

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: P130207

Luminaire Tested: **HL612ICAT - HLM6935 - HL6NFL - 455SN**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130207  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33469)  
Test Lab: INNOVATION CENTER-P3  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: HL612ICAT - HLM6935 - HL6NFL - 455SN  
Description: HALO ALLSLOPE 6" 21W, Satin Nickel Reflector, Satin Nickel 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: 1533.3 lumens  
Efficiency: N/A  
Efficacy: 80.3 lumens/watt  
Spacing Criteria (0/90/45): 1.85 / 0.72 / 1.15  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

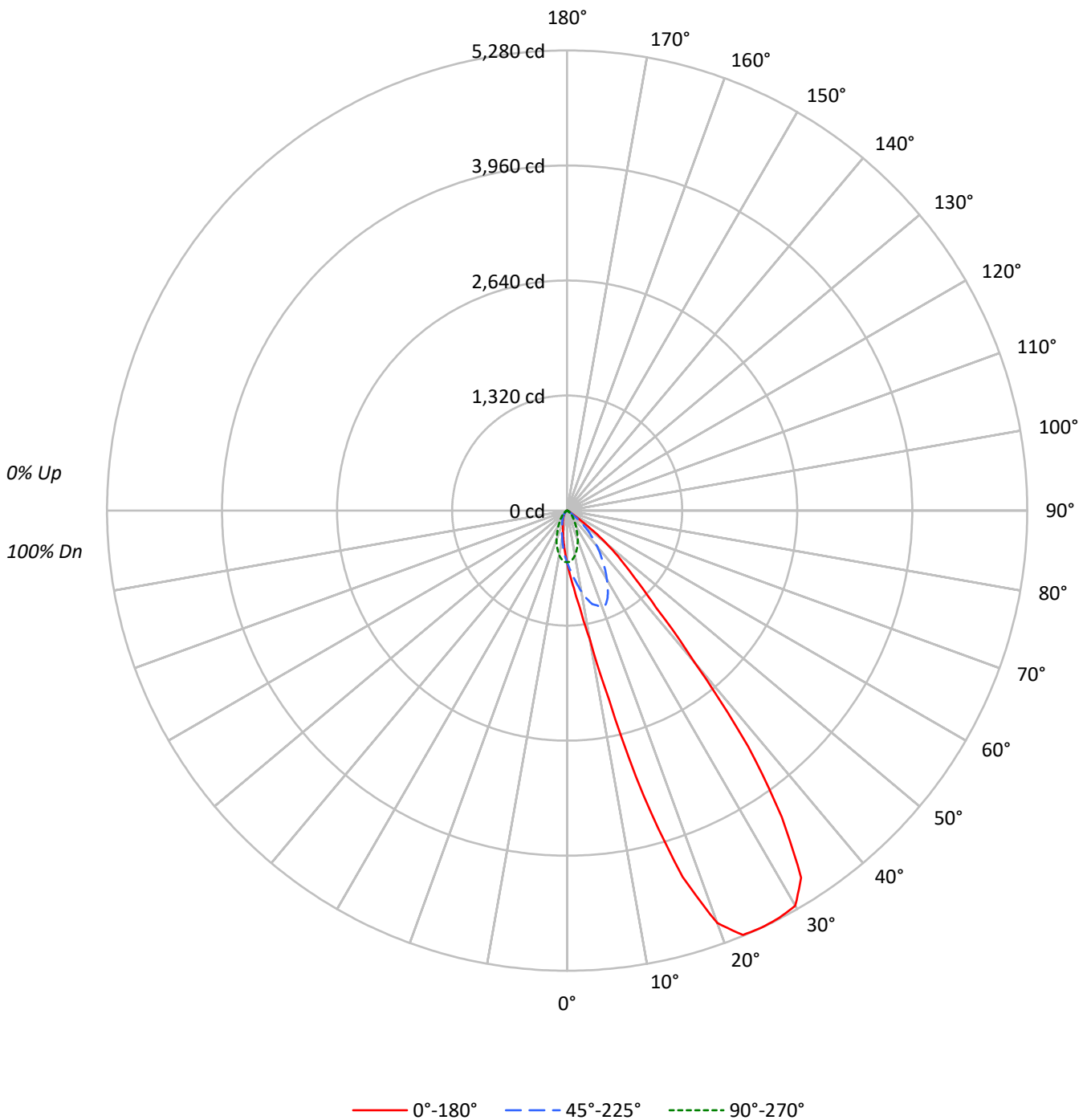
Input Watts (W): 19.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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	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	84	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68				
5	87	78	71	66	86	77	70	66	75	69	65	73	68	64	71	67	64	62				
6	82	72	65	60	80	71	64	59	69	63	59	68	62	59	66	62	58	56				
7	77	66	59	54	75	65	59	54	64	58	54	63	57	53	62	57	53	52				
8	72	61	54	50	71	61	54	49	59	53	49	58	53	49	57	52	49	47				
9	68	57	50	45	67	56	50	45	55	49	45	54	49	45	53	48	45	43				
10	64	53	46	42	63	52	46	42	51	46	41	51	45	41	50	45	41	40				

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

	0°	90°	180°
0°	35367	35367	35367
5°	52374	33647	23476
10°	86837	30119	15459
15°	195283	25424	10909
20°	291626	20492	8086
25°	309416	15506	6323
30°	312859	11641	5091
35°	263820	8773	3987
40°	145097	6518	3103
45°	73183	4549	2168
50°	42070	3033	1375
55°	10101	2082	732
60°	3254	1463	531
65°	2114	873	369
70°	1150	414	242
75°	371	278	185
80°	110	219	110
85°	0	271	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	59.3	3.9
10°-20°	252.1	16.4
20°-30°	500.2	32.6
30°-40°	450.2	29.4
40°-50°	204.3	13.3
50°-60°	50.9	3.3
60°-70°	12.2	0.8
70°-80°	3.0	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°	811.6	52.9
0°-40°	1261.9	82.3
0°-60°	1517.0	98.9
