

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: P130162

Luminaire Tested: **HL612ICAT - HLM6930 - HL6FL - 455H**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130162
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33448)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6930 - HL6FL - 455H
Description: HALO ALLSLOPE 6" 21W, Semi-Specular Haze Reflector, White Metal Trim Ring using 40 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: 1556.1 lumens
Efficiency: N/A
Efficacy: 81.5 lumens/watt
Spacing Criteria (0/90/45): 1.6 / 0.65 / 1.06
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

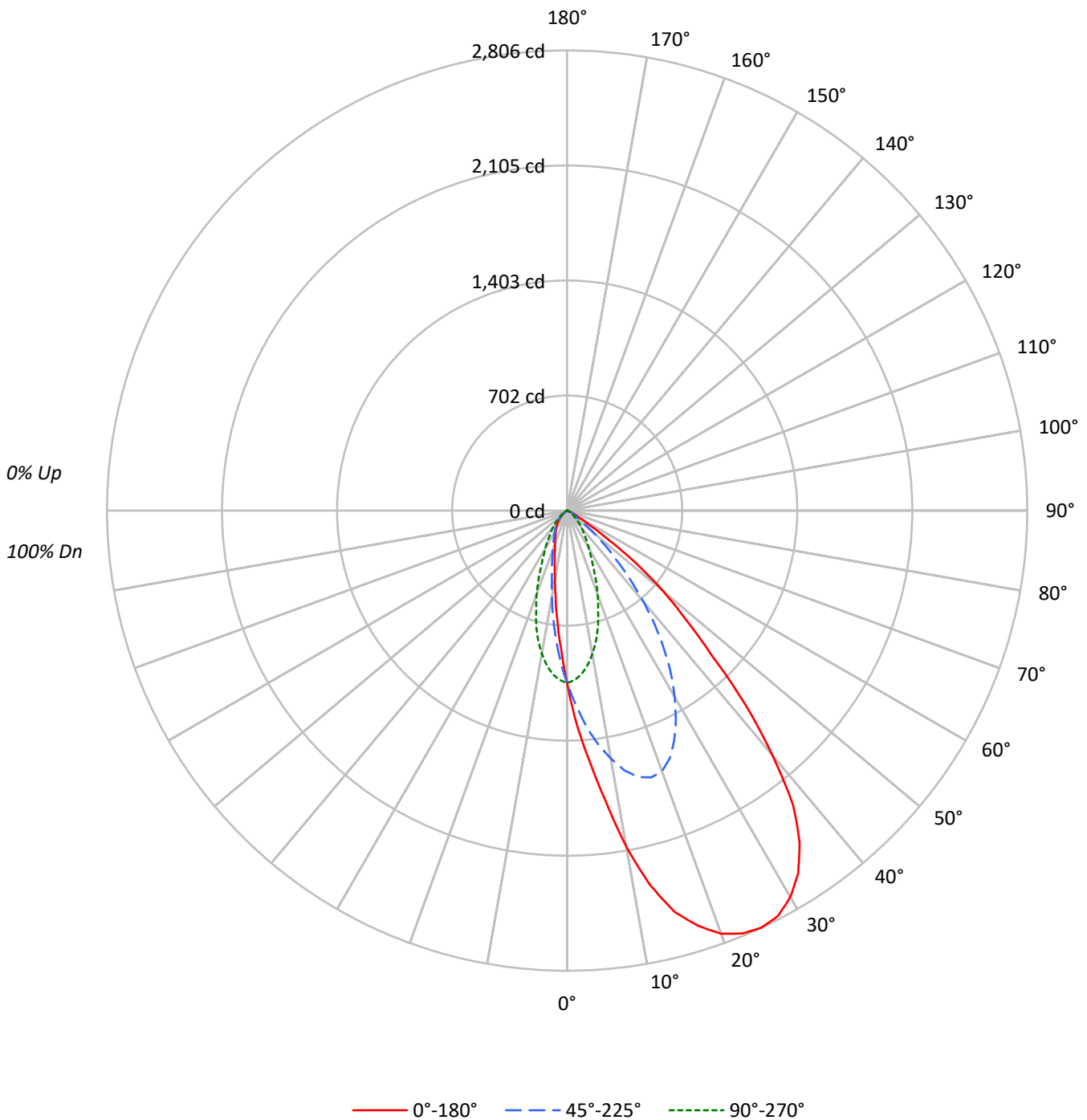
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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				
1	113	110	107	104	110	107	105	103	103	101	99	99	98	96	96	95	94	92				
2	106	100	96	92	104	99	94	91	95	92	89	92	89	87	89	87	85	83				
3	99	92	86	82	97	91	85	81	88	83	80	85	82	78	83	80	77	75				
4	93	85	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	69				
5	88	78	71	66	86	77	71	66	75	69	65	73	68	65	72	67	64	62				
6	82	72	65	60	81	71	65	60	69	64	59	68	63	59	67	62	59	57				
7	77	67	60	55	76	66	59	55	65	59	54	63	58	54	62	57	54	52				
8	73	62	55	50	71	61	55	50	60	54	50	59	54	50	58	53	49	48				
9	69	58	51	46	67	57	51	46	56	50	46	55	50	46	54	49	46	44				
10	65	54	47	43	64	53	47	43	52	47	43	52	46	42	51	46	42	41				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	62771	62771	62771
5°	89124	58715	39907
10°	120736	51304	24590
15°	146161	41998	16787
20°	159025	31491	12557
25°	164427	21928	9886
30°	162606	15830	8235
35°	151801	11569	6660
40°	124186	8621	5091
45°	83020	6142	3368
50°	53700	4140	1954
55°	22571	2829	860
60°	6401	1799	401
65°	3671	882	144
70°	1886	333	0
75°	475	185	0
80°	110	219	0
85°	0	271	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	100.5	6.5
10°-20°	294.5	18.9
20°-30°	418.7	26.9
30°-40°	405.3	26.0
40°-50°	243.3	15.6
50°-60°	74.9	4.8
60°-70°	15.6	1.0
70°-80°	2.5	0.2
80°-90°	0.8	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°	813.7	52.3
0°-40°	1219.0	78.3
