

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: P130198

Luminaire Tested: **HL612ICAT - HLM6930 - HL6NFL - 455H**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P130198  
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 - HLM6930 - 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 / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1535.3 lumens  
Efficiency: N/A  
Efficacy: 80.4 lumens/watt  
Spacing Criteria (0/90/45): 1.94 / 0.73 / 1.15  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

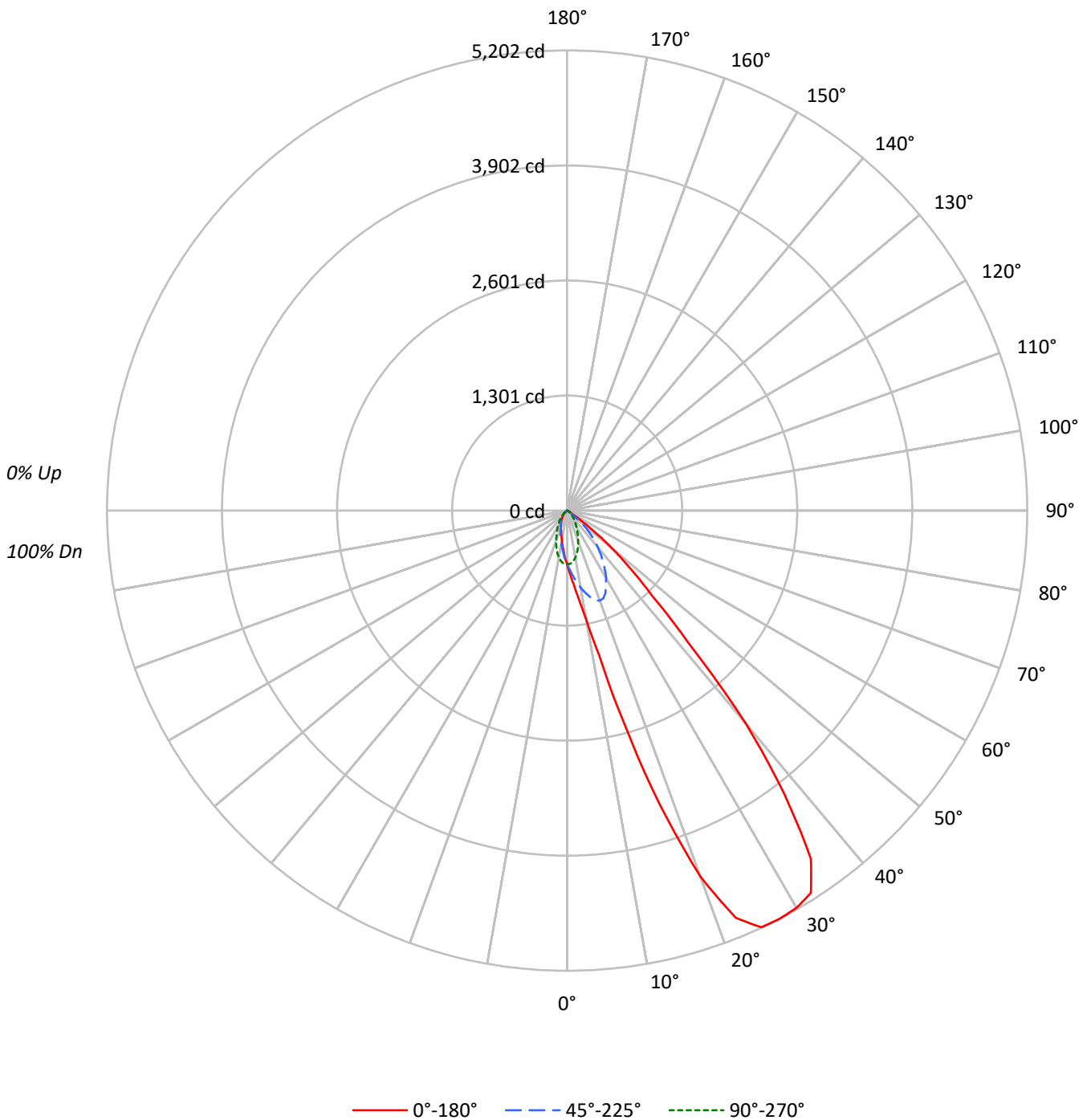
Input Watts (W): 19.1  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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

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

	0°	90°	180°
0°	36161	36161	36161
5°	48866	34701	26960
10°	72628	31115	19720
15°	143432	26335	15028
20°	254905	21036	11937
25°	304564	16226	9663
30°	309883	12453	7810
35°	295233	9554	6070
40°	200280	7283	4511
45°	90096	5082	3161
50°	47063	3456	1862
55°	11203	2346	883
60°	3368	1529	384
65°	2168	837	144
70°	1180	313	81
75°	359	185	0
80°	0	219	0
85°	0	271	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	59.3	3.9
10°-20°	225.7	14.7
20°-30°	476.2	31.0
30°-40°	479.3	31.2
40°-50°	227.6	14.8
50°-60°	52.7	3.4
60°-70°	11.2	0.7
70°-80°	2.3	0.2
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°	761.2	49.6
0°-40°	1240.5	80.8
0°-60°	1520.8	99.1
0°-90°	1535.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1535.3	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	606	606	606	606	606	
5°	834	740	593	487	460	92
15°	2486	1014	456	285	260	790
25°	5197	1025	277	172	165	2343
35°	4805	705	156	107	99	2820
45°	1351	368	76	54	47	1185
55°	148	47	31	19	12	203
65°	24	18	9	4	2	24
75°	3	2	2	2	0	4
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°	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8
2.5°	710.0	689.8	698.4	680.5	699.9	684.4	684.4	678.2	674.3	668.8	653.3
5°	834.5	808.8	815.8	804.9	810.4	790.9	782.4	765.3	768.4	739.6	713.1
7.5°	1001.7	965.1	976.8	944.9	942.6	917.7	893.6	862.5	836.0	811.9	772.3
10°	1254.4	1206.2	1207.8	1154.1	1141.7	1084.9	1039.0	977.6	924.7	885.0	822.0
12.5°	1673.6	1584.9	1571.7	1472.2	1420.8	1304.2	1205.4	1108.2	1019.6	951.1	864.8
15°	2486.3	2359.5	2255.3	2013.5	1837.7	1615.3	1421.6	1260.6	1128.4	1014.1	900.6