0°-90°	1533.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1533.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	592	592	592	592	592	
5°	894	756	575	455	401	103
15°	3385	1112	441	232	189	997
25°	5280	1099	265	128	108	2426
35°	4294	713	143	80	65	2547
45°	1097	360	68	41	32	927
55°	134	50	28	16	10	184
65°	24	19	10	6	4	24
75°	3	2	2	2	2	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°	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5
2.5°	732.0	695.5	711.8	696.3	698.0	696.3	685.0	693.1	676.0	668.7	659.0
5°	894.4	848.1	866.8	840.8	831.1	828.6	802.6	797.0	772.6	756.4	732.9
7.5°	1124.8	1079.4	1085.9	1054.2	1020.2	1003.9	959.3	932.5	883.8	843.2	805.1
10°	1499.8	1420.3	1443.8	1355.3	1286.3	1227.1	1151.6	1091.6	1009.6	942.2	877.3
12.5°	2216.4	2034.6	2002.2	1842.3	1698.6	1540.4	1383.7	1279.9	1141.9	1033.9	939.0
15°	3385.1	3118.9	3054.0	2724.5	2374.7	2007.8	1684.0	1481.1	1263.6	1111.9	983.6
17.5°	4406.9	4132.5	4049.0	3609.1	3238.2	2677.4	2077.6	1691.3	1374.0	1140.3	1004.7
20°	5035.0	4892.2	4881.6	4317.6	3788.4	3202.5	2426.6	1855.3	1406.5	1182.5	995.0
22.5°	5270.4	5188.4	5147.0	4734.7	4190.2	3481.7	2613.3	1923.4	1443.8	1162.2	957.7
25°	5280.1	5239.5	5257.4	4867.0	4305.4	3540.9	2602.7	1863.4	1378.1	1098.9	896.0
27.5°	5268.8	5227.4	5236.3	4815.1	4205.6	3375.3	2413.6	1705.9	1271.7	1010.4	824.6
30°	5235.5	5177.0	5088.6	4564.3	3888.3	2985.0	2050.9	1494.9	1139.5	913.0	753.1
32.5°	4996.1	4929.5	4716.9	4066.0	3325.8	2421.7	1670.2	1279.0	996.6	812.4	674.4
35°	4294.1	4257.5	3971.0	3300.7	2592.2	1848.0	1373.2	1092.4	866.0	712.6	594.1
37.5°	3410.2	3373.7	3051.5	2476.9	1859.3	1434.1	1129.7	925.2	745.0	622.5	518.6
40°	2277.3	2321.1	2116.6	1706.7	1384.6	1118.4	922.8	782.4	635.5	528.3	438.3
42.5°	1509.5	1515.2	1437.3	1231.2	1051.8	889.5	750.7	647.6	529.1	441.5	361.2
45°	1097.3	1095.6	1051.8	920.3	819.7	711.8	614.4	531.6	437.4	360.3	291.4
47.5°	828.6	830.2	804.3	720.7	662.2	574.6	495.9	424.5	345.7	280.0	221.6
50°	596.5	601.4	581.9	522.7	474.0	408.2	342.5	288.1	229.7	182.6	138.8
