

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: P130217

Luminaire Tested: **HL612ICAT - HLM6940 - HL6NFL - 456P**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130217  
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 - HLM6940 - 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 / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1549.0 lumens  
Efficiency: N/A  
Efficacy: 81.1 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

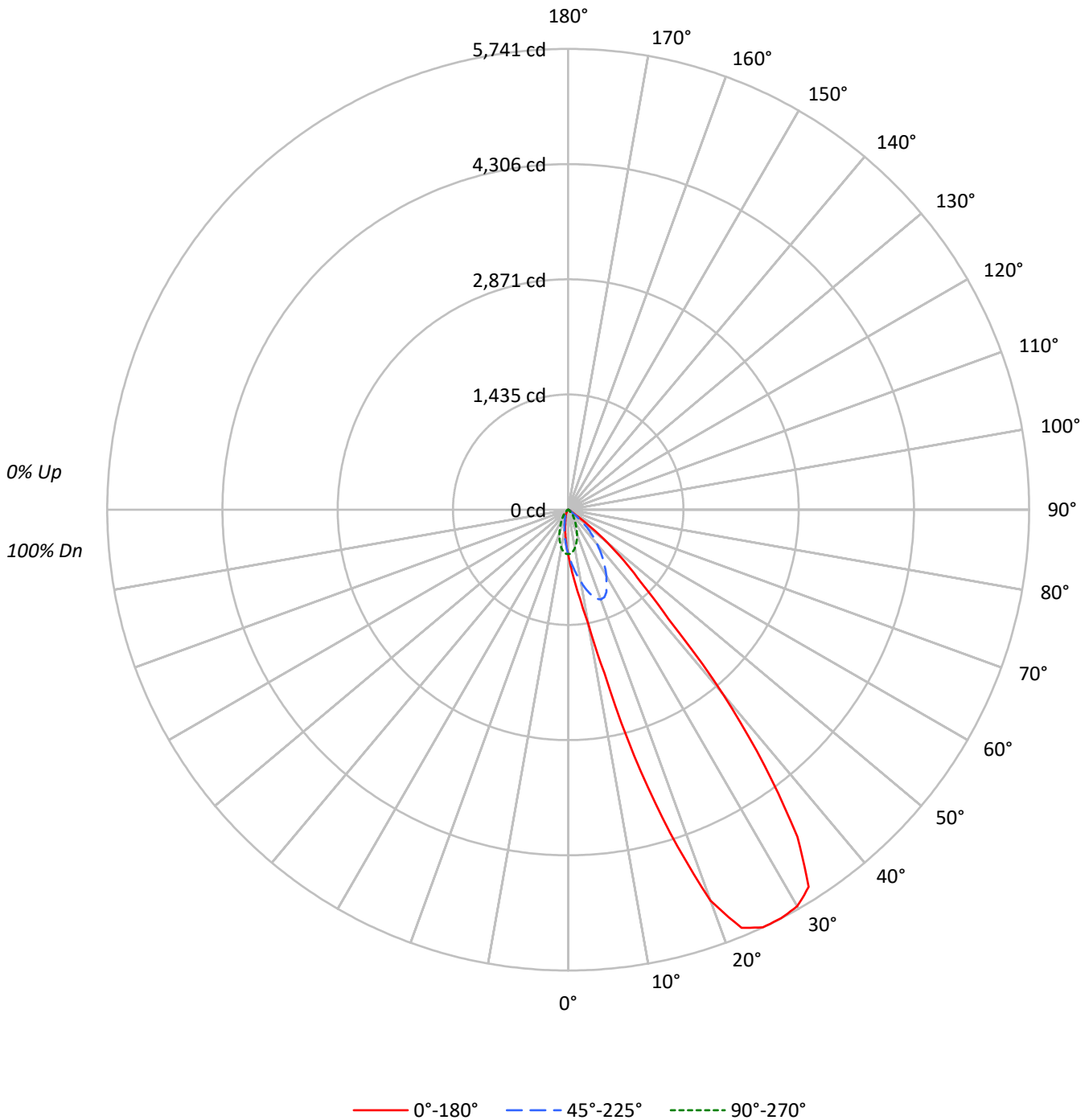
Input Watts (W): 19.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	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°	32854	32854	32854
5°	51367	31422	20548
10°	83901	27930	12298
15°	183266	23364	7540
20°	300152	18482	5080
25°	336437	13859	3727
30°	340921	10177	2928
35°	305653	7452	2218
40°	191175	5422	1586
45°	85114	3381	860
50°	44637	2123	367
55°	8691	1365	68
60°	3164	842	74
65°	1853	387	153
70°	958	171	171
75°	197	197	104
80°	0	233	0
85°	0	288	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	55.1	3.6
10°-20°	235.0	15.2
20°-30°	504.3	32.6
30°-40°	485.3	31.3
40°-50°	215.2	13.9
50°-60°	42.7	2.8
60°-70°	8.4	0.5
70°-80°	2.0	0.1
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°	794.4	51.3
0°-40°	1279.7	82.6
0°-60°	1537.5	99.3
0°-90°	1549.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1549.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	550	550	550	550	550	
5°	877	722	537	395	351	101
15°	3177	1096	405	173	131	964
25°	5741	1127	236	83	64	2616
35°	4975	757	121	49	36	2936
45°	1276	381	51	20	13	1117
55°	115	41	18	5	1	180
65°	21	15	4	2	2	22
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°	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4
2.5°	703.5	673.4	654.4	667.3	657.0	658.7	645.0	647.6	646.7	630.4	624.3
5°	877.2	807.5	812.7	822.1	798.1	796.3	774.8	763.7	751.6	722.4	706.0
7.5°	1111.1	1050.9	1022.5	1013.9	975.2	958.0	926.2	892.7	859.1	817.0	784.3
10°	1449.1	1382.0	1326.9	1300.3	1225.5	1182.5	1115.4	1049.2	984.7	913.3	857.4
12.5°	2082.0	1910.9	1805.1	1723.4	1576.3	1467.1	1342.4	1223.7	1126.6	1012.2	922.8
15°	3176.8	2934.2	2690.0	2480.2	2143.9	1865.3	1626.2	1412.1	1257.3	1096.5	972.6
17.5°	4225.1	3992.9	3746.1	3481.2	2993.6	2448.4	1953.9	1617.6	1369.9	1160.1	1001.9
20°	5182.2	4882.1	4585.4	4274.1	3691.0	3077.0	2332.3	1787.9	1448.2	1191.1	1003.6