17.5°	3484.9	3312.2	3192.4	2866.6	2519.7	2030.6	1689.2	1413.1	1212.4	1061.6	920.0
20°	4401.0	4178.6	3985.7	3606.2	3190.1	2632.5	1933.4	1546.8	1272.3	1082.6	914.6
22.5°	4982.7	4812.4	4628.8	4179.3	3672.3	2994.1	2211.0	1633.2	1291.8	1071.7	884.2
25°	5197.3	5044.1	4946.9	4495.9	3947.6	3229.0	2294.2	1637.0	1263.0	1025.0	843.0
27.5°	5202.0	5065.1	5016.9	4579.8	3994.2	3140.3	2216.4	1553.1	1192.2	941.8	787.0
30°	5185.7	5048.0	4966.4	4464.7	3815.4	2924.9	2002.6	1405.3	1095.0	882.7	724.0
32.5°	5125.0	4954.7	4755.6	4145.9	3442.1	2502.6	1704.7	1241.2	972.1	794.8	663.4
35°	4805.4	4588.4	4257.1	3609.3	2861.9	1981.6	1399.9	1067.8	853.1	704.6	578.6
37.5°	4023.0	3841.8	3526.8	2898.5	2130.1	1515.0	1163.4	919.2	742.7	621.4	506.3
40°	3143.4	2935.0	2567.2	2037.6	1554.6	1191.4	949.6	774.6	642.4	536.6	432.4
42.5°	2022.0	1931.0	1710.9	1410.0	1150.2	941.0	773.0	650.2	542.8	448.7	359.3
45°	1350.9	1286.3	1195.3	1033.6	885.8	758.3	638.5	535.8	448.7	367.8	294.0
47.5°	970.6	914.6	878.0	783.9	689.8	602.7	512.5	424.6	345.3	280.7	220.1
50°	667.3	624.5	608.9	551.4	477.5	413.0	341.4	281.5	222.4	176.5	134.5
52.5°	367.1	344.5	337.5	307.2	272.2	227.1	179.6	143.1	112.8	88.7	70.0
55°	148.5	143.9	136.9	126.0	109.7	87.9	75.4	62.2	52.9	47.4	43.6
57.5°	59.9	57.5	56.8	52.9	49.8	45.1	42.0	39.7	38.1	37.3	35.8
60°	41.2	39.7	38.9	37.3	36.6	35.0	33.4	32.7	31.1	30.3	28.8
62.5°	31.1	30.3	30.3	28.8	28.8	28.0	27.2	25.7	24.9	24.1	22.6
65°	24.1	23.3	22.6	22.6	21.8	21.8	21.0	20.2	18.7	17.9	16.3
67.5°	17.1	17.1	16.3	16.3	15.6	15.6	14.8	14.0	13.2	12.4	11.7
70°	11.7	10.9	10.9	10.9	10.9	10.1	10.1	9.3	8.6	8.6	7.8
72.5°	7.0	7.0	7.0	6.2	6.2	6.2	5.4	5.4	5.4	4.7	4.7
75°	3.1	3.1	3.1	3.1	3.1	2.3	2.3	2.3	2.3	2.3	2.3
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6
80°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6
82.5°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	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°	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8
2.5°	647.0	645.5	629.9	622.9	621.4	615.2	612.8	605.0	577.0	578.6	581.7
5°	698.4	684.4	659.5	643.2	632.3	618.3	606.6	592.6	569.3	551.4	547.5
7.5°	742.7	717.0	681.3	655.6	633.8	611.3	590.3	568.5	541.3	518.7	507.8
10°	779.3	741.1	691.4	655.6	625.3	594.2	566.2	537.4	503.9	477.5	464.3
12.5°	802.6	751.3	689.8	643.9	605.0	564.6	533.5	500.8	463.5	433.2	417.6
