

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: P130164

Luminaire Tested: **HL612ICAT - HLM6940 - HL6FL - 455H**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130164
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33448)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6940 - HL6FL - 455H
Description: HALO ALLSLOPE 6" 21W, Semi-Specular Haze Reflector, White Metal Trim Ring using 40 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: 1742.2 lumens
Efficiency: N/A
Efficacy: 91.2 lumens/watt
Spacing Criteria (0/90/45): 1.6 / 0.65 / 1.06
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

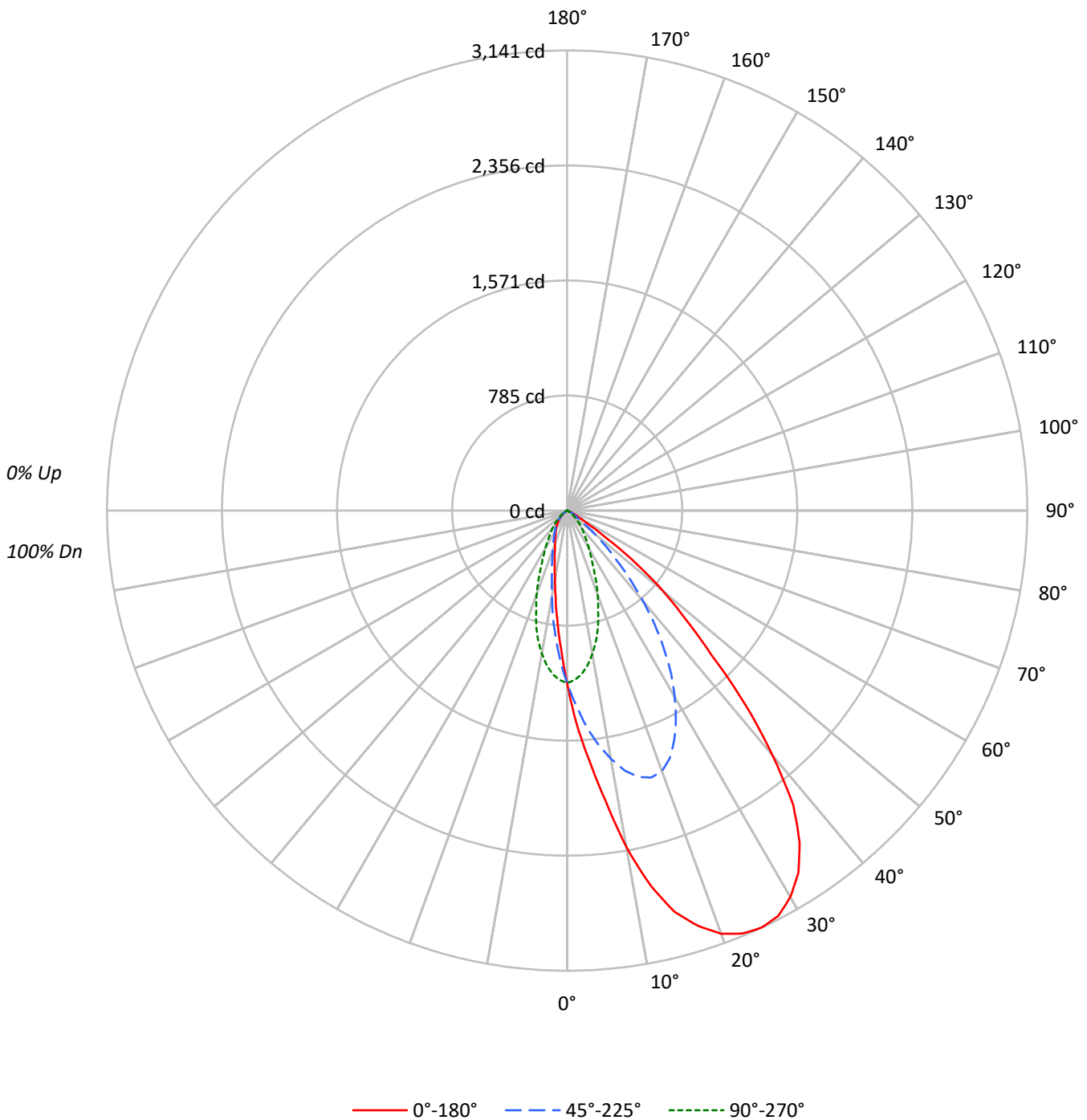
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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				
1	113	110	107	104	110	107	105	103	103	101	99	99	98	96	96	95	94	92				
2	106	100	96	92	104	99	94	91	95	92	89	92	89	87	89	87	85	83				
3	99	92	86	82	97	91	85	81	88	83	80	85	82	78	83	80	77	75				
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	69				
5	88	78	71	66	86	77	71	66	75	69	65	73	68	65	72	67	64	62				
6	82	72	65	60	81	71	65	60	69	64	59	68	63	59	67	62	59	57				
7	77	67	60	55	76	66	59	55	65	59	54	63	58	54	62	57	54	52				
8	73	62	55	50	71	61	55	50	60	54	50	59	54	50	58	53	49	48				
9	69	58	51	46	67	57	51	46	56	50	46	55	50	46	54	49	46	44				
10	65	54	47	43	64	53	47	43	52	47	43	52	46	42	51	46	42	41				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	70280	70280	70280
5°	99782	65737	44679
10°	135170	57441	27531
15°	163640	47016	18795
20°	178040	35262	14063
25°	184087	24548	11070
30°	182051	17724	9215
35°	169955	12951	7459
40°	139038	9653	5696
45°	92951	6876	3775
50°	60118	4634	2186
55°	25272	3168	966
60°	7162	2011	450
65°	4103	990	162
70°	2118	373	0
75°	533	208	0
80°	123	247	0
85°	0	305	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	112.5	6.5
10°-20°	329.7	18.9
20°-30°	468.8	26.9
30°-40°	453.8	26.0
40°-50°	272.4	15.6
50°-60°	83.9	4.8
60°-70°	17.5	1.0
70°-80°	2.8	0.2
80°-90°	0.9	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°	911.0	52.3
0°-40°	1364.7	78.3
0°-60°	1721.0	98.8
