

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: P130070

Luminaire Tested: **HL618TAT - HLM6940 - HL6NFL - 455SN**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130070
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: HL618TAT - HLM6940 - HL6NFL - 455SN
Description: HALO ALLSLOPE 6" 30W, Satin Nickel Reflector, Satin Nickel 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: 2228.7 lumens
Efficiency: N/A
Efficacy: 80.8 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

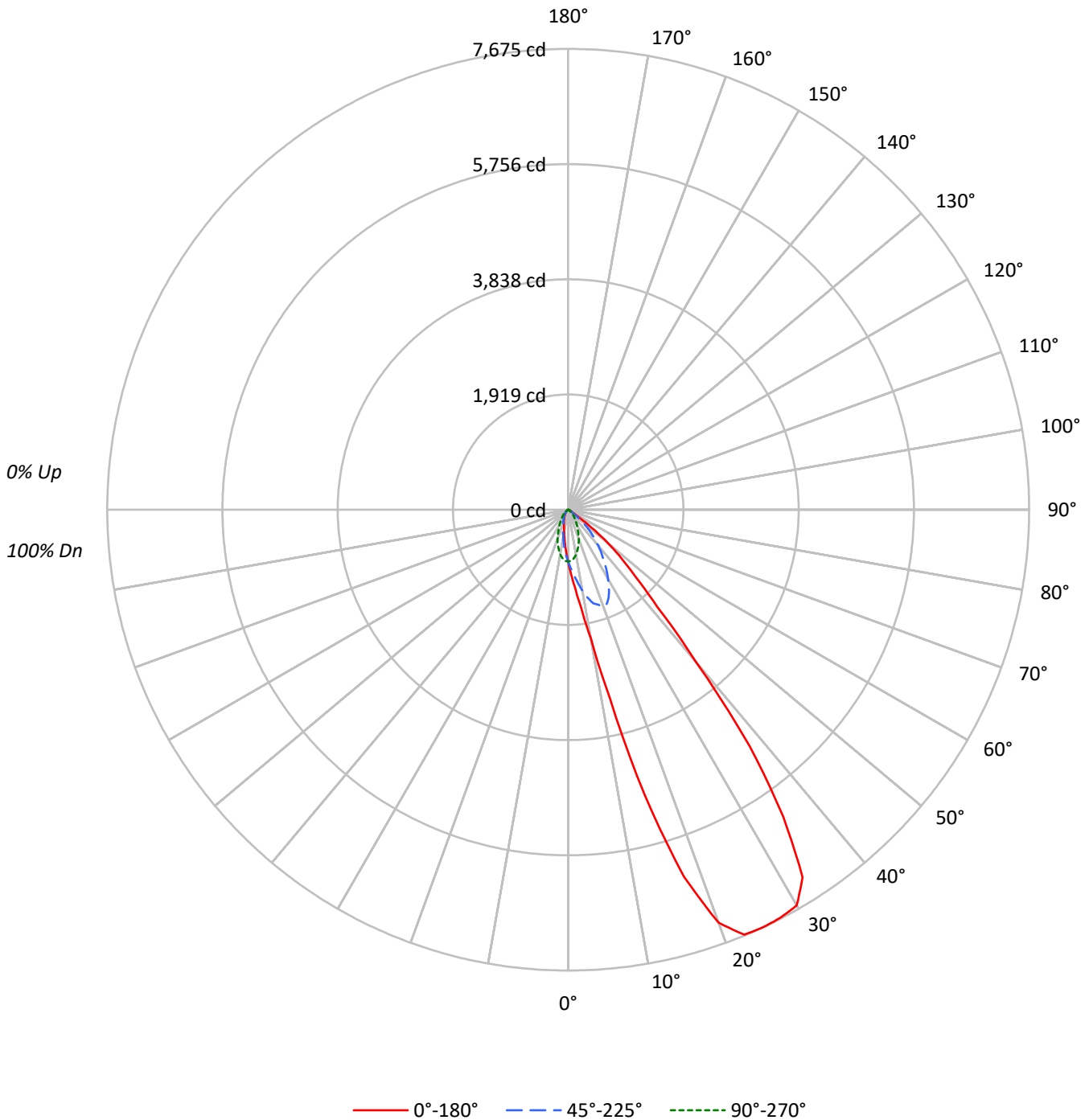
Input Watts (W): 27.6
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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	82	78	83	80	77	75					75			
4	93	84	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68					68			
5	87	78	71	66	86	77	70	66	75	69	65	73	68	64	71	67	64	62					62			
6	82	72	65	60	80	71	64	59	69	63	59	68	62	59	66	62	58	56					56			
7	77	66	59	54	75	65	59	54	64	58	54	63	57	53	62	57	53	52					52			
8	72	61	54	50	71	61	54	49	59	53	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	51	46	41	51	45	41	50	45	41	40					40			

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	51406	51406	51406
5°	76125	48907	34127
10°	126219	43783	22471
15°	283853	36956	15859
20°	423892	29788	11752
25°	449752	22538	9194
30°	454753	16917	7404
35°	383470	12754	5800
40°	210902	9468	4511
45°	106370	6609	3148
50°	61155	4408	1996
55°	14680	3025	1071
60°	4725	2126	768
65°	3077	1278	531
70°	1664	595	353
75°	544	405	278
80°	165	329	165
85°	0	407	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	86.2	3.9
10°-20°	366.4	16.4
20°-30°	727.1	32.6
30°-40°	654.4	29.4
40°-50°	296.9	13.3
50°-60°	74.0	3.3
60°-70°	17.7	0.8
70°-80°	4.4	0.2
80°-90°	1.6	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°	1179.7	52.9
0°-40°	1834.2	82.3
0°-60°	2205.0	98.9
0°-90°	2228.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2228.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	861	861	861	861	861	
5°	1300	1099	835	662	583	150
15°	4920	1616	641	337	275	1449
25°	7675	1597	385	186	157	3527
35°	6242	1036	208	116	94	3703
45°	1595	524	99	60	47	1347
