

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: P130073

Luminaire Tested: **HL618TAT - HLM6935 - HL6NFL - 455TBZ**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130073  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33470)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: HL618TAT - HLM6935 - HL6NFL - 455TBZ  
Description: HALO ALLSLOPE 6" 30W, Tuscan Bronze Reflector, Tuscan Bronze 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: 2059.9 lumens  
Efficiency: N/A  
Efficacy: 74.6 lumens/watt  
Spacing Criteria (0/90/45): 1.88 / 0.71 / 1.15  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

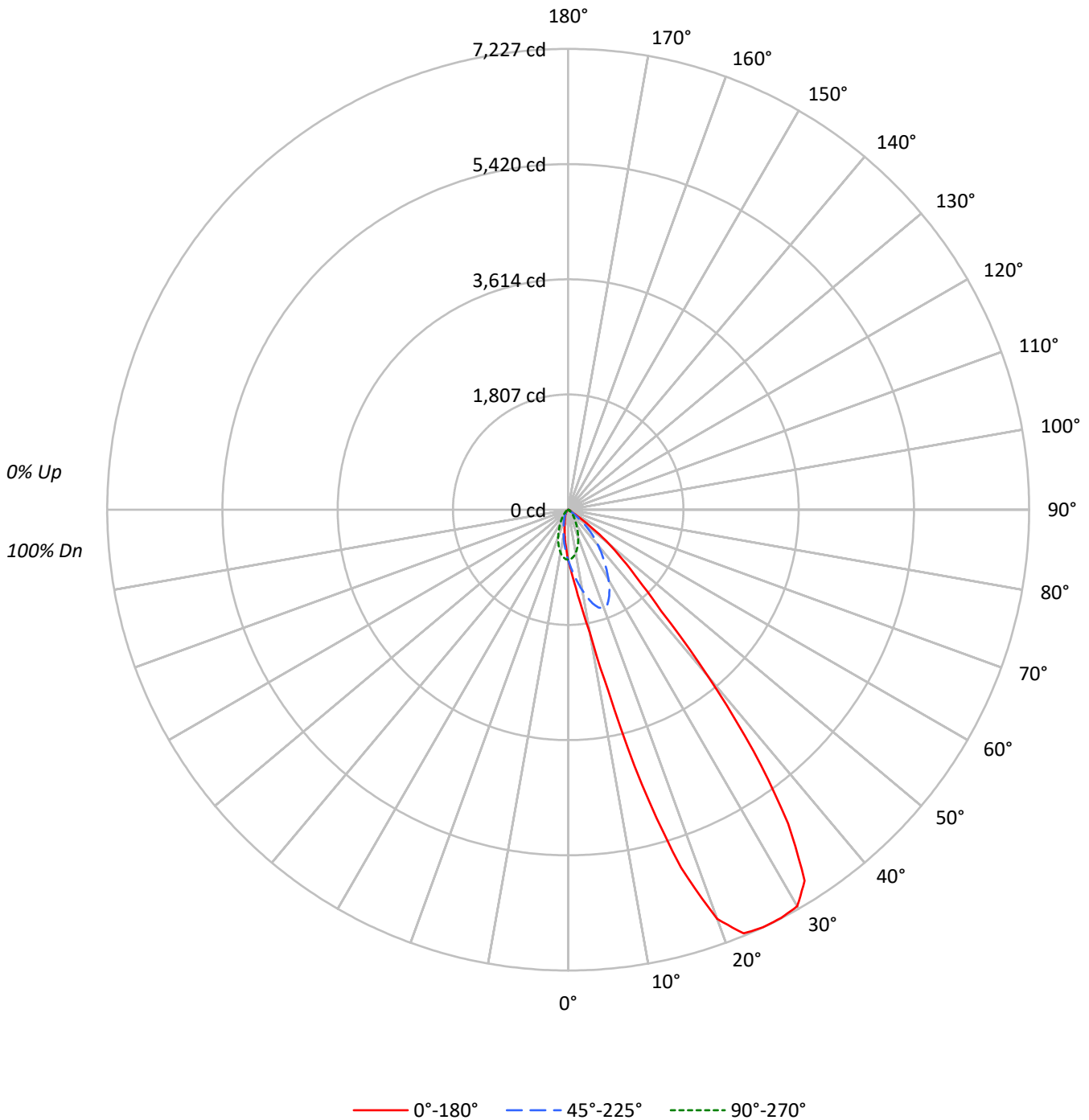
Input Watts (W): 27.6  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	110	107	104	110	107	105	103	103	101	99	100	98	96	96	95	94	92					92			
2	106	100	96	92	104	99	94	91	95	92	89	92	89	87	90	87	85	83					83			
3	100	92	86	82	97	91	85	81	88	84	80	85	82	79	83	80	77	76					76			
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	69					69			
5	88	78	71	66	86	77	71	66	75	69	65	73	68	65	72	67	64	62					62			
6	82	72	65	60	80	71	64	60	69	63	59	68	63	59	66	62	58	57					57			
7	77	66	59	54	76	66	59	54	64	58	54	63	58	54	62	57	53	52					52			
8	72	61	54	50	71	61	54	50	60	54	49	58	53	49	57	52	49	47					47			
9	68	57	50	45	67	56	50	45	55	49	45	54	49	45	53	48	45	43					43			
10	64	53	46	42	63	52	46	42	52	46	42	51	45	41	50	45	41	40					40			

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

	0°	90°	180°
0°	46792	46792	46792
5°	67815	44404	30128
10°	113534	39585	18632
15°	257339	33402	12270
20°	395488	26637	8578
25°	423499	19836	6458
30°	429195	14641	5121
35°	369297	10739	3901
40°	216534	7875	2982
45°	103228	5195	1781
50°	59370	3378	860
55°	16468	2188	166
60°	4366	1455	0
65°	2807	702	0
70°	1463	222	0
75°	521	255	0
80°	0	302	0
85°	0	373	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	78.5	3.8
10°-20°	337.8	16.4
20°-30°	677.9	32.9
30°-40°	611.3	29.7
40°-50°	273.5	13.3
50°-60°	64.4	3.1
60°-70°	12.4	0.6
70°-80°	2.7	0.1
80°-90°	1.3	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°	1094.2	53.1
0°-40°	1705.4	82.8
0°-60°	2043.4	99.2
0°-90°	2059.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2059.9	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	784	784	784	784	784	
5°	1158	1018	758	588	514	135
15°	4461	1534	579	278	213	1327
25°	7227	1516	338	140	110	3318
35°	6011	982	175	82	64	3560
45°	1548	491	78	38	27	1327
55°	218	62	29	10	2	268
65°	31	22	8	2	0	31
75°	4	2	2	1	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°	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9
2.5°	938.7	940.9	935.4	920.9	929.8	917.6	906.4	907.5	890.8	898.6	876.4