22.5°	5638.0	5434.2	5176.2	4855.4	4173.5	3450.2	2585.1	1881.6	1472.3	1178.2	975.2
25°	5741.2	5598.4	5403.2	5135.8	4407.4	3603.3	2643.6	1856.7	1431.0	1127.4	921.0
27.5°	5738.6	5600.2	5430.8	5165.9	4390.2	3525.0	2486.2	1730.3	1332.1	1028.5	854.0
30°	5705.1	5570.1	5345.6	4990.4	4144.2	3222.3	2186.1	1553.1	1204.8	953.7	781.7
32.5°	5573.5	5407.5	5055.8	4552.7	3668.7	2710.6	1835.2	1354.5	1072.4	851.4	705.2
35°	4975.0	4887.2	4391.0	3857.0	2956.6	2082.9	1498.9	1154.9	931.4	756.8	622.6
37.5°	4015.2	3955.0	3519.9	2972.1	2160.3	1618.5	1225.5	993.3	807.5	661.3	539.2
40°	3000.5	2901.6	2494.8	2051.0	1568.6	1259.9	1002.7	829.9	691.4	559.8	457.5
42.5°	1853.2	1859.3	1615.0	1443.0	1179.0	987.3	817.0	687.1	577.9	466.1	375.8
45°	1276.2	1270.2	1172.1	1069.0	909.9	805.8	665.6	565.0	478.1	381.0	304.4
47.5°	940.0	936.5	884.9	812.7	714.6	626.9	529.7	445.5	362.9	285.5	220.2
50°	632.9	630.4	596.0	559.8	487.6	426.5	351.7	278.6	222.7	168.6	126.4
52.5°	319.9	319.1	299.3	289.0	252.8	215.9	170.3	133.3	108.4	80.0	58.5
55°	115.2	118.7	115.2	109.2	95.5	81.7	65.4	55.9	48.2	41.3	37.0
57.5°	54.2	52.5	50.7	49.0	45.6	42.1	38.7	37.0	35.3	32.7	31.0
60°	38.7	37.8	37.0	37.0	34.4	33.5	31.0	30.1	28.4	25.8	24.1
62.5°	29.2	28.4	28.4	27.5	26.7	25.8	24.1	23.2	22.4	20.6	18.9
65°	20.6	20.6	20.6	21.5	19.8	18.9	18.1	17.2	16.3	14.6	13.8
67.5°	14.6	13.8	13.8	14.6	13.8	13.8	12.0	12.0	11.2	10.3	9.5
70°	9.5	9.5	8.6	8.6	8.6	7.7	7.7	6.9	6.9	6.0	5.2
72.5°	5.2	5.2	4.3	4.3	4.3	4.3	3.4	3.4	3.4	3.4	2.6
75°	1.7	0.9	0.9	0.9	0.9	1.7	0.9	1.7	1.7	1.7	1.7
77.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.7	1.7
80°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.7	1.7
82.5°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	1.7	1.7
85°	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	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°	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4
2.5°	608.9	599.4	588.2	583.9	571.0	563.3	553.8	550.4	541.8	525.4	519.4
5°	682.0	653.6	631.2	620.9	589.9	571.0	551.2	536.6	517.7	492.8	477.3
7.5°	741.3	700.0	663.9	642.4	598.5	567.6	537.5	513.4	486.7	454.1	432.6
10°	797.2	735.3	685.4	652.7	595.1	548.7	514.3	482.4	450.6	410.2	385.3
12.5°	838.5	757.6	694.9	648.4	580.5	531.5	485.0	445.5	410.2	367.2	339.7
15°	862.6	766.2	688.8	631.2	556.4	500.5	448.0	405.0	364.6	322.5	293.3
