

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: P130206

Luminaire Tested: **HL612ICAT - HLM6930 - HL6NFL - 455SN**

Issue Date: 3/3/2020

Test Information

Test Method: LM-41-14
Report Number: P130206
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: HL612ICAT - HLM6930 - HL6NFL - 455SN
Description: HALO ALLSLOPE 6" 21W, Satin Nickel Reflector, Satin Nickel Metal Trim Ring using 25 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: 1469.1 lumens
Efficiency: N/A
Efficacy: 76.9 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

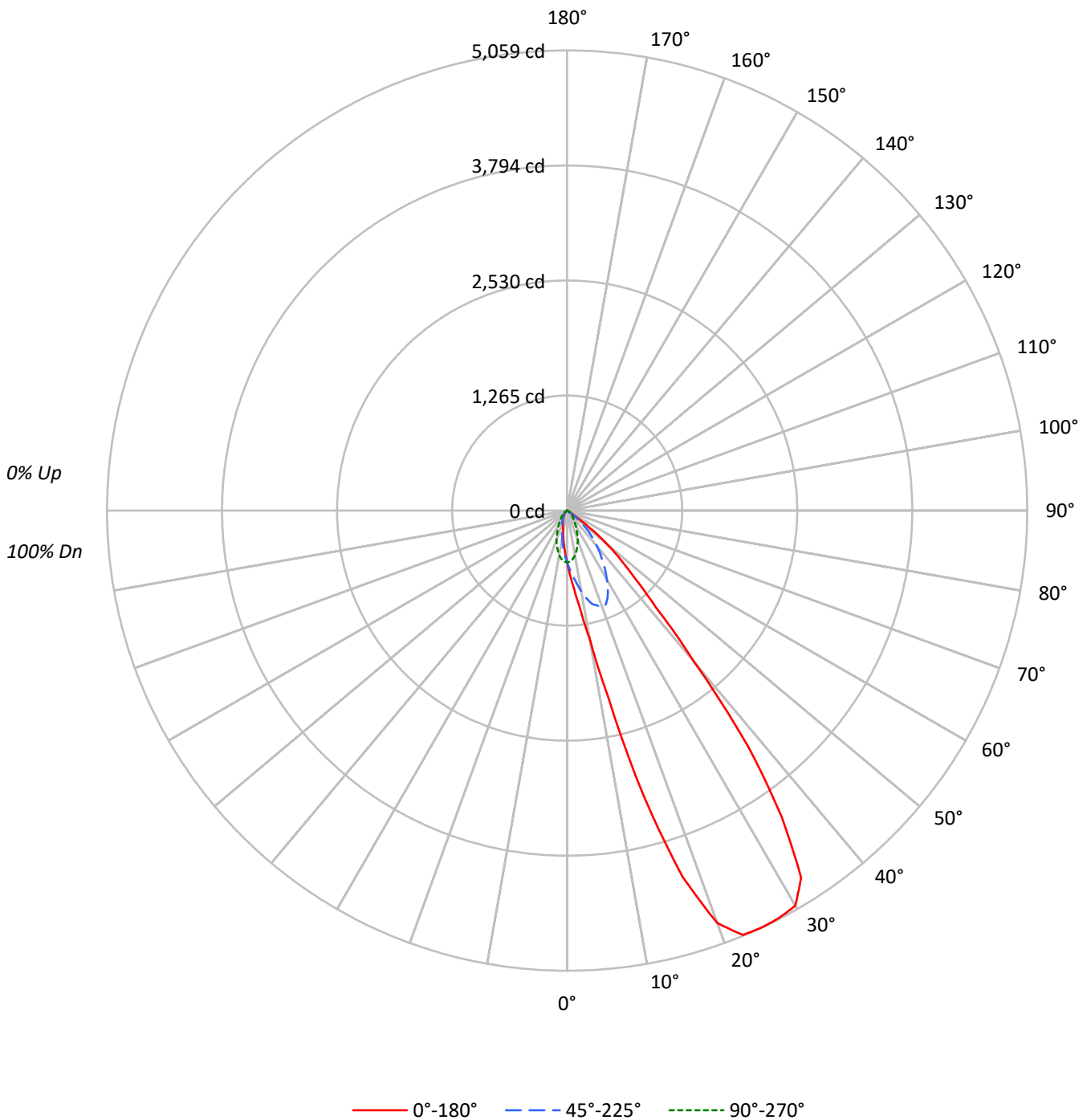
Input Watts (W): 19.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	109	107	104	110	107	105	102	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	84	78	73	91	83	77	73	81	76	72	79	75	71	77	73	70	68				
5	87	78	71	66	86	77	70	66	75	69	65	73	68	64	71	67	64	62				
6	82	72	65	60	80	71	64	59	69	63	59	68	62	59	66	62	58	56				
7	77	66	59	54	75	65	59	54	64	58	54	63	57	53	62	57	53	52				
8	72	61	54	50	71	61	54	49	59	53	49	58	53	49	57	52	49	47				
9	68	57	50	45	67	56	50	45	55	49	45	54	49	45	53	48	45	43				
10	64	53	46	42	63	52	46	42	51	46	41	51	45	41	50	45	41	40				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	33886	33886	33886
5°	50178	32236	22492
10°	83201	28857	14811
15°	187108	24356	10453
20°	279423	19635	7744
25°	296465	14855	6059
30°	299761	11151	4876
35°	252774	8411	3821
40°	139025	6244	2975
45°	70115	4355	2074
50°	40307	2906	1319
55°	9679	1992	702
60°	3115	1398	507
65°	2033	837	351
70°	1100	393	232
75°	359	266	185
80°	110	219	110
85°	0	271	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	56.8	3.9
10°-20°	241.5	16.4
20°-30°	479.3	32.6
30°-40°	431.4	29.4
40°-50°	195.7	13.3
50°-60°	48.8	3.3
60°-70°	11.7	0.8
70°-80°	2.9	0.2
80°-90°	1.1	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°	777.6	52.9
0°-40°	1209.0	82.3
0°-60°	1453.5	98.9
0°-90°	1469.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1469.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	568	568	568	568	568	