55°	195	72	40	24	14	268
65°	34	27	14	8	6	35
75°	5	4	4	4	2	7
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°	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2
2.5°	1064.1	1011.0	1034.6	1012.2	1014.5	1012.2	995.6	1007.4	982.7	972.0	957.9
5°	1300.0	1232.7	1259.9	1222.1	1208.0	1204.4	1166.7	1158.4	1123.0	1099.4	1065.2
7.5°	1635.0	1569.0	1578.4	1532.4	1482.8	1459.2	1394.4	1355.4	1284.7	1225.7	1170.2
10°	2180.0	2064.4	2098.6	1970.0	1869.8	1783.6	1673.9	1586.6	1467.5	1369.6	1275.2
12.5°	3221.7	2957.4	2910.2	2677.8	2469.0	2239.0	2011.3	1860.3	1659.8	1502.9	1364.9
15°	4920.4	4533.4	4439.1	3960.1	3451.7	2918.5	2447.8	2152.9	1836.7	1616.1	1429.8
17.5°	6405.6	6006.8	5885.3	5246.0	4706.9	3891.7	3019.9	2458.4	1997.2	1657.4	1460.4
20°	7318.6	7111.0	7095.7	6275.8	5506.7	4654.9	3527.2	2696.7	2044.4	1718.8	1446.3
22.5°	7660.7	7541.6	7481.4	6882.2	6090.6	5060.8	3798.5	2795.8	2098.6	1689.3	1392.0
25°	7674.9	7615.9	7641.9	7074.4	6258.1	5146.9	3783.2	2708.5	2003.1	1597.3	1302.3
27.5°	7658.4	7598.2	7611.2	6998.9	6113.0	4906.2	3508.3	2479.7	1848.5	1468.7	1198.5
30°	7610.0	7525.1	7396.5	6634.4	5651.8	4338.8	2981.0	2172.9	1656.2	1327.1	1094.7
32.5°	7262.0	7165.3	6856.2	5910.1	4834.3	3520.1	2427.7	1859.1	1448.6	1180.8	980.3
35°	6241.6	6188.5	5772.1	4797.7	3767.8	2686.1	1996.0	1587.8	1258.7	1035.7	863.5
37.5°	4956.9	4903.9	4435.5	3600.3	2702.6	2084.5	1642.1	1344.8	1082.9	904.8	753.8
40°	3310.1	3373.8	3076.6	2480.8	2012.5	1625.6	1341.3	1137.2	923.7	768.0	637.0
42.5°	2194.2	2202.4	2089.2	1789.5	1528.8	1292.9	1091.2	941.4	769.1	641.7	524.9
45°	1594.9	1592.5	1528.8	1337.7	1191.5	1034.6	893.0	772.7	635.8	523.8	423.5
47.5°	1204.4	1206.8	1169.0	1047.5	962.6	835.2	720.8	617.0	502.5	407.0	322.0
50°	867.1	874.1	845.8	759.7	688.9	593.4	497.8	418.8	333.8	265.4	201.7
52.5°	483.7	501.4	477.8	429.4	378.7	318.5	261.9	220.6	169.9	134.5	106.2
55°	194.6	207.6	200.5	176.9	156.9	132.1	116.8	99.1	81.4	72.0	66.1
57.5°	83.8	82.6	82.6	75.5	72.0	67.2	62.5	61.3	56.6	55.4	53.1
60°	57.8	57.8	57.8	55.4	54.3	53.1	50.7	49.5	47.2	44.8	42.5
62.5°	44.8	44.8	44.8	43.6	42.5	42.5	40.1	40.1	37.7	35.4	33.0