15°	816.6	747.4	677.4	620.6	574.7	528.8	493.1	456.5	417.6	386.5	369.4
17.5°	815.8	745.8	654.0	590.3	537.4	486.8	448.0	409.8	372.5	340.6	322.0
20°	796.4	707.7	619.0	552.2	497.7	442.5	400.5	363.2	325.9	297.1	279.2
22.5°	760.6	668.0	578.6	507.1	451.1	399.0	354.6	317.3	283.9	258.2	245.0
25°	718.6	622.2	535.1	457.3	403.6	351.5	311.1	276.9	247.3	224.0	213.1
27.5°	667.3	572.4	485.3	411.4	355.4	308.0	269.9	241.1	213.9	196.0	185.1
30°	605.0	517.9	429.3	364.0	310.3	267.5	232.5	208.4	185.9	169.5	163.3
32.5°	544.4	458.1	375.6	315.0	268.3	229.4	199.9	179.6	162.5	148.5	142.3
35°	482.2	396.6	325.9	268.3	229.4	195.2	172.6	155.5	140.8	129.9	125.2
37.5°	416.8	339.9	276.9	227.1	192.9	164.9	144.7	136.9	121.3	112.0	108.9
40°	349.2	283.9	231.8	191.3	161.8	139.2	124.4	114.3	103.4	98.0	94.9
42.5°	290.1	232.5	190.5	157.1	134.5	115.9	104.2	95.7	85.5	81.7	79.3
45°	233.3	185.9	150.1	124.4	105.8	91.8	82.4	76.2	70.0	66.1	64.5
47.5°	171.1	133.8	107.3	89.4	76.2	68.4	62.2	59.9	56.0	54.4	52.9
50°	104.2	83.2	69.2	59.9	54.4	52.1	49.8	49.0	45.9	44.3	42.0
52.5°	59.1	52.9	47.4	45.1	44.3	42.8	40.4	38.9	35.8	34.2	33.4
55°	41.2	40.4	38.9	37.3	35.8	33.4	31.9	31.1	28.8	28.0	26.4
57.5°	35.0	32.7	31.1	28.8	28.0	26.4	25.7	24.9	23.3	21.8	21.0
60°	27.2	25.7	24.1	23.3	22.6	21.0	19.4	18.7	17.1	16.3	15.6
62.5°	21.0	20.2	18.7	17.9	17.1	16.3	14.8	14.0	13.2	11.7	10.1
65°	15.6	14.8	14.0	13.2	12.4	11.7	10.1	9.3	8.6	7.8	7.0
67.5°	10.9	10.9	9.3	8.6	8.6	7.0	6.2	5.4	4.7	4.7	3.9
70°	7.0	7.0	6.2	5.4	4.7	3.9	3.9	3.1	3.1	3.1	2.3
72.5°	3.9	3.1	3.1	3.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3
75°	2.3	1.6	1.6	2.3	2.3	2.3	2.3	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°	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8	605.8
2.5°	577.8	566.2	559.9	553.7	553.7	549.1	551.4	540.5	542.8	536.6	535.8
5°	537.4	534.3	508.6	500.8	488.4	486.8	489.2	475.2	473.6	467.4	462.0
7.5°	494.6	475.2	459.6	447.2	439.4	430.8	418.4	415.3	411.4	406.7	401.3
10°	448.0	426.2	408.3	393.5	388.8	377.2	371.0	361.6	355.4	350.0	346.1
12.5°	399.0	376.4	360.1	344.5	338.3	327.4	322.7	313.4	308.0	302.5	301.0
15°	349.2	329.0	311.1	299.4	292.4	284.6	280.7	270.6	269.1	264.4	261.3
17.5°	304.9	286.2	270.6	261.3	255.1	247.3	245.8	238.0	236.4	234.1	231.0
20°	263.6	248.9	235.6	227.9	224.0	219.3	217.0	211.5	210.0	208.4	206.9
22.5°	230.2	217.8	210.0	201.4	198.3	194.4	192.9	187.4	186.6	186.6	184.3
