

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: P345494

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSBZ 3000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345494
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 3000lm3500K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1993.3 lumens
Efficiency: N/A
Efficacy: 76.4 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

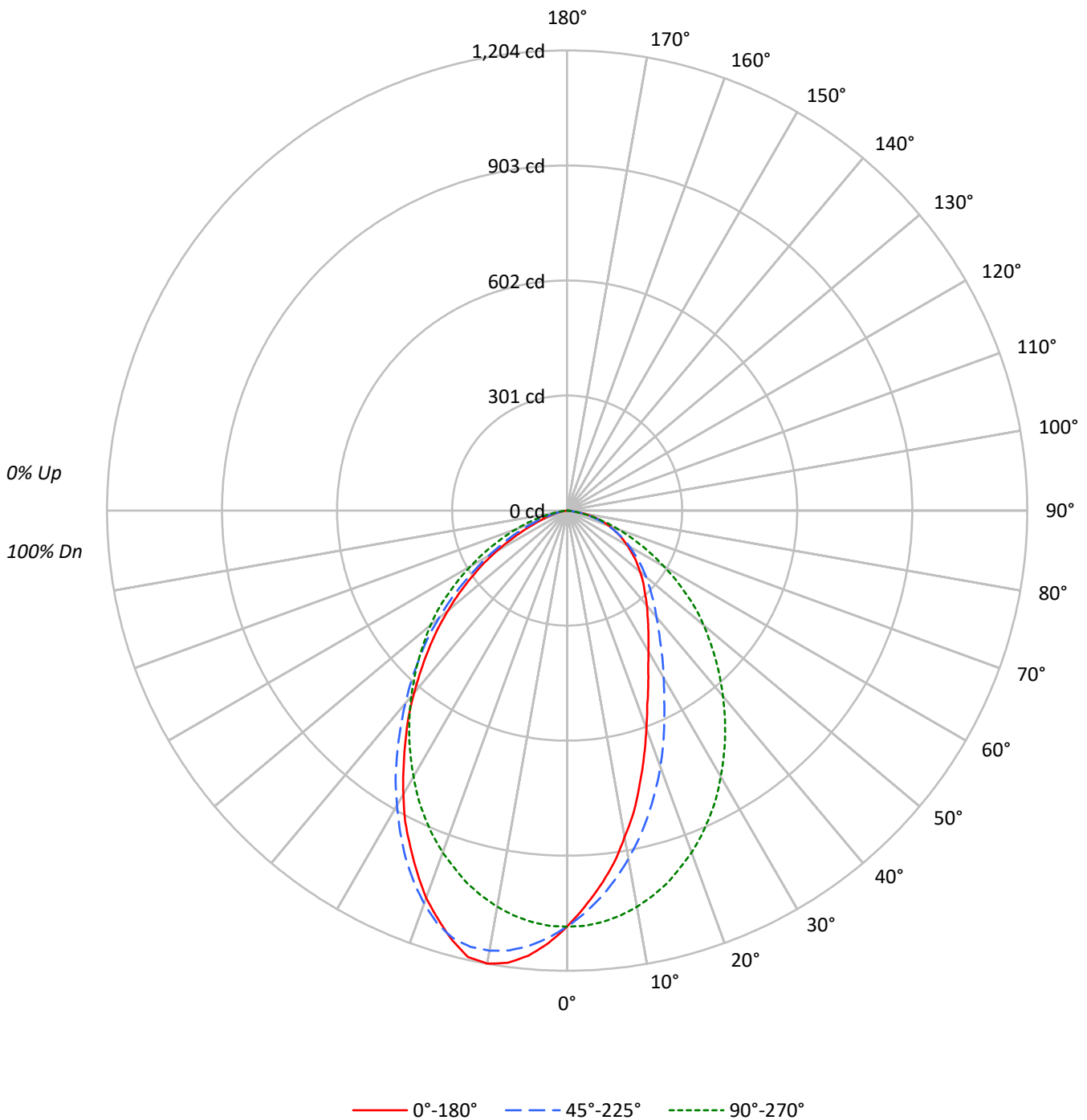
Input Watts (W): 26.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	95228	95228	95228
5°	86627	94828	102660
10°	77024	93500	106911
15°	66676	91424	105352
20°	56362	88615	100399
25°	48439	85220	93684
30°	42996	81195	86568
35°	39466	76935	78783
40°	37110	72415	71102
45°	35218	67961	63335
50°	33856	63412	55193
55°	32894	57904	46710
60°	31699	51065	37489
65°	30963	44043	27092
70°	29794	36034	18746
75°	27712	27205	13113
80°	18839	14507	6498
85°	1405	5821	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	101.9	5.1
10°-20°	275.8	13.8
20°-30°	371.3	18.6
30°-40°	388.9	19.5
40°-50°	348.8	17.5
50°-60°	267.0	13.4
60°-70°	162.6	8.2
70°-80°	69.1	3.5
80°-90°	7.8	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°	749.0	37.6
0°-40°	1138.0	57.1
0°-60°	1753.8	88.0
0°-90°	1993.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1993.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1089	1089	1089	1089	1089	
5°	987	1015	1080	1143	1169	91
15°	736	823	1010	1158	1163	205
25°	502	601	883	1001	971	232
35°	370	426	720	775	738	232
45°	285	314	549	546	512	220
55°	216	229	380	332	306	192
65°	150	151	213	158	131	148
75°	82	73	80	49	39	84
85°	1	3	6	1	0	9
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°	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7
2.5°	1038.3	1039.8	1042.6	1041.2	1044.1	1044.1	1044.1	1047.0	1049.8	1051.3	1054.1
5°	986.6	988.0	989.4	992.3	993.7	992.3	996.6	1000.9	1005.3	1011.0	1015.3
7.5°	931.9	931.9	930.5	934.8	940.5	942.0	944.9	949.2	954.9	963.5	972.2
10°	867.2	868.6	871.5	872.9	881.6	883.0	887.3	893.1	903.1	913.2	924.7
12.5°	806.8	805.4	806.8	811.1	816.9	824.0	828.4	835.6	848.5	861.4	875.8
15°	736.3	737.8	742.1	746.4	755.0	759.3	766.5	779.5	792.4	805.4	822.6
17.5°	670.2	668.7	674.5	681.7	688.9	696.1	701.8	713.3	730.6	749.3	768.0
