

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: P130216

Luminaire Tested: **HL612ICAT - HLM6935 - HL6NFL - 456P**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130216  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33472)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: HL612ICAT - HLM6935 - HL6NFL - 456P  
Description: HALO ALLSLOPE 6" 21W, Black Coilex Baffle, 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: 1461.8 lumens  
Efficiency: N/A  
Efficacy: 76.5 lumens/watt  
Spacing Criteria (0/90/45): 1.94 / 0.71 / 1.18  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

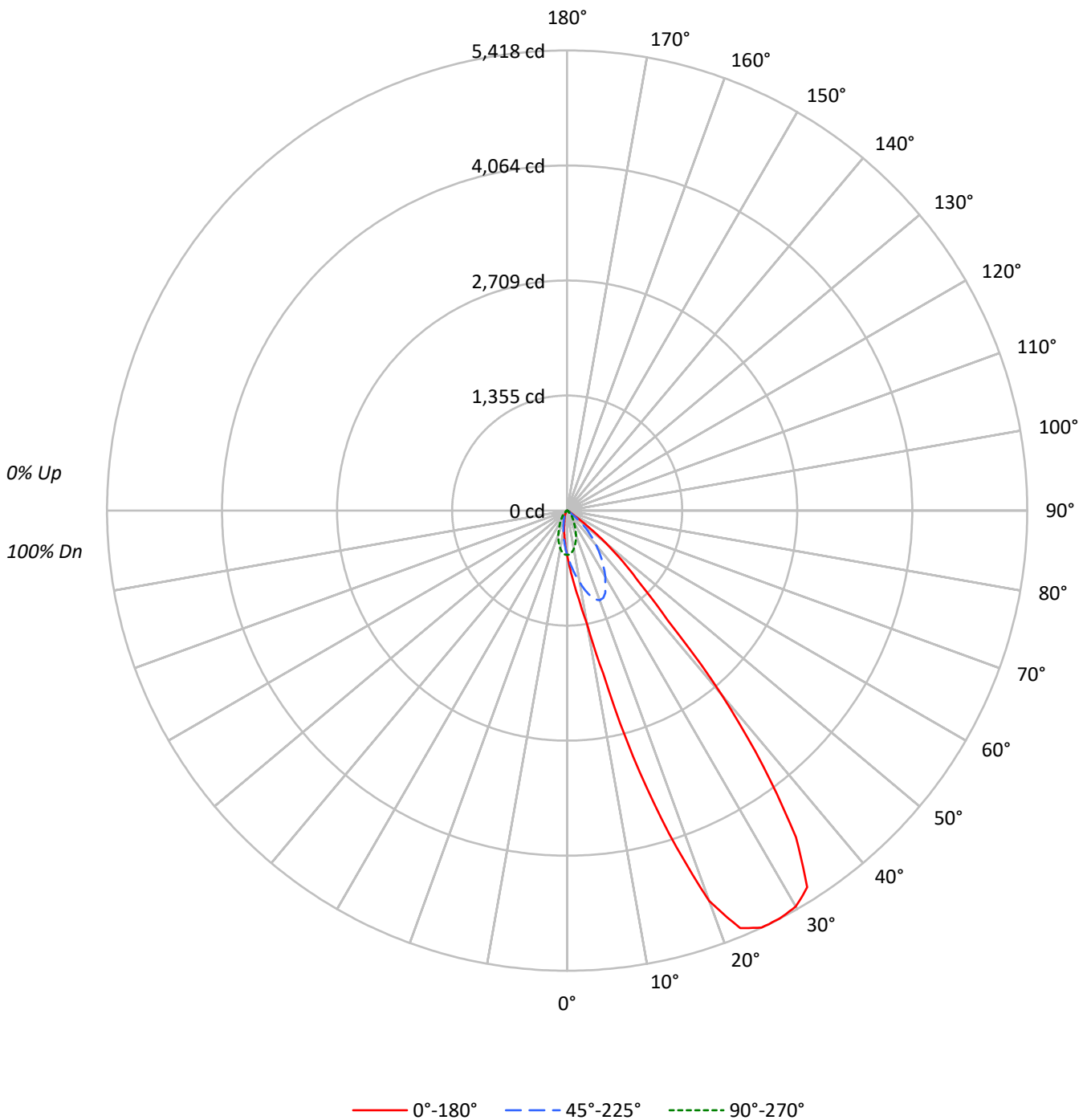
Input Watts (W): 19.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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

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

	0°	90°	180°
0°	31003	31003	31003
5°	48474	29653	19388
10°	79182	26361	11609
15°	172957	22054	7119
20°	283269	17440	4796
25°	317514	13080	3522
30°	321745	9603	2767
35°	288457	7028	2095
40°	180420	5116	1497
45°	80326	3195	814
50°	42126	2003	346
55°	8208	1282	60
60°	2984	793	65
65°	1754	369	144
70°	898	161	161
75°	185	185	93
80°	0	219	0
85°	0	271	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	52.0	3.6
10°-20°	221.7	15.2
20°-30°	475.9	32.6
30°-40°	458.0	31.3
40°-50°	203.1	13.9
50°-60°	40.3	2.8
60°-70°	8.0	0.5
70°-80°	1.8	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°	749.7	51.3
0°-40°	1207.7	82.6
0°-60°	1451.0	99.3
0°-90°	1461.8	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1461.8	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	519	519	519	519	519	
5°	828	682	506	372	331	95
15°	2998	1035	382	163	123	910
25°	5418	1064	223	79	60	2469
35°	4695	714	114	46	34	2771
45°	1204	360	48	19	12	1054
55°	109	39	17	5	1	170
65°	20	14	4	2	2	21
75°	2	2	2	2	1	3
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°	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4
2.5°	663.9	635.5	617.6	629.8	620.1	621.7	608.7	611.1	610.3	594.9	589.2
5°	827.8	762.1	767.0	775.9	753.2	751.5	731.3	720.7	709.3	681.7	666.3
7.5°	1048.6	991.8	965.0	956.9	920.4	904.1	874.1	842.4	810.8	771.0	740.2
10°	1367.6	1304.2	1252.3	1227.1	1156.5	1116.0	1052.7	990.2	929.3	861.9	809.2
12.5°	1964.9	1803.4	1703.6	1626.5	1487.7	1384.6	1266.9	1154.9	1063.2	955.3	870.9