0°-90°	1742.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1742.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1177	1177	1177	1177	1177	
5°	1704	1474	1123	876	763	182
15°	2837	1882	815	400	326	799
25°	3141	1730	419	216	189	1440
35°	2766	1153	211	135	121	1694
45°	1394	474	103	69	57	1112
55°	335	82	42	23	13	343
65°	46	28	11	4	2	48
75°	5	2	2	1	0	7
85°	0	1	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°	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4
2.5°	1453.0	1424.7	1411.0	1392.7	1404.6	1385.4	1384.5	1381.8	1353.5	1322.5	1328.9
5°	1704.0	1677.5	1656.5	1627.3	1623.6	1592.6	1544.2	1575.3	1524.2	1474.0	1461.2
7.5°	1994.2	1956.8	1934.9	1878.3	1865.5	1777.9	1778.8	1747.8	1681.1	1606.3	1568.0
10°	2334.6	2287.2	2266.2	2183.1	2147.5	2054.4	2002.4	1934.9	1830.8	1719.5	1651.0
12.5°	2617.6	2574.7	2547.3	2452.4	2410.4	2298.1	2213.2	2116.5	1966.8	1818.0	1719.5
15°	2836.6	2791.0	2722.5	2655.0	2610.3	2483.4	2427.7	2254.3	2101.0	1881.9	1749.6
17.5°	2971.7	2936.1	2894.1	2793.7	2745.3	2623.9	2497.1	2344.7	2134.7	1910.2	1743.2
20°	3073.9	3032.8	2983.5	2880.4	2825.6	2685.1	2556.4	2386.6	2144.8	1892.9	1703.1
22.5°	3125.0	3084.8	3035.6	2922.4	2859.4	2706.1	2563.7	2368.4	2098.2	1829.9	1630.0
25°	3141.4	3098.5	3045.6	2924.2	2849.4	2684.2	2522.6	2299.0	2005.1	1729.5	1528.7
27.5°	3119.5	3072.1	3014.6	2888.6	2801.0	2617.6	2429.5	2172.2	1876.5	1607.2	1408.3
30°	3046.5	3001.8	2940.6	2810.1	2706.1	2489.8	2275.3	1995.1	1713.1	1467.6	1268.6
32.5°	2935.2	2886.8	2827.5	2680.5	2554.6	2314.5	2064.5	1798.0	1550.6	1318.8	1124.4
35°	2766.3	2717.0	2653.1	2479.7	2335.5	2072.7	1825.4	1602.7	1395.5	1152.7	966.5
37.5°	2535.4	2477.0	2380.3	2221.5	2045.3	1796.1	1589.9	1401.9	1183.7	983.0	812.3
40°	2182.2	2140.2	2039.8	1887.4	1728.6	1533.3	1371.8	1190.1	986.6	803.2	660.8
42.5°	1811.7	1763.3	1683.0	1551.5	1430.2	1259.5	1108.0	940.1	781.2	628.8	511.1
45°	1393.7	1361.7	1309.7	1211.1	1106.2	982.0	866.1	738.4	619.7	473.7	383.3
47.5°	1096.1	1072.4	1035.9	948.3	888.9	771.2	682.7	574.1	466.4	350.5	276.5
50°	852.4	837.8	804.1	730.1	674.5	587.8	506.5	413.4	315.8	235.5	187.1
52.5°	595.1	606.9	555.8	509.3	456.3	387.0	308.5	240.0	181.6	139.6	116.8
