

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: P130199

Luminaire Tested: **HL612ICAT - HLM6935 - HL6NFL - 455H**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130199
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33467)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6935 - HL6NFL - 455H
Description: HALO ALLSLOPE 6" 21W, Semi-Specular Haze Reflector, White Metal Trim Ring using 25 Degree Optic at a 6-12 Pitch
Light Source: (1) HIGH LUMEN LED 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1602.3 lumens
Efficiency: N/A
Efficacy: 83.9 lumens/watt
Spacing Criteria (0/90/45): 1.94 / 0.72 / 1.15
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

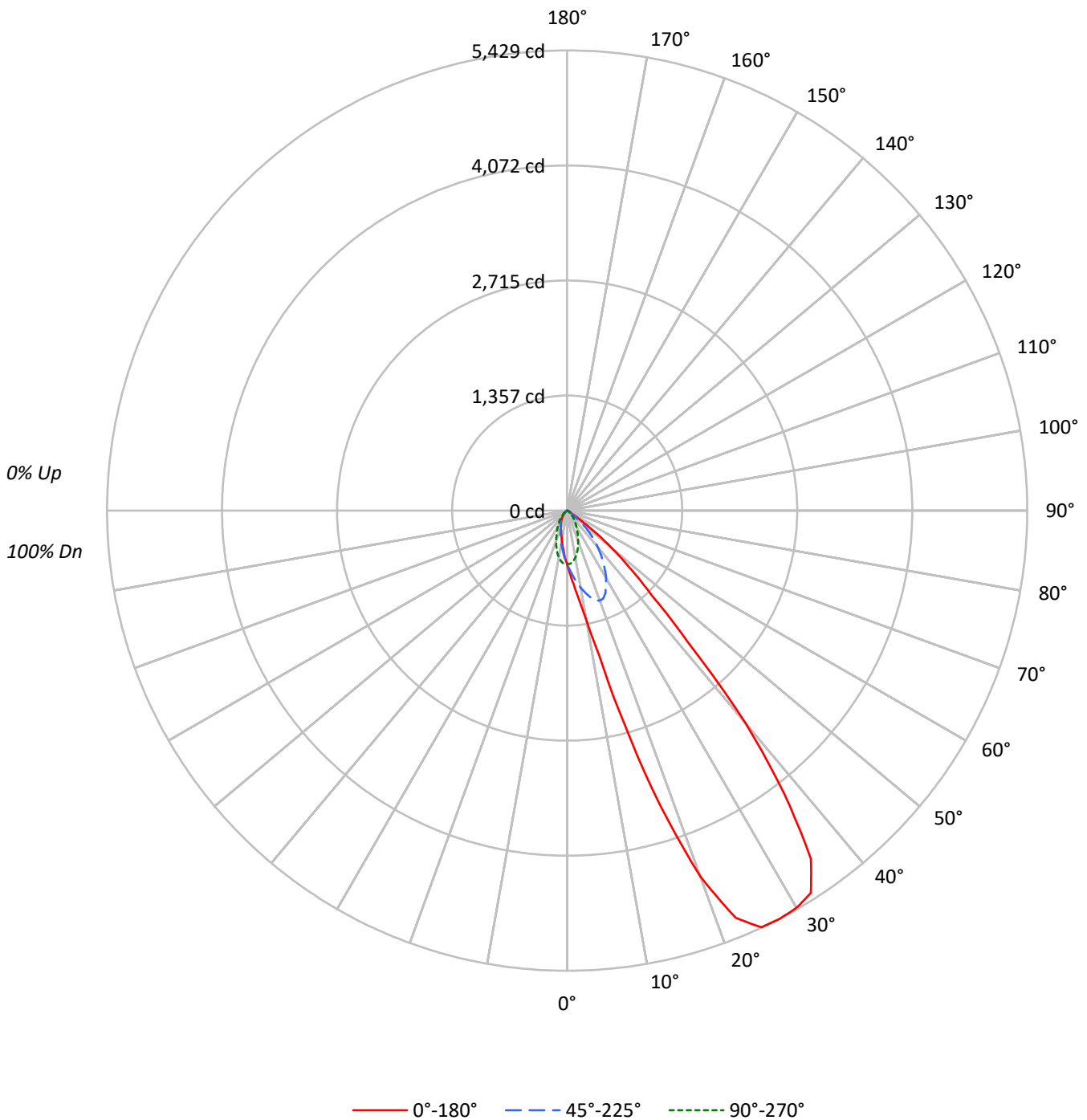
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	113	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92					92			
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83					83			
3	99	92	86	81	97	90	85	80	87	83	79	85	81	78	83	79	77	75					75			
4	93	84	77	72	91	83	77	72	80	75	71	78	74	70	76	73	69	68					68			
5	87	77	70	65	85	76	70	65	74	68	64	72	67	64	71	66	63	61					61			
6	81	71	64	59	80	70	63	58	68	62	58	67	62	58	65	61	57	56					56			
7	76	65	58	53	75	65	58	53	63	57	53	62	56	52	61	56	52	50					50			
8	71	60	53	48	70	60	53	48	58	52	48	57	52	48	56	51	48	46					46			
9	67	56	49	44	66	55	49	44	54	48	44	53	48	44	52	47	44	42					42			
10	63	52	45	40	62	51	45	40	50	44	40	50	44	40	49	44	40	38					38			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	37742	37742	37742
5°	50998	36218	28137
10°	75801	32475	20583
15°	149697	27483	15686
20°	266037	21952	12459
25°	317872	16936	10085
30°	323419	12997	8151
35°	308129	9971	6334
40°	209035	7601	4709
45°	94031	5302	3301
50°	49116	3604	1947
55°	11693	2452	920
60°	3515	1594	401
65°	2267	873	144
70°	1231	323	81
75°	371	185	0
80°	0	219	0
85°	0	271	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	61.9	3.9
10°-20°	235.5	14.7
20°-30°	497.0	31.0
30°-40°	500.2	31.2
40°-50°	237.5	14.8
50°-60°	55.0	3.4
60°-70°	11.6	0.7
70°-80°	2.4	0.1
80°-90°	1.0	0.1
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°	794.5	49.6
0°-40°	1294.7	80.8