65°	34.2	34.2	35.4	34.2	33.0	33.0	31.9	30.7	28.3	27.1	24.8
67.5°	24.8	24.8	24.8	24.8	24.8	23.6	22.4	21.2	20.1	18.9	18.9
70°	16.5	16.5	16.5	16.5	16.5	15.3	15.3	14.2	14.2	13.0	11.8
72.5°	10.6	10.6	10.6	9.4	9.4	9.4	9.4	8.3	8.3	7.1	7.1
75°	4.7	4.7	4.7	4.7	4.7	3.5	4.7	3.5	3.5	3.5	3.5
77.5°	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4	2.4	2.4	2.4
80°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4	2.4
82.5°	1.2	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4	2.4
85°	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4	2.4
87.5°	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.2	1.2	2.4	2.4
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°	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2
2.5°	954.3	933.1	928.4	903.6	888.3	877.7	870.6	856.4	828.1	823.4	815.1
5°	1047.5	1003.9	983.8	942.6	910.7	885.9	863.5	835.2	791.6	772.7	757.3
7.5°	1132.5	1041.6	1026.3	967.3	920.1	877.7	841.1	801.0	746.7	722.0	694.8
10°	1203.3	1110.1	1052.3	975.6	913.1	857.6	808.1	756.2	696.0	660.6	627.6
12.5°	1257.5	1137.2	1055.8	962.6	885.9	817.5	762.1	698.4	637.0	595.7	560.3
15°	1285.8	1139.6	1040.5	954.3	845.8	769.1	705.4	640.6	573.3	533.2	489.6
17.5°	1282.3	1116.0	1005.1	888.3	791.6	710.2	642.9	581.6	512.0	462.4	422.3
20°	1249.3	1075.9	956.7	832.8	731.4	644.1	580.4	514.3	444.7	399.9	362.2
22.5°	1190.3	1016.9	893.0	765.6	667.7	581.6	512.0	448.3	383.4	346.8	310.3
25°	1117.1	944.9	817.5	692.5	594.5	512.0	445.9	384.6	329.1	296.1	266.6
27.5°	1029.8	862.3	736.1	622.9	526.1	445.9	382.2	331.5	281.9	256.0	230.0
30°	934.3	772.7	654.7	542.6	453.0	382.2	326.8	283.1	243.0	214.7	200.5
32.5°	831.7	680.7	574.5	469.5	386.9	325.6	278.4	241.8	208.8	189.9	174.6
35°	727.9	589.8	490.7	397.5	329.1	273.7	237.1	207.6	179.3	165.2	151.0
37.5°	625.2	500.2	412.9	333.8	274.9	232.4	201.7	175.8	153.4	142.7	132.1
40°	522.6	415.2	339.7	274.9	226.5	193.5	168.7	148.6	130.9	122.7	114.4
42.5°	425.9	338.6	276.0	231.2	188.7	161.6	141.6	125.0	109.7	102.6	95.6
45°	342.1	270.1	221.8	180.5	151.0	127.4	112.1	99.1	88.5	82.6	79.0
47.5°	253.6	198.2	159.3	129.8	108.5	93.2	84.9	76.7	70.8	68.4	64.9