5°	1158.1	1152.5	1151.4	1123.6	1122.4	1098.0	1087.9	1059.0	1027.8	1017.8	979.9
7.5°	1481.0	1459.9	1436.5	1406.4	1386.4	1336.2	1298.4	1241.6	1183.7	1150.3	1082.4
10°	1960.9	1934.2	1894.1	1821.8	1763.8	1663.6	1562.3	1459.9	1361.9	1288.4	1181.5
12.5°	2907.5	2820.6	2653.6	2477.6	2337.3	2101.3	1880.8	1712.6	1547.8	1419.8	1268.3
15°	4460.8	4330.6	4096.7	3710.3	3293.9	2747.1	2326.2	1984.3	1730.4	1534.5	1330.7
17.5°	5887.3	5770.4	5479.7	4948.6	4444.1	3615.7	2829.5	2278.3	1877.4	1613.5	1361.9
20°	6828.2	6800.4	6506.4	5922.9	5284.9	4400.7	3364.0	2499.9	1966.5	1639.1	1354.1
22.5°	7191.3	7201.3	6998.6	6493.1	5811.6	4806.0	3653.5	2586.8	1969.9	1605.7	1306.2
25°	7226.9	7275.9	7154.5	6691.3	5985.3	4908.5	3625.7	2493.2	1859.6	1515.5	1222.7
27.5°	7219.1	7267.0	7137.8	6623.3	5823.8	4679.1	3289.4	2280.5	1737.1	1399.7	1101.3
30°	7182.3	7208.0	6968.5	6316.0	5356.1	4139.0	2809.5	2016.6	1565.6	1263.9	1025.6
32.5°	6897.3	6900.6	6449.6	5644.5	4602.3	3327.3	2305.0	1729.3	1370.8	1120.2	920.9
35°	6010.9	5936.3	5409.6	4663.5	3566.7	2550.0	1870.7	1472.1	1188.1	982.1	808.4
37.5°	4778.2	4698.0	4219.2	3428.6	2532.2	1974.3	1553.4	1247.2	1028.9	858.5	698.2
40°	3398.5	3248.2	2889.6	2342.9	1904.2	1554.5	1278.3	1043.4	879.7	730.5	593.5
42.5°	2153.6	2158.0	1971.0	1695.9	1481.0	1240.5	1033.4	866.3	728.3	602.4	487.7
45°	1547.8	1536.7	1437.6	1282.8	1151.4	988.8	846.3	712.7	594.6	491.1	394.2
47.5°	1160.3	1151.4	1099.1	997.7	902.0	801.7	683.7	570.1	474.4	377.5	297.3
50°	841.8	855.2	812.9	737.2	661.4	580.2	490.0	388.6	316.2	243.9	183.7
52.5°	481.0	500.0	469.9	417.6	374.1	317.4	261.7	203.8	160.3	120.3	96.9
55°	218.3	206.0	198.2	178.2	154.8	129.2	108.0	88.0	73.5	62.4	56.8
57.5°	80.2	79.1	79.1	72.4	66.8	62.4	56.8	52.3	50.1	46.8	45.7
60°	53.4	53.4	52.3	50.1	49.0	47.9	45.7	43.4	41.2	37.9	35.6
62.5°	40.1	41.2	40.1	39.0	39.0	37.9	35.6	34.5	32.3	30.1	29.0
65°	31.2	31.2	31.2	30.1	30.1	29.0	27.8	26.7	24.5	22.3	21.2
67.5°	22.3	22.3	22.3	22.3	21.2	21.2	20.0	17.8	17.8	15.6	14.5
70°	14.5	14.5	14.5	14.5	13.4	13.4	12.2	12.2	11.1	10.0	8.9
72.5°	8.9	8.9	8.9	7.8	7.8	7.8	6.7	6.7	6.7	5.6	4.5
75°	4.5	4.5	3.3	3.3	3.3	3.3	3.3	2.2	2.2	2.2	2.2
77.5°	0.0	0.0	1.1	1.1	1.1	1.1	1.1	1.1	2.2	2.2	2.2
80°	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2	2.2
82.5°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2
85°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2
87.5°	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1	2.2	2.2
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°	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9
2.5°	868.6	849.6	837.4	826.2	814.0	799.5	787.3	778.4	762.8	761.7	740.5
5°	955.4	922.0	890.8	863.0	837.4	808.4	781.7	758.3	731.6	717.1	687.1
