

Scaled data based on original data using

LM-41-14 Approved Method for Photometric Testing Of Indoor Fluorescent Luminaires

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: HALO

Report Number: P130229

Luminaire Tested: **HL612ICAT - HLM6940 - HL6NFL - 73PS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130229
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33478)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6940 - HL6NFL - 73PS
Description: HALO ALLSLOPE 6" 21W, Fresnel Glass Lens, White Polymer Trim Ring
"Dead Front", Wet Location - Showerlight using 25 Degree Optic at a 6-12
Pitch
Light Source: (1) HIGH LUMEN LED 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1238.5 lumens
Efficiency: N/A
Efficacy: 64.8 lumens/watt
Spacing Criteria (0/90/45): 1.67 / 0.76 / 1.09
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

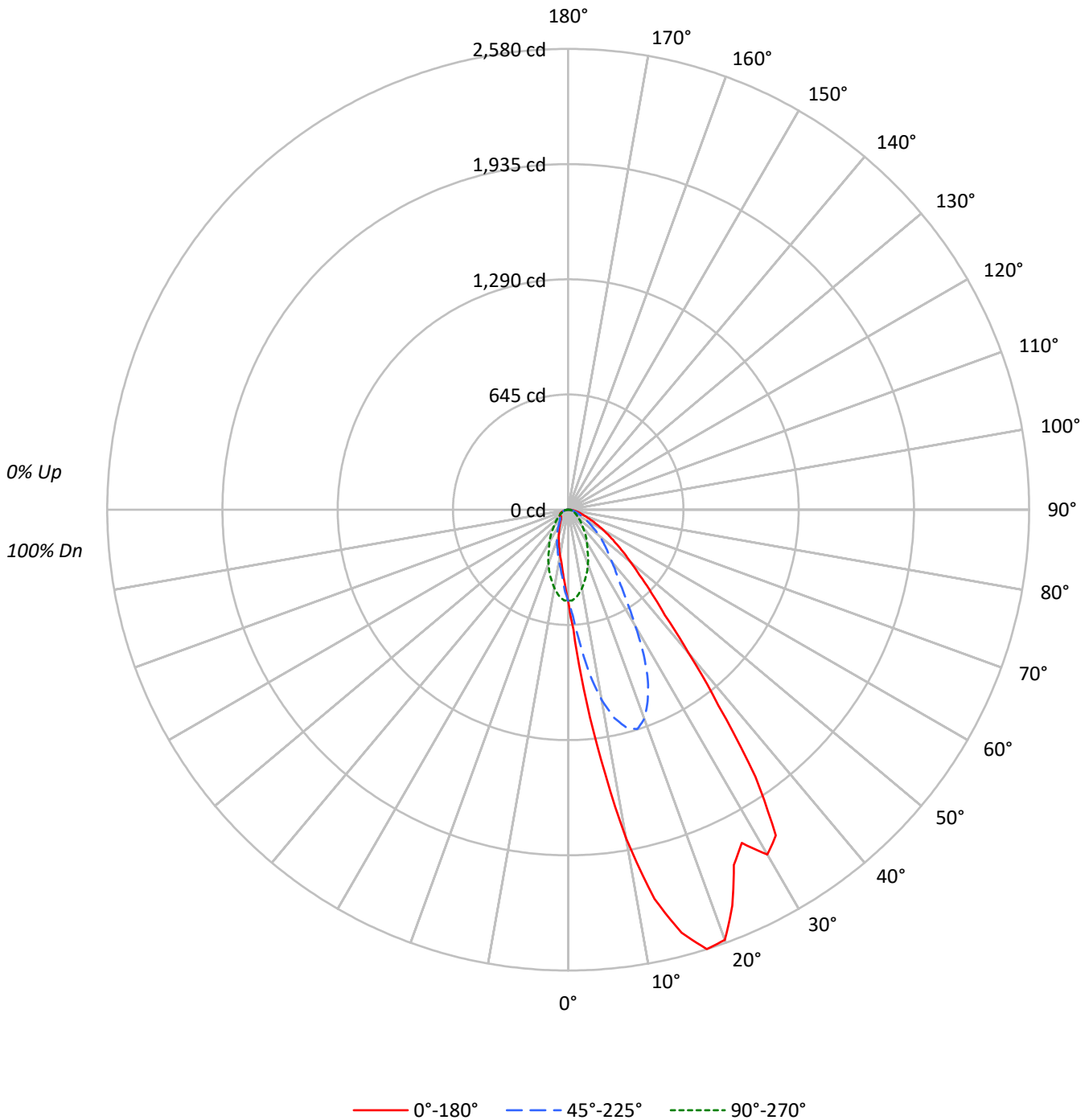
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	50	30	10	0	
RCR																						
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100				100
1	111	107	104	101	109	105	102	99	101	99	96	97	95	93	94	92	91	89				89
2	103	97	92	87	101	95	90	86	92	88	84	89	85	82	86	83	80	78				78
3	96	88	81	76	94	86	80	75	84	78	74	81	77	73	79	75	72	70				70
4	90	80	73	67	88	79	72	67	76	71	66	74	69	65	72	68	64	63				63
5	84	73	66	60	82	72	65	60	70	64	59	68	63	59	67	62	58	56				56
6	79	67	60	54	77	66	59	54	65	58	54	63	58	53	62	57	53	51				51
7	74	62	55	49	72	61	54	49	60	54	49	59	53	49	57	52	48	47				47
8	69	58	50	45	68	57	50	45	56	49	45	55	49	45	53	48	44	43				43
9	65	54	46	42	64	53	46	41	52	46	41	51	45	41	50	45	41	39				39
10	62	50	43	38	60	49	43	38	49	42	38	48	42	38	47	42	38	36				36

