046.7	1049.5	1052.2	1053.6	1056.3	1060.4	1063.2	1065.9	1068.7	1071.4
5°	1042.6	1050.8	1056.3	1060.4	1064.5	1070.0	1076.9	1082.4	1086.5	1091.9	1096.1
7.5°	1038.5	1049.5	1059.1	1064.5	1070.0	1078.2	1086.5	1094.7	1101.5	1108.4	1113.9
10°	1030.3	1044.0	1057.7	1063.2	1070.0	1081.0	1091.9	1101.5	1109.8	1118.0	1124.8
12.5°	1018.0	1034.4	1050.8	1057.7	1064.5	1078.2	1090.6	1101.5	1109.8	1116.6	1120.7
15°	1001.5	1020.7	1038.5	1046.7	1055.0	1068.7	1081.0	1090.6	1097.4	1101.5	1104.3
17.5°	981.0	1001.5	1020.7	1030.3	1039.9	1053.6	1063.2	1068.7	1072.8	1072.8	1071.4
20°	957.7	979.6	1000.2	1009.7	1018.0	1028.9	1035.8	1037.1	1035.8	1033.0	1030.3
22.5°	928.9	953.6	974.1	982.3	989.2	997.4	997.4	996.0	993.3	989.2	987.8
25°	898.8	922.1	942.6	950.8	953.6	959.0	954.9	952.2	945.3	941.2	937.1
27.5°	865.9	890.5	905.6	911.1	913.8	911.1	907.0	901.5	897.4	890.5	885.1
30°	830.3	852.2	864.5	868.6	867.3	863.1	859.0	849.4	842.6	835.7	828.9
32.5°	789.2	811.1	820.7	822.0	817.9	811.1	804.2	797.4	789.2	780.9	776.8
35°	749.4	768.6	774.1	771.3	767.2	759.0	749.4	741.2	734.4	724.8	717.9
37.5°	707.0	723.4	723.4	719.3	716.5	707.0	697.4	689.1	679.6	671.3	661.7
40°	664.5	676.8	672.7	668.6	664.5	653.5	645.3	633.0	623.4	613.8	606.9
42.5°	622.0	628.9	623.4	617.9	612.4	601.5	593.2	579.5	571.3	561.7	556.2
45°	579.5	580.9	572.7	568.6	563.1	549.4	538.4	528.8	519.3	508.3	501.4
47.5°	535.7	533.0	523.4	517.9	512.4	500.1	489.1	478.2	467.2	459.0	450.8
50°	491.9	485.0	475.4	469.9	463.1	452.1	439.8	427.5	417.9	409.7	402.8
52.5°	443.9	438.4	427.5	419.2	413.8	398.7	387.7	376.8	365.8	357.6	352.1
55°	396.0	387.7	375.4	369.9	361.7	349.4	338.4	324.7	316.5	309.6	302.8
57.5°	348.0	338.4	327.4	320.6	312.4	300.0	287.7	279.5	271.3	263.1	258.9
60°	301.4	291.8	278.1	275.4	267.2	254.8	243.9	234.3	226.1	220.6	216.5
62.5°	257.6	248.0	234.3	228.8	223.3	211.0	201.4	193.2	187.7	182.2	178.1
65°	213.7	205.5	194.5	187.7	182.2	172.6	164.4	156.2	152.1	145.2	141.1
67.5°	174.0	164.4	156.2	150.7	146.6	137.0	130.2	124.7	119.2	115.1	109.6
70°	137.0	128.8	120.6	117.8	113.7	106.9	101.4	95.9	91.8	87.7	82.2
72.5°	105.5	100.0	91.8	89.1	86.3	80.8	76.7	72.6	67.1	64.4	61.7
75°	78.1	72.6	67.1	64.4	63.0	57.5	54.8	50.7	48.0	46.6	43.8
77.5°	50.7	46.6	43.8	42.5	41.1	38.4	35.6	34.3	31.5	30.1	30.1