52.5°	332.7	344.9	328.7	295.4	260.5	219.1	180.2	151.8	116.9	92.5	73.0
55°	133.9	142.8	138.0	121.7	107.9	90.9	80.3	68.2	56.0	49.5	45.4
57.5°	57.6	56.8	56.8	51.9	49.5	46.3	43.0	42.2	39.0	38.1	36.5
60°	39.8	39.8	39.8	38.1	37.3	36.5	34.9	34.1	32.5	30.8	29.2
62.5°	30.8	30.8	30.8	30.0	29.2	29.2	27.6	27.6	26.0	24.3	22.7
65°	23.5	23.5	24.3	23.5	22.7	22.7	21.9	21.1	19.5	18.7	17.0
67.5°	17.0	17.0	17.0	17.0	17.0	16.2	15.4	14.6	13.8	13.0	13.0
70°	11.4	11.4	11.4	11.4	11.4	10.6	10.6	9.7	9.7	8.9	8.1
72.5°	7.3	7.3	7.3	6.5	6.5	6.5	6.5	5.7	5.7	4.9	4.9
75°	3.2	3.2	3.2	3.2	3.2	2.4	3.2	2.4	2.4	2.4	2.4
77.5°	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6	1.6	1.6
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6
82.5°	0.8	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6
85°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	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°	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5
2.5°	656.6	642.0	638.7	621.7	611.1	603.8	598.9	589.2	569.7	566.5	560.8
5°	720.7	690.7	676.9	648.4	626.5	609.5	594.1	574.6	544.6	531.6	521.0
7.5°	779.1	716.6	706.1	665.5	633.0	603.8	578.7	551.1	513.7	496.7	478.0
10°	827.8	763.7	723.9	671.2	628.2	590.0	555.9	520.2	478.8	454.5	431.8
12.5°	865.1	782.4	726.4	662.2	609.5	562.4	524.3	480.5	438.3	409.8	385.5
15°	884.6	784.0	715.8	656.6	581.9	529.1	485.3	440.7	394.4	366.8	336.8
17.5°	882.2	767.8	691.5	611.1	544.6	488.6	442.3	400.1	352.2	318.1	290.5
20°	859.5	740.2	658.2	573.0	503.2	443.1	399.3	353.8	306.0	275.1	249.2
22.5°	818.9	699.6	614.4	526.7	459.4	400.1	352.2	308.4	263.8	238.6	213.4
25°	768.6	650.1	562.4	476.4	409.0	352.2	306.8	264.6	226.4	203.7	183.4
27.5°	708.5	593.3	506.4	428.5	362.0	306.8	263.0	228.1	194.0	176.1	158.3
30°	642.8	531.6	450.4	373.3	311.6	263.0	224.8	194.8	167.2	147.7	138.0
32.5°	572.2	468.3	395.2	323.0	266.2	224.0	191.5	166.4	143.6	130.7	120.1
35°	500.7	405.8	337.6	273.5	226.4	188.3	163.1	142.8	123.4	113.6	103.9
37.5°	430.1	344.1	284.1	229.7	189.1	159.9	138.8	120.9	105.5	98.2	90.9