20°	605.5	604.0	608.3	614.1	625.6	629.9	637.1	654.3	670.2	690.3	713.3
22.5°	547.9	547.9	552.2	559.4	566.6	570.9	578.1	592.5	611.2	634.2	657.2
25°	501.9	501.9	504.8	509.1	517.7	522.0	529.2	539.3	556.6	578.1	601.1
27.5°	458.8	461.6	463.1	467.4	474.6	478.9	483.2	494.7	509.1	527.8	549.4
30°	425.7	427.1	428.6	431.4	437.2	440.1	445.8	455.9	468.8	484.6	504.8
32.5°	395.5	396.9	396.9	401.2	405.6	409.9	412.7	421.4	430.0	445.8	464.5
35°	369.6	369.6	372.5	373.9	376.8	379.7	382.5	389.7	399.8	411.3	425.7
37.5°	345.2	345.2	346.6	349.5	352.3	355.2	356.7	362.4	371.0	381.1	392.6
40°	325.0	325.0	325.0	327.9	330.8	332.2	333.6	339.4	346.6	353.8	363.8
42.5°	303.4	304.9	306.3	307.8	309.2	312.1	313.5	316.4	322.1	327.9	338.0
45°	284.7	286.2	286.2	287.6	290.5	290.5	291.9	296.3	300.6	306.3	313.5
47.5°	267.5	267.5	267.5	268.9	270.4	271.8	273.2	276.1	280.4	283.3	290.5
50°	248.8	248.8	250.2	251.7	253.1	253.1	254.5	256.0	260.3	263.2	268.9
52.5°	231.5	231.5	233.0	233.0	234.4	234.4	235.9	238.7	240.2	244.5	248.8
55°	215.7	214.3	215.7	215.7	215.7	217.2	217.2	220.0	222.9	224.3	228.7
57.5°	197.0	198.5	198.5	199.9	199.9	199.9	201.3	201.3	204.2	205.7	207.1
60°	181.2	182.6	182.6	182.6	182.6	182.6	184.1	184.1	185.5	187.0	188.4
62.5°	165.4	165.4	165.4	165.4	165.4	166.8	166.8	166.8	166.8	168.3	169.7
65°	149.6	149.6	149.6	149.6	149.6	149.6	149.6	149.6	149.6	149.6	151.0
67.5°	132.3	132.3	132.3	133.7	132.3	132.3	132.3	132.3	132.3	132.3	130.9
70°	116.5	116.5	116.5	116.5	116.5	115.1	115.1	113.6	113.6	112.2	112.2
72.5°	99.2	99.2	99.2	97.8	97.8	97.8	96.4	94.9	93.5	93.5	93.5
75°	82.0	82.0	80.5	80.5	79.1	79.1	77.7	76.2	74.8	73.3	73.3
77.5°	61.8	61.8	61.8	61.8	60.4	59.0	59.0	57.5	56.1	56.1	54.6
80°	37.4	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	34.5	34.5
82.5°	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
85°	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	2.9
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.4	1.4	2.9
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7
2.5°	1057.0	1059.9	1064.2	1067.1	1068.5	1070.0	1074.3	1078.6	1082.9	1087.2	1090.1
5°	1022.5	1028.3	1034.0	1041.2	1044.1	1048.4	1057.0	1064.2	1071.4	1080.0	1087.2
7.5°	980.8	990.9	1000.9	1012.4	1016.8	1021.1	1032.6	1045.5	1055.6	1068.5	1080.0
