

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: P130169

Luminaire Tested: **HL612ICAT - HLM6927 - HL6FL - 455TBZ**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130169
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33451)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: HL612ICAT - HLM6927 - HL6FL - 455TBZ
Description: HALO ALLSLOPE 6" 21W, Tuscan Bronze Reflector, Tuscan Bronze Metal Trim Ring using 40 Degree Optic at a 6-12 Pitch
Light Source: (1) HIGH LUMEN LED 90CRI / 2700K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1366.3 lumens
Efficiency: N/A
Efficacy: 71.5 lumens/watt
Spacing Criteria (0/90/45): 1.55 / 0.65 / 1.05
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')
CIE Type: Direct

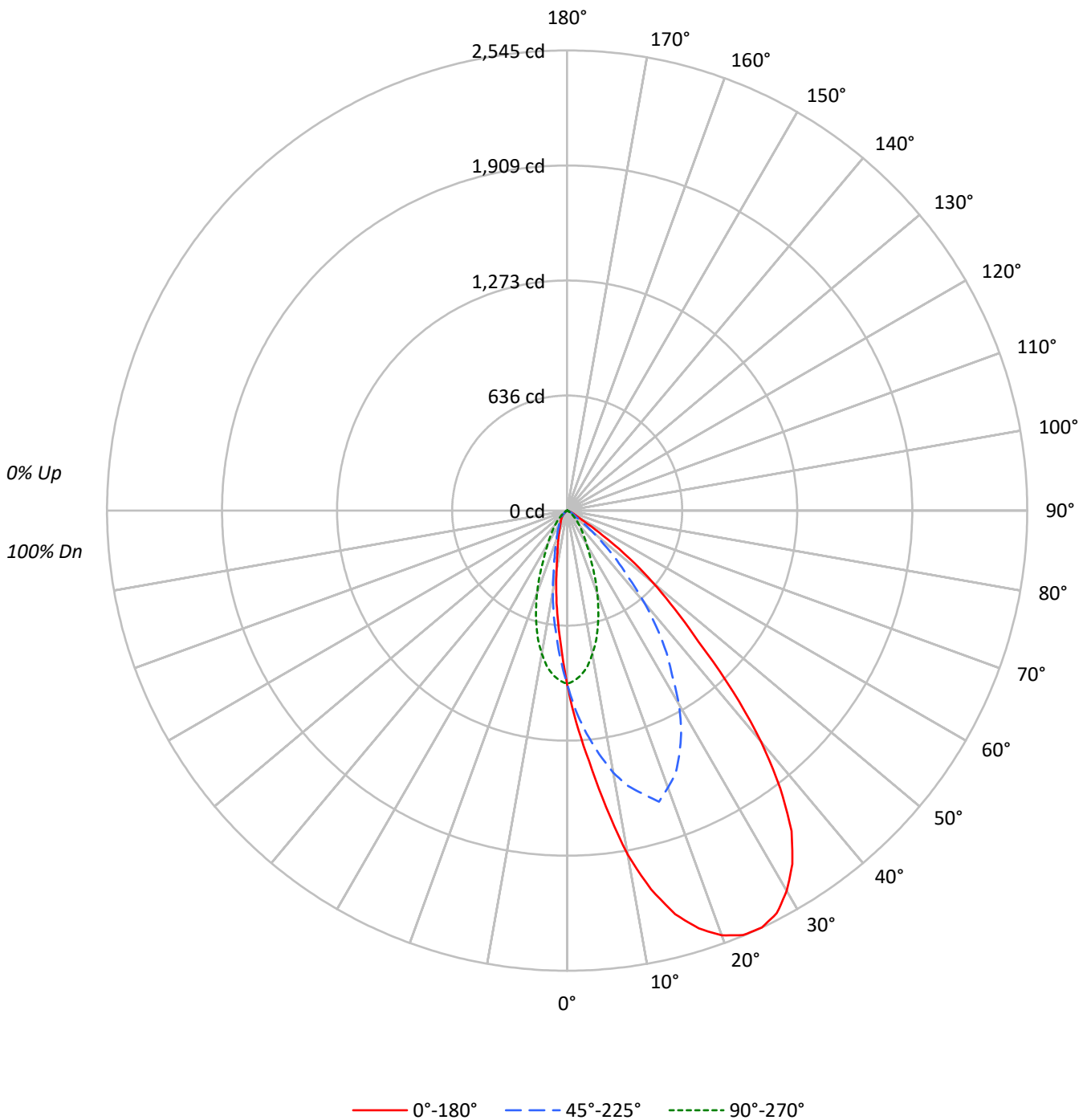
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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				100
1	113	110	107	104	110	107	105	103	103	101	100	100	98	97	96	95	94	92				92
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	88	85	84				84
3	100	93	87	82	98	91	86	82	88	84	80	86	82	79	84	80	78	76				76
4	94	85	79	74	92	84	78	74	82	77	73	80	75	72	78	74	71	69				69
5	88	79	72	67	86	78	71	67	76	70	66	74	69	65	72	68	65	63				63
6	83	73	66	61	81	72	65	61	70	65	60	69	64	60	67	63	59	58				58
7	78	67	61	56	76	67	60	56	65	60	55	64	59	55	63	58	55	53				53
8	73	63	56	51	72	62	56	51	61	55	51	60	55	51	59	54	50	49				49
9	69	58	52	47	68	58	52	47	57	51	47	56	51	47	55	50	47	45				45
10	66	55	48	44	64	54	48	44	53	48	44	52	47	43	52	47	43	42				42

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	57273	57273	57273
5°	81477	53404	35064
10°	111907	46597	19419
15°	133319	37861	11399
20°	144811	28253	7448
25°	149161	18846	5385
30°	145103	12902	4207
35°	132951	9031	3484
40°	106263	6486	2638
45°	68534	4395	1687
50°	43636	2807	867
55°	18136	1909	234
60°	4946	1128	65
65°	2960	486	0
70°	1392	151	0
75°	266	174	0
80°	0	206	0
85°	0	254	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	92.2	6.8
10°-20°	268.9	19.7
20°-30°	378.4	27.7
30°-40°	354.1	25.9
40°-50°	202.4	14.8
50°-60°	56.8	4.2
60°-70°	10.9	0.8
70°-80°	1.7	0.1
80°-90°	0.7	0.0