0°-60°	1587.2	99.1
0°-90°	1602.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1602.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	632	632	632	632	632	
5°	871	772	618	508	480	96
15°	2595	1058	476	297	272	825
25°	5424	1070	289	179	172	2446
35°	5015	735	162	112	103	2943
45°	1410	384	80	56	50	1237
55°	155	50	32	20	12	212
65°	25	19	10	4	2	25
75°	3	2	2	2	0	5
85°	0	2	2	1	0	0
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°	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3
2.5°	741.1	720.0	728.9	710.2	730.5	714.3	714.3	707.8	703.7	698.0	681.8
5°	870.9	844.1	851.4	840.1	845.8	825.5	816.5	798.7	801.9	771.9	744.3
7.5°	1045.4	1007.3	1019.5	986.2	983.7	957.8	932.6	900.1	872.5	847.4	806.0
10°	1309.2	1258.9	1260.5	1204.5	1191.5	1132.3	1084.4	1020.3	965.1	923.7	857.9
12.5°	1746.7	1654.2	1640.4	1536.5	1482.9	1361.2	1258.1	1156.6	1064.1	992.7	902.6
15°	2594.9	2462.6	2353.8	2101.4	1918.0	1685.8	1483.7	1315.7	1177.7	1058.4	939.9
17.5°	3637.1	3456.9	3331.9	2991.8	2629.8	2119.3	1762.9	1474.8	1265.4	1107.9	960.2
20°	4593.2	4361.1	4159.8	3763.7	3329.5	2747.5	2017.8	1614.4	1327.9	1129.8	954.5
22.5°	5200.4	5022.6	4831.1	4361.9	3832.7	3124.9	2307.6	1704.5	1348.2	1118.5	922.9
25°	5424.4	5264.5	5163.0	4692.3	4120.0	3370.0	2394.4	1708.6	1318.1	1069.8	879.8
27.5°	5429.3	5286.4	5236.1	4779.9	4168.7	3277.5	2313.3	1620.9	1244.3	982.9	821.4
30°	5412.2	5268.5	5183.3	4659.8	3982.0	3052.7	2090.0	1466.7	1142.8	921.2	755.7
32.5°	5348.9	5171.1	4963.4	4327.0	3592.4	2611.9	1779.2	1295.4	1014.6	829.5	692.4
35°	5015.3	4788.8	4443.1	3767.0	2986.9	2068.1	1461.0	1114.4	890.4	735.4	603.9
37.5°	4198.8	4009.6	3680.9	3025.1	2223.2	1581.1	1214.3	959.4	775.1	648.5	528.4
40°	3280.8	3063.2	2679.3	2126.6	1622.5	1243.5	991.0	808.4	670.4	560.1	451.3
42.5°	2110.3	2015.4	1785.7	1471.6	1200.5	982.1	806.8	678.6	566.5	468.3	375.0
45°	1409.9	1342.5	1247.5	1078.7	924.5	791.4	666.4	559.2	468.3	383.9	306.8
47.5°	1013.0	954.5	916.4	818.2	720.0	629.0	534.9	443.2	360.4	293.0	229.7
50°	696.4	651.8	635.5	575.5	498.4	431.0	356.3	293.8	232.1	184.2	140.4
52.5°	383.1	359.6	352.3	320.6	284.1	237.0	187.5	149.3	117.7	92.5	73.1