55°	335.0	332.2	314.9	274.7	230.9	183.4	145.1	122.3	99.5	82.1	73.9
57.5°	160.6	155.2	145.1	124.1	105.9	92.2	81.2	74.8	67.5	61.1	57.5
60°	87.6	86.7	82.1	75.8	72.1	66.6	62.1	58.4	52.9	48.4	44.7
62.5°	63.0	62.1	60.2	56.6	54.8	51.1	47.5	44.7	42.0	38.3	35.6
65°	45.6	45.6	44.7	42.0	41.1	38.3	36.5	33.8	31.0	28.3	26.5
67.5°	33.8	32.9	31.9	31.0	29.2	27.4	25.6	23.7	21.9	19.2	17.3
70°	21.0	20.1	20.1	19.2	18.3	16.4	14.6	13.7	12.8	11.0	10.0
72.5°	11.0	11.0	10.0	10.0	9.1	8.2	7.3	7.3	6.4	5.5	4.6
75°	4.6	3.7	3.7	3.7	3.7	3.7	2.7	2.7	2.7	1.8	1.8
77.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.8	1.8	1.8
80°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82.5°	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
85°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
87.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4
2.5°	1305.1	1284.1	1283.2	1252.2	1220.2	1211.1	1171.9	1157.3	1142.7	1105.2	1102.5
5°	1414.6	1377.2	1352.6	1298.7	1244.9	1212.9	1154.5	1122.6	1089.7	1057.8	1019.5
7.5°	1502.3	1442.0	1394.6	1313.3	1241.2	1189.2	1134.5	1064.2	1015.8	976.6	921.8
10°	1568.9	1479.4	1409.2	1307.9	1215.7	1142.7	1058.7	992.1	932.8	882.6	825.1
12.5°	1605.4	1488.6	1399.1	1287.8	1167.3	1082.4	980.2	909.0	824.1	780.3	712.8
15°	1610.9	1473.1	1362.6	1223.9	1100.7	1003.9	898.1	815.0	741.1	676.3	609.7
17.5°	1584.4	1429.2	1301.5	1147.2	1023.1	909.9	803.2	702.8	638.9	569.5	505.6
20°	1497.7	1360.8	1213.9	1055.1	923.6	812.3	697.3	608.8	534.8	466.4	418.0
22.5°	1442.9	1266.8	1110.7	950.1	816.8	705.5	592.3	510.2	438.1	390.6	352.3
25°	1335.2	1150.9	996.6	839.7	707.3	596.0	491.0	418.9	366.9	324.0	298.4
27.5°	1211.1	1028.6	877.1	727.4	600.5	495.6	406.1	350.5	308.5	280.2	253.7
30°	1060.5	903.5	754.8	618.8	492.8	404.3	337.7	296.6	262.9	237.3	219.0
32.5°	941.9	776.7	640.7	504.7	404.3	338.6	284.8	250.1	223.6	206.3	188.9
35°	802.2	652.6	521.1	405.2	330.4	279.3	238.2	210.8	190.7	176.1	163.4
37.5°	662.6	519.3	410.7	327.7	269.2	230.9	198.1	178.9	161.5	151.5	141.5
40°	523.0	401.6	321.3	262.9	219.0	188.9	167.0	151.5	137.8	130.5	122.3
42.5°	395.2	307.6	254.6	210.8	178.9	157.0	138.7	127.8	116.8	107.7	103.1
