

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: P130203

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

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130203
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33468)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6935 - HL6NFL - 455SC
Description: HALO ALLSLOPE 6" 21W, Specular Clear Reflector, 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: 1620.1 lumens
Efficiency: N/A
Efficacy: 84.8 lumens/watt
Spacing Criteria (0/90/45): 1.96 / 0.82 / 1.16
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

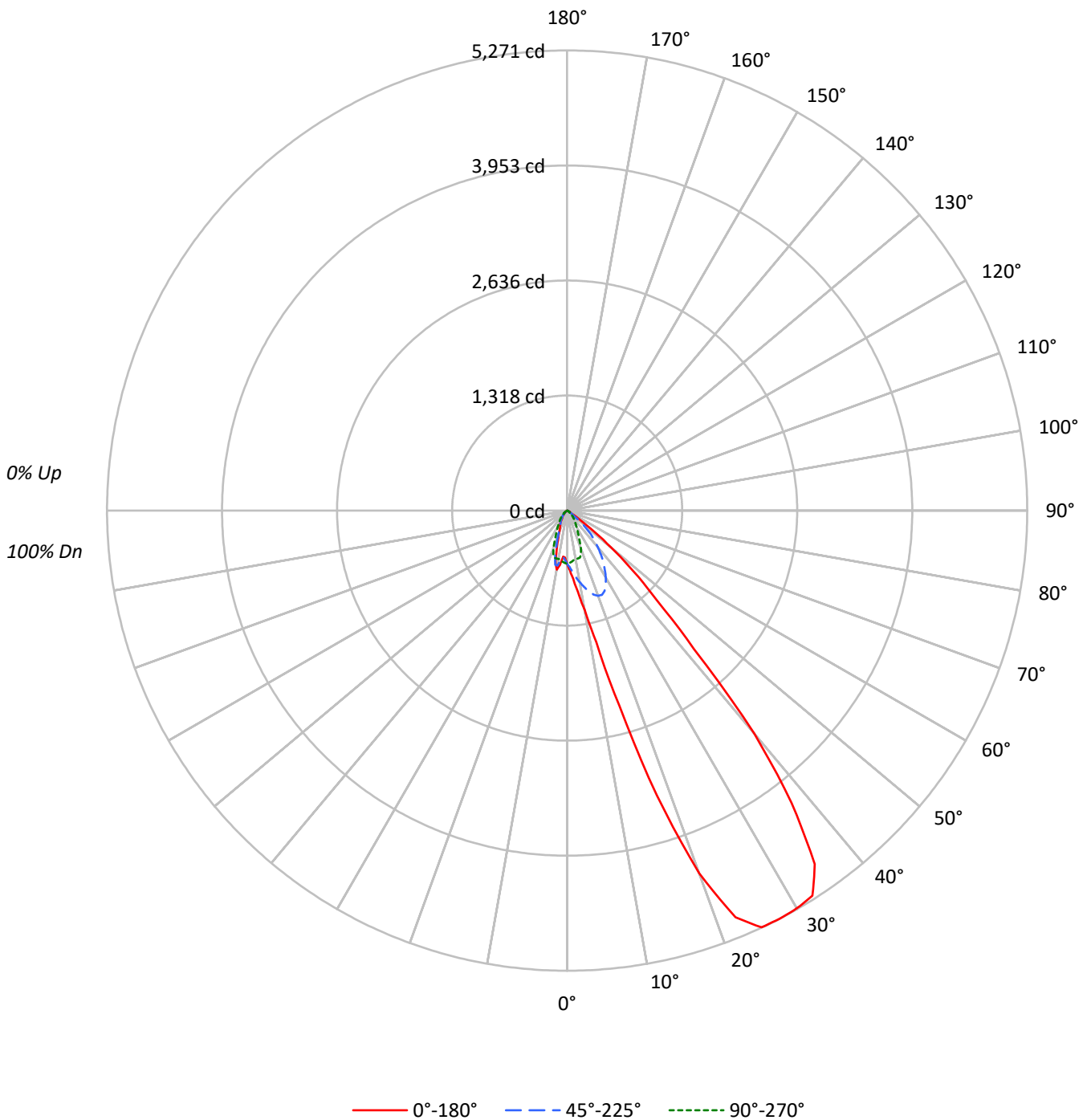
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	96	92	104	98	94	91	95	92	89	92	89	87	89	87	85	83					83			
3	99	92	86	81	97	90	85	81	88	83	79	85	81	78	83	80	77	75					75			
4	93	84	78	73	91	83	77	72	81	75	71	79	74	70	77	73	70	68					68			
5	87	77	70	65	85	76	70	65	74	69	64	73	68	64	71	67	63	61					61			
6	81	71	64	59	80	70	64	59	69	63	58	67	62	58	66	61	57	56					56			
7	76	65	58	53	75	65	58	53	63	57	53	62	57	53	61	56	52	51					51			
8	72	60	53	49	70	60	53	49	59	53	48	58	52	48	57	52	48	46					46			
9	67	56	49	44	66	55	49	44	54	48	44	53	48	44	53	48	44	42					42			
10	63	52	45	41	62	52	45	41	51	45	41	50	44	40	49	44	40	39					39			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	36393	36393	36393
5°	45774	34514	30948
10°	67024	32574	39765
15°	133515	32219	26272
20°	255925	26469	15048
25°	308642	17697	10941
30°	314443	12758	8539
35°	303785	9627	5935
40°	212424	7295	4345
45°	96426	5142	2868
50°	46492	3265	1834
55°	9860	2142	430
60°	3319	1463	0
65°	1970	801	0
70°	1069	161	0
75°	278	185	0
80°	0	219	0
85°	0	271	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	63.7	3.9
10°-20°	248.1	15.3
20°-30°	495.2	30.6
30°-40°	505.4	31.2
40°-50°	243.1	15.0
50°-60°	51.7	3.2
60°-70°	10.0	0.6
70°-80°	1.9	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°	807.1	49.8
0°-40°	1312.4	81.0
0°-60°	1607.2	99.2
0°-90°	1620.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1620.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	610	610	610	610	610	
5°	782	706	589	532	528	86
15°	2314	957	558	527	455	763
25°	5267	1016	302	192	187	2372
35°	4945	722	157	111	97	2912
45°	1446	383	77	51	43	1256
55°	131	50	28	19	6	192
65°	22	17	9	1	0	23
75°	2	2	2	1	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°	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7