5°	857	725	550	436	384	99
15°	3243	1065	422	222	181	955
25°	5059	1053	254	123	103	2325
35°	4114	683	137	76	62	2441
45°	1051	345	65	40	31	888
55°	128	47	26	16	9	176
65°	23	18	9	5	4	23
75°	3	2	2	2	2	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°	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7
2.5°	701.4	666.4	682.0	667.2	668.7	667.2	656.3	664.1	647.7	640.7	631.4
5°	856.9	812.6	830.5	805.6	796.3	793.9	769.1	763.6	740.3	724.7	702.2
7.5°	1077.8	1034.2	1040.4	1010.1	977.5	961.9	919.1	893.5	846.8	807.9	771.4
10°	1437.0	1360.8	1383.4	1298.6	1232.5	1175.7	1103.4	1045.9	967.3	902.8	840.6
12.5°	2123.6	1949.5	1918.4	1765.2	1627.5	1475.9	1325.8	1226.3	1094.1	990.7	899.7
15°	3243.4	2988.3	2926.1	2610.4	2275.3	1923.8	1613.5	1419.1	1210.7	1065.3	942.5
17.5°	4222.4	3959.6	3879.5	3458.0	3102.7	2565.3	1990.7	1620.5	1316.5	1092.5	962.7
20°	4824.3	4687.4	4677.3	4136.9	3629.9	3068.4	2325.0	1777.6	1347.6	1133.0	953.3
22.5°	5049.8	4971.2	4931.6	4536.6	4014.8	3335.9	2503.9	1842.9	1383.4	1113.5	917.6
25°	5059.1	5020.2	5037.3	4663.3	4125.2	3392.7	2493.8	1785.4	1320.4	1052.9	858.5
27.5°	5048.2	5008.6	5017.1	4613.5	4029.6	3234.1	2312.6	1634.5	1218.5	968.1	790.0
30°	5016.3	4960.4	4875.6	4373.3	3725.5	2860.0	1965.0	1432.4	1091.8	874.8	721.6
32.5°	4787.0	4723.2	4519.5	3895.8	3186.6	2320.4	1600.3	1225.5	954.9	778.4	646.2
35°	4114.3	4079.3	3804.8	3162.5	2483.7	1770.6	1315.7	1046.7	829.7	682.7	569.2
37.5°	3267.5	3232.5	2923.8	2373.3	1781.5	1374.0	1082.4	886.5	713.8	596.4	496.9
40°	2182.0	2224.0	2028.0	1635.3	1326.6	1071.5	884.1	749.6	608.9	506.2	419.9
42.5°	1446.3	1451.8	1377.1	1179.6	1007.8	852.3	719.3	620.5	507.0	423.0	346.0
45°	1051.3	1049.8	1007.8	881.8	785.4	682.0	588.6	509.3	419.1	345.3	279.2
47.5°	793.9	795.5	770.6	690.5	634.5	550.5	475.1	406.7	331.3	268.3	212.3
50°	571.5	576.2	557.5	500.8	454.1	391.1	328.2	276.1	220.1	175.0	133.0
52.5°	318.8	330.5	314.9	283.0	249.6	210.0	172.6	145.4	112.0	88.6	70.0
55°	128.3	136.9	132.2	116.6	103.4	87.1	77.0	65.3	53.7	47.4	43.5