45°	299.4	240.9	201.7	169.8	145.1	128.7	111.3	103.1	94.9	89.4	85.8
47.5°	228.2	186.2	153.3	126.9	111.3	97.7	87.6	80.3	76.7	75.8	71.2
50°	154.2	125.0	106.8	90.4	81.2	73.9	69.4	65.7	63.0	60.2	56.6
52.5°	96.7	83.1	74.8	67.5	63.9	60.2	56.6	53.8	50.2	48.4	43.8
55°	67.5	63.0	59.3	54.8	52.0	48.4	44.7	42.0	40.2	38.3	35.6
57.5°	53.8	50.2	47.5	43.8	41.1	38.3	35.6	33.8	31.0	30.1	26.5
60°	42.9	40.2	37.4	34.7	31.9	29.2	27.4	24.6	22.8	21.0	18.3
62.5°	33.8	31.0	28.3	26.5	23.7	21.9	19.2	17.3	15.5	13.7	11.9
65°	24.6	21.9	20.1	18.3	16.4	14.6	12.8	11.0	9.1	8.2	7.3
67.5°	16.4	13.7	12.8	11.9	10.0	8.2	7.3	5.5	5.5	4.6	4.6
70°	9.1	8.2	7.3	6.4	5.5	4.6	3.7	3.7	2.7	2.7	2.7
72.5°	4.6	3.7	3.7	2.7	2.7	2.7	2.7	2.7	2.7	1.8	1.8
75°	2.7	1.8	1.8	2.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8
77.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
80°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
82.5°	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
85°	0.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
87.5°	0.9	0.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4	1177.4
2.5°	1108.9	1078.8	1067.8	1036.8	1020.4	1031.3	1009.4	996.6	989.3	990.3	972.0
5°	1010.3	969.3	944.6	949.2	864.3	876.2	853.4	831.4	824.1	811.4	800.4
7.5°	899.0	856.1	822.3	775.8	747.5	733.8	715.5	678.1	669.0	650.7	638.0
10°	787.6	737.4	700.0	643.4	613.3	596.0	566.8	539.4	529.4	517.5	498.3
12.5°	674.5	620.6	575.9	526.6	497.4	482.8	458.2	439.9	429.9	418.9	410.7
15°	558.6	502.0	470.0	432.6	408.9	399.8	380.6	367.8	357.8	350.5	344.1
17.5°	462.7	419.8	392.5	363.2	344.1	336.8	322.2	309.4	302.1	296.6	293.0
20°	387.0	352.3	332.2	308.5	295.7	285.7	272.9	266.5	261.9	258.3	254.6
22.5°	328.6	298.4	282.0	262.9	251.9	247.3	239.1	230.9	228.2	225.4	221.8
25°	280.2	256.5	242.8	229.1	220.0	216.3	209.0	203.5	201.7	199.0	197.1
27.5°	239.1	221.8	211.7	199.9	193.5	190.7	184.4	180.7	180.7	178.0	178.9
30°	207.2	193.5	185.3	176.1	171.6	169.8	165.2	162.5	161.5	159.7	158.8
32.5°	180.7	168.8	164.3	156.1	153.3	151.5	147.9	145.1	146.0	144.2	143.3
35°	157.0	148.8	145.1	138.7	136.9	135.1	132.3	129.6	129.6	127.8	125.9