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°	739.6	54.1
0°-40°	1093.7	80.0
0°-60°	1352.9	99.0
0°-90°	1366.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1366.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	960	960	960	960	960	
5°	1391	1238	912	689	599	150
15°	2311	1622	656	268	198	653
25°	2545	1473	322	120	92	1163
35°	2164	957	147	69	57	1320
45°	1028	388	66	34	25	829
55°	240	59	25	9	3	247
65°	33	19	5	1	0	34
75°	2	1	2	1	0	4
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°	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5
2.5°	1173.1	1166.2	1183.1	1160.1	1138.7	1143.3	1140.2	1132.6	1128.7	1107.3	1077.4
5°	1391.4	1391.4	1402.1	1372.2	1341.6	1339.3	1346.2	1300.3	1282.6	1238.2	1193.0
7.5°	1653.3	1659.4	1664.0	1615.0	1575.9	1546.8	1501.6	1466.4	1426.6	1359.2	1294.1
10°	1932.8	1934.3	1937.4	1869.2	1818.7	1773.5	1703.8	1639.5	1563.7	1471.8	1374.5
12.5°	2144.9	2154.8	2160.2	2085.2	2021.6	1963.4	1883.8	1794.2	1696.9	1560.6	1428.9
15°	2311.0	2319.5	2329.4	2251.3	2172.4	2117.3	2022.4	1917.5	1783.4	1621.9	1460.3
17.5°	2422.8	2438.2	2447.4	2363.9	2282.7	2216.9	2114.2	1987.1	1840.1	1688.5	1461.1
20°	2500.2	2516.3	2520.1	2436.6	2347.0	2278.9	2161.0	2017.0	1845.5	1630.3	1425.1
22.5°	2541.5	2554.6	2561.5	2468.8	2373.8	2297.3	2164.8	1997.1	1801.8	1569.8	1360.0
25°	2545.4	2561.5	2563.0	2461.1	2360.1	2272.0	2120.4	1928.2	1707.6	1473.3	1270.4
27.5°	2510.9	2527.0	2523.9	2419.0	2308.0	2204.6	2023.1	1813.3	1579.8	1365.3	1166.2
30°	2428.2	2485.6	2442.0	2336.3	2213.8	2090.5	1879.2	1648.7	1435.0	1238.2	1046.8
32.5°	2317.9	2333.3	2319.5	2203.1	2056.1	1915.2	1692.3	1464.9	1284.2	1079.7	916.6
35°	2164.0	2169.4	2141.8	2007.8	1837.0	1673.2	1473.3	1291.8	1131.0	957.2	783.4
37.5°	1936.6	1944.3	1915.2	1760.5	1600.4	1446.5	1289.5	1122.6	966.4	808.6	662.4
40°	1667.8	1651.7	1603.5	1474.1	1344.7	1226.7	1091.2	944.2	798.7	661.6	517.7
42.5°	1360.0	1349.3	1307.9	1204.5	1082.8	983.2	864.5	735.1	619.5	504.6	395.9
45°	1027.6	1036.1	1003.9	931.9	847.7	761.9	672.3	575.8	484.0	388.2	294.0
47.5°	807.9	813.2	797.2	733.6	673.1	594.2	523.0	440.3	357.6	274.9	216.7
50°	618.7	627.9	615.7	565.1	507.7	451.8	380.6	297.1	233.6	180.0	143.2
