

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: P130163

Luminaire Tested: **HL612ICAT - HLM6935 - HL6FL - 455H**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130163
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 - HLM6935 - 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 / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1651.1 lumens
Efficiency: N/A
Efficacy: 86.4 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

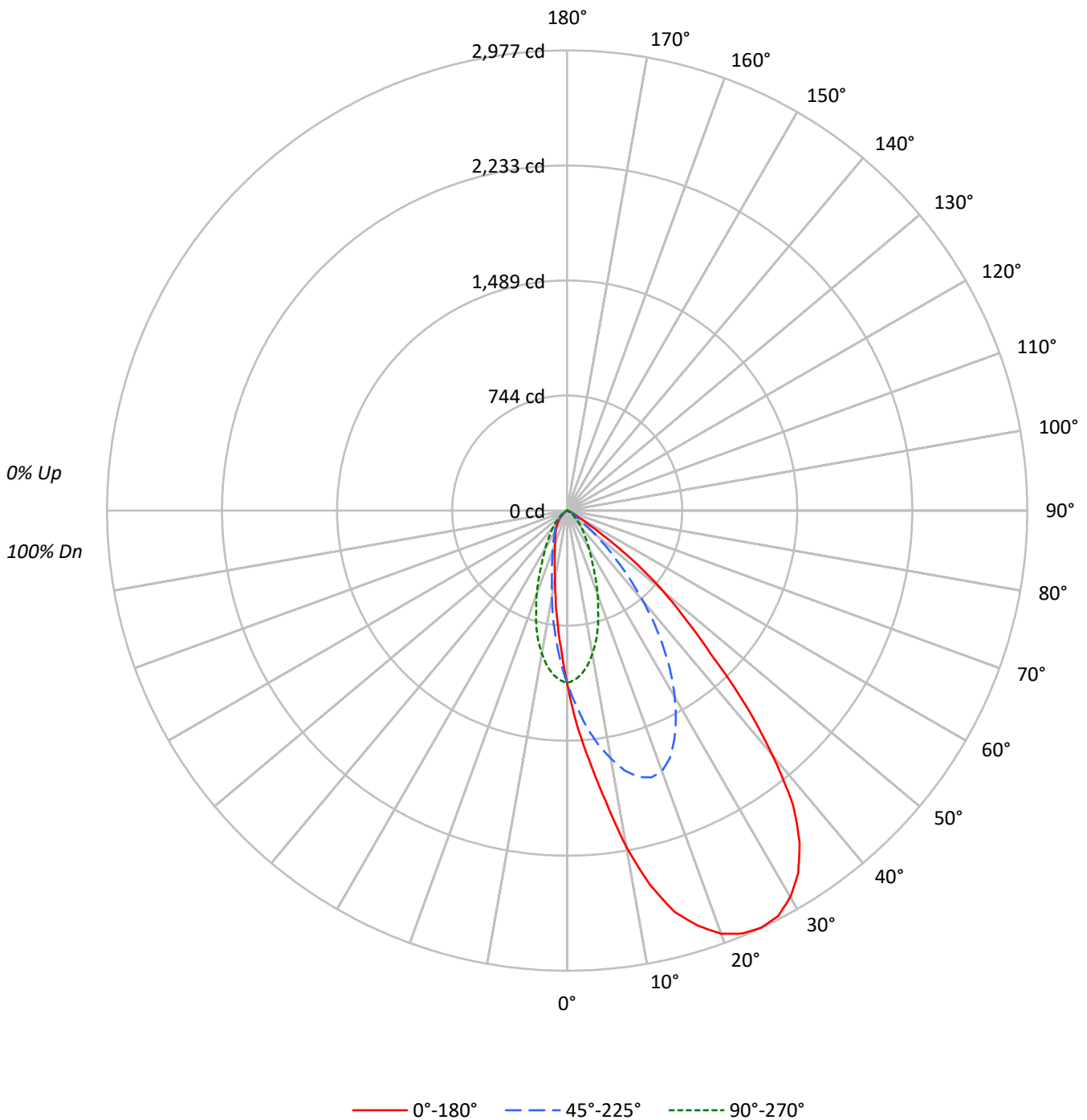
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	66603	66603	66603
5°	94558	62299	42343
10°	128101	54436	26089
15°	155079	44559	17814
20°	168726	33414	13327
25°	174459	23264	10489
30°	172531	16798	8737
35°	161065	12275	7065
40°	131768	9149	5403
45°	88089	6516	3575
50°	56973	4394	2074
55°	23944	3002	913
60°	6786	1913	425
65°	3887	936	153
70°	2007	353	0
75°	498	197	0
80°	123	233	0
85°	0	288	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	106.6	6.5
10°-20°	312.5	18.9
20°-30°	444.2	26.9
30°-40°	430.0	26.0
40°-50°	258.2	15.6
50°-60°	79.5	4.8
60°-70°	16.6	1.0
70°-80°	2.7	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°	863.3	52.3
0°-40°	1293.4	78.3
0°-60°	1631.0	98.8
0°-90°	1651.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1651.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1116	1116	1116	1116	1116	
5°	1615	1397	1064	830	723	172
15°	2688	1784	772	379	309	757
25°	2977	1639	397	205	179	1365
35°	2622	1092	200	128	115	1605
45°	1321	449	98	66	54	1054
55°	317	78	40	22	12	325
65°	43	27	10	4	2	46
75°	4	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°	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8
2.5°	1377.0	1350.2	1337.2	1319.9	1331.1	1313.0	1312.1	1309.5	1282.7	1253.3	1259.3
5°	1614.8	1589.8	1569.9	1542.2	1538.7	1509.3	1463.5	1492.9	1444.4	1396.9	1384.8
7.5°	1889.9	1854.4	1833.7	1780.0	1767.9	1684.9	1685.8	1656.4	1593.2	1522.3	1486.0
10°	2212.5	2167.5	2147.6	2068.9	2035.2	1947.0	1897.7	1833.7	1735.1	1629.5	1564.7
12.5°	2480.6	2440.0	2414.0	2324.1	2284.3	2177.9	2097.5	2005.8	1863.9	1723.0	1629.5
15°	2688.2	2645.0	2580.1	2516.1	2473.7	2353.5	2300.7	2136.4	1991.1	1783.5	1658.1
17.5°	2816.2	2782.5	2742.7	2647.6	2601.7	2486.7	2366.5	2222.0	2023.1	1810.3	1652.0
20°	2913.1	2874.2	2827.5	2729.7	2677.8	2544.6	2422.7	2261.8	2032.6	1793.9	1614.0
22.5°	2961.5	2923.5	2876.8	2769.5	2709.8	2564.5	2429.6	2244.5	1988.5	1734.2	1544.8