2.5°	681.9	673.8	669.7	672.2	677.0	670.5	668.1	665.7	665.7	646.2	650.2
5°	781.7	768.8	759.0	763.1	768.8	752.5	746.8	737.9	731.4	706.3	703.8
7.5°	935.2	910.0	900.3	896.2	889.7	860.5	845.1	828.0	803.7	769.6	755.8
10°	1157.6	1132.4	1112.1	1091.9	1074.0	1011.5	972.5	933.6	887.3	832.9	803.7
12.5°	1543.2	1479.1	1417.4	1385.7	1307.0	1207.1	1139.7	1061.0	983.1	894.6	845.9
15°	2314.4	2204.0	2027.8	1898.8	1696.6	1518.9	1329.7	1211.2	1082.1	957.1	883.2
17.5°	3420.9	3284.5	3072.6	2752.8	2398.0	1915.0	1601.7	1365.4	1180.3	1008.2	908.4
20°	4418.6	4276.5	3976.1	3639.2	3164.3	2474.3	1899.6	1531.8	1254.2	1039.1	914.1
22.5°	5043.6	4973.8	4710.0	4317.1	3761.0	2967.1	2162.6	1610.6	1285.9	1044.0	898.6
25°	5266.9	5232.0	5041.2	4694.6	4114.1	3238.2	2286.0	1640.6	1268.0	1015.5	861.3
27.5°	5270.9	5264.4	5129.7	4809.0	4201.8	3260.1	2244.6	1583.0	1212.0	957.1	806.9
30°	5262.0	5256.3	5104.5	4735.1	4055.7	3059.6	2057.9	1455.5	1126.8	883.2	749.3
32.5°	5229.5	5191.4	4942.2	4442.9	3685.5	2639.9	1781.9	1296.4	1014.7	804.5	680.3
35°	4944.6	4889.4	4490.0	3873.0	3089.7	2113.9	1492.9	1123.5	890.5	721.7	605.6
37.5°	4222.9	4140.9	3732.6	3115.6	2328.2	1634.9	1233.1	962.0	776.9	634.0	528.5
40°	3334.0	3195.2	2816.9	2220.2	1706.4	1279.4	1012.3	817.5	672.2	545.5	451.4
42.5°	2151.2	2208.1	1843.6	1549.7	1278.6	1022.9	832.9	686.8	567.4	462.7	376.7
45°	1445.8	1456.3	1294.0	1134.9	982.3	816.7	682.7	572.3	473.3	383.2	309.3
47.5°	1032.6	1041.5	960.3	856.4	741.2	639.7	542.3	445.7	368.6	290.6	230.5
50°	659.2	673.0	624.3	553.6	493.6	429.4	359.6	287.4	233.8	178.6	137.2
52.5°	338.5	355.6	316.6	302.0	255.7	220.0	183.5	143.7	117.7	90.9	73.9
55°	130.7	139.6	126.6	112.8	100.7	89.3	74.7	63.3	56.8	49.5	45.5
57.5°	59.3	58.4	55.2	52.8	50.3	46.3	43.8	40.6	39.0	36.5	36.5
60°	40.6	40.6	39.0	39.0	37.3	35.7	34.1	32.5	31.7	29.2	29.2
62.5°	29.2	30.0	29.2	29.2	29.2	27.6	26.8	25.2	25.2	23.5	22.7
65°	21.9	22.7	21.9	21.9	21.9	21.1	20.3	19.5	18.7	17.0	16.2
67.5°	15.4	16.2	15.4	15.4	15.4	14.6	14.6	13.8	13.0	12.2	11.4
70°	10.6	10.6	9.7	10.6	10.6	9.7	9.7	8.9	8.9	8.1	7.3
72.5°	6.5	6.5	5.7	5.7	5.7	5.7	5.7	4.9	4.9	4.1	3.2
75°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.6	1.6	1.6	1.6
77.5°	0.0	0.0	0.0	0.8	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	0.8	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°	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7
2.5°	647.8	645.4	637.3	628.3	624.3	621.0	603.2	600.7	603.2	590.2	594.2