57.5°	55.2	54.4	54.4	49.8	47.4	44.3	41.2	40.4	37.3	36.5	35.0
60°	38.1	38.1	38.1	36.5	35.8	35.0	33.4	32.7	31.1	29.5	28.0
62.5°	29.5	29.5	29.5	28.8	28.0	28.0	26.4	26.4	24.9	23.3	21.8
65°	22.6	22.6	23.3	22.6	21.8	21.8	21.0	20.2	18.7	17.9	16.3
67.5°	16.3	16.3	16.3	16.3	16.3	15.6	14.8	14.0	13.2	12.4	12.4
70°	10.9	10.9	10.9	10.9	10.9	10.1	10.1	9.3	9.3	8.6	7.8
72.5°	7.0	7.0	7.0	6.2	6.2	6.2	6.2	5.4	5.4	4.7	4.7
75°	3.1	3.1	3.1	3.1	3.1	2.3	3.1	2.3	2.3	2.3	2.3
77.5°	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6	1.6	1.6
80°	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6
82.5°	0.8	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6	1.6
85°	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	1.6	1.6	1.6
87.5°	0.0	0.0	0.0	0.0	0.8	0.8	0.8	0.8	0.8	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):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7
2.5°	629.1	615.1	612.0	595.6	585.5	578.5	573.9	564.5	545.9	542.8	537.3
5°	690.5	661.7	648.5	621.3	600.3	584.0	569.2	550.5	521.8	509.3	499.2
7.5°	746.5	686.6	676.5	637.6	606.5	578.5	554.4	528.0	492.2	475.9	458.0
10°	793.2	731.7	693.6	643.1	601.9	565.3	532.7	498.4	458.8	435.5	413.7
12.5°	828.9	749.6	696.0	634.5	584.0	538.9	502.3	460.3	419.9	392.7	369.4
15°	847.6	751.2	685.8	629.1	557.5	507.0	465.0	422.2	377.9	351.5	322.7
17.5°	845.3	735.6	662.5	585.5	521.8	468.1	423.8	383.4	337.5	304.8	278.4
20°	823.5	709.2	630.6	549.0	482.1	424.6	382.6	339.0	293.2	263.6	238.7
22.5°	784.6	670.3	588.6	504.7	440.1	383.4	337.5	295.5	252.7	228.6	204.5
25°	736.4	622.9	538.9	456.5	391.9	337.5	293.9	253.5	217.0	195.2	175.7
27.5°	678.9	568.4	485.2	410.6	346.8	293.9	251.9	218.5	185.8	168.7	151.6
30°	615.9	509.3	431.6	357.7	298.6	251.9	215.4	186.6	160.2	141.5	132.2
32.5°	548.2	448.7	378.7	309.5	255.1	214.6	183.5	159.4	137.6	125.2	115.1
35°	479.8	388.8	323.5	262.1	217.0	180.4	156.3	136.9	118.2	108.9	99.5
37.5°	412.1	329.7	272.2	220.1	181.2	153.2	133.0	115.9	101.1	94.1	87.1
40°	344.5	273.7	224.0	181.2	149.3	127.5	111.2	98.0	86.3	80.9	75.4
42.5°	280.7	223.2	182.0	152.4	124.4	106.5	93.3	82.4	72.3	67.7	63.0