37.5°	136.9	131.4	127.8	122.3	120.5	118.6	115.9	112.3	112.3	110.4	110.4
40°	120.5	113.2	111.3	105.0	102.2	100.4	98.6	96.7	94.9	93.1	93.1
42.5°	101.3	94.9	93.1	88.5	86.7	84.9	83.1	78.5	78.5	76.7	76.7
45°	83.1	79.4	77.6	73.9	71.2	69.4	66.6	63.9	63.0	61.1	60.2
47.5°	68.5	64.8	63.0	59.3	57.5	55.7	53.8	51.1	50.2	48.4	46.5
50°	55.7	52.0	50.2	47.5	45.6	43.8	42.0	39.2	38.3	35.6	34.7
52.5°	43.8	42.0	39.2	36.5	34.7	31.9	31.0	28.3	26.5	24.6	23.7
55°	33.8	31.9	29.2	26.5	24.6	22.8	21.0	19.2	17.3	16.4	14.6
57.5°	25.6	22.8	20.1	18.3	16.4	14.6	13.7	11.9	11.0	10.0	9.1
60°	17.3	14.6	13.7	11.9	10.0	9.1	8.2	7.3	7.3	6.4	6.4
62.5°	11.0	9.1	8.2	7.3	6.4	6.4	5.5	4.6	4.6	3.7	3.7
65°	6.4	5.5	5.5	4.6	4.6	3.7	3.7	2.7	2.7	2.7	1.8
67.5°	3.7	3.7	3.7	2.7	2.7	1.8	1.8	1.8	1.8	0.9	0.9
70°	2.7	2.7	2.7	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9
72.5°	1.8	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9
75°	1.8	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
80°	1.8	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
82.5°	1.8	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0
85°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0
87.5°	1.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	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):

	165°	170°	175°	180°
0°	1177.4	1177.4	1177.4	1177.4
2.5°	963.8	959.2	970.2	943.7
5°	795.9	781.2	794.9	763.0
7.5°	633.4	621.5	627.9	601.5
10°	497.4	481.9	490.1	475.5
12.5°	405.2	397.9	398.8	389.7
15°	339.5	332.2	335.0	325.8
17.5°	287.5	282.0	287.5	277.5
20°	250.1	244.6	249.2	242.8
22.5°	220.0	216.3	221.8	214.5
25°	190.7	192.6	194.4	188.9
27.5°	175.2	172.5	175.2	170.7
30°	157.9	155.2	157.9	154.2
32.5°	142.4	139.6	141.5	137.8
35°	125.0	123.2	125.0	121.4
37.5°	108.6	105.9	107.7	106.8
40°	91.3	90.4	91.3	89.4
42.5°	73.9	73.0	73.9	73.0
45°	58.4	57.5	59.3	56.6
47.5°	45.6	43.8	44.7	43.8
50°	32.9	31.9	31.9	31.0
52.5°	22.8	21.0	21.9	21.0
55°	14.6	13.7	13.7	12.8
57.5°	9.1	8.2	8.2	8.2
60°	5.5	5.5	5.5	5.5
62.5°	3.7	2.7	2.7	2.7
65°	1.8	1.8	1.8	1.8
67.5°	0.9	0.9	0.9	0.9
70°	0.9	0.0	0.0	0.0
72.5°	0.0	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)