

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: P130204

Luminaire Tested: **HL612ICAT - HLM6940 - HL6NFL - 455SC**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130204
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 - HLM6940 - 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 / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1716.7 lumens
Efficiency: N/A
Efficacy: 89.9 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

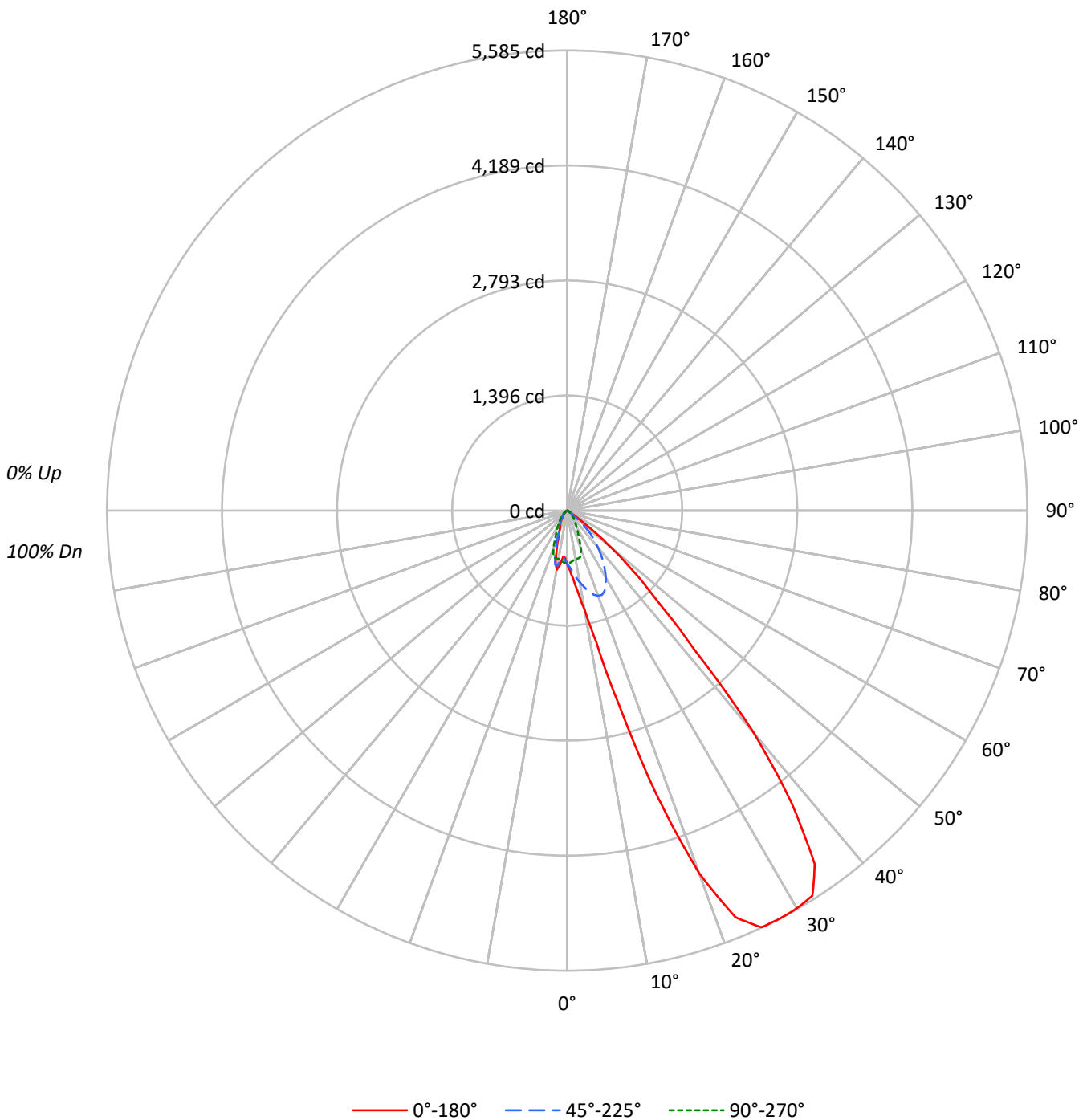
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	38560	38560	38560
5°	48503	36569	32792
10°	71019	34513	42133
15°	141471	34140	27841
20°	271175	28051	15945
25°	327037	18752	11591
30°	333183	13517	9047
35°	321891	10199	6291
40°	225084	7729	4607
45°	102175	5449	3041
50°	49264	3456	1940
55°	10448	2271	453
60°	3515	1545	0
65°	2087	855	0
70°	1130	171	0
75°	301	197	0
80°	0	233	0
85°	0	288	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	67.5	3.9
10°-20°	262.9	15.3
20°-30°	524.8	30.6
30°-40°	535.5	31.2
40°-50°	257.5	15.0
50°-60°	54.8	3.2
60°-70°	10.6	0.6
70°-80°	2.1	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°	855.2	49.8
0°-40°	1390.7	81.0
0°-60°	1703.0	99.2
0°-90°	1716.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1716.7	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	646	646	646	646	646	
5°	828	748	624	563	560	91
15°	2452	1014	592	558	483	809
25°	5581	1076	320	203	198	2514
35°	5239	765	166	118	102	3086
45°	1532	406	82	54	46	1331
55°	138	52	30	20	6	203
65°	23	18	10	1	0	24
75°	3	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°	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0
2.5°	722.5	713.9	709.6	712.2	717.4	710.5	707.9	705.3	705.3	684.7	689.0
5°	828.3	814.6	804.3	808.6	814.6	797.4	791.4	781.9	775.0	748.3	745.8
7.5°	990.9	964.2	953.9	949.6	942.7	911.8	895.4	877.4	851.6	815.4	800.8
10°	1226.6	1199.9	1178.4	1156.9	1138.0	1071.8	1030.5	989.2	940.2	882.5	851.6
12.5°	1635.2	1567.2	1501.9	1468.3	1384.9	1279.1	1207.7	1124.2	1041.7	947.9	896.3
15°	2452.3	2335.4	2148.7	2011.9	1797.8	1609.4	1409.0	1283.4	1146.6	1014.1	935.9
17.5°	3624.7	3480.2	3255.7	2916.8	2540.9	2029.1	1697.1	1446.8	1250.7	1068.3	962.5
20°	4681.9	4531.4	4213.1	3856.1	3352.9	2621.8	2012.8	1623.1	1329.0	1101.0	968.5