45°	225.5	178.1	146.2	119.0	99.5	84.0	73.9	65.3	58.3	54.4	52.1
47.5°	167.2	130.6	105.0	85.5	71.5	61.4	56.0	50.5	46.7	45.1	42.8
50°	103.4	80.9	68.4	56.8	50.5	46.7	44.3	41.2	38.1	36.5	34.2
52.5°	59.1	49.8	45.9	42.8	40.4	38.9	36.5	34.2	30.3	28.8	27.2
55°	40.4	38.1	37.3	35.0	32.7	30.3	28.8	26.4	24.1	24.1	22.6
57.5°	33.4	31.1	30.3	27.2	25.7	24.1	23.3	21.8	20.2	18.7	17.9
60°	27.2	24.9	24.1	22.6	21.0	19.4	18.7	17.1	15.6	14.8	14.0
62.5°	21.0	19.4	18.7	17.9	16.3	14.8	14.0	13.2	11.7	10.9	10.1
65°	16.3	14.8	14.0	13.2	11.7	10.9	10.1	9.3	8.6	7.8	7.0
67.5°	11.7	10.1	10.1	9.3	8.6	7.8	7.0	6.2	5.4	5.4	4.7
70°	7.8	7.0	6.2	5.4	5.4	4.7	3.9	3.9	3.9	3.9	3.9
72.5°	4.7	3.9	3.9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
75°	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
77.5°	1.6	1.6	2.3	2.3	2.3	2.3	2.3	2.3	1.6	2.3	2.3
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°	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7	567.7
2.5°	528.0	525.7	514.8	512.4	502.3	509.3	500.0	485.2	482.9	486.8	478.2
5°	480.6	471.2	458.0	450.2	437.8	436.2	428.5	408.2	405.9	402.0	394.2
7.5°	433.9	423.0	403.6	388.8	378.7	372.5	363.1	344.5	337.5	333.6	323.5
10°	388.8	373.3	349.9	337.5	320.4	311.8	301.7	284.6	277.6	275.3	263.6
12.5°	342.9	322.7	299.4	286.9	269.1	261.3	251.9	237.9	231.7	226.3	220.8
15°	295.5	276.8	255.1	243.4	229.4	222.4	214.6	200.6	195.2	192.1	190.5
17.5°	254.3	236.4	216.2	207.6	194.4	187.4	182.0	171.1	166.4	163.3	160.2
20°	218.5	203.0	185.8	178.1	167.2	162.5	156.3	147.7	144.6	142.3	139.2
22.5°	186.6	173.4	160.2	154.0	145.4	141.5	136.1	129.9	126.7	124.4	122.1
25°	160.2	150.1	140.0	134.5	126.7	122.9	119.0	113.5	110.4	109.6	107.3
27.5°	139.2	131.4	122.9	117.4	111.2	108.1	105.0	100.3	98.8	97.2	94.9
30°	122.1	115.1	107.3	103.4	98.8	96.4	93.3	90.2	87.9	88.6	85.5
32.5°	106.5	101.1	94.9	92.5	87.9	86.3	84.0	80.1	77.8	77.0	75.4
35°	93.3	88.6	84.0	82.4	78.5	76.2	73.9	70.8	70.0	67.7	66.1
37.5°	81.6	77.8	73.9	72.3	69.2	66.1	64.5	60.7	59.1	58.3	57.5
