

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: P130200

Luminaire Tested: **HL612ICAT - HLM6940 - HL6NFL - 455H**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130200  
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 - HLM6940 - 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 / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1697.8 lumens  
Efficiency: N/A  
Efficacy: 88.9 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

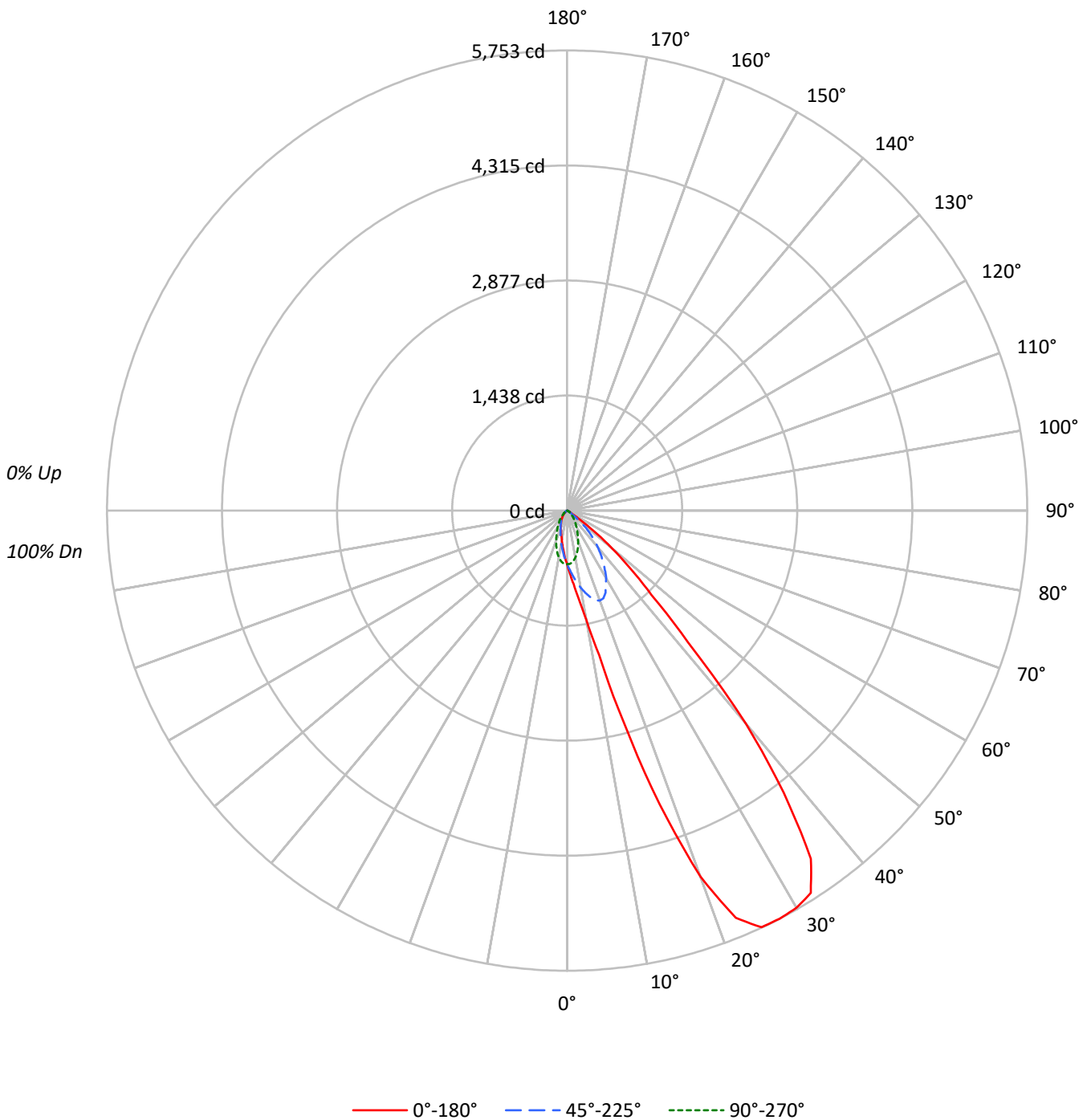
Input Watts (W): 19.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	109	107	104	110	107	105	102	103	101	99	99	98	96	96	95	93	92
2	106	100	95	91	103	98	94	90	95	91	88	92	89	86	89	87	85	83
3	99	92	86	81	97	90	85	80	87	83	79	85	81	78	83	79	77	75
4	93	84	77	72	91	83	77	72	80	75	71	78	74	70	76	73	69	68
5	87	77	70	65	85	76	70	65	74	68	64	72	67	63	71	66	63	61
6	81	71	64	59	80	70	63	58	68	62	58	67	62	58	65	61	57	56
7	76	65	58	53	75	65	58	53	63	57	53	62	56	52	61	56	52	50
8	71	60	53	48	70	60	53	48	58	52	48	57	52	48	56	51	48	46
9	67	56	49	44	66	55	49	44	54	48	44	53	48	44	52	47	44	42
10	63	52	45	40	62	51	45	40	50	44	40	50	44	40	49	44	40	38

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	39993	39993	39993
5°	54037	38379	29812
10°	80323	34409	21810
15°	158621	29121	16620
20°	281896	23261	13200
25°	336817	17943	10683
30°	342696	13774	8635
35°	326493	10567	6709
40°	221491	8054	4989
45°	99634	5622	3501
50°	52043	3823	2059
55°	12395	2595	973
60°	3728	1684	425
65°	2402	927	153
70°	1301	343	91
75°	394	197	0
80°	0	233	0
85°	0	288	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	65.6	3.9
10°-20°	249.6	14.7
20°-30°	526.6	31.0
30°-40°	530.0	31.2
40°-50°	251.7	14.8
50°-60°	58.3	3.4
60°-70°	12.3	0.7
70°-80°	2.6	0.2
80°-90°	1.1	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°	841.8	49.6
0°-40°	1371.9	80.8
0°-60°	1681.8	99.1
0°-90°	1697.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1697.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	670	670	670	670	670	
5°	923	818	655	538	509	102
15°	2750	1122	505	315	288	874
25°	5748	1134	306	190	182	2592
35°	5314	779	172	119	109	3118
45°	1494	407	84	59	52	1311
55°	164	52	34	21	13	225
65°	27	20	10	4	2	27
75°	3	3	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°	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0
2.5°	785.2	762.9	772.3	752.5	774.0	756.8	756.8	750.0	745.7	739.6	722.4
5°	922.8	894.4	902.2	890.1	896.2	874.7	865.2	846.3	849.7	817.9	788.7
7.5°	1107.7	1067.3	1080.2	1045.0	1042.4	1014.9	988.2	953.8	924.5	897.9	854.0