40°	359.5	285.7	233.7	189.1	155.8	133.1	116.1	102.3	90.1	84.4	78.7
42.5°	293.0	232.9	189.9	159.1	129.9	111.2	97.4	86.0	75.5	70.6	65.7
45°	235.4	185.9	152.6	124.2	103.9	87.7	77.1	68.2	60.9	56.8	54.4
47.5°	174.5	136.3	109.6	89.3	74.7	64.1	58.4	52.8	48.7	47.1	44.6
50°	107.9	84.4	71.4	59.2	52.8	48.7	46.3	43.0	39.8	38.1	35.7
52.5°	61.7	51.9	47.9	44.6	42.2	40.6	38.1	35.7	31.7	30.0	28.4
55°	42.2	39.8	39.0	36.5	34.1	31.7	30.0	27.6	25.2	25.2	23.5
57.5°	34.9	32.5	31.7	28.4	26.8	25.2	24.3	22.7	21.1	19.5	18.7
60°	28.4	26.0	25.2	23.5	21.9	20.3	19.5	17.9	16.2	15.4	14.6
62.5°	21.9	20.3	19.5	18.7	17.0	15.4	14.6	13.8	12.2	11.4	10.6
65°	17.0	15.4	14.6	13.8	12.2	11.4	10.6	9.7	8.9	8.1	7.3
67.5°	12.2	10.6	10.6	9.7	8.9	8.1	7.3	6.5	5.7	5.7	4.9
70°	8.1	7.3	6.5	5.7	5.7	4.9	4.1	4.1	4.1	4.1	4.1
72.5°	4.9	4.1	4.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
75°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
77.5°	1.6	1.6	2.4	2.4	2.4	2.4	2.4	2.4	1.6	2.4	2.4
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°	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5	592.5
2.5°	551.1	548.6	537.3	534.8	524.3	531.6	521.8	506.4	504.0	508.0	499.1
5°	501.6	491.8	478.0	469.9	456.9	455.3	447.2	426.1	423.6	419.6	411.5
7.5°	452.9	441.5	421.2	405.8	395.2	388.7	379.0	359.5	352.2	348.2	337.6
10°	405.8	389.6	365.2	352.2	334.4	325.4	314.9	297.0	289.7	287.3	275.1
12.5°	357.9	336.8	312.5	299.5	280.8	272.7	263.0	248.3	241.8	236.2	230.5
15°	308.4	288.9	266.2	254.0	239.4	232.1	224.0	209.4	203.7	200.5	198.8
17.5°	265.4	246.7	225.6	216.7	202.9	195.6	189.9	178.5	173.7	170.4	167.2
20°	228.1	211.8	194.0	185.9	174.5	169.6	163.1	154.2	151.0	148.5	145.3
22.5°	194.8	181.0	167.2	160.7	151.8	147.7	142.0	135.5	132.3	129.9	127.4
25°	167.2	156.6	146.1	140.4	132.3	128.2	124.2	118.5	115.2	114.4	112.0
27.5°	145.3	137.2	128.2	122.5	116.1	112.8	109.6	104.7	103.1	101.4	99.0
30°	127.4	120.1	112.0	107.9	103.1	100.6	97.4	94.1	91.7	92.5	89.3
32.5°	111.2	105.5	99.0	96.6	91.7	90.1	87.7	83.6	81.2	80.3	78.7
35°	97.4	92.5	87.7	86.0	82.0	79.5	77.1	73.9	73.0	70.6	69.0