10°	937.7	949.2	962.1	977.9	985.1	992.3	1006.7	1022.5	1036.9	1052.7	1067.1
12.5°	888.8	907.5	924.7	942.0	949.2	957.8	976.5	995.2	1013.9	1032.6	1049.8
15°	839.9	858.6	880.1	900.3	910.3	921.8	943.4	966.4	988.0	1009.6	1029.7
17.5°	791.0	809.7	832.7	858.6	871.5	883.0	906.0	931.9	957.8	980.8	1006.7
20°	736.3	760.8	788.1	815.4	828.4	842.7	870.1	897.4	926.2	952.0	979.4
22.5°	683.1	709.0	742.1	769.4	783.8	798.2	829.8	861.4	890.2	919.0	946.3
25°	629.9	660.1	691.7	724.8	740.6	756.5	789.5	819.7	852.8	883.0	914.7
27.5°	578.1	609.8	642.8	677.4	694.6	711.9	745.0	779.5	812.5	845.6	877.3
30°	529.2	559.4	595.4	631.3	648.6	667.3	701.8	737.8	770.8	803.9	838.4
32.5°	486.1	512.0	547.9	583.9	602.6	621.3	658.7	694.6	727.7	762.2	798.2
35°	445.8	470.3	501.9	539.3	558.0	576.7	614.1	651.5	687.4	720.5	755.0
37.5°	411.3	432.9	460.2	493.3	514.9	533.5	570.9	608.3	642.8	677.4	710.4
40°	378.2	396.9	422.8	454.4	471.7	490.4	527.8	566.6	601.1	634.2	667.3
42.5°	349.5	365.3	386.9	414.2	432.9	448.7	487.5	524.9	558.0	591.1	624.1
45°	323.6	336.5	353.8	376.8	392.6	412.7	448.7	483.2	516.3	549.4	581.0
47.5°	297.7	309.2	323.6	345.2	358.1	373.9	409.9	442.9	476.0	506.2	536.4
50°	276.1	284.7	296.3	313.5	326.5	338.0	371.0	405.6	435.8	466.0	493.3
52.5°	254.5	260.3	270.4	286.2	294.8	306.3	335.1	366.7	396.9	425.7	450.1
55°	233.0	238.7	245.9	257.4	266.1	274.7	299.1	329.3	356.7	379.7	404.1
57.5°	211.4	215.7	221.5	231.5	237.3	244.5	264.6	289.1	313.5	336.5	355.2
60°	192.7	195.6	199.9	205.7	210.0	214.3	228.7	251.7	274.7	291.9	309.2
62.5°	171.1	172.6	175.5	181.2	184.1	187.0	197.0	217.2	235.9	251.7	266.1
65°	151.0	152.4	153.9	156.8	159.6	161.1	169.7	184.1	199.9	212.8	222.9
67.5°	130.9	132.3	132.3	135.2	135.2	138.1	142.4	151.0	165.4	175.5	184.1
70°	110.7	112.2	112.2	113.6	112.2	113.6	117.9	123.7	132.3	140.9	146.7
72.5°	92.0	90.6	90.6	90.6	90.6	92.0	93.5	96.4	103.5	110.7	112.2
75°	71.9	71.9	70.5	70.5	70.5	70.5	70.5	71.9	76.2	80.5	82.0
77.5°	53.2	51.8	51.8	50.3	50.3	50.3	48.9	48.9	50.3	53.2	53.2
80°	34.5	33.1	31.6	33.1	30.2	31.6	30.2	28.8	28.8	28.8	27.3
82.5°	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	12.9	12.9	12.9
85°	2.9	2.9	4.3	4.3	4.3	4.3	4.3	4.3	5.8	5.8	4.3
87.5°	2.9	2.9	2.9	4.3	4.3	4.3	4.3	4.3	5.8	5.8	5.8
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°	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7