7.5°	1038.9	982.1	933.1	888.6	846.3	801.7	761.7	727.1	687.1	664.8	622.5
10°	1105.7	1030.0	959.9	898.6	840.7	782.8	730.5	683.7	636.9	603.5	557.9
12.5°	1136.9	1055.6	965.4	889.7	817.3	748.3	685.9	633.6	582.4	546.7	495.5
15°	1187.0	1057.9	953.2	863.0	779.5	703.8	632.5	579.0	524.5	481.0	428.7
17.5°	1184.8	1041.2	923.1	821.8	730.5	649.2	577.9	518.9	461.0	417.6	367.5
20°	1155.9	1003.3	876.4	770.6	674.8	587.9	517.8	459.9	398.6	357.4	319.6
22.5°	1100.2	947.6	819.6	709.3	611.3	525.6	453.2	396.4	340.7	302.9	261.7
25°	1027.8	879.7	748.3	642.5	549.0	462.1	392.0	338.5	290.6	256.1	230.5
27.5°	948.7	801.7	673.7	571.2	483.3	397.5	336.3	288.4	247.2	217.1	189.3
30°	859.7	718.2	598.0	503.3	413.1	338.5	286.2	245.0	209.3	186.0	163.7
32.5°	766.1	630.3	521.1	432.1	351.9	287.3	241.6	207.1	178.2	159.2	140.3
35°	663.7	545.6	445.4	364.1	296.2	241.6	202.7	174.8	151.4	137.0	120.3
37.5°	569.0	463.2	374.1	302.9	246.1	200.4	170.4	147.0	128.1	116.9	103.6
40°	475.5	379.7	307.3	248.3	201.6	165.9	141.4	123.6	108.0	99.1	91.3
42.5°	387.5	312.9	249.4	200.4	163.7	137.0	115.8	100.2	88.0	81.3	72.4
45°	308.5	247.2	196.0	159.2	126.9	104.7	89.1	77.9	69.0	64.6	56.8
47.5°	226.0	175.9	141.4	110.2	91.3	75.7	65.7	59.0	53.4	51.2	47.9
50°	138.1	106.9	88.0	71.3	62.4	55.7	51.2	47.9	43.4	40.1	35.6
52.5°	75.7	63.5	57.9	52.3	49.0	44.5	41.2	37.9	33.4	31.2	27.8
55°	51.2	49.0	46.8	42.3	39.0	34.5	31.2	29.0	26.7	24.5	22.3
57.5°	42.3	40.1	36.7	33.4	30.1	26.7	24.5	23.4	20.0	18.9	16.7
60°	33.4	31.2	29.0	26.7	24.5	21.2	20.0	17.8	15.6	13.4	12.2
62.5°	25.6	23.4	22.3	20.0	17.8	15.6	14.5	12.2	11.1	8.9	7.8
65°	18.9	17.8	15.6	14.5	12.2	11.1	10.0	7.8	6.7	5.6	4.5
67.5°	13.4	12.2	11.1	8.9	7.8	6.7	5.6	4.5	3.3	3.3	2.2
70°	7.8	6.7	6.7	5.6	4.5	3.3	3.3	2.2	2.2	2.2	2.2
72.5°	4.5	3.3	3.3	3.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
75°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
77.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
80°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
82.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
85°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
87.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
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°	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9	783.9
2.5°	724.9	719.3	728.3	696.0	690.4	691.5	685.9	672.6	662.6	661.4	652.5
5°	659.2	644.7	632.5	605.8	594.6	587.9	576.8	559.0	547.9	544.5	532.3
7.5°	590.2	570.1	553.4	518.9	506.7	497.8	479.9	463.2	446.5	442.1	424.3
10°	525.6	496.6	478.8	437.6	422.0	412.0	388.6	375.3	360.8	351.9	343.0
12.5°	455.4	427.6	402.0	369.7	350.8	338.5	318.5	302.9	294.0	286.2	275.0
15°	388.6	361.9	338.5	307.3	290.6	278.4	261.7	248.3	239.4	232.7	224.9