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	30347	30347	30347
5°	59032	28962	20349
10°	108074	25800	15141
15°	141424	22233	11463
20°	148466	18685	8868
25°	128587	14920	6956
30°	133235	12489	5498
35°	112192	10254	4491
40°	67079	8111	3944
45°	43998	6769	3728
50°	31970	5579	3943
55°	24397	4670	4285
60°	18427	4145	4219
65°	13307	3635	4490
70°	9715	3127	3813
75°	7666	2686	3289
80°	5306	2235	2948
85°	4377	1612	1612



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	59.6	4.8
10°-20°	224.4	18.1
20°-30°	309.3	25.0
30°-40°	265.8	21.5
40°-50°	159.2	12.9
50°-60°	105.9	8.6
60°-70°	65.6	5.3
70°-80°	35.4	2.9
80°-90°	13.2	1.1
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°	593.3	47.9
0°-40°	859.2	69.4
0°-60°	1124.3	90.8
0°-90°	1238.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1238.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	508	508	508	508	508	
5°	1008	750	495	378	348	123
15°	2452	1264	385	228	199	682
25°	2194	1056	255	144	119	1046
35°	1826	509	167	85	73	1085
45°	660	296	102	62	56	528
55°	323	163	62	52	57	294
65°	148	80	40	43	50	151
75°	66	36	23	26	28	69
85°	26	15	10	10	10	26
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4
2.5°	671.8	647.7	652.9	646.0	644.3	623.6	625.3	615.0	602.1	591.8	591.8
5°	1008.1	998.7	999.5	972.0	943.6	900.6	862.7	848.1	794.8	750.1	720.0
7.5°	1410.7	1393.5	1384.0	1327.2	1293.7	1221.4	1161.2	1101.0	1012.4	930.7	863.6
10°	1866.6	1862.3	1840.8	1762.5	1692.0	1556.9	1447.7	1347.9	1196.5	1082.1	973.7
12.5°	2232.1	2219.2	2210.6	2142.7	2036.0	1876.9	1713.5	1549.2	1353.0	1194.8	1054.6
15°	2451.5	2452.3	2448.0	2374.9	2261.4	2080.7	1880.3	1680.8	1452.8	1263.6	1101.0
17.5°	2579.6	2565.9	2562.4	2472.1	2336.2	2135.8	1929.4	1726.4	1465.7	1287.7	1099.3
20°	2563.3	2552.1	2533.2	2433.4	2276.0	2075.6	1879.5	1687.6	1454.5	1246.4	1045.1
22.5°	2399.9	2398.1	2378.4	2293.2	2138.4	1954.3	1781.4	1605.1	1377.1	1162.1	969.4
25°	2194.3	2203.8	2208.1	2139.2	2023.1	1873.4	1710.0	1518.2	1278.2	1056.3	866.2
27.5°	2103.1	2116.9	2141.0	2095.4	1993.0	1823.6	1644.6	1415.0	1138.9	915.2	740.6
30°	2229.6	2221.8	2196.9	2098.8	1950.9	1718.6	1475.2	1216.3	939.3	751.8	619.3
32.5°	2162.5	2130.6	2076.4	1919.0	1723.8	1460.6	1205.1	965.1	750.9	612.4	520.4
35°	1826.1	1809.8	1747.9	1556.9	1366.8	1117.4	923.0	749.2	607.3	509.2	449.0
37.5°	1381.4	1346.2	1286.8	1159.5	1021.9	849.0	712.2	602.1	504.9	437.8	383.6
40°	1052.8	1023.6	982.3	884.3	780.2	670.1	578.0	500.6	432.7	379.3	336.3
42.5°	800.8	792.2	765.5	704.5	635.7	553.1	492.0	433.5	378.5	334.6	301.1
45°	659.7	649.4	635.7	593.5	539.3	473.1	423.2	375.0	331.2	295.9	267.5
47.5°	542.8	535.0	521.3	488.6	451.6	402.6	364.7	326.9	290.7	261.5	234.8
50°	453.3	454.2	439.5	418.0	385.4	345.8	315.7	285.6	254.6	224.5	204.7
52.5°	385.4	381.9	370.7	353.5	326.9	297.6	272.7	246.9	218.5	195.3	174.6