0°-60°	1537.2	98.8
0°-90°	1556.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1556.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1052	1052	1052	1052	1052	
5°	1522	1316	1003	783	682	162
15°	2534	1681	728	357	291	714
25°	2806	1545	374	193	169	1286
35°	2471	1030	188	121	108	1513
45°	1245	423	92	62	50	993
55°	299	73	38	20	11	306
65°	41	25	10	3	2	43
75°	4	2	2	1	0	6
85°	0	1	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°	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6
2.5°	1297.8	1272.5	1260.3	1244.0	1254.6	1237.5	1236.6	1234.2	1208.9	1181.2	1186.9
5°	1522.0	1498.3	1479.6	1453.5	1450.2	1422.5	1379.3	1407.0	1361.4	1316.5	1305.1
7.5°	1781.2	1747.8	1728.2	1677.7	1666.2	1588.0	1588.8	1561.1	1501.6	1434.7	1400.5
10°	2085.3	2042.9	2024.1	1949.9	1918.1	1835.0	1788.5	1728.2	1635.3	1535.8	1474.7
12.5°	2338.0	2299.6	2275.2	2190.4	2152.9	2052.6	1976.8	1890.4	1756.7	1623.9	1535.8
15°	2533.6	2492.8	2431.7	2371.4	2331.4	2218.1	2168.4	2013.5	1876.6	1680.9	1562.7
17.5°	2654.3	2622.5	2585.0	2495.3	2452.1	2343.7	2230.4	2094.2	1906.7	1706.2	1557.0
20°	2745.6	2708.9	2664.9	2572.7	2523.8	2398.3	2283.3	2131.7	1915.7	1690.7	1521.1
22.5°	2791.2	2755.3	2711.3	2610.2	2554.0	2417.0	2289.9	2115.4	1874.1	1634.5	1455.9
25°	2805.9	2767.6	2720.3	2611.9	2545.0	2397.5	2253.2	2053.5	1791.0	1544.8	1365.4
27.5°	2786.3	2743.9	2692.6	2580.1	2501.8	2338.0	2170.0	1940.2	1676.0	1435.5	1257.8
30°	2721.1	2681.2	2626.5	2510.0	2417.0	2223.8	2032.3	1782.0	1530.1	1310.8	1133.1
32.5°	2621.6	2578.4	2525.5	2394.2	2281.7	2067.3	1844.0	1605.9	1385.0	1177.9	1004.3
35°	2470.8	2426.8	2369.8	2214.9	2086.1	1851.3	1630.4	1431.5	1246.4	1029.6	863.3
37.5°	2264.6	2212.4	2126.0	1984.2	1826.8	1604.3	1420.1	1252.1	1057.3	878.0	725.5
40°	1949.1	1911.6	1821.9	1685.8	1544.0	1369.5	1225.2	1063.0	881.2	717.4	590.2
42.5°	1618.2	1574.9	1503.2	1385.8	1277.4	1125.0	989.6	839.6	697.8	561.7	456.5
45°	1244.8	1216.3	1169.8	1081.8	988.0	877.1	773.6	659.5	553.5	423.1	342.4
47.5°	979.0	957.8	925.2	847.0	794.0	688.8	609.8	512.8	416.6	313.0	247.0
50°	761.4	748.3	718.2	652.2	602.4	525.0	452.4	369.3	282.1	210.3	167.1