17.5°	329.6	304.0	281.7	256.1	240.5	230.5	218.3	199.3	197.1	193.8	189.3
20°	278.4	255.0	236.1	213.8	201.6	193.8	182.6	173.7	165.9	162.6	155.9
22.5°	233.8	213.8	198.2	180.4	171.5	163.7	154.8	149.2	140.3	138.1	133.6
25°	198.2	182.6	170.4	154.8	148.1	140.3	132.5	126.9	121.4	119.1	115.8
27.5°	167.0	157.0	147.0	133.6	126.9	122.5	114.7	110.2	105.8	103.6	101.3
30°	145.9	134.7	126.9	115.8	111.4	106.9	101.3	96.9	93.5	90.2	89.1
32.5°	126.9	118.0	112.5	102.4	99.1	94.7	90.2	85.7	82.4	80.2	76.8
35°	110.2	102.4	98.0	90.2	88.0	82.4	77.9	74.6	71.3	69.0	66.8
37.5°	94.7	89.1	85.7	77.9	75.7	71.3	66.8	64.6	61.2	59.0	56.8
40°	80.2	75.7	71.3	65.7	62.4	59.0	55.7	53.4	51.2	50.1	47.9
42.5°	65.7	61.2	57.9	53.4	51.2	49.0	45.7	43.4	42.3	40.1	37.9
45°	52.3	50.1	46.8	42.3	41.2	37.9	34.5	33.4	31.2	29.0	27.8
47.5°	42.3	39.0	36.7	32.3	30.1	27.8	26.7	24.5	23.4	22.3	21.2
50°	32.3	30.1	27.8	25.6	23.4	22.3	20.0	17.8	16.7	15.6	14.5
52.5°	25.6	23.4	22.3	18.9	17.8	15.6	14.5	12.2	11.1	10.0	8.9
55°	20.0	17.8	16.7	13.4	12.2	10.0	8.9	7.8	6.7	5.6	4.5
57.5°	14.5	12.2	11.1	8.9	7.8	6.7	4.5	3.3	2.2	2.2	1.1
60°	10.0	8.9	6.7	5.6	4.5	3.3	2.2	1.1	1.1	1.1	1.1
62.5°	6.7	5.6	4.5	3.3	2.2	2.2	2.2	1.1	1.1	1.1	1.1
65°	3.3	2.2	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1
67.5°	2.2	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1
70°	2.2	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1
72.5°	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1
75°	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	0.0
77.5°	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	0.0
80°	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	0.0
82.5°	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	0.0
85°	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	0.0
87.5°	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	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°	783.9	783.9	783.9	783.9
2.5°	665.9	657.0	641.4	636.9
5°	539.0	532.3	522.3	514.5
7.5°	427.6	419.8	415.4	407.6
10°	340.7	334.1	329.6	321.8
12.5°	276.2	269.5	262.8	260.6
15°	224.9	221.6	213.8	212.7
17.5°	184.8	181.5	179.3	175.9
20°	158.1	153.7	150.3	148.1
22.5°	134.7	131.4	128.1	128.1
25°	114.7	113.6	111.4	110.2
27.5°	101.3	100.2	98.0	96.9
30°	90.2	88.0	86.9	85.7
32.5°	77.9	75.7	74.6	74.6
35°	66.8	64.6	63.5	63.5
37.5°	57.9	55.7	54.6	54.6
40°	47.9	46.8	46.8	46.8
42.5°	39.0	36.7	36.7	36.7
45°	27.8	26.7	26.7	26.7
47.5°	21.2	20.0	18.9	18.9
50°	14.5	13.4	13.4	12.2
52.5°	8.9	7.8	6.7	6.7
55°	3.3	3.3	2.2	2.2
57.5°	1.1	0.0	0.0	0.0
60°	1.1	0.0	0.0	0.0
62.5°	1.1	1.1	0.0	0.0
65°	1.1	0.0	0.0	0.0
67.5°	1.1	0.0	0.0	0.0
70°	0.0	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)