2.5°	1094.4	1098.7	1103.0	1104.5	1105.9	1110.2	1113.1	1117.4	1118.9	1121.7	1124.6
5°	1094.4	1103.0	1110.2	1114.6	1117.4	1124.6	1131.8	1136.1	1143.3	1147.6	1151.9
7.5°	1091.5	1103.0	1113.1	1118.9	1124.6	1133.2	1143.3	1151.9	1160.6	1166.3	1173.5
10°	1082.9	1097.3	1110.2	1117.4	1124.6	1137.6	1149.1	1159.1	1169.2	1177.8	1185.0
12.5°	1070.0	1087.2	1103.0	1111.7	1118.9	1134.7	1147.6	1159.1	1169.2	1176.4	1182.1
15°	1051.3	1072.8	1091.5	1100.2	1108.8	1126.1	1139.0	1149.1	1157.7	1162.0	1166.3
17.5°	1029.7	1052.7	1074.3	1084.3	1093.0	1108.8	1120.3	1127.5	1131.8	1134.7	1133.2
20°	1005.3	1029.7	1051.3	1061.3	1071.4	1084.3	1093.0	1095.9	1094.4	1093.0	1090.1
22.5°	975.1	1000.9	1023.9	1032.6	1041.2	1051.3	1054.1	1052.7	1049.8	1047.0	1042.6
25°	943.4	969.3	990.9	998.1	1005.3	1009.6	1008.1	1005.3	1000.9	996.6	989.4
27.5°	907.5	934.8	952.0	960.7	962.1	962.1	957.8	953.5	946.3	940.5	933.3
30°	870.1	893.1	910.3	913.2	914.7	911.8	907.5	900.3	890.2	885.9	878.7
32.5°	826.9	851.4	864.3	864.3	861.4	857.1	848.5	841.3	835.6	825.5	818.3
35°	786.7	805.4	812.5	812.5	808.2	801.0	793.8	783.8	775.2	769.4	759.3
37.5°	740.6	759.3	762.2	757.9	755.0	746.4	734.9	726.3	716.2	709.0	701.8
40°	697.5	710.4	707.6	703.2	700.4	691.7	678.8	668.7	658.7	650.0	642.8
42.5°	648.6	657.2	652.9	650.0	644.3	634.2	622.7	612.6	602.6	593.9	586.8
45°	604.0	608.3	601.1	595.4	591.1	579.6	570.9	556.6	546.5	537.9	532.1
47.5°	556.6	556.6	549.4	543.6	536.4	524.9	514.9	500.5	494.7	483.2	477.5
50°	510.5	506.2	497.6	490.4	484.6	471.7	458.8	448.7	438.6	430.0	424.2
52.5°	461.6	455.9	444.4	437.2	434.3	418.5	407.0	394.0	385.4	375.4	369.6
55°	412.7	404.1	391.2	385.4	379.7	366.7	353.8	340.8	332.2	325.0	319.3
57.5°	362.4	352.3	340.8	333.6	326.5	313.5	300.6	289.1	281.9	274.7	270.4
60°	310.6	303.4	291.9	284.7	277.6	266.1	251.7	243.0	237.3	228.7	227.2
62.5°	266.1	256.0	243.0	237.3	231.5	220.0	208.5	201.3	194.1	189.8	184.1
65°	221.5	211.4	199.9	194.1	189.8	179.8	171.1	163.9	158.2	152.4	148.1
67.5°	178.3	171.1	161.1	156.8	151.0	142.4	135.2	129.4	123.7	117.9	113.6
70°	142.4	133.7	125.1	122.2	119.4	110.7	105.0	99.2	93.5	89.2	84.8
72.5°	109.3	102.1	94.9	90.6	87.7	83.4	79.1	73.3	69.0	64.7	61.8
75°	77.7	73.3	67.6	64.7	61.8	59.0	53.2	50.3	48.9	46.0	43.1