5°	694.9	680.3	665.7	647.0	634.0	623.5	598.3	589.4	585.3	565.8	565.8
7.5°	735.5	712.7	686.0	657.5	636.4	618.6	586.9	572.3	566.6	548.0	550.4
10°	769.6	735.5	698.9	663.2	634.0	608.8	575.6	562.6	560.1	549.6	560.9
12.5°	794.7	745.2	700.6	654.3	621.0	598.3	569.9	563.4	565.8	566.6	584.5
15°	811.0	748.5	694.9	646.2	610.5	588.5	562.6	558.5	566.6	560.1	571.5
17.5°	815.0	742.8	682.7	631.6	593.4	569.1	540.6	526.0	524.4	502.5	493.6
20°	807.7	728.2	660.8	601.5	560.1	526.0	485.4	457.0	439.2	407.5	392.1
22.5°	785.8	698.1	621.8	554.4	500.1	457.8	407.5	373.4	349.1	319.0	299.5
25°	745.2	650.2	566.6	496.8	435.1	386.4	336.1	302.0	280.9	253.3	241.1
27.5°	694.1	593.4	507.4	435.9	374.2	324.7	281.7	251.7	233.0	211.9	202.9
30°	629.9	534.2	449.7	377.5	321.5	277.6	238.7	213.5	198.1	181.0	174.5
32.5°	569.9	471.6	396.2	326.3	275.2	236.2	204.6	183.5	171.3	156.7	151.0
35°	500.9	412.4	347.4	278.4	233.0	201.3	174.5	156.7	146.9	135.6	131.5
37.5°	431.9	351.5	288.2	239.5	197.3	172.1	150.2	133.9	125.8	117.7	117.7
40°	366.1	292.2	237.9	196.5	164.0	144.5	126.6	114.5	108.0	101.5	99.8
42.5°	301.2	241.9	194.8	160.7	135.6	120.1	105.5	96.6	90.9	85.2	82.8
45°	241.9	194.8	155.1	127.5	108.0	95.0	84.4	77.1	73.9	69.0	66.6
47.5°	177.0	141.3	113.7	90.9	79.6	71.4	64.1	59.3	57.6	54.4	52.8
50°	108.0	88.5	73.1	61.7	56.0	52.8	48.7	46.3	45.5	43.0	41.4
52.5°	62.5	54.4	49.5	45.5	43.0	41.4	39.0	36.5	35.7	32.5	32.5
55°	43.0	40.6	39.0	37.3	34.9	32.5	30.0	28.4	28.4	26.0	26.0
57.5°	34.1	32.5	30.8	28.4	26.8	26.0	24.4	22.7	22.7	21.1	19.5
60°	27.6	25.2	24.4	22.7	21.1	20.3	18.7	17.9	17.0	15.4	14.6
62.5°	21.1	19.5	19.5	17.9	17.0	15.4	13.8	13.0	12.2	10.6	10.6
65°	15.4	14.6	13.8	13.0	12.2	10.6	9.7	8.9	7.3	6.5	5.7
67.5°	11.4	10.6	9.7	8.9	7.3	6.5	5.7	4.9	4.1	2.4	2.4
70°	6.5	5.7	5.7	4.9	3.2	3.2	2.4	1.6	1.6	1.6	1.6
72.5°	3.2	2.4	2.4	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°	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7	609.7
2.5°	591.8	588.5	572.3	566.6	567.4	565.8	563.4	564.2	552.0	552.8	551.2
5°	560.1	553.6	536.6	530.9	531.7	531.7	531.7	535.8	526.0	535.0	533.3
7.5°	548.0	548.8	540.6	547.1	559.3	570.7	578.8	596.7	598.3	615.3	619.4
10°	569.1	584.5	587.7	600.7	623.5	639.7	647.8	668.1	664.0	683.5	682.7
12.5°	599.1	608.0	607.2	617.8	625.1	635.6	634.0	638.1	623.5	625.1	617.0
15°	574.7	569.9	552.8	548.8	540.6	526.8	511.4	512.2	491.1	485.4	478.1
17.5°	481.4	472.5	441.6	418.9	407.5	393.7	377.5	390.5	357.2	353.9	348.3