15°	2998.1	2769.2	2538.7	2340.7	2023.3	1760.4	1534.7	1332.7	1186.6	1034.8	917.9
17.5°	3987.4	3768.3	3535.4	3285.4	2825.2	2310.6	1844.0	1526.6	1292.9	1094.9	945.5
20°	4890.7	4607.5	4327.5	4033.7	3483.4	2903.9	2201.1	1687.3	1366.7	1124.1	947.1
22.5°	5320.9	5128.5	4885.1	4582.3	3938.7	3256.2	2439.7	1775.8	1389.5	1111.9	920.4
25°	5418.3	5283.6	5099.3	4846.9	4159.5	3400.6	2494.9	1752.3	1350.5	1064.0	869.2
27.5°	5415.8	5285.2	5125.3	4875.3	4143.2	3326.8	2346.4	1633.0	1257.2	970.7	805.9
30°	5384.2	5256.8	5044.9	4709.7	3911.1	3041.1	2063.1	1465.8	1137.1	900.1	737.7
32.5°	5260.0	5103.4	4771.4	4296.6	3462.3	2558.2	1732.0	1278.3	1012.1	803.5	665.5
35°	4695.1	4612.4	4144.1	3640.1	2790.3	1965.7	1414.6	1090.0	879.0	714.2	587.6
37.5°	3789.4	3732.6	3321.9	2804.9	2038.8	1527.4	1156.5	937.4	762.1	624.1	508.9
40°	2831.7	2738.4	2354.5	1935.7	1480.4	1189.0	946.3	783.2	652.5	528.4	431.8
42.5°	1749.0	1754.7	1524.2	1361.9	1112.7	931.7	771.0	648.5	545.4	439.9	354.7
45°	1204.4	1198.7	1106.2	1008.8	858.7	760.5	628.2	533.2	451.3	359.5	287.3
47.5°	887.1	883.8	835.1	767.0	674.4	591.7	499.9	420.4	342.5	269.5	207.8
50°	597.3	594.9	562.4	528.4	460.2	402.6	331.9	263.0	210.2	159.1	119.3
52.5°	301.9	301.1	282.4	272.7	238.6	203.7	160.7	125.8	102.3	75.5	55.2
55°	108.8	112.0	108.8	103.1	90.1	77.1	61.7	52.8	45.4	39.0	34.9
57.5°	51.1	49.5	47.9	46.3	43.0	39.8	36.5	34.9	33.3	30.8	29.2
60°	36.5	35.7	34.9	34.9	32.5	31.7	29.2	28.4	26.8	24.3	22.7
62.5°	27.6	26.8	26.8	26.0	25.2	24.3	22.7	21.9	21.1	19.5	17.9
65°	19.5	19.5	19.5	20.3	18.7	17.9	17.0	16.2	15.4	13.8	13.0
67.5°	13.8	13.0	13.0	13.8	13.0	13.0	11.4	11.4	10.6	9.7	8.9
70°	8.9	8.9	8.1	8.1	8.1	7.3	7.3	6.5	6.5	5.7	4.9
72.5°	4.9	4.9	4.1	4.1	4.1	4.1	3.2	3.2	3.2	3.2	2.4
75°	1.6	0.8	0.8	0.8	0.8	1.6	0.8	1.6	1.6	1.6	1.6
77.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
80°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
82.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6
85°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	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°	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4
2.5°	574.6	565.7	555.1	551.1	538.9	531.6	522.7	519.4	511.3	495.9	490.2
5°	643.6	616.8	595.7	586.0	556.8	538.9	520.2	506.4	488.6	465.0	450.4
7.5°	699.6	660.6	626.6	606.3	564.9	535.7	507.3	484.5	459.4	428.5	408.2
10°	752.4	693.9	646.8	616.0	561.6	517.8	485.3	455.3	425.3	387.1	363.6