55°	323.4	319.1	312.2	297.6	277.8	254.6	233.1	209.9	184.9	163.4	147.9
57.5°	271.0	267.5	261.5	250.3	233.1	213.3	195.3	176.3	155.7	138.5	125.6
60°	225.4	222.8	217.6	209.0	194.4	178.1	163.4	147.1	129.9	117.0	106.7
62.5°	184.9	181.5	178.9	172.9	159.1	147.9	135.0	121.3	109.2	97.2	88.6
65°	147.9	147.1	145.4	140.2	133.3	120.4	111.0	99.8	89.5	80.0	74.0
67.5°	119.6	118.7	118.7	113.5	105.8	96.3	89.5	81.7	73.1	66.2	61.1
70°	96.3	95.5	94.6	90.3	86.0	78.3	73.1	66.2	60.2	54.2	50.7
72.5°	76.6	76.6	76.6	74.0	69.7	64.5	59.4	54.2	49.0	44.7	41.3
75°	66.2	66.2	62.8	61.9	58.5	54.2	49.0	44.7	40.4	36.1	34.4
77.5°	50.7	52.5	50.7	49.9	47.3	43.0	39.6	36.1	31.8	29.2	27.5
80°	38.7	38.7	38.7	37.0	35.3	32.7	30.1	27.5	24.9	22.4	21.5
82.5°	31.8	31.8	30.1	28.4	26.7	24.9	24.1	22.4	19.8	17.2	16.3
85°	25.8	25.8	26.7	25.8	23.2	20.6	18.1	17.2	15.5	14.6	13.8
87.5°	18.9	18.1	17.2	17.2	15.5	13.8	12.9	12.0	10.3	9.5	9.5
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4
2.5°	573.7	561.7	547.1	543.6	537.6	517.0	513.5	508.4	498.0	485.1	485.1
5°	680.4	640.0	602.1	578.9	558.2	524.7	509.2	494.6	476.5	454.2	449.0
7.5°	779.3	708.8	646.8	603.0	566.0	519.5	494.6	471.4	447.3	420.6	409.4
10°	855.0	754.4	673.5	610.7	559.1	503.2	471.4	445.6	415.5	387.9	374.2
12.5°	902.3	775.9	676.1	601.3	541.9	480.0	444.7	414.6	384.5	354.4	338.9
15°	917.8	771.6	661.5	580.6	516.1	453.3	417.2	385.4	353.5	325.1	312.2
17.5°	895.4	740.6	628.8	544.5	482.6	422.3	387.9	355.2	326.9	297.6	283.9
20°	845.5	689.0	582.3	504.9	443.8	386.2	351.8	322.6	295.9	269.2	253.7
22.5°	772.4	627.1	529.0	459.3	403.4	349.2	317.4	291.6	264.1	240.8	227.9
25°	685.6	560.0	475.7	410.3	360.4	314.0	284.7	254.6	236.5	215.0	203.0
27.5°	591.8	492.0	416.3	367.3	321.7	279.6	254.6	231.4	213.3	193.5	181.5
30°	504.1	428.4	369.0	322.6	285.6	248.6	229.7	209.0	191.0	172.0	161.7
32.5°	438.7	373.3	324.3	289.0	257.2	226.2	207.3	188.4	170.3	153.1	143.6
35°	375.0	325.1	289.0	257.2	229.7	202.1	184.9	166.9	149.7	135.0	125.6
37.5°	331.2	289.9	255.5	228.8	203.0	178.9	161.7	145.4	131.6	117.8	110.1
40°	292.5	257.2	227.1	202.1	178.9	154.8	141.1	127.3	115.3	104.1	97.2
42.5°	262.4	229.7	203.0	178.1	157.4	136.8	123.9	112.7	103.2	93.8	87.7
45°	232.2	202.1	177.2	156.6	138.5	121.3	111.0	101.5	92.0	84.3	79.1
47.5°	204.7	177.2	154.8	138.5	123.0	107.5	97.2	90.3	82.6	74.8	71.4
50°	178.1	153.1	135.0	120.4	106.7	94.6	86.9	79.1	73.1	67.1	64.5
52.5°	152.2	130.7	115.3	103.2	91.2	80.9	75.7	69.7	65.4	61.1	59.4
55°	129.0	112.7	98.9	87.7	79.1	70.5	66.2	61.9	59.4	56.8	55.1
57.5°	109.2	96.3	84.3	76.6	70.5	62.8	59.4	55.9	54.2	51.6	50.7
60°	92.0	80.9	71.4	65.4	59.4	55.1	53.3	50.7	49.0	47.3	47.3
62.5°	76.6	68.0	61.1	57.6	51.6	49.0	47.3	45.6	44.7	43.0	43.9
65°	63.7	56.8	51.6	48.2	45.6	43.0	42.1	40.4	39.6	38.7	39.6
67.5°	54.2	48.2	43.9	41.3	39.6	37.8	37.0	35.3	35.3	35.3	36.1