25°	2977.1	2936.5	2886.3	2771.3	2700.3	2543.8	2390.7	2178.8	1900.3	1639.1	1448.8
27.5°	2956.3	2911.4	2856.9	2737.5	2654.5	2480.6	2302.5	2058.5	1778.3	1523.2	1334.6
30°	2887.2	2844.8	2786.8	2663.1	2564.5	2359.5	2156.3	1890.7	1623.5	1390.8	1202.3
32.5°	2781.6	2735.8	2679.6	2540.3	2421.0	2193.5	1956.5	1703.9	1469.5	1249.8	1065.6
35°	2621.6	2574.9	2514.4	2350.0	2213.4	1964.3	1729.9	1518.8	1322.5	1092.4	916.0
37.5°	2402.8	2347.4	2255.8	2105.3	1938.3	1702.2	1506.7	1328.5	1121.8	931.5	769.8
40°	2068.1	2028.3	1933.1	1788.7	1638.2	1453.1	1300.0	1127.9	935.0	761.1	626.2
42.5°	1716.9	1671.1	1594.9	1470.4	1355.4	1193.6	1050.0	890.9	740.4	595.9	484.4
45°	1320.8	1290.5	1241.2	1147.8	1048.3	930.7	820.8	699.7	587.3	448.9	363.3
47.5°	1038.8	1016.3	981.7	898.7	842.4	730.9	647.0	544.0	442.0	332.1	262.1
50°	807.8	794.0	762.0	691.9	639.2	557.0	480.0	391.8	299.3	223.2	177.3
52.5°	563.9	575.2	526.7	482.6	432.5	366.7	292.3	227.5	172.1	132.3	110.7
55°	317.4	314.8	298.4	260.3	218.8	173.9	137.5	115.9	94.3	77.8	70.1
57.5°	152.2	147.0	137.5	117.6	100.3	87.4	77.0	70.9	64.0	58.0	54.5
60°	83.0	82.2	77.8	71.8	68.3	63.1	58.8	55.4	50.2	45.8	42.4
62.5°	59.7	58.8	57.1	53.6	51.9	48.4	45.0	42.4	39.8	36.3	33.7
65°	43.2	43.2	42.4	39.8	38.9	36.3	34.6	32.0	29.4	26.8	25.1
67.5°	32.0	31.1	30.3	29.4	27.7	25.9	24.2	22.5	20.8	18.2	16.4
70°	19.9	19.0	19.0	18.2	17.3	15.6	13.8	13.0	12.1	10.4	9.5
72.5°	10.4	10.4	9.5	9.5	8.6	7.8	6.9	6.9	6.1	5.2	4.3
75°	4.3	3.5	3.5	3.5	3.5	3.5	2.6	2.6	2.6	1.7	1.7
77.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.7	1.7	1.7
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°	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8
2.5°	1236.9	1217.0	1216.1	1186.7	1156.4	1147.8	1110.6	1096.7	1082.9	1047.4	1044.8
5°	1340.6	1305.2	1281.8	1230.8	1179.8	1149.5	1094.1	1063.9	1032.7	1002.5	966.1
7.5°	1423.7	1366.6	1321.6	1244.6	1176.3	1127.0	1075.1	1008.5	962.7	925.5	873.6
10°	1486.8	1402.1	1335.5	1239.5	1152.1	1082.9	1003.3	940.2	884.0	836.4	781.9
12.5°	1521.4	1410.7	1325.9	1220.4	1106.3	1025.8	928.9	861.5	781.0	739.5	675.5
15°	1526.6	1396.0	1291.3	1159.9	1043.1	951.4	851.1	772.4	702.3	640.9	577.8
17.5°	1501.5	1354.5	1233.4	1087.2	969.6	862.3	761.1	666.0	605.5	539.7	479.2
20°	1419.4	1289.6	1150.4	999.9	875.3	769.8	660.8	576.9	506.9	442.0	396.1
22.5°	1367.5	1200.5	1052.6	900.4	774.1	668.6	561.3	483.5	415.2	370.2	333.9