12.5°	791.3	715.0	655.8	612.0	547.8	501.6	457.7	420.4	387.1	346.6	320.6
15°	814.0	723.1	650.1	595.7	525.1	472.4	422.8	382.3	344.1	304.4	276.8
17.5°	818.1	713.4	630.6	568.9	494.3	435.8	375.8	342.5	302.7	264.6	236.2
20°	804.3	692.3	602.2	535.7	456.1	395.3	344.9	301.1	262.1	224.8	199.7
22.5°	773.5	657.4	564.1	494.3	413.1	353.9	302.7	259.7	223.2	189.9	167.2
25°	729.6	612.8	519.4	448.0	369.3	310.8	262.1	223.2	190.7	160.7	141.2
27.5°	671.2	560.8	466.7	400.1	324.6	271.1	224.0	189.1	161.5	135.5	119.3
30°	615.2	505.6	415.5	349.8	281.6	232.9	191.5	160.7	136.3	116.1	102.3
32.5°	549.5	449.6	363.6	304.4	241.0	197.2	161.5	136.3	116.1	99.0	87.7
35°	479.7	388.8	310.8	258.1	203.7	164.8	135.5	114.4	98.2	84.4	75.5
37.5°	412.3	330.3	262.1	215.1	168.0	138.0	112.8	97.4	82.8	72.2	64.1
40°	344.1	273.5	214.3	175.3	138.0	113.6	93.3	80.3	69.0	60.1	53.6
42.5°	282.4	221.6	174.5	141.2	110.4	90.9	74.7	64.1	54.4	47.1	42.2
45°	224.0	174.5	133.9	106.3	81.2	66.6	55.2	47.9	41.4	36.5	33.3
47.5°	159.9	119.3	88.5	69.0	55.2	44.6	38.1	35.7	32.5	29.2	26.8
50°	87.7	66.6	51.9	43.8	37.3	34.1	30.8	28.4	26.0	22.7	19.5
52.5°	47.1	39.8	34.9	33.3	30.0	27.6	24.3	21.9	19.5	17.0	15.4
55°	33.3	30.8	28.4	26.8	23.5	21.1	18.7	17.0	15.4	13.8	12.2
57.5°	26.8	24.3	22.7	21.1	18.7	16.2	14.6	13.0	12.2	10.6	8.9
60°	21.1	19.5	17.9	16.2	14.6	13.0	11.4	9.7	8.9	7.3	6.5
62.5°	16.2	14.6	13.0	12.2	10.6	9.7	8.1	7.3	5.7	4.9	4.1
65°	11.4	10.6	9.7	8.1	7.3	6.5	4.9	4.1	4.1	3.2	2.4
67.5°	8.1	6.5	6.5	5.7	4.9	4.1	3.2	2.4	2.4	2.4	1.6
70°	4.9	4.1	3.2	3.2	2.4	2.4	1.6	1.6	1.6	1.6	1.6
72.5°	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
75°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	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°	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4	519.4
2.5°	480.5	469.9	461.0	464.2	457.7	445.6	447.2	431.8	434.2	432.6	426.9
5°	433.4	418.0	402.6	398.5	379.8	372.5	369.3	348.2	351.4	340.1	338.4
7.5°	385.5	364.4	347.4	336.8	326.3	307.6	301.1	284.9	280.8	275.1	265.4
10°	337.6	313.3	301.1	280.0	265.4	249.2	237.8	225.6	220.8	214.3	206.1
12.5°	291.4	267.0	246.7	231.3	218.3	201.3	192.4	181.0	176.1	169.6	163.1
15°	247.5	224.0	205.3	189.9	176.9	163.1	153.4	142.8	138.8	133.9	129.0
17.5°	209.4	187.5	168.8	156.6	144.5	133.9	126.6	116.9	112.0	108.8	104.7
20°	175.3	155.0	139.6	129.9	120.1	110.4	104.7	96.6	93.3	90.1	86.0