25°	200.6	191.3	184.3	177.3	175.8	171.9	171.9	167.2	168.0	166.4	165.6
27.5°	177.3	168.8	162.5	157.1	156.3	154.0	153.2	150.1	150.1	149.3	147.8
30°	155.5	149.3	143.9	140.0	140.0	137.7	137.7	134.5	133.8	133.0	133.0
32.5°	136.9	133.0	129.1	124.4	125.2	122.1	122.1	119.0	117.4	116.7	115.1
35°	119.8	117.4	113.5	110.4	110.4	107.3	105.8	102.7	101.9	101.1	100.3
37.5°	105.0	102.7	99.5	95.7	95.7	92.5	91.8	89.4	87.9	87.1	86.3
40°	91.0	88.7	85.5	81.7	81.7	78.5	77.8	76.2	75.4	73.9	73.1
42.5°	75.4	73.1	70.8	69.2	68.4	66.1	65.3	61.4	63.0	62.2	59.9
45°	62.2	61.4	59.1	56.8	56.0	53.7	52.1	49.8	49.0	49.0	47.4
47.5°	51.3	49.0	47.4	45.1	44.3	42.8	41.2	39.7	39.7	38.9	37.3
50°	40.4	38.9	38.1	35.8	35.0	33.4	32.7	31.1	30.3	28.8	28.0
52.5°	32.7	31.1	29.6	28.8	27.2	26.4	24.9	22.6	22.6	21.0	19.4
55°	25.7	24.1	22.6	21.8	20.2	18.7	17.9	16.3	14.8	14.0	13.2
57.5°	19.4	17.9	17.1	15.6	14.0	13.2	11.7	10.1	9.3	8.6	7.8
60°	14.0	13.2	11.7	10.1	9.3	8.6	7.8	6.2	6.2	5.4	5.4
62.5°	10.1	8.6	7.8	6.2	6.2	5.4	4.7	4.7	3.9	3.9	3.1
65°	6.2	5.4	4.7	4.7	3.9	3.9	3.1	3.1	2.3	2.3	2.3
67.5°	3.9	3.1	3.1	3.1	2.3	2.3	2.3	1.6	1.6	1.6	0.8
70°	2.3	2.3	2.3	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8
72.5°	2.3	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
75°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
77.5°	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8
80°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
82.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
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°	605.8	605.8	605.8	605.8
2.5°	534.3	528.8	527.3	536.6
5°	463.5	457.3	455.7	460.4
7.5°	400.5	392.7	395.1	395.8
10°	344.5	339.1	338.3	340.6
12.5°	296.3	292.4	292.4	296.3
15°	259.8	257.4	256.6	260.5
17.5°	228.6	227.9	227.9	231.0
20°	204.5	203.8	203.8	206.1
22.5°	182.8	182.8	182.8	183.5
25°	164.1	164.9	164.1	164.9
27.5°	147.0	147.8	147.8	147.8
30°	133.8	130.7	131.4	130.7
32.5°	114.3	113.5	114.3	114.3
35°	98.8	98.8	98.8	98.8
37.5°	84.8	84.8	84.8	84.8
40°	71.5	71.5	71.5	70.8
42.5°	59.1	59.1	59.1	58.3
45°	46.7	46.7	46.7	47.4
47.5°	36.6	36.6	35.8	36.6
50°	27.2	26.4	26.4	26.4
52.5°	19.4	18.7	17.9	17.9
55°	12.4	11.7	11.7	11.7
57.5°	7.8	7.8	7.0	7.0
60°	4.7	4.7	4.7	4.7
62.5°	3.1	3.1	3.1	2.3
65°	1.6	1.6	1.6	1.6
67.5°	0.8	0.8	0.8	0.8
70°	0.8	0.8	0.8	0.8
72.5°	0.8	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)