20°	371.0	353.1	328.8	312.5	302.8	296.3	288.2	286.6	273.6	272.8	270.3
22.5°	282.5	270.3	253.3	243.5	239.5	232.2	227.3	226.5	218.4	218.4	215.1
25°	228.1	220.8	207.0	199.7	194.8	191.6	189.1	187.5	181.8	185.1	188.3
27.5°	193.2	185.9	174.5	168.9	165.6	164.8	165.6	167.2	165.6	170.5	171.3
30°	166.4	159.9	150.2	146.9	146.9	150.2	151.8	152.6	147.7	149.4	146.1
32.5°	145.3	140.4	134.8	134.8	134.8	134.8	131.5	127.5	120.1	119.3	115.3
35°	127.5	125.0	121.8	120.1	115.3	111.2	108.0	104.7	99.8	99.8	98.2
37.5°	112.0	110.4	104.7	101.5	97.4	94.2	92.5	91.7	89.3	90.1	87.7
40°	96.6	93.4	87.7	84.4	82.8	82.0	81.2	80.4	77.9	74.7	71.4
42.5°	79.6	76.3	72.2	71.4	69.0	68.2	64.9	60.1	56.8	56.8	55.2
45°	64.1	62.5	59.3	56.8	52.0	51.1	49.5	47.9	46.3	45.5	44.6
47.5°	51.1	49.5	45.5	43.0	40.6	40.6	39.8	39.0	36.5	35.7	35.7
50°	39.0	37.3	35.7	34.1	33.3	32.5	30.8	30.0	29.2	28.4	27.6
52.5°	30.8	30.0	28.4	27.6	26.0	25.2	23.5	22.7	21.1	20.3	19.5
55°	24.4	23.5	21.9	21.1	19.5	18.7	17.0	15.4	13.0	11.4	8.9
57.5°	18.7	17.9	16.2	14.6	13.0	11.4	9.7	7.3	4.9	2.4	0.8
60°	13.8	12.2	10.6	8.9	6.5	4.9	2.4	0.8	0.0	0.0	0.0
62.5°	8.9	7.3	5.7	4.1	2.4	0.8	0.8	0.8	0.0	0.0	0.0
65°	4.1	3.2	1.6	1.6	0.8	0.8	0.8	0.8	0.0	0.0	0.0
67.5°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
70°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
72.5°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0	0.0
75°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.0
77.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.0
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	0.8	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°	609.7	609.7	609.7	609.7
2.5°	555.3	556.1	551.2	539.0
5°	539.0	542.3	541.5	528.5
7.5°	629.9	638.9	638.9	625.9
10°	697.3	701.4	699.8	686.8
12.5°	624.3	628.3	617.8	613.7
15°	479.0	479.8	469.2	455.4
17.5°	348.3	352.3	346.6	336.9
20°	269.5	271.1	267.1	259.8
22.5°	215.9	215.9	215.9	210.3
25°	187.5	190.0	190.0	186.7
27.5°	173.7	176.2	176.2	172.9
30°	146.1	145.3	144.5	142.9
32.5°	113.7	113.7	112.8	108.0
35°	99.0	99.0	98.2	96.6
37.5°	90.1	90.1	89.3	86.9
40°	71.4	70.6	69.8	68.2
42.5°	56.0	55.2	54.4	53.6
45°	44.6	44.6	43.8	43.0
47.5°	35.7	35.7	34.9	34.1
50°	27.6	27.6	26.8	26.0
52.5°	18.7	17.9	17.0	16.2
55°	8.1	6.5	5.7	5.7
57.5°	0.0	0.0	0.0	0.0
60°	0.0	0.0	0.0	0.0
62.5°	0.0	0.0	0.0	0.0
65°	0.0	0.0	0.0	0.0
67.5°	0.0	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)