40°	70.8	67.7	63.0	61.4	58.3	56.8	54.4	52.1	50.5	50.5	49.0
42.5°	59.1	56.8	52.9	52.1	49.0	48.2	45.9	44.3	42.8	42.0	41.2
45°	49.0	47.4	44.3	43.5	41.2	39.7	38.9	35.8	34.2	33.4	32.7
47.5°	40.4	38.9	35.0	34.2	33.4	31.1	29.5	28.8	27.2	26.4	26.4
50°	31.9	30.3	28.0	28.0	26.4	24.9	24.1	22.6	21.8	21.0	20.2
52.5°	25.7	24.9	22.6	22.6	21.0	20.2	18.7	17.9	16.3	16.3	15.6
55°	21.0	19.4	17.9	17.1	16.3	15.6	14.0	13.2	12.4	11.7	10.9
57.5°	16.3	15.6	14.0	13.2	12.4	11.7	10.1	9.3	8.6	8.6	7.8
60°	12.4	11.7	10.1	10.1	8.6	7.8	7.8	7.0	7.0	7.0	6.2
62.5°	9.3	8.6	7.8	7.0	6.2	6.2	6.2	6.2	5.4	5.4	5.4
65°	6.2	6.2	5.4	5.4	5.4	5.4	5.4	4.7	4.7	4.7	4.7
67.5°	4.7	4.7	4.7	4.7	4.7	3.9	3.9	3.9	3.9	3.9	3.9
70°	3.9	3.9	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	2.3
72.5°	3.1	3.1	3.1	3.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3
75°	2.3	2.3	2.3	2.3	2.3	2.3	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	0.8
80°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8
82.5°	1.6	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8
85°	1.6	1.6	1.6	1.6	1.6	0.8	0.8	0.8	0.8	0.8	0.8
87.5°	1.6	1.6	1.6	1.6	1.6	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°	567.7	567.7	567.7	567.7
2.5°	475.9	482.1	474.3	468.1
5°	395.0	398.1	390.4	384.1
7.5°	322.7	323.5	316.5	311.0
10°	265.9	265.2	259.7	255.8
12.5°	220.8	220.1	215.4	212.3
15°	185.1	185.8	182.7	181.2
17.5°	159.4	159.4	156.3	155.5
20°	137.6	138.4	136.1	133.7
22.5°	121.3	121.3	119.8	117.4
25°	106.5	106.5	105.0	103.4
27.5°	94.9	95.6	94.1	91.8
30°	84.8	84.8	83.2	81.6
32.5°	74.7	74.7	73.9	72.3
35°	64.5	65.3	63.8	62.2
37.5°	56.8	56.8	56.0	54.4
40°	48.2	49.0	48.2	46.7
42.5°	40.4	40.4	40.4	39.7
45°	31.9	32.7	31.9	31.1
47.5°	25.7	25.7	25.7	24.9
50°	19.4	20.2	19.4	18.7
52.5°	14.8	14.8	14.0	14.0
55°	10.9	10.1	10.1	9.3
57.5°	7.8	7.8	7.8	7.0
60°	6.2	6.2	6.2	6.2
62.5°	5.4	5.4	5.4	5.4
65°	4.7	4.7	4.7	3.9
67.5°	3.1	3.1	3.1	3.1
70°	2.3	2.3	2.3	2.3
72.5°	2.3	2.3	1.6	1.6
75°	1.6	1.6	1.6	1.6
77.5°	0.8	0.8	0.8	0.8
80°	0.8	0.8	0.8	0.8
82.5°	0.8	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)