22.5°	146.1	129.9	116.9	110.4	100.6	92.5	87.7	82.0	77.9	75.5	72.2
25°	123.4	110.4	99.8	93.3	85.2	78.7	73.9	69.0	66.6	64.1	62.5
27.5°	104.7	94.1	85.2	79.5	73.0	68.2	64.1	60.1	58.4	56.0	54.4
30°	90.9	81.2	73.9	69.0	64.1	60.1	56.8	53.6	51.9	49.5	47.9
32.5°	78.7	70.6	64.9	61.7	56.8	53.6	50.3	47.1	45.4	43.0	41.4
35°	67.4	60.9	56.8	54.4	49.5	46.3	43.8	40.6	39.0	36.5	35.7
37.5°	58.4	52.8	48.7	45.4	41.4	39.0	35.7	33.3	32.5	30.8	30.0
40°	48.7	43.0	39.8	36.5	33.3	31.7	30.0	27.6	26.8	26.0	24.3
42.5°	37.3	34.1	31.7	30.0	27.6	25.2	23.5	21.1	20.3	19.5	17.9
45°	30.0	28.4	25.2	22.7	20.3	18.7	17.0	15.4	14.6	13.8	13.0
47.5°	23.5	21.1	18.7	17.0	15.4	14.6	13.0	12.2	11.4	10.6	9.7
50°	17.9	16.2	14.6	13.8	12.2	10.6	9.7	8.1	7.3	7.3	6.5
52.5°	13.8	13.0	11.4	9.7	8.9	8.1	6.5	5.7	4.9	4.1	3.2
55°	10.6	9.7	8.1	7.3	5.7	4.9	4.1	3.2	2.4	1.6	0.8
57.5°	8.1	6.5	5.7	4.9	4.1	2.4	2.4	1.6	0.8	0.8	0.8
60°	4.9	4.1	3.2	2.4	2.4	1.6	1.6	1.6	1.6	0.8	0.8
62.5°	3.2	2.4	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
65°	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
67.5°	1.6	1.6	1.6	2.4	1.6	1.6	1.6	1.6	1.6	1.6	1.6
70°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
72.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
75°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8
77.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
80°	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8
82.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8
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°	519.4	519.4	519.4	519.4
2.5°	425.3	426.1	422.0	428.5
5°	337.6	335.2	335.2	331.1
7.5°	263.8	260.5	258.1	258.1
10°	204.5	203.7	198.8	200.5
12.5°	159.9	159.1	155.0	156.6
15°	126.6	125.8	122.6	123.4
17.5°	102.3	100.6	99.8	99.8
20°	84.4	82.8	82.0	82.8
22.5°	71.4	70.6	69.8	69.8
25°	60.9	60.9	60.1	60.1
27.5°	53.6	52.8	51.9	51.9
30°	47.1	46.3	46.3	46.3
32.5°	40.6	39.8	39.8	39.8
35°	34.1	34.1	34.1	34.1
37.5°	29.2	29.2	29.2	29.2
40°	24.3	23.5	23.5	23.5
42.5°	17.0	17.0	16.2	16.2
45°	13.0	12.2	12.2	12.2
47.5°	8.9	8.1	8.1	8.1
50°	5.7	4.9	4.9	4.9
52.5°	2.4	2.4	2.4	2.4
55°	0.8	0.8	0.8	0.8
57.5°	0.8	0.8	0.8	0.8
60°	0.8	0.8	0.8	0.8
62.5°	1.6	1.6	1.6	1.6
65°	1.6	1.6	1.6	1.6
67.5°	1.6	1.6	1.6	1.6
70°	1.6	1.6	1.6	1.6
72.5°	0.8	0.8	0.8	0.8
75°	0.8	0.8	0.8	0.8
77.5°	0.8	0.8	0.8	0.8
80°	0.8	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)