25°	1265.4	1090.7	944.5	795.7	670.3	564.8	465.3	397.0	347.7	307.1	282.8
27.5°	1147.8	974.8	831.2	689.4	569.1	469.7	384.9	332.1	292.3	265.5	240.5
30°	1005.1	856.3	715.3	586.4	467.1	383.2	320.0	281.1	249.1	224.9	207.6
32.5°	892.6	736.1	607.2	478.3	383.2	320.9	269.9	237.0	211.9	195.5	179.0
35°	760.3	618.4	493.9	384.0	313.1	264.7	225.7	199.8	180.8	166.9	154.8
37.5°	627.9	492.1	389.2	310.5	255.2	218.8	187.7	169.5	153.1	143.6	134.1
40°	495.6	380.6	304.5	249.1	207.6	179.0	158.3	143.6	130.6	123.7	115.9
42.5°	374.5	291.5	241.3	199.8	169.5	148.8	131.5	121.1	110.7	102.1	97.7
45°	283.7	228.3	191.2	160.9	137.5	122.0	105.5	97.7	90.0	84.8	81.3
47.5°	216.2	176.4	145.3	120.2	105.5	92.5	83.0	76.1	72.7	71.8	67.5
50°	146.2	118.5	101.2	85.6	77.0	70.1	65.7	62.3	59.7	57.1	53.6
52.5°	91.7	78.7	70.9	64.0	60.5	57.1	53.6	51.0	47.6	45.8	41.5
55°	64.0	59.7	56.2	51.9	49.3	45.8	42.4	39.8	38.1	36.3	33.7
57.5°	51.0	47.6	45.0	41.5	38.9	36.3	33.7	32.0	29.4	28.5	25.1
60°	40.7	38.1	35.5	32.9	30.3	27.7	25.9	23.4	21.6	19.9	17.3
62.5°	32.0	29.4	26.8	25.1	22.5	20.8	18.2	16.4	14.7	13.0	11.2
65°	23.4	20.8	19.0	17.3	15.6	13.8	12.1	10.4	8.6	7.8	6.9
67.5°	15.6	13.0	12.1	11.2	9.5	7.8	6.9	5.2	5.2	4.3	4.3
70°	8.6	7.8	6.9	6.1	5.2	4.3	3.5	3.5	2.6	2.6	2.6
72.5°	4.3	3.5	3.5	2.6	2.6	2.6	2.6	2.6	2.6	1.7	1.7
75°	2.6	1.7	1.7	2.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
77.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
80°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
82.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
85°	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87.5°	0.9	0.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
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°	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8	1115.8
2.5°	1050.9	1022.4	1012.0	982.6	967.0	977.4	956.6	944.5	937.6	938.5	921.2
5°	957.5	918.6	895.2	899.5	819.1	830.3	808.7	788.0	781.0	768.9	758.5
7.5°	852.0	811.3	779.3	735.2	708.4	695.4	678.1	642.6	634.0	616.7	604.6
10°	746.4	698.9	663.4	609.8	581.2	564.8	537.1	511.2	501.7	490.4	472.3
12.5°	639.2	588.2	545.8	499.1	471.4	457.6	434.2	416.9	407.4	397.0	389.2
15°	529.3	475.7	445.4	410.0	387.5	378.8	360.7	348.6	339.1	332.1	326.1
17.5°	438.5	397.9	371.9	344.2	326.1	319.2	305.3	293.2	286.3	281.1	277.6
20°	366.7	333.9	314.8	292.3	280.2	270.7	258.6	252.6	248.2	244.8	241.3
22.5°	311.4	282.8	267.3	249.1	238.7	234.4	226.6	218.8	216.2	213.6	210.2