37.5°	85.2	81.2	77.1	75.5	72.2	69.0	67.4	63.3	61.7	60.9	60.1
40°	73.9	70.6	65.7	64.1	60.9	59.2	56.8	54.4	52.8	52.8	51.1
42.5°	61.7	59.2	55.2	54.4	51.1	50.3	47.9	46.3	44.6	43.8	43.0
45°	51.1	49.5	46.3	45.4	43.0	41.4	40.6	37.3	35.7	34.9	34.1
47.5°	42.2	40.6	36.5	35.7	34.9	32.5	30.8	30.0	28.4	27.6	27.6
50°	33.3	31.7	29.2	29.2	27.6	26.0	25.2	23.5	22.7	21.9	21.1
52.5°	26.8	26.0	23.5	23.5	21.9	21.1	19.5	18.7	17.0	17.0	16.2
55°	21.9	20.3	18.7	17.9	17.0	16.2	14.6	13.8	13.0	12.2	11.4
57.5°	17.0	16.2	14.6	13.8	13.0	12.2	10.6	9.7	8.9	8.9	8.1
60°	13.0	12.2	10.6	10.6	8.9	8.1	8.1	7.3	7.3	7.3	6.5
62.5°	9.7	8.9	8.1	7.3	6.5	6.5	6.5	6.5	5.7	5.7	5.7
65°	6.5	6.5	5.7	5.7	5.7	5.7	5.7	4.9	4.9	4.9	4.9
67.5°	4.9	4.9	4.9	4.9	4.9	4.1	4.1	4.1	4.1	4.1	4.1
70°	4.1	4.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	2.4
72.5°	3.2	3.2	3.2	3.2	2.4	2.4	2.4	2.4	2.4	2.4	2.4
75°	2.4	2.4	2.4	2.4	2.4	2.4	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	0.8
80°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
82.5°	1.6	1.6	1.6	1.6	1.6	1.6	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	0.8
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°	592.5	592.5	592.5	592.5
2.5°	496.7	503.2	495.1	488.6
5°	412.3	415.5	407.4	400.9
7.5°	336.8	337.6	330.3	324.6
10°	277.6	276.7	271.1	267.0
12.5°	230.5	229.7	224.8	221.6
15°	193.2	194.0	190.7	189.1
17.5°	166.4	166.4	163.1	162.3
20°	143.6	144.5	142.0	139.6
22.5°	126.6	126.6	125.0	122.5
25°	111.2	111.2	109.6	107.9
27.5°	99.0	99.8	98.2	95.8
30°	88.5	88.5	86.8	85.2
32.5°	77.9	77.9	77.1	75.5
35°	67.4	68.2	66.5	64.9
37.5°	59.2	59.2	58.4	56.8
40°	50.3	51.1	50.3	48.7
42.5°	42.2	42.2	42.2	41.4
45°	33.3	34.1	33.3	32.5
47.5°	26.8	26.8	26.8	26.0
50°	20.3	21.1	20.3	19.5
52.5°	15.4	15.4	14.6	14.6
55°	11.4	10.6	10.6	9.7
57.5°	8.1	8.1	8.1	7.3
60°	6.5	6.5	6.5	6.5
62.5°	5.7	5.7	5.7	5.7
65°	4.9	4.9	4.9	4.1
67.5°	3.2	3.2	3.2	3.2
70°	2.4	2.4	2.4	2.4
72.5°	2.4	2.4	1.6	1.6
75°	1.6	1.6	1.6	1.6
77.5°	0.8	0.8	0.8	0.8
80°	0.8	0.8	0.8	0.8
82.5°	0.8	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)