52.5°	531.5	542.1	496.5	454.9	407.6	345.6	275.5	214.4	162.2	124.7	104.3
55°	299.2	296.7	281.2	245.4	206.2	163.9	129.6	109.2	88.9	73.4	66.0
57.5°	143.5	138.6	129.6	110.9	94.6	82.3	72.6	66.8	60.3	54.6	51.4
60°	78.3	77.4	73.4	67.7	64.4	59.5	55.4	52.2	47.3	43.2	39.9
62.5°	56.2	55.4	53.8	50.5	48.9	45.7	42.4	39.9	37.5	34.2	31.8
65°	40.8	40.8	39.9	37.5	36.7	34.2	32.6	30.2	27.7	25.3	23.6
67.5°	30.2	29.3	28.5	27.7	26.1	24.5	22.8	21.2	19.6	17.1	15.5
70°	18.7	17.9	17.9	17.1	16.3	14.7	13.0	12.2	11.4	9.8	9.0
72.5°	9.8	9.8	9.0	9.0	8.2	7.3	6.5	6.5	5.7	4.9	4.1
75°	4.1	3.3	3.3	3.3	3.3	3.3	2.4	2.4	2.4	1.6	1.6
77.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
82.5°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
85°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
87.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
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°	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6
2.5°	1165.7	1147.0	1146.2	1118.4	1089.9	1081.8	1046.7	1033.7	1020.6	987.2	984.7
5°	1263.5	1230.1	1208.1	1160.0	1111.9	1083.4	1031.2	1002.7	973.3	944.8	910.6
7.5°	1341.8	1288.0	1245.6	1173.1	1108.7	1062.2	1013.3	950.5	907.3	872.3	823.3
10°	1401.3	1321.4	1258.7	1168.2	1085.8	1020.6	945.6	886.1	833.1	788.3	736.9
12.5°	1433.9	1329.6	1249.7	1150.2	1042.6	966.8	875.5	811.9	736.1	697.0	636.7
15°	1438.8	1315.7	1217.1	1093.2	983.1	896.7	802.1	728.0	661.9	604.1	544.5
17.5°	1415.2	1276.6	1162.5	1024.7	913.8	812.7	717.4	627.7	570.6	508.7	451.6
20°	1337.7	1215.4	1084.2	942.4	825.0	725.5	622.8	543.7	477.7	416.6	373.4
22.5°	1288.8	1131.5	992.1	848.6	729.6	630.1	529.1	455.7	391.3	348.9	314.7
25°	1192.6	1028.0	890.2	750.0	631.8	532.3	438.6	374.2	327.7	289.4	266.6
27.5°	1081.8	918.7	783.4	649.7	536.4	442.6	362.8	313.0	275.5	250.3	226.6
30°	947.3	807.0	674.2	552.7	440.2	361.1	301.6	264.9	234.8	211.9	195.6
32.5°	841.3	693.7	572.3	450.8	361.1	302.4	254.3	223.4	199.7	184.2	168.7
35°	716.6	582.9	465.5	361.9	295.1	249.4	212.8	188.3	170.4	157.3	145.9
37.5°	591.8	463.8	366.8	292.7	240.5	206.2	176.9	159.8	144.3	135.3	126.4