25°	265.5	243.0	230.1	217.1	208.4	205.0	198.1	192.9	191.2	188.6	186.8
27.5°	226.6	210.2	200.7	189.4	183.4	180.8	174.7	171.3	171.3	168.7	169.5
30°	196.3	183.4	175.6	166.9	162.6	160.9	156.6	154.0	153.1	151.4	150.5
32.5°	171.3	160.0	155.7	147.9	145.3	143.6	140.1	137.5	138.4	136.7	135.8
35°	148.8	141.0	137.5	131.5	129.7	128.0	125.4	122.8	122.8	121.1	119.4
37.5°	129.7	124.6	121.1	115.9	114.2	112.4	109.8	106.4	106.4	104.7	104.7
40°	114.2	107.3	105.5	99.5	96.9	95.1	93.4	91.7	90.0	88.2	88.2
42.5°	96.0	90.0	88.2	83.9	82.2	80.4	78.7	74.4	74.4	72.7	72.7
45°	78.7	75.2	73.5	70.1	67.5	65.7	63.1	60.5	59.7	58.0	57.1
47.5°	64.9	61.4	59.7	56.2	54.5	52.8	51.0	48.4	47.6	45.8	44.1
50°	52.8	49.3	47.6	45.0	43.2	41.5	39.8	37.2	36.3	33.7	32.9
52.5°	41.5	39.8	37.2	34.6	32.9	30.3	29.4	26.8	25.1	23.4	22.5
55°	32.0	30.3	27.7	25.1	23.4	21.6	19.9	18.2	16.4	15.6	13.8
57.5°	24.2	21.6	19.0	17.3	15.6	13.8	13.0	11.2	10.4	9.5	8.6
60°	16.4	13.8	13.0	11.2	9.5	8.6	7.8	6.9	6.9	6.1	6.1
62.5°	10.4	8.6	7.8	6.9	6.1	6.1	5.2	4.3	4.3	3.5	3.5
65°	6.1	5.2	5.2	4.3	4.3	3.5	3.5	2.6	2.6	2.6	1.7
67.5°	3.5	3.5	3.5	2.6	2.6	1.7	1.7	1.7	1.7	0.9	0.9
70°	2.6	2.6	2.6	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9
72.5°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9
75°	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9
77.5°	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
80°	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0
82.5°	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0
85°	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0
87.5°	1.7	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°	1115.8	1115.8	1115.8	1115.8
2.5°	913.4	909.0	919.4	894.3
5°	754.2	740.4	753.4	723.1
7.5°	600.3	589.0	595.1	570.0
10°	471.4	456.7	464.5	450.6
12.5°	384.0	377.1	378.0	369.3
15°	321.8	314.8	317.4	308.8
17.5°	272.5	267.3	272.5	262.9
20°	237.0	231.8	236.1	230.1
22.5°	208.4	205.0	210.2	203.3
25°	180.8	182.5	184.2	179.0
27.5°	166.1	163.5	166.1	161.7
30°	149.6	147.0	149.6	146.2
32.5°	134.9	132.3	134.1	130.6
35°	118.5	116.8	118.5	115.0
37.5°	102.9	100.3	102.1	101.2
40°	86.5	85.6	86.5	84.8
42.5°	70.1	69.2	70.1	69.2
45°	55.4	54.5	56.2	53.6
47.5°	43.2	41.5	42.4	41.5
50°	31.1	30.3	30.3	29.4
52.5°	21.6	19.9	20.8	19.9
55°	13.8	13.0	13.0	12.1
57.5°	8.6	7.8	7.8	7.8
60°	5.2	5.2	5.2	5.2
62.5°	3.5	2.6	2.6	2.6
65°	1.7	1.7	1.7	1.7
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)