52.5°	438.0	435.7	421.9	373.7	325.4	277.2	214.4	164.6	130.9	102.6	83.5
55°	240.4	239.7	219.0	191.4	153.9	125.6	100.3	79.6	68.2	59.0	51.3
57.5°	108.0	103.4	97.3	83.5	72.0	64.3	56.7	51.3	48.2	43.6	39.8
60°	60.5	60.5	59.0	53.6	50.5	46.7	43.6	40.6	37.5	34.5	31.4
62.5°	44.4	44.4	42.9	40.6	38.3	36.0	33.7	31.4	29.1	26.8	24.5
65°	32.9	32.2	32.2	29.9	28.3	26.8	25.3	23.7	21.4	19.1	17.6
67.5°	22.2	23.0	23.0	20.7	19.9	18.4	17.6	16.1	14.5	13.0	11.5
70°	13.8	13.8	13.0	13.0	11.5	10.7	10.0	9.2	7.7	6.9	6.1
72.5°	6.9	6.9	6.1	6.1	5.4	5.4	4.6	3.8	3.8	3.1	2.3
75°	2.3	2.3	2.3	1.5	1.5	1.5	1.5	1.5	1.5	0.8	0.8
77.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
80°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8
82.5°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
85°	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	0.8
87.5°	0.0	0.0	0.0	0.0	0.0	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°	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5
2.5°	1075.1	1050.6	1042.2	1023.0	1006.2	987.8	979.4	940.3	935.8	905.1	891.3
5°	1175.4	1131.0	1103.5	1066.7	1030.7	994.0	981.7	912.0	891.3	848.5	820.9
7.5°	1259.7	1215.3	1143.3	1088.9	1033.0	978.6	935.8	866.8	832.4	781.1	739.7
10°	1317.1	1231.3	1161.7	1090.4	1014.6	944.9	882.9	804.8	760.4	700.7	650.9
12.5°	1348.5	1241.3	1153.2	1065.9	975.6	892.9	818.6	736.7	682.3	609.5	559.8
15°	1355.4	1229.8	1121.8	1020.0	918.9	826.2	744.3	656.3	596.5	525.3	467.9
17.5°	1336.2	1195.3	1069.8	960.3	846.2	750.4	665.4	572.8	507.7	441.8	379.0
20°	1287.2	1134.8	1003.1	882.9	763.5	665.4	578.1	487.8	420.4	356.1	305.5
22.5°	1211.4	1056.7	918.9	796.4	676.2	579.7	487.0	401.3	339.2	284.9	249.6
25°	1102.7	962.6	826.2	702.2	584.3	492.4	401.3	321.6	274.1	233.6	205.2
27.5°	1013.1	854.6	726.7	604.2	503.9	405.1	321.6	261.1	228.2	194.5	170.0
30°	903.6	742.8	620.3	510.8	407.4	325.4	261.1	215.9	188.4	160.0	142.4
32.5°	778.8	631.7	518.4	419.6	325.4	263.4	215.9	179.2	155.4	134.8	119.5
35°	650.9	526.1	431.9	329.3	257.3	213.6	176.1	147.0	129.4	112.6	101.1
37.5°	536.0	417.3	321.6	257.3	206.0	172.3	144.0	123.3	108.7	95.0	86.5
40°	418.9	316.3	245.0	202.9	164.6	137.8	119.5	101.8	91.1	80.4	73.5