40°	467.1	358.7	286.9	234.8	195.6	168.7	149.2	135.3	123.1	116.6	109.2
42.5°	353.0	274.7	227.4	188.3	159.8	140.2	123.9	114.1	104.3	96.2	92.1
45°	267.4	215.2	180.2	151.6	129.6	114.9	99.5	92.1	84.8	79.9	76.6
47.5°	203.8	166.3	137.0	113.3	99.5	87.2	78.3	71.7	68.5	67.7	63.6
50°	137.8	111.7	95.4	80.7	72.6	66.0	62.0	58.7	56.2	53.8	50.5
52.5°	86.4	74.2	66.8	60.3	57.1	53.8	50.5	48.1	44.8	43.2	39.1
55°	60.3	56.2	53.0	48.9	46.5	43.2	39.9	37.5	35.9	34.2	31.8
57.5°	48.1	44.8	42.4	39.1	36.7	34.2	31.8	30.2	27.7	26.9	23.6
60°	38.3	35.9	33.4	31.0	28.5	26.1	24.5	22.0	20.4	18.7	16.3
62.5°	30.2	27.7	25.3	23.6	21.2	19.6	17.1	15.5	13.9	12.2	10.6
65°	22.0	19.6	17.9	16.3	14.7	13.0	11.4	9.8	8.2	7.3	6.5
67.5°	14.7	12.2	11.4	10.6	9.0	7.3	6.5	4.9	4.9	4.1	4.1
70°	8.2	7.3	6.5	5.7	4.9	4.1	3.3	3.3	2.4	2.4	2.4
72.5°	4.1	3.3	3.3	2.4	2.4	2.4	2.4	2.4	2.4	1.6	1.6
75°	2.4	1.6	1.6	2.4	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°	0.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
87.5°	0.8	0.8	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°	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6	1051.6
2.5°	990.5	963.6	953.8	926.1	911.4	921.2	901.6	890.2	883.7	884.5	868.2
5°	902.4	865.7	843.7	847.8	772.0	782.6	762.2	742.6	736.1	724.7	714.9
7.5°	803.0	764.6	734.5	692.9	667.6	655.4	639.1	605.7	597.5	581.2	569.8
10°	703.5	658.7	625.3	574.7	547.8	532.3	506.2	481.8	472.8	462.2	445.1
12.5°	602.4	554.3	514.4	470.4	444.3	431.2	409.2	392.9	384.0	374.2	366.8
15°	498.9	448.4	419.8	386.4	365.2	357.1	339.9	328.5	319.6	313.0	307.3
17.5°	413.3	375.0	350.5	324.4	307.3	300.8	287.8	276.3	269.8	264.9	261.7
20°	345.6	314.7	296.7	275.5	264.1	255.2	243.7	238.0	234.0	230.7	227.4
22.5°	293.5	266.6	251.9	234.8	225.0	220.9	213.6	206.2	203.8	201.4	198.1
25°	250.3	229.1	216.8	204.6	196.5	193.2	186.7	181.8	180.2	177.7	176.1
27.5°	213.6	198.1	189.1	178.5	172.8	170.4	164.7	161.4	161.4	159.0	159.8
30°	185.0	172.8	165.5	157.3	153.3	151.6	147.5	145.1	144.3	142.7	141.8
32.5°	161.4	150.8	146.7	139.4	137.0	135.3	132.1	129.6	130.4	128.8	128.0
35°	140.2	132.9	129.6	123.9	122.3	120.6	118.2	115.8	115.8	114.1	112.5