10°	1387.3	1333.9	1335.6	1276.3	1262.5	1199.8	1149.0	1081.1	1022.6	978.7	909.1
12.5°	1850.8	1752.8	1738.1	1628.1	1571.3	1442.3	1333.1	1225.6	1127.5	1051.8	956.4
15°	2749.6	2609.4	2494.1	2226.7	2032.3	1786.3	1572.2	1394.1	1247.9	1121.5	995.9
17.5°	3853.9	3662.9	3530.5	3170.1	2786.5	2245.6	1868.0	1562.7	1340.8	1174.0	1017.4
20°	4867.0	4621.0	4407.7	3988.0	3527.9	2911.2	2138.1	1710.6	1407.0	1197.2	1011.4
22.5°	5510.3	5322.0	5119.0	4621.9	4061.1	3311.2	2445.1	1806.1	1428.5	1185.1	977.9
25°	5747.7	5578.2	5470.7	4971.9	4365.6	3570.9	2537.1	1810.4	1396.7	1133.5	932.3
27.5°	5752.8	5601.5	5548.1	5064.8	4417.2	3472.9	2451.1	1717.5	1318.4	1041.5	870.4
30°	5734.8	5582.5	5492.2	4937.5	4219.4	3234.6	2214.6	1554.1	1210.9	976.1	800.7
32.5°	5667.7	5479.3	5259.2	4584.9	3806.6	2767.6	1885.2	1372.6	1075.1	879.0	733.6
35°	5314.2	5074.3	4707.9	3991.5	3165.0	2191.4	1548.1	1180.8	943.5	779.2	639.9
37.5°	4449.0	4248.6	3900.3	3205.4	2355.7	1675.4	1286.6	1016.6	821.3	687.2	559.9
40°	3476.3	3245.8	2839.0	2253.3	1719.2	1317.6	1050.1	856.6	710.4	593.4	478.2
42.5°	2236.1	2135.5	1892.1	1559.3	1272.0	1040.7	854.9	719.0	600.3	496.2	397.3
45°	1493.9	1422.5	1321.9	1143.0	979.6	838.5	706.1	592.6	496.2	406.8	325.1
47.5°	1073.3	1011.4	971.0	866.9	762.9	666.5	566.8	469.6	381.9	310.5	243.4
50°	737.9	690.6	673.4	609.8	528.1	456.7	377.6	311.3	246.0	195.2	148.8
52.5°	405.9	381.0	373.3	339.7	301.0	251.1	198.7	158.2	124.7	98.0	77.4
55°	164.3	159.1	151.4	139.3	121.3	97.2	83.4	68.8	58.5	52.5	48.2
57.5°	66.2	63.6	62.8	58.5	55.0	49.9	46.4	43.9	42.1	41.3	39.6
60°	45.6	43.9	43.0	41.3	40.4	38.7	37.0	36.1	34.4	33.5	31.8
62.5°	34.4	33.5	33.5	31.8	31.8	31.0	30.1	28.4	27.5	26.7	24.9
65°	26.7	25.8	24.9	24.9	24.1	24.1	23.2	22.4	20.6	19.8	18.1
67.5°	18.9	18.9	18.1	18.1	17.2	17.2	16.3	15.5	14.6	13.8	12.9
70°	12.9	12.0	12.0	12.0	12.0	11.2	11.2	10.3	9.5	9.5	8.6
72.5°	7.7	7.7	7.7	6.9	6.9	6.9	6.0	6.0	6.0	5.2	5.2
75°	3.4	3.4	3.4	3.4	3.4	2.6	2.6	2.6	2.6	2.6	2.6
77.5°	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.7	1.7	1.7	1.7
80°	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.7	1.7	1.7
82.5°	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.7	1.7	1.7
85°	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.7	1.7	1.7
87.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	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):**

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0
2.5°	715.6	713.8	696.6	688.9	687.2	680.3	677.7	669.1	638.2	639.9	643.3
5°	772.3	756.8	729.3	711.3	699.2	683.7	670.8	655.4	629.6	609.8	605.5
7.5°	821.3	793.0	753.4	725.0	700.9	676.0	652.8	628.7	598.6	573.6	561.6