55°	155.0	150.2	142.9	131.5	114.4	91.7	78.7	64.9	55.2	49.5	45.5
57.5°	62.5	60.1	59.3	55.2	51.9	47.1	43.8	41.4	39.8	39.0	37.3
60°	43.0	41.4	40.6	39.0	38.1	36.5	34.9	34.1	32.5	31.7	30.0
62.5°	32.5	31.7	31.7	30.0	30.0	29.2	28.4	26.8	26.0	25.2	23.5
65°	25.2	24.4	23.5	23.5	22.7	22.7	21.9	21.1	19.5	18.7	17.0
67.5°	17.9	17.9	17.0	17.0	16.2	16.2	15.4	14.6	13.8	13.0	12.2
70°	12.2	11.4	11.4	11.4	11.4	10.6	10.6	9.7	8.9	8.9	8.1
72.5°	7.3	7.3	7.3	6.5	6.5	6.5	5.7	5.7	5.7	4.9	4.9
75°	3.2	3.2	3.2	3.2	3.2	2.4	2.4	2.4	2.4	2.4	2.4
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6
80°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6
82.5°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6
85°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6
87.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
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°	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3
2.5°	675.3	673.7	657.5	650.1	648.5	642.0	639.6	631.5	602.3	603.9	607.1
5°	728.9	714.3	688.3	671.3	659.9	645.3	633.1	618.5	594.1	575.5	571.4
7.5°	775.1	748.4	711.0	684.2	661.5	638.0	616.1	593.3	564.9	541.4	530.0
10°	813.3	773.5	721.6	684.2	652.6	620.1	590.9	560.9	526.0	498.4	484.6
12.5°	837.6	784.1	720.0	672.1	631.5	589.3	556.8	522.7	483.8	452.1	435.9
15°	852.3	780.0	707.0	647.7	599.8	551.9	514.6	476.4	435.9	403.4	385.5
17.5°	851.4	778.4	682.6	616.1	560.9	508.1	467.5	427.7	388.8	355.5	336.0
20°	831.1	738.6	646.1	576.3	519.5	461.8	418.0	379.0	340.1	310.1	291.4
22.5°	793.8	697.2	603.9	529.2	470.8	416.4	370.1	331.2	296.3	269.5	255.7
25°	750.0	649.3	558.4	477.3	421.3	366.9	324.7	289.0	258.1	233.8	222.4
27.5°	696.4	597.4	506.5	429.4	370.9	321.4	281.6	251.6	223.2	204.5	193.2
30°	631.5	540.6	448.0	379.9	323.9	279.2	242.7	217.5	194.0	176.9	170.5
32.5°	568.2	478.1	392.0	328.7	280.0	239.4	208.6	187.5	169.6	155.0	148.5
35°	503.2	414.0	340.1	280.0	239.4	203.7	180.2	162.3	146.9	135.5	130.7
37.5°	435.1	354.7	289.0	237.0	201.3	172.1	151.0	142.9	126.6	116.9	113.6
40°	364.4	296.3	241.9	199.7	168.8	145.3	129.9	119.3	108.0	102.3	99.0
42.5°	302.8	242.7	198.9	164.0	140.4	120.9	108.8	99.8	89.3	85.2	82.8
45°	243.5	194.0	156.7	129.9	110.4	95.8	86.0	79.5	73.1	69.0	67.4