50°	156.9	122.7	103.8	86.1	76.7	70.8	67.2	62.5	57.8	55.4	51.9
52.5°	89.7	75.5	69.6	64.9	61.3	59.0	55.4	51.9	46.0	43.6	41.3
55°	61.3	57.8	56.6	53.1	49.5	46.0	43.6	40.1	36.6	36.6	34.2
57.5°	50.7	47.2	46.0	41.3	38.9	36.6	35.4	33.0	30.7	28.3	27.1
60°	41.3	37.7	36.6	34.2	31.9	29.5	28.3	26.0	23.6	22.4	21.2
62.5°	31.9	29.5	28.3	27.1	24.8	22.4	21.2	20.1	17.7	16.5	15.3
65°	24.8	22.4	21.2	20.1	17.7	16.5	15.3	14.2	13.0	11.8	10.6
67.5°	17.7	15.3	15.3	14.2	13.0	11.8	10.6	9.4	8.3	8.3	7.1
70°	11.8	10.6	9.4	8.3	8.3	7.1	5.9	5.9	5.9	5.9	5.9
72.5°	7.1	5.9	5.9	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
75°	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
77.5°	2.4	2.4	3.5	3.5	3.5	3.5	3.5	3.5	2.4	3.5	3.5
80°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
82.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
85°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
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°	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2	861.2
2.5°	801.0	797.5	780.9	777.4	762.1	772.7	758.5	736.1	732.6	738.5	725.5
5°	729.0	714.9	694.8	683.0	664.2	661.8	650.0	619.3	615.8	609.9	598.1
7.5°	658.3	641.7	612.2	589.8	574.5	565.1	550.9	522.6	512.0	506.1	490.7
10°	589.8	566.2	530.8	512.0	486.0	473.0	457.7	431.8	421.1	417.6	399.9
12.5°	520.2	489.6	454.2	435.3	408.2	396.4	382.2	361.0	351.5	343.3	335.0
15°	448.3	420.0	386.9	369.2	348.0	337.4	325.6	304.4	296.1	291.4	289.0
17.5°	385.7	358.6	327.9	315.0	294.9	284.3	276.0	259.5	252.4	247.7	243.0
20°	331.5	307.9	281.9	270.1	253.6	246.5	237.1	224.1	219.4	215.9	211.2
22.5°	283.1	263.1	243.0	233.6	220.6	214.7	206.4	197.0	192.3	188.7	185.2
25°	243.0	227.7	212.3	204.1	192.3	186.4	180.5	172.2	167.5	166.3	162.8
27.5°	211.2	199.4	186.4	178.1	168.7	164.0	159.3	152.2	149.8	147.5	143.9
30°	185.2	174.6	162.8	156.9	149.8	146.3	141.6	136.8	133.3	134.5	129.8
32.5°	161.6	153.4	143.9	140.4	133.3	130.9	127.4	121.5	118.0	116.8	114.4
35°	141.6	134.5	127.4	125.0	119.1	115.6	112.1	107.3	106.2	102.6	100.3
37.5°	123.9	118.0	112.1	109.7	105.0	100.3	97.9	92.0	89.7	88.5	87.3