77.5°	50.3	46.0	43.1	40.3	40.3	37.4	34.5	33.1	30.2	30.2	28.8
80°	25.9	24.4	23.0	23.0	23.0	20.1	18.7	18.7	17.3	15.8	15.8
82.5°	11.5	11.5	10.1	10.1	10.1	8.6	8.6	7.2	7.2	5.8	5.8
85°	4.3	4.3	4.3	4.3	4.3	2.9	2.9	2.9	1.4	1.4	1.4
87.5°	4.3	4.3	4.3	4.3	4.3	2.9	2.9	2.9	1.4	1.4	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°	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7	1088.7
2.5°	1126.1	1128.9	1128.9	1130.4	1131.8	1133.2	1131.8	1133.2
5°	1156.3	1160.6	1162.0	1162.0	1164.9	1166.3	1169.2	1169.2
7.5°	1179.3	1183.6	1186.5	1187.9	1190.8	1193.6	1193.6	1193.6
10°	1190.8	1195.1	1196.5	1199.4	1200.8	1202.3	1203.7	1203.7
12.5°	1186.5	1190.8	1192.2	1192.2	1195.1	1195.1	1195.1	1196.5
15°	1167.8	1166.3	1166.3	1166.3	1164.9	1164.9	1164.9	1163.4
17.5°	1130.4	1128.9	1128.9	1128.9	1127.5	1126.1	1124.6	1121.7
20°	1088.7	1085.8	1082.9	1084.3	1081.5	1080.0	1078.6	1078.6
22.5°	1039.8	1035.5	1034.0	1032.6	1029.7	1028.3	1025.4	1025.4
25°	986.6	983.7	979.4	977.9	976.5	973.6	970.7	970.7
27.5°	930.5	926.2	924.7	921.8	920.4	917.5	916.1	917.5
30°	872.9	868.6	867.2	864.3	858.6	861.4	858.6	857.1
32.5°	812.5	808.2	805.4	802.5	802.5	798.2	798.2	796.7
35°	753.6	749.3	746.4	745.0	742.1	742.1	739.2	737.8
37.5°	696.1	691.7	688.9	687.4	684.5	681.7	680.2	681.7
40°	637.1	632.8	629.9	628.5	625.6	622.7	622.7	622.7
42.5°	579.6	575.3	575.3	572.4	568.1	566.6	565.2	565.2
45°	526.4	520.6	519.2	516.3	516.3	513.4	512.0	512.0
47.5°	470.3	466.0	464.5	463.1	461.6	460.2	460.2	460.2
50°	418.5	412.7	412.7	409.9	408.4	409.9	407.0	405.6
52.5°	366.7	362.4	361.0	361.0	358.1	358.1	358.1	356.7
55°	315.0	312.1	312.1	310.6	307.8	309.2	309.2	306.3
57.5°	267.5	263.2	263.2	261.7	261.7	261.7	258.9	261.7
60°	222.9	220.0	218.6	217.2	215.7	215.7	215.7	214.3
62.5°	181.2	178.3	176.9	175.5	172.6	172.6	169.7	168.3
65°	143.8	140.9	138.1	136.6	133.7	132.3	132.3	130.9
67.5°	109.3	106.4	103.5	102.1	99.2	97.8	96.4	96.4
70°	82.0	77.7	77.7	76.2	74.8	74.8	73.3	73.3
72.5°	59.0	59.0	57.5	57.5	56.1	56.1	56.1	56.1
75°	41.7	41.7	41.7	41.7	40.3	40.3	38.8	38.8
77.5°	27.3	27.3	27.3	25.9	25.9	25.9	25.9	25.9
80°	14.4	14.4	14.4	14.4	14.4	12.9	14.4	12.9
82.5°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
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)