10°	861.8	819.6	764.6	725.0	691.5	657.1	626.1	594.3	557.3	528.1	513.4
12.5°	887.6	830.8	762.9	712.1	669.1	624.4	590.0	553.9	512.6	479.0	461.8
15°	903.0	826.5	749.1	686.3	635.6	584.8	545.3	504.8	461.8	427.4	408.5
17.5°	902.2	824.8	723.3	652.8	594.3	538.4	495.4	453.2	412.0	376.7	356.1
20°	880.7	782.6	684.6	610.6	550.4	489.4	442.9	401.6	360.4	328.5	308.8
22.5°	841.1	738.8	639.9	560.7	498.8	441.2	392.2	350.9	313.9	285.5	270.9
25°	794.7	688.0	591.7	505.7	446.4	388.7	344.0	306.2	273.5	247.7	235.7
27.5°	737.9	633.0	536.7	455.0	393.0	340.6	298.4	266.6	236.5	216.7	204.7
30°	669.1	572.8	474.7	402.5	343.2	295.9	257.2	230.5	205.6	187.5	180.6
32.5°	602.0	506.6	415.4	348.3	296.7	253.7	221.0	198.7	179.7	164.3	157.4
35°	533.2	438.6	360.4	296.7	253.7	215.9	190.9	172.0	155.7	143.6	138.5
37.5°	461.0	375.8	306.2	251.1	213.3	182.3	160.0	151.4	134.2	123.8	120.4
40°	386.2	313.9	256.3	211.6	178.9	153.9	137.6	126.4	114.4	108.4	104.9
42.5°	320.8	257.2	210.7	173.7	148.8	128.1	115.2	105.8	94.6	90.3	87.7
45°	258.0	205.6	166.0	137.6	117.0	101.5	91.2	84.3	77.4	73.1	71.4
47.5°	189.2	147.9	118.7	98.9	84.3	75.7	68.8	66.2	61.9	60.2	58.5
50°	115.2	92.0	76.5	66.2	60.2	57.6	55.0	54.2	50.7	49.0	46.4
52.5°	65.4	58.5	52.5	49.9	49.0	47.3	44.7	43.0	39.6	37.8	37.0
55°	45.6	44.7	43.0	41.3	39.6	37.0	35.3	34.4	31.8	31.0	29.2
57.5°	38.7	36.1	34.4	31.8	31.0	29.2	28.4	27.5	25.8	24.1	23.2
60°	30.1	28.4	26.7	25.8	24.9	23.2	21.5	20.6	18.9	18.1	17.2
62.5°	23.2	22.4	20.6	19.8	18.9	18.1	16.3	15.5	14.6	12.9	11.2
65°	17.2	16.3	15.5	14.6	13.8	12.9	11.2	10.3	9.5	8.6	7.7
67.5°	12.0	12.0	10.3	9.5	9.5	7.7	6.9	6.0	5.2	5.2	4.3
70°	7.7	7.7	6.9	6.0	5.2	4.3	4.3	3.4	3.4	3.4	2.6
72.5°	4.3	3.4	3.4	3.4	2.6	2.6	2.6	2.6	2.6	2.6	2.6
75°	2.6	1.7	1.7	2.6	2.6	2.6	2.6	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°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87.5°	1.7	1.7	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°	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0	670.0
2.5°	639.0	626.1	619.2	612.4	612.4	607.2	609.8	597.7	600.3	593.4	592.6
5°	594.3	590.9	562.5	553.9	540.1	538.4	541.0	525.5	523.8	516.9	510.9
7.5°	547.0	525.5	508.3	494.5	485.9	476.5	462.7	459.3	455.0	449.8	443.8
10°	495.4	471.3	451.5	435.2	430.0	417.1	410.2	399.9	393.0	387.0	382.7
12.5°	441.2	416.3	398.2	381.0	374.1	362.1	356.9	346.6	340.6	334.6	332.8
15°	386.2	363.8	344.0	331.1	323.4	314.8	310.5	299.3	297.6	292.4	289.0
17.5°	337.1	316.5	299.3	289.0	282.1	273.5	271.8	263.2	261.5	258.9	255.4
20°	291.6	275.2	260.6	252.0	247.7	242.5	240.0	233.9	232.2	230.5	228.8