22.5°	5344.2	5270.2	4990.7	4574.4	3985.2	3143.9	2291.5	1706.6	1362.5	1106.2	952.2
25°	5580.8	5543.8	5341.6	4974.4	4359.3	3431.2	2422.2	1738.4	1343.6	1076.1	912.6
27.5°	5585.1	5578.2	5435.4	5095.6	4452.2	3454.4	2378.4	1677.3	1284.2	1014.1	855.0
30°	5575.6	5569.6	5408.7	5017.4	4297.4	3242.0	2180.5	1542.3	1193.9	935.9	793.9
32.5°	5541.2	5500.8	5236.7	4707.7	3905.2	2797.3	1888.1	1373.7	1075.2	852.4	720.8
35°	5239.3	5180.8	4757.6	4103.9	3273.8	2239.9	1581.8	1190.5	943.6	764.7	641.7
37.5°	4474.6	4387.7	3955.1	3301.3	2467.0	1732.4	1306.6	1019.3	823.2	671.8	560.0
40°	3532.7	3385.6	2984.8	2352.6	1808.1	1355.6	1072.6	866.2	712.2	578.0	478.3
42.5°	2279.4	2339.7	1953.4	1642.1	1354.8	1083.8	882.5	727.7	601.3	490.3	399.1
45°	1532.0	1543.1	1371.1	1202.5	1040.8	865.3	723.4	606.4	501.5	406.0	327.7
47.5°	1094.1	1103.6	1017.6	907.5	785.3	677.8	574.6	472.2	390.5	307.9	244.3
50°	698.5	713.1	661.5	586.6	523.0	455.0	381.1	304.5	247.7	189.2	145.4
52.5°	358.7	376.8	335.5	320.0	271.0	233.1	194.4	152.2	124.7	96.3	78.3
55°	138.5	147.9	134.2	119.6	106.7	94.6	79.1	67.1	60.2	52.5	48.2
57.5°	62.8	61.9	58.5	55.9	53.3	49.0	46.4	43.0	41.3	38.7	38.7
60°	43.0	43.0	41.3	41.3	39.6	37.8	36.1	34.4	33.5	31.0	31.0
62.5°	31.0	31.8	31.0	31.0	31.0	29.2	28.4	26.7	26.7	24.9	24.1
65°	23.2	24.1	23.2	23.2	23.2	22.4	21.5	20.6	19.8	18.1	17.2
67.5°	16.3	17.2	16.3	16.3	16.3	15.5	15.5	14.6	13.8	12.9	12.0
70°	11.2	11.2	10.3	11.2	11.2	10.3	10.3	9.5	9.5	8.6	7.7
72.5°	6.9	6.9	6.0	6.0	6.0	6.0	6.0	5.2	5.2	4.3	3.4
75°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	1.7	1.7	1.7	1.7
77.5°	0.0	0.0	0.0	0.9	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	0.9	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°	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0
2.5°	686.4	683.8	675.2	665.8	661.5	658.0	639.1	636.5	639.1	625.3	629.6
5°	736.3	720.8	705.3	685.6	671.8	660.6	633.9	624.5	620.2	599.5	599.5
7.5°	779.3	755.2	726.8	696.7	674.4	655.4	621.9	606.4	600.4	580.6	583.2
10°	815.4	779.3	740.6	702.8	671.8	645.1	609.9	596.1	593.5	582.3	594.4
12.5°	842.1	789.6	742.3	693.3	658.0	633.9	603.8	597.0	599.5	600.4	619.3
15°	859.3	793.1	736.3	684.7	646.8	623.6	596.1	591.8	600.4	593.5	605.6