47.5°	178.6	139.6	112.0	93.3	79.5	71.4	64.9	62.5	58.4	56.8	55.2
50°	108.8	86.8	72.2	62.5	56.8	54.4	51.9	51.1	47.9	46.3	43.8
52.5°	61.7	55.2	49.5	47.1	46.3	44.6	42.2	40.6	37.3	35.7	34.9
55°	43.0	42.2	40.6	39.0	37.3	34.9	33.3	32.5	30.0	29.2	27.6
57.5°	36.5	34.1	32.5	30.0	29.2	27.6	26.8	26.0	24.4	22.7	21.9
60°	28.4	26.8	25.2	24.4	23.5	21.9	20.3	19.5	17.9	17.0	16.2
62.5°	21.9	21.1	19.5	18.7	17.9	17.0	15.4	14.6	13.8	12.2	10.6
65°	16.2	15.4	14.6	13.8	13.0	12.2	10.6	9.7	8.9	8.1	7.3
67.5°	11.4	11.4	9.7	8.9	8.9	7.3	6.5	5.7	4.9	4.9	4.1
70°	7.3	7.3	6.5	5.7	4.9	4.1	4.1	3.2	3.2	3.2	2.4
72.5°	4.1	3.2	3.2	3.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4
75°	2.4	1.6	1.6	2.4	2.4	2.4	2.4	1.6	1.6	1.6	1.6
77.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
80°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
82.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
85°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
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°	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3	632.3
2.5°	603.1	590.9	584.4	577.9	577.9	573.0	575.5	564.1	566.5	560.1	559.2
5°	560.9	557.6	530.8	522.7	509.7	508.1	510.5	495.9	494.3	487.8	482.1
7.5°	516.2	495.9	479.7	466.7	458.6	449.7	436.7	433.4	429.4	424.5	418.8
10°	467.5	444.8	426.1	410.7	405.8	393.7	387.2	377.4	370.9	365.3	361.2
12.5°	416.4	392.8	375.8	359.6	353.1	341.7	336.8	327.1	321.4	315.7	314.1
15°	364.4	343.3	324.7	312.5	305.2	297.1	293.0	282.5	280.8	276.0	272.7
17.5°	318.2	298.7	282.5	272.7	266.2	258.1	256.5	248.4	246.7	244.3	241.1
20°	275.2	259.7	245.9	237.8	233.8	228.9	226.5	220.8	219.2	217.5	215.9
22.5°	240.3	227.3	219.2	210.2	207.0	202.9	201.3	195.6	194.8	194.8	192.4
25°	209.4	199.7	192.4	185.1	183.4	179.4	179.4	174.5	175.3	173.7	172.9
27.5°	185.1	176.1	169.6	164.0	163.1	160.7	159.9	156.7	156.7	155.8	154.2
30°	162.3	155.8	150.2	146.1	146.1	143.7	143.7	140.4	139.6	138.8	138.8
32.5°	142.9	138.8	134.7	129.9	130.7	127.4	127.4	124.2	122.6	121.8	120.1
35°	125.0	122.6	118.5	115.3	115.3	112.0	110.4	107.1	106.3	105.5	104.7
37.5°	109.6	107.1	103.9	99.8	99.8	96.6	95.8	93.3	91.7	90.9	90.1