37.5°	122.3	117.4	114.1	109.2	107.6	106.0	103.5	100.3	100.3	98.6	98.6
40°	107.6	101.1	99.5	93.7	91.3	89.7	88.0	86.4	84.8	83.1	83.1
42.5°	90.5	84.8	83.1	79.1	77.4	75.8	74.2	70.1	70.1	68.5	68.5
45°	74.2	70.9	69.3	66.0	63.6	62.0	59.5	57.1	56.2	54.6	53.8
47.5°	61.1	57.9	56.2	53.0	51.4	49.7	48.1	45.7	44.8	43.2	41.6
50°	49.7	46.5	44.8	42.4	40.8	39.1	37.5	35.1	34.2	31.8	31.0
52.5°	39.1	37.5	35.1	32.6	31.0	28.5	27.7	25.3	23.6	22.0	21.2
55°	30.2	28.5	26.1	23.6	22.0	20.4	18.7	17.1	15.5	14.7	13.0
57.5°	22.8	20.4	17.9	16.3	14.7	13.0	12.2	10.6	9.8	9.0	8.2
60°	15.5	13.0	12.2	10.6	9.0	8.2	7.3	6.5	6.5	5.7	5.7
62.5°	9.8	8.2	7.3	6.5	5.7	5.7	4.9	4.1	4.1	3.3	3.3
65°	5.7	4.9	4.9	4.1	4.1	3.3	3.3	2.4	2.4	2.4	1.6
67.5°	3.3	3.3	3.3	2.4	2.4	1.6	1.6	1.6	1.6	0.8	0.8
70°	2.4	2.4	2.4	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
72.5°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8
75°	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8
77.5°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0
80°	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0
82.5°	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
85°	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
87.5°	1.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	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°	1051.6	1051.6	1051.6	1051.6
2.5°	860.8	856.8	866.5	842.9
5°	710.8	697.8	710.0	681.5
7.5°	565.7	555.1	560.9	537.2
10°	444.3	430.4	437.8	424.7
12.5°	361.9	355.4	356.2	348.1
15°	303.3	296.7	299.2	291.0
17.5°	256.8	251.9	256.8	247.8
20°	223.4	218.5	222.5	216.8
22.5°	196.5	193.2	198.1	191.6
25°	170.4	172.0	173.6	168.7
27.5°	156.5	154.1	156.5	152.4
30°	141.0	138.6	141.0	137.8
32.5°	127.2	124.7	126.4	123.1
35°	111.7	110.1	111.7	108.4
37.5°	97.0	94.6	96.2	95.4
40°	81.5	80.7	81.5	79.9
42.5°	66.0	65.2	66.0	65.2
45°	52.2	51.4	53.0	50.5
47.5°	40.8	39.1	39.9	39.1
50°	29.3	28.5	28.5	27.7
52.5°	20.4	18.7	19.6	18.7
55°	13.0	12.2	12.2	11.4
57.5°	8.2	7.3	7.3	7.3
60°	4.9	4.9	4.9	4.9
62.5°	3.3	2.4	2.4	2.4
65°	1.6	1.6	1.6	1.6
67.5°	0.8	0.8	0.8	0.8
70°	0.8	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)