70°	44.7	40.4	37.8	35.3	33.5	31.8	31.8	31.0	31.0	31.0	31.0
72.5°	37.0	33.5	31.0	30.1	28.4	27.5	27.5	27.5	27.5	26.7	27.5
75°	31.0	27.5	25.8	24.9	24.1	23.2	23.2	23.2	23.2	22.4	23.2
77.5°	24.9	23.2	22.4	21.5	20.6	20.6	20.6	19.8	19.8	19.8	19.8
80°	19.8	18.9	17.2	17.2	16.3	16.3	16.3	16.3	16.3	16.3	16.3
82.5°	15.5	13.8	13.8	13.8	12.9	12.9	12.9	12.9	12.0	12.9	12.9
85°	12.0	11.2	10.3	10.3	9.5	9.5	9.5	9.5	9.5	9.5	9.5
87.5°	7.7	7.7	6.9	6.9	6.0	6.0	6.0	6.0	5.2	5.2	5.2
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4	508.4
2.5°	471.4	472.2	459.3	453.3	450.7	450.7	434.4	435.2	429.2	435.2	425.8
5°	430.1	420.6	408.6	398.3	391.4	377.6	369.9	368.2	363.0	363.9	356.1
7.5°	387.9	379.3	361.3	351.8	341.5	329.4	319.1	317.4	311.4	309.7	303.6
10°	350.9	338.0	319.1	310.5	301.9	292.5	283.0	280.4	274.4	274.4	269.2
12.5°	317.4	305.4	290.7	279.6	271.0	260.6	251.2	249.4	242.6	241.7	234.8
15°	288.2	277.8	262.4	252.0	242.6	227.9	222.8	220.2	213.3	211.6	206.4
17.5°	261.5	250.3	234.8	224.5	217.6	206.4	197.8	194.4	189.2	186.7	181.5
20°	234.8	224.5	209.9	198.7	191.8	181.5	173.8	171.2	165.2	164.3	160.0
22.5°	210.7	199.6	185.8	178.1	170.3	160.9	154.0	151.4	146.2	144.5	140.2
25°	187.5	178.1	166.0	160.0	152.2	144.5	137.6	135.0	129.9	128.2	124.7
27.5°	166.9	158.3	148.8	141.9	136.8	127.3	121.3	119.6	114.4	111.8	108.4
30°	148.8	141.1	131.6	124.7	119.6	110.1	105.8	104.1	99.8	98.1	95.5
32.5°	131.6	123.9	115.3	109.2	103.2	97.2	92.0	90.3	87.7	86.9	84.3
35°	115.3	108.4	100.6	95.5	90.3	85.2	81.7	80.9	78.3	77.4	74.8
37.5°	100.6	94.6	88.6	84.3	80.9	76.6	74.0	72.3	70.5	69.7	68.0
40°	89.5	84.3	80.0	76.6	74.0	69.7	67.1	67.1	65.4	64.5	62.8
42.5°	80.0	76.6	73.1	70.5	68.0	65.4	62.8	62.8	61.1	61.1	58.5
45°	74.0	71.4	68.0	65.4	63.7	61.9	60.2	60.2	59.4	58.5	57.6
47.5°	67.1	65.4	62.8	61.1	59.4	58.5	56.8	58.5	57.6	57.6	57.6
50°	61.1	60.2	58.5	57.6	56.8	55.9	55.9	56.8	56.8	56.8	56.8
52.5°	56.8	55.9	55.1	54.2	55.1	54.2	53.3	54.2	54.2	55.1	55.9
55°	53.3	52.5	52.5	52.5	53.3	51.6	51.6	53.3	53.3	54.2	54.2
57.5°	49.9	49.9	49.9	49.9	49.9	49.9	49.9	50.7	51.6	53.3	53.3
60°	46.4	46.4	46.4	47.3	47.3	47.3	47.3	49.0	49.0	49.9	50.7
62.5°	42.1	43.0	43.0	43.9	44.7	45.6	46.4	48.2	48.2	49.0	49.9
65°	38.7	39.6	40.4	41.3	42.1	43.0	43.0	44.7	44.7	45.6	46.4
67.5°	35.3	36.1	36.1	37.0	37.8	37.8	37.8	40.4	40.4	41.3	42.1
70°	31.0	31.8	31.8	32.7	33.5	33.5	34.4	35.3	34.4	35.3	36.1
72.5°	26.7	28.4	29.2	29.2	30.1	30.1	30.1	31.0	31.0	31.0	31.8
75°	23.2	24.1	24.1	24.9	25.8	25.8	25.8	26.7	27.5	27.5	27.5
77.5°	20.6	20.6	21.5	21.5	21.5	22.4	22.4	23.2	23.2	23.2	23.2
80°	16.3	17.2	17.2	18.1	18.1	18.9	18.9	20.6	19.8	19.8	19.8
82.5°	12.9	12.9	13.8	13.8	13.8	14.6	14.6	15.5	14.6	14.6	14.6
85°	9.5	9.5	9.5	9.5	9.5	9.5	9.5	10.3	9.5	10.3	9.5
87.5°	5.2	5.2	5.2	4.3	4.3	4.3	4.3	5.2	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):