42.5°	313.2	242.0	194.5	160.8	133.2	114.1	98.0	83.5	75.8	67.4	61.3
45°	232.8	183.0	150.9	126.3	105.7	89.6	76.6	65.9	59.7	53.6	49.0
47.5°	170.8	135.5	111.0	93.4	75.8	66.6	56.7	50.5	46.7	42.1	39.8
50°	113.3	89.6	74.3	63.6	54.4	49.0	43.6	39.8	37.5	34.5	31.4
52.5°	68.2	57.4	50.5	45.9	41.4	39.1	35.2	32.2	29.9	26.8	24.5
55°	46.7	42.9	39.1	36.8	33.7	30.6	27.6	25.3	23.0	21.4	19.1
57.5°	37.5	34.5	31.4	29.1	26.0	24.5	22.2	19.1	17.6	16.1	13.8
60°	29.1	26.8	23.7	23.0	19.9	18.4	16.1	13.8	13.0	10.7	9.2
62.5°	22.2	19.9	17.6	16.8	14.5	13.0	10.7	9.2	7.7	6.1	5.4
65°	16.1	14.5	12.3	10.7	9.2	7.7	6.9	5.4	4.6	3.1	2.3
67.5°	10.0	8.4	7.7	6.1	5.4	4.6	3.8	2.3	2.3	1.5	1.5
70°	5.4	4.6	3.8	3.1	2.3	2.3	1.5	1.5	1.5	1.5	1.5
72.5°	2.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
75°	0.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
77.5°	0.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
80°	0.8	0.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
82.5°	0.8	0.8	0.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.8
85°	0.8	0.8	0.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.8
87.5°	0.8	0.8	0.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	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):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5	959.5
2.5°	886.0	868.4	864.5	844.6	839.3	824.7	801.0	777.2	794.9	786.4	790.3
5°	799.4	772.6	760.4	727.5	709.9	689.2	676.2	652.4	640.9	638.6	623.3
7.5°	706.0	674.6	649.4	618.7	608.0	572.0	546.7	524.5	506.2	499.3	483.2
10°	615.7	572.8	542.9	506.2	480.1	453.3	428.1	402.8	388.2	375.2	357.6
12.5°	519.2	475.5	438.8	399.0	368.3	346.1	319.3	299.4	291.0	280.3	271.1
15°	423.5	375.2	344.6	314.0	289.5	268.0	252.7	238.9	229.0	219.0	211.3
17.5°	335.4	300.9	278.7	247.3	232.0	213.6	200.6	189.9	180.0	173.1	166.9
20°	270.3	242.0	222.8	202.9	186.8	171.5	160.8	153.2	147.0	141.7	137.8
22.5°	224.4	200.6	180.7	164.6	153.2	144.0	135.5	127.1	121.0	117.9	114.9
25°	182.2	163.1	149.3	137.8	128.6	119.5	110.3	105.7	102.6	98.8	97.3
27.5°	151.6	137.1	126.3	115.6	108.0	101.1	97.3	91.1	88.1	85.8	85.0
30°	127.9	115.6	106.4	98.8	92.7	88.1	84.2	80.4	78.1	76.6	75.0