40°	107.3	102.6	95.6	93.2	88.5	86.1	82.6	79.0	76.7	76.7	74.3
42.5°	89.7	86.1	80.2	79.0	74.3	73.1	69.6	67.2	64.9	63.7	62.5
45°	74.3	72.0	67.2	66.1	62.5	60.2	59.0	54.3	51.9	50.7	49.5
47.5°	61.3	59.0	53.1	51.9	50.7	47.2	44.8	43.6	41.3	40.1	40.1
50°	48.4	46.0	42.5	42.5	40.1	37.7	36.6	34.2	33.0	31.9	30.7
52.5°	38.9	37.7	34.2	34.2	31.9	30.7	28.3	27.1	24.8	24.8	23.6
55°	31.9	29.5	27.1	26.0	24.8	23.6	21.2	20.1	18.9	17.7	16.5
57.5°	24.8	23.6	21.2	20.1	18.9	17.7	15.3	14.2	13.0	13.0	11.8
60°	18.9	17.7	15.3	15.3	13.0	11.8	11.8	10.6	10.6	10.6	9.4
62.5°	14.2	13.0	11.8	10.6	9.4	9.4	9.4	9.4	8.3	8.3	8.3
65°	9.4	9.4	8.3	8.3	8.3	8.3	8.3	7.1	7.1	7.1	7.1
67.5°	7.1	7.1	7.1	7.1	7.1	5.9	5.9	5.9	5.9	5.9	5.9
70°	5.9	5.9	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	3.5
72.5°	4.7	4.7	4.7	4.7	3.5	3.5	3.5	3.5	3.5	3.5	3.5
75°	3.5	3.5	3.5	3.5	3.5	3.5	2.4	2.4	2.4	2.4	2.4
77.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.2
80°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2
82.5°	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2
85°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	1.2
87.5°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2	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°	861.2	861.2	861.2	861.2
2.5°	722.0	731.4	719.6	710.2
5°	599.3	604.0	592.2	582.8
7.5°	489.6	490.7	480.1	471.9
10°	403.4	402.3	394.0	388.1
12.5°	335.0	333.8	326.8	322.0
15°	280.8	281.9	277.2	274.9
17.5°	241.8	241.8	237.1	235.9
20°	208.8	210.0	206.4	202.9
22.5°	184.0	184.0	181.7	178.1
25°	161.6	161.6	159.3	156.9
27.5°	143.9	145.1	142.7	139.2
30°	128.6	128.6	126.2	123.9
32.5°	113.2	113.2	112.1	109.7
35°	97.9	99.1	96.7	94.4
37.5°	86.1	86.1	84.9	82.6
40°	73.1	74.3	73.1	70.8
42.5°	61.3	61.3	61.3	60.2
45°	48.4	49.5	48.4	47.2
47.5°	38.9	38.9	38.9	37.7
50°	29.5	30.7	29.5	28.3
52.5°	22.4	22.4	21.2	21.2
55°	16.5	15.3	15.3	14.2
57.5°	11.8	11.8	11.8	10.6
60°	9.4	9.4	9.4	9.4
62.5°	8.3	8.3	8.3	8.3
65°	7.1	7.1	7.1	5.9
67.5°	4.7	4.7	4.7	4.7
70°	3.5	3.5	3.5	3.5
72.5°	3.5	3.5	2.4	2.4
75°	2.4	2.4	2.4	2.4
77.5°	1.2	1.2	1.2	1.2
80°	1.2	1.2	1.2	1.2
82.5°	1.2	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)