40°	95.0	92.5	89.3	85.2	85.2	82.0	81.2	79.5	78.7	77.1	76.3
42.5°	78.7	76.3	73.9	72.2	71.4	69.0	68.2	64.1	65.7	64.9	62.5
45°	64.9	64.1	61.7	59.3	58.4	56.0	54.4	51.9	51.1	51.1	49.5
47.5°	53.6	51.1	49.5	47.1	46.3	44.6	43.0	41.4	41.4	40.6	39.0
50°	42.2	40.6	39.8	37.3	36.5	34.9	34.1	32.5	31.7	30.0	29.2
52.5°	34.1	32.5	30.8	30.0	28.4	27.6	26.0	23.5	23.5	21.9	20.3
55°	26.8	25.2	23.5	22.7	21.1	19.5	18.7	17.0	15.4	14.6	13.8
57.5°	20.3	18.7	17.9	16.2	14.6	13.8	12.2	10.6	9.7	8.9	8.1
60°	14.6	13.8	12.2	10.6	9.7	8.9	8.1	6.5	6.5	5.7	5.7
62.5°	10.6	8.9	8.1	6.5	6.5	5.7	4.9	4.9	4.1	4.1	3.2
65°	6.5	5.7	4.9	4.9	4.1	4.1	3.2	3.2	2.4	2.4	2.4
67.5°	4.1	3.2	3.2	3.2	2.4	2.4	2.4	1.6	1.6	1.6	0.8
70°	2.4	2.4	2.4	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8
72.5°	2.4	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
75°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
77.5°	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8
80°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
82.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
85°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
87.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	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):

	165°	170°	175°	180°
0°	632.3	632.3	632.3	632.3
2.5°	557.6	551.9	550.3	560.1
5°	483.8	477.3	475.6	480.5
7.5°	418.0	409.9	412.3	413.1
10°	359.6	353.9	353.1	355.5
12.5°	309.2	305.2	305.2	309.2
15°	271.1	268.7	267.9	271.9
17.5°	238.6	237.8	237.8	241.1
20°	213.5	212.7	212.7	215.1
22.5°	190.7	190.7	190.7	191.6
25°	171.3	172.1	171.3	172.1
27.5°	153.4	154.2	154.2	154.2
30°	139.6	136.4	137.2	136.4
32.5°	119.3	118.5	119.3	119.3
35°	103.1	103.1	103.1	103.1
37.5°	88.5	88.5	88.5	88.5
40°	74.7	74.7	74.7	73.9
42.5°	61.7	61.7	61.7	60.9
45°	48.7	48.7	48.7	49.5
47.5°	38.1	38.1	37.3	38.1
50°	28.4	27.6	27.6	27.6
52.5°	20.3	19.5	18.7	18.7
55°	13.0	12.2	12.2	12.2
57.5°	8.1	8.1	7.3	7.3
60°	4.9	4.9	4.9	4.9
62.5°	3.2	3.2	3.2	2.4
65°	1.6	1.6	1.6	1.6
67.5°	0.8	0.8	0.8	0.8
70°	0.8	0.8	0.8	0.8
72.5°	0.8	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0
82.5°	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0

(END OF REPORT)