32.5°	108.0	98.8	91.9	85.8	81.2	78.1	75.0	72.0	70.4	68.2	67.4
35°	92.7	85.0	80.4	75.0	72.0	68.9	66.6	64.3	62.8	60.5	59.7
37.5°	79.6	74.3	70.4	65.9	62.8	60.5	58.2	55.9	54.4	52.8	52.1
40°	69.7	64.3	60.5	56.7	54.4	51.3	49.0	46.7	45.9	44.4	43.6
42.5°	57.4	52.8	49.8	46.7	44.4	42.9	40.6	38.3	37.5	36.0	36.0
45°	45.9	42.9	40.6	38.3	36.8	34.5	32.2	30.6	29.1	28.3	26.8
47.5°	37.5	35.2	32.9	29.9	28.3	26.0	24.5	23.7	22.2	21.4	20.7
50°	29.9	26.8	25.3	23.0	21.4	19.9	19.1	16.8	16.1	15.3	14.5
52.5°	23.0	21.4	19.9	17.6	16.1	14.5	13.0	11.5	10.7	9.2	8.4
55°	17.6	16.1	13.8	12.3	10.7	9.2	8.4	6.9	5.4	4.6	4.6
57.5°	12.3	10.7	9.2	7.7	6.1	5.4	3.8	3.1	2.3	2.3	1.5
60°	7.7	6.1	5.4	3.8	3.1	2.3	1.5	1.5	0.8	0.8	0.8
62.5°	4.6	3.1	2.3	1.5	1.5	0.8	0.8	0.8	0.8	0.8	0.8
65°	2.3	1.5	1.5	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
67.5°	1.5	1.5	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
70°	1.5	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0
72.5°	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
75°	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
77.5°	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
80°	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0
82.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
85°	1.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	0.0	0.0
87.5°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.0	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°	959.5	959.5	959.5	959.5
2.5°	780.3	765.8	765.8	754.3
5°	621.8	601.9	610.3	598.8
7.5°	479.4	466.3	472.5	457.9
10°	355.3	345.4	343.1	335.4
12.5°	266.5	258.8	256.5	249.6
15°	206.8	200.6	200.6	197.6
17.5°	163.1	158.5	159.3	158.5
20°	134.8	130.9	130.2	128.6
22.5°	112.6	108.7	108.7	108.0
25°	95.0	92.7	92.7	91.9
27.5°	82.7	81.2	81.2	80.4
30°	73.5	72.0	72.0	70.4
32.5°	65.9	64.3	65.1	64.3
35°	58.2	57.4	57.4	56.7
37.5°	51.3	49.8	49.8	49.0
40°	42.9	42.1	42.9	41.4
42.5°	34.5	33.7	34.5	33.7
45°	26.0	25.3	26.0	25.3
47.5°	19.9	19.1	18.4	18.4
50°	13.8	13.0	13.0	12.3
52.5°	8.4	7.7	7.7	6.9
55°	3.8	3.8	3.1	3.1
57.5°	1.5	1.5	0.8	0.8
60°	0.8	0.8	0.8	0.8
62.5°	0.8	0.8	0.8	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)