17.5°	863.6	787.1	723.4	669.2	628.8	603.0	572.9	557.4	555.7	532.4	523.0
20°	855.9	771.6	700.2	637.4	593.5	557.4	514.4	484.3	465.4	431.8	415.5
22.5°	832.6	739.7	658.9	587.5	529.9	485.1	431.8	395.7	369.9	338.0	317.4
25°	789.6	689.0	600.4	526.4	461.1	409.4	356.1	320.0	297.6	268.4	255.5
27.5°	735.4	628.8	537.6	461.9	396.5	344.1	298.5	266.7	246.9	224.5	215.0
30°	667.5	566.0	476.5	400.0	340.6	294.2	252.9	226.2	209.9	191.8	184.9
32.5°	603.8	499.8	419.8	345.8	291.6	250.3	216.8	194.4	181.5	166.0	160.0
35°	530.7	437.0	368.2	295.0	246.9	213.3	184.9	166.0	155.7	143.6	139.3
37.5°	457.6	372.5	305.4	253.7	209.0	182.4	159.1	141.9	133.3	124.7	124.7
40°	387.9	309.7	252.0	208.2	173.8	153.1	134.2	121.3	114.4	107.5	105.8
42.5°	319.1	256.3	206.4	170.3	143.6	127.3	111.8	102.4	96.3	90.3	87.7
45°	256.3	206.4	164.3	135.0	114.4	100.6	89.5	81.7	78.3	73.1	70.5
47.5°	187.5	149.7	120.4	96.3	84.3	75.7	68.0	62.8	61.1	57.6	55.9
50°	114.4	93.8	77.4	65.4	59.4	55.9	51.6	49.0	48.2	45.6	43.9
52.5°	66.2	57.6	52.5	48.2	45.6	43.9	41.3	38.7	37.8	34.4	34.4
55°	45.6	43.0	41.3	39.6	37.0	34.4	31.8	30.1	30.1	27.5	27.5
57.5°	36.1	34.4	32.7	30.1	28.4	27.5	25.8	24.1	24.1	22.4	20.6
60°	29.2	26.7	25.8	24.1	22.4	21.5	19.8	18.9	18.1	16.3	15.5
62.5°	22.4	20.6	20.6	18.9	18.1	16.3	14.6	13.8	12.9	11.2	11.2
65°	16.3	15.5	14.6	13.8	12.9	11.2	10.3	9.5	7.7	6.9	6.0
67.5°	12.0	11.2	10.3	9.5	7.7	6.9	6.0	5.2	4.3	2.6	2.6
70°	6.9	6.0	6.0	5.2	3.4	3.4	2.6	1.7	1.7	1.7	1.7
72.5°	3.4	2.6	2.6	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°	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0	646.0
2.5°	627.1	623.6	606.4	600.4	601.3	599.5	597.0	597.8	584.9	585.8	584.1
5°	593.5	586.6	568.6	562.5	563.4	563.4	563.4	567.7	557.4	566.9	565.1
7.5°	580.6	581.5	572.9	579.8	592.7	604.7	613.3	632.2	633.9	652.0	656.3
10°	603.0	619.3	622.8	636.5	660.6	677.8	686.4	707.9	703.6	724.3	723.4
12.5°	634.8	644.3	643.4	654.6	662.3	673.5	671.8	676.1	660.6	662.3	653.7
15°	609.0	603.8	585.8	581.5	572.9	558.2	541.9	542.8	520.4	514.4	506.6
17.5°	510.1	500.6	467.9	443.8	431.8	417.2	400.0	413.7	378.5	375.0	369.0
20°	393.1	374.2	348.4	331.2	320.8	314.0	305.4	303.6	289.9	289.0	286.4
22.5°	299.3	286.4	268.4	258.1	253.7	246.0	240.8	240.0	231.4	231.4	227.9
25°	241.7	234.0	219.3	211.6	206.4	203.0	200.4	198.7	192.7	196.1	199.6