	165°	170°	175°	180°
0°	508.4	508.4	508.4	508.4
2.5°	423.2	419.8	422.3	418.0
5°	352.7	348.4	350.1	347.5
7.5°	300.2	297.6	296.8	295.0
10°	264.9	263.2	263.2	261.5
12.5°	233.1	228.8	229.7	229.7
15°	203.0	200.4	200.4	198.7
17.5°	178.1	174.6	175.5	172.9
20°	156.6	153.1	154.0	153.1
22.5°	138.5	135.0	135.0	133.3
25°	122.1	120.4	119.6	118.7
27.5°	106.7	104.9	104.9	104.1
30°	94.6	92.0	92.9	92.0
32.5°	84.3	82.6	82.6	81.7
35°	74.8	73.1	73.1	73.1
37.5°	68.0	66.2	66.2	66.2
40°	61.9	61.1	61.9	61.9
42.5°	59.4	57.6	58.5	58.5
45°	56.8	55.9	55.9	55.9
47.5°	56.8	55.1	55.1	54.2
50°	57.6	56.8	56.8	55.9
52.5°	56.8	57.6	59.4	58.5
55°	55.9	55.9	56.8	56.8
57.5°	53.3	53.3	53.3	53.3
60°	51.6	51.6	51.6	51.6
62.5°	50.7	50.7	51.6	50.7
65°	48.2	49.0	49.9	49.9
67.5°	43.0	43.0	43.9	43.0
70°	37.8	37.8	37.8	37.8
72.5°	31.8	31.8	32.7	33.5
75°	28.4	27.5	28.4	28.4
77.5°	24.1	23.2	23.2	23.2
80°	20.6	19.8	20.6	21.5
82.5°	14.6	13.8	14.6	13.8
85°	10.3	9.5	9.5	9.5
87.5°	4.3	4.3	4.3	4.3
90°	0.0	0.0	0.0	0.0

(END OF REPORT)