17.5°	866.9	755.9	668.2	602.8	523.7	461.8	398.2	362.9	320.8	280.4	250.3
20°	852.2	733.6	638.1	567.6	483.3	418.8	365.5	319.1	277.8	238.2	211.6
22.5°	819.6	696.6	597.7	523.7	437.7	374.9	320.8	275.2	236.5	201.2	177.2
25°	773.1	649.3	550.4	474.7	391.3	329.4	277.8	236.5	202.1	170.3	149.6
27.5°	711.2	594.2	494.5	424.0	344.0	287.2	237.4	200.4	171.1	143.6	126.4
30°	651.9	535.8	440.3	370.6	298.4	246.8	203.0	170.3	144.5	123.0	108.4
32.5°	582.2	476.4	385.3	322.5	255.4	209.0	171.1	144.5	123.0	104.9	92.9
35°	508.2	411.9	329.4	273.5	215.9	174.6	143.6	121.3	104.1	89.4	80.0
37.5°	436.9	350.0	277.8	227.9	178.0	146.2	119.5	103.2	87.7	76.5	67.9
40°	364.6	289.8	227.0	185.8	146.2	120.4	98.9	85.1	73.1	63.6	56.8
42.5°	299.3	234.8	184.9	149.6	117.0	96.3	79.1	67.9	57.6	49.9	44.7
45°	237.4	184.9	141.9	112.7	86.0	70.5	58.5	50.7	43.9	38.7	35.3
47.5°	169.4	126.4	93.7	73.1	58.5	47.3	40.4	37.8	34.4	31.0	28.4
50°	92.9	70.5	55.0	46.4	39.6	36.1	32.7	30.1	27.5	24.1	20.6
52.5°	49.9	42.1	37.0	35.3	31.8	29.2	25.8	23.2	20.6	18.1	16.3
55°	35.3	32.7	30.1	28.4	24.9	22.4	19.8	18.1	16.3	14.6	12.9
57.5°	28.4	25.8	24.1	22.4	19.8	17.2	15.5	13.8	12.9	11.2	9.5
60°	22.4	20.6	18.9	17.2	15.5	13.8	12.0	10.3	9.5	7.7	6.9
62.5°	17.2	15.5	13.8	12.9	11.2	10.3	8.6	7.7	6.0	5.2	4.3
65°	12.0	11.2	10.3	8.6	7.7	6.9	5.2	4.3	4.3	3.4	2.6
67.5°	8.6	6.9	6.9	6.0	5.2	4.3	3.4	2.6	2.6	2.6	1.7
70°	5.2	4.3	3.4	3.4	2.6	2.6	1.7	1.7	1.7	1.7	1.7
72.5°	2.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
75°	1.7	1.7	1.7	1.7	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°	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°	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4	550.4
2.5°	509.1	497.9	488.5	491.9	485.0	472.1	473.8	457.5	460.1	458.4	452.3
5°	459.2	442.9	426.5	422.2	402.5	394.7	391.3	368.9	372.4	360.3	358.6
7.5°	408.5	386.1	368.1	356.9	345.7	325.9	319.1	301.9	297.6	291.5	281.2
10°	357.8	332.0	319.1	296.7	281.2	264.0	252.0	239.1	233.9	227.0	218.4
12.5°	308.7	282.9	261.4	245.1	231.3	213.3	203.8	191.8	186.6	179.7	172.9
15°	262.3	237.4	217.6	201.2	187.5	172.9	162.5	151.4	147.1	141.9	136.7
17.5°	221.9	198.7	178.9	166.0	153.1	141.9	134.2	123.8	118.7	115.2	110.9
20°	185.8	164.3	147.9	137.6	127.3	117.0	110.9	102.3	98.9	95.5	91.2
22.5°	154.8	137.6	123.8	117.0	106.6	98.0	92.9	86.9	82.6	80.0	76.5