22.5°	254.6	240.8	232.2	222.8	219.3	215.0	213.3	207.3	206.4	206.4	203.8
25°	221.9	211.6	203.8	196.1	194.4	190.1	190.1	184.9	185.8	184.0	183.2
27.5°	196.1	186.6	179.7	173.7	172.9	170.3	169.4	166.0	166.0	165.1	163.4
30°	172.0	165.1	159.1	154.8	154.8	152.2	152.2	148.8	147.9	147.1	147.1
32.5°	151.4	147.1	142.8	137.6	138.5	135.0	135.0	131.6	129.9	129.0	127.3
35°	132.4	129.9	125.6	122.1	122.1	118.7	117.0	113.5	112.7	111.8	110.9
37.5°	116.1	113.5	110.1	105.8	105.8	102.3	101.5	98.9	97.2	96.3	95.5
40°	100.6	98.0	94.6	90.3	90.3	86.9	86.0	84.3	83.4	81.7	80.8
42.5°	83.4	80.8	78.3	76.5	75.7	73.1	72.2	67.9	69.7	68.8	66.2
45°	68.8	67.9	65.4	62.8	61.9	59.3	57.6	55.0	54.2	54.2	52.5
47.5°	56.8	54.2	52.5	49.9	49.0	47.3	45.6	43.9	43.9	43.0	41.3
50°	44.7	43.0	42.1	39.6	38.7	37.0	36.1	34.4	33.5	31.8	31.0
52.5°	36.1	34.4	32.7	31.8	30.1	29.2	27.5	24.9	24.9	23.2	21.5
55°	28.4	26.7	24.9	24.1	22.4	20.6	19.8	18.1	16.3	15.5	14.6
57.5°	21.5	19.8	18.9	17.2	15.5	14.6	12.9	11.2	10.3	9.5	8.6
60°	15.5	14.6	12.9	11.2	10.3	9.5	8.6	6.9	6.9	6.0	6.0
62.5°	11.2	9.5	8.6	6.9	6.9	6.0	5.2	5.2	4.3	4.3	3.4
65°	6.9	6.0	5.2	5.2	4.3	4.3	3.4	3.4	2.6	2.6	2.6
67.5°	4.3	3.4	3.4	3.4	2.6	2.6	2.6	1.7	1.7	1.7	0.9
70°	2.6	2.6	2.6	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9
72.5°	2.6	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9
75°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9
77.5°	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9
80°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.0
82.5°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.0
85°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.0
87.5°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	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°	670.0	670.0	670.0	670.0
2.5°	590.9	584.8	583.1	593.4
5°	512.6	505.7	504.0	509.1
7.5°	442.9	434.3	436.9	437.8
10°	381.0	375.0	374.1	376.7
12.5°	327.7	323.4	323.4	327.7
15°	287.3	284.7	283.8	288.1
17.5°	252.9	252.0	252.0	255.4
20°	226.2	225.3	225.3	227.9
22.5°	202.1	202.1	202.1	203.0
25°	181.5	182.3	181.5	182.3
27.5°	162.5	163.4	163.4	163.4
30°	147.9	144.5	145.3	144.5
32.5°	126.4	125.6	126.4	126.4
35°	109.2	109.2	109.2	109.2
37.5°	93.7	93.7	93.7	93.7
40°	79.1	79.1	79.1	78.3
42.5°	65.4	65.4	65.4	64.5
45°	51.6	51.6	51.6	52.5
47.5°	40.4	40.4	39.6	40.4
50°	30.1	29.2	29.2	29.2
52.5°	21.5	20.6	19.8	19.8
55°	13.8	12.9	12.9	12.9
57.5°	8.6	8.6	7.7	7.7
60°	5.2	5.2	5.2	5.2
62.5°	3.4	3.4	3.4	2.6
65°	1.7	1.7	1.7	1.7
67.5°	0.9	0.9	0.9	0.9
70°	0.9	0.9	0.9	0.9
72.5°	0.9	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)