80°	28.8	27.4	26.0	24.7	23.3	21.9	21.9	20.6	19.2	17.8	16.4
82.5°	13.7	13.7	12.3	12.3	12.3	11.0	11.0	9.6	9.6	8.2	8.2
85°	6.9	6.9	6.9	6.9	6.9	5.5	5.5	5.5	4.1	4.1	2.7
87.5°	5.5	5.5	5.5	5.5	5.5	4.1	4.1	4.1	2.7	2.7	1.4
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°	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1	1037.1
2.5°	1071.4	1072.8	1074.1	1075.5	1075.5	1076.9	1078.2	1076.9
5°	1098.8	1102.9	1104.3	1105.6	1107.0	1108.4	1109.8	1109.8
7.5°	1119.3	1124.8	1126.2	1126.2	1130.3	1131.7	1133.0	1133.0
10°	1130.3	1133.0	1135.8	1135.8	1138.5	1138.5	1141.3	1141.3
12.5°	1124.8	1127.6	1128.9	1130.3	1130.3	1131.7	1131.7	1131.7
15°	1105.6	1104.3	1104.3	1102.9	1102.9	1101.5	1101.5	1101.5
17.5°	1070.0	1068.7	1067.3	1067.3	1064.5	1064.5	1061.8	1061.8
20°	1027.6	1024.8	1023.4	1022.1	1022.1	1020.7	1018.0	1018.0
22.5°	982.3	979.6	976.9	974.1	971.4	970.0	968.6	968.6
25°	931.6	927.5	926.2	924.8	920.7	919.3	916.6	915.2
27.5°	879.6	872.7	871.4	870.0	867.3	865.9	864.5	864.5
30°	824.8	820.7	817.9	816.6	812.5	811.1	807.0	807.0
32.5°	770.0	763.1	760.4	759.0	756.3	753.5	752.2	752.2
35°	712.4	708.3	707.0	702.8	698.7	698.7	696.0	696.0
37.5°	657.6	653.5	649.4	648.0	645.3	641.2	639.8	643.9
40°	602.8	597.4	594.6	593.2	590.5	586.4	586.4	586.4
42.5°	549.4	545.3	543.9	541.2	538.4	537.1	534.3	533.0
45°	494.6	491.9	490.5	487.7	486.4	483.6	480.9	480.9
47.5°	446.6	441.2	441.2	438.4	435.7	434.3	434.3	435.7
50°	398.7	394.6	391.8	390.5	387.7	387.7	386.4	385.0
52.5°	346.6	343.9	342.5	342.5	339.8	339.8	338.4	338.4
55°	298.7	298.7	297.3	295.9	293.2	293.2	293.2	293.2
57.5°	256.2	253.5	252.1	250.7	249.4	248.0	248.0	246.6
60°	212.4	211.0	208.3	209.6	205.5	205.5	205.5	204.1
62.5°	172.6	169.9	168.5	167.1	164.4	164.4	161.7	160.3
65°	138.4	134.3	131.5	131.5	128.8	126.0	124.7	123.3
67.5°	104.1	101.4	100.0	98.6	95.9	93.2	93.2	91.8
70°	79.5	76.7	75.4	74.0	72.6	71.2	71.2	71.2
72.5°	58.9	57.5	56.2	56.2	54.8	53.4	53.4	54.8
75°	42.5	41.1	41.1	41.1	39.7	39.7	39.7	38.4
77.5°	28.8	27.4	27.4	26.0	26.0	26.0	26.0	26.0
80°	16.4	15.1	15.1	15.1	15.1	15.1	15.1	15.1
82.5°	6.9	6.9	6.9	6.9	5.5	5.5	5.5	5.5
85°	2.7	2.7	2.7	2.7	2.7	1.4	1.4	1.4
87.5°	1.4	1.4	1.4	1.4	1.4	1.4	0.0	1.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)