25°	130.7	117.0	105.8	98.9	90.3	83.4	78.3	73.1	70.5	67.9	66.2
27.5°	110.9	99.8	90.3	84.3	77.4	72.2	67.9	63.6	61.9	59.3	57.6
30°	96.3	86.0	78.3	73.1	67.9	63.6	60.2	56.8	55.0	52.5	50.7
32.5°	83.4	74.8	68.8	65.4	60.2	56.8	53.3	49.9	48.2	45.6	43.9
35°	71.4	64.5	60.2	57.6	52.5	49.0	46.4	43.0	41.3	38.7	37.8
37.5°	61.9	55.9	51.6	48.2	43.9	41.3	37.8	35.3	34.4	32.7	31.8
40°	51.6	45.6	42.1	38.7	35.3	33.5	31.8	29.2	28.4	27.5	25.8
42.5°	39.6	36.1	33.5	31.8	29.2	26.7	24.9	22.4	21.5	20.6	18.9
45°	31.8	30.1	26.7	24.1	21.5	19.8	18.1	16.3	15.5	14.6	13.8
47.5°	24.9	22.4	19.8	18.1	16.3	15.5	13.8	12.9	12.0	11.2	10.3
50°	18.9	17.2	15.5	14.6	12.9	11.2	10.3	8.6	7.7	7.7	6.9
52.5°	14.6	13.8	12.0	10.3	9.5	8.6	6.9	6.0	5.2	4.3	3.4
55°	11.2	10.3	8.6	7.7	6.0	5.2	4.3	3.4	2.6	1.7	0.9
57.5°	8.6	6.9	6.0	5.2	4.3	2.6	2.6	1.7	0.9	0.9	0.9
60°	5.2	4.3	3.4	2.6	2.6	1.7	1.7	1.7	1.7	0.9	0.9
62.5°	3.4	2.6	2.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
65°	2.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
67.5°	1.7	1.7	1.7	2.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
70°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
72.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
75°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9
77.5°	1.7	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9
80°	1.7	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9
82.5°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9
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°	550.4	550.4	550.4	550.4
2.5°	450.6	451.5	447.2	454.1
5°	357.8	355.2	355.2	350.9
7.5°	279.5	276.1	273.5	273.5
10°	216.7	215.9	210.7	212.4
12.5°	169.4	168.6	164.3	166.0
15°	134.2	133.3	129.9	130.7
17.5°	108.4	106.6	105.8	105.8
20°	89.4	87.7	86.9	87.7
22.5°	75.7	74.8	74.0	74.0
25°	64.5	64.5	63.6	63.6
27.5°	56.8	55.9	55.0	55.0
30°	49.9	49.0	49.0	49.0
32.5°	43.0	42.1	42.1	42.1
35°	36.1	36.1	36.1	36.1
37.5°	31.0	31.0	31.0	31.0
40°	25.8	24.9	24.9	24.9
42.5°	18.1	18.1	17.2	17.2
45°	13.8	12.9	12.9	12.9
47.5°	9.5	8.6	8.6	8.6
50°	6.0	5.2	5.2	5.2
52.5°	2.6	2.6	2.6	2.6
55°	0.9	0.9	0.9	0.9
57.5°	0.9	0.9	0.9	0.9
60°	0.9	0.9	0.9	0.9
62.5°	1.7	1.7	1.7	1.7
65°	1.7	1.7	1.7	1.7
67.5°	1.7	1.7	1.7	1.7
70°	1.7	1.7	1.7	1.7
72.5°	0.9	0.9	0.9	0.9
75°	0.9	0.9	0.9	0.9
77.5°	0.9	0.9	0.9	0.9
80°	0.9	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)