27.5°	204.7	197.0	184.9	178.9	175.5	174.6	175.5	177.2	175.5	180.6	181.5
30°	176.3	169.5	159.1	155.7	155.7	159.1	160.9	161.7	156.6	158.3	154.8
32.5°	154.0	148.8	142.8	142.8	142.8	142.8	139.3	135.0	127.3	126.4	122.1
35°	135.0	132.5	129.0	127.3	122.1	117.8	114.4	111.0	105.8	105.8	104.1
37.5°	118.7	117.0	111.0	107.5	103.2	99.8	98.1	97.2	94.6	95.5	92.9
40°	102.4	98.9	92.9	89.5	87.7	86.9	86.0	85.2	82.6	79.1	75.7
42.5°	84.3	80.9	76.6	75.7	73.1	72.3	68.8	63.7	60.2	60.2	58.5
45°	68.0	66.2	62.8	60.2	55.1	54.2	52.5	50.7	49.0	48.2	47.3
47.5°	54.2	52.5	48.2	45.6	43.0	43.0	42.1	41.3	38.7	37.8	37.8
50°	41.3	39.6	37.8	36.1	35.3	34.4	32.7	31.8	31.0	30.1	29.2
52.5°	32.7	31.8	30.1	29.2	27.5	26.7	24.9	24.1	22.4	21.5	20.6
55°	25.8	24.9	23.2	22.4	20.6	19.8	18.1	16.3	13.8	12.0	9.5
57.5°	19.8	18.9	17.2	15.5	13.8	12.0	10.3	7.7	5.2	2.6	0.9
60°	14.6	12.9	11.2	9.5	6.9	5.2	2.6	0.9	0.0	0.0	0.0
62.5°	9.5	7.7	6.0	4.3	2.6	0.9	0.9	0.9	0.0	0.0	0.0
65°	4.3	3.4	1.7	1.7	0.9	0.9	0.9	0.9	0.0	0.0	0.0
67.5°	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0
70°	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.0	0.0
72.5°	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.0	0.0
75°	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.9	0.0
77.5°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.0
80°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.0
82.5°	1.7	1.7	1.7	1.7	1.7	0.9	0.9	0.9	0.9	0.9	0.0
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	0.9	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°	646.0	646.0	646.0	646.0
2.5°	588.4	589.2	584.1	571.2
5°	571.2	574.6	573.7	560.0
7.5°	667.5	677.0	677.0	663.2
10°	738.9	743.2	741.5	727.7
12.5°	661.5	665.8	654.6	650.3
15°	507.5	508.4	497.2	482.6
17.5°	369.0	373.3	367.3	357.0
20°	285.6	287.3	283.0	275.3
22.5°	228.8	228.8	228.8	222.8
25°	198.7	201.3	201.3	197.8
27.5°	184.1	186.7	186.7	183.2
30°	154.8	154.0	153.1	151.4
32.5°	120.4	120.4	119.6	114.4
35°	104.9	104.9	104.1	102.4
37.5°	95.5	95.5	94.6	92.0
40°	75.7	74.8	74.0	72.3
42.5°	59.4	58.5	57.6	56.8
45°	47.3	47.3	46.4	45.6
47.5°	37.8	37.8	37.0	36.1
50°	29.2	29.2	28.4	27.5
52.5°	19.8	18.9	18.1	17.2
55°	8.6	6.9	6.0	6.0
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)