

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: P85549

Luminaire Tested: **ML709830ICAT120D-495WW06-H750ICAT**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-41-14  
Report Number: P85549  
Test Lab: INNOVATION CENTER P2  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO  
Catalog Number: ML709830ICAT120D-495WW06-H750ICAT  
Description: HALO 6 INCH LED DOWNLIGHT WITH 900 Lmn MODULE, DIFFUSE LENS AND SEMISPECULAR REFLECTOR WITH PLASTIC SPECULAR KICKER---ABSOLUTE PHOTOMETRY IS BASED ON CALIBRATION FACTORS CREATED USING A 500 WATT, NIST TRACEABLE, OMNI-DIRECTIONAL LAB LUMEN STANDARD IN THE GONIOPHOTOMETER WITH TEST DISTANCE OF 28.75 FEET----  
Light Source: (1)SMT LED 3000K  
(1)CL-L241-C26L2-A  
Ballast/Driver: (1)ELECTRONIC DRIVER  
(1)RHPS311BL-CLO

**Summary**

Lumens per Lamp: 711 (1 lamp)  
Luminaire Lumens: 714.3 lumens  
Efficiency: 100.5%  
Efficacy: 51.0 lumens/watt  
Spacing Criteria (0/90/45): 1.29 / 1.31 / 1.33  
Luminous Opening: Vertical Cylinder (Dia: 0.48' x H: 0.1')  
CIE Type: Direct

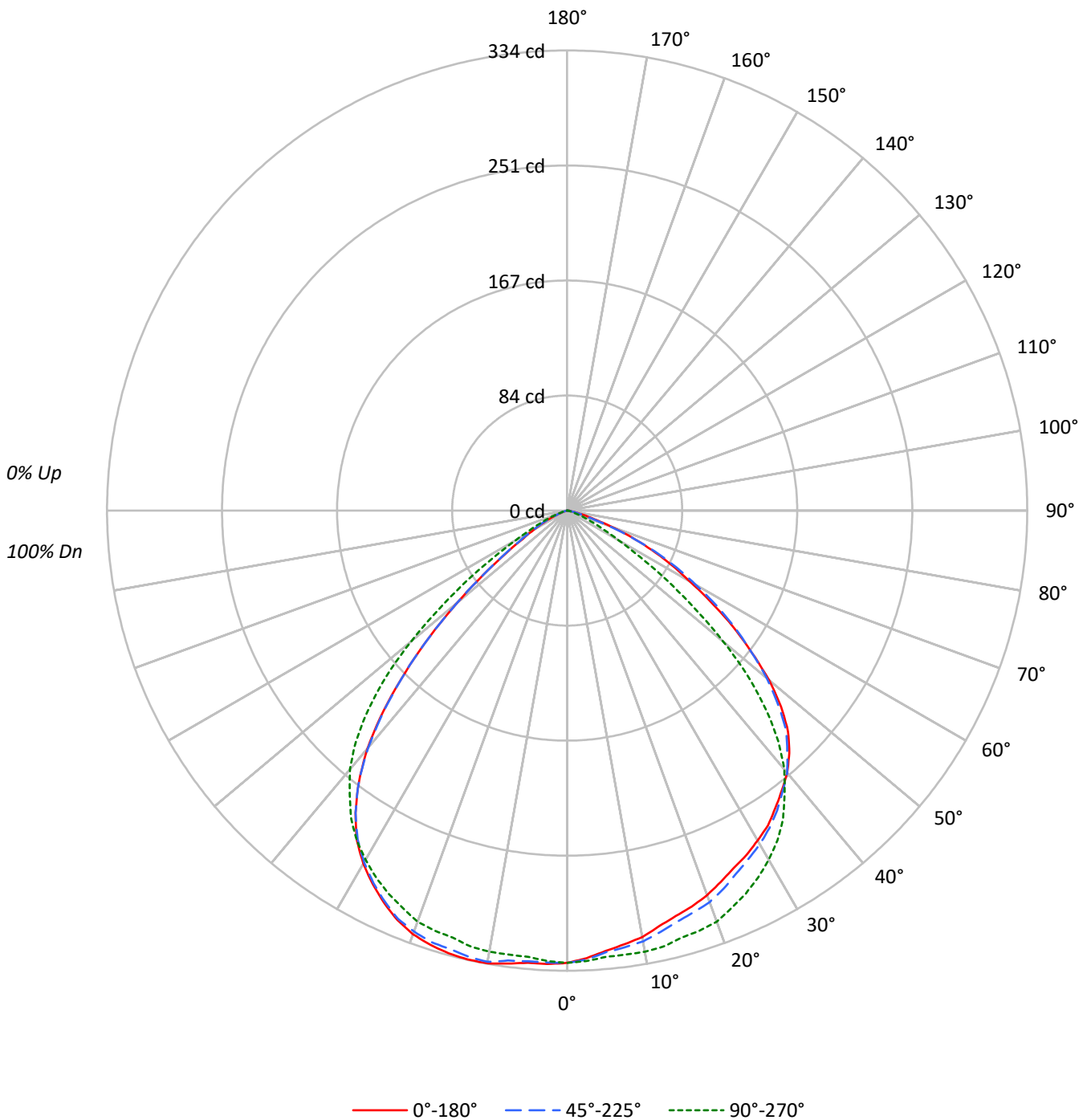
Input Watts (W): 14  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 0.12081  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	0
RCR																		
0	120	120	120	120	117	117	117	117	112	112	112	107	107	107	103	103	103	100
1	112	108	105	102	109	106	103	100	102	99	97	98	96	94	94	93	91	89
2	104	97	92	87	101	95	90	86	92	88	84	89	85	82	86	83	80	78
3	96	87	80	75	94	86	79	74	83	77	73	80	76	72	78	74	71	69
4	89	78	71	65	87	77	70	65	75	69	64	73	67	63	71	66	62	60
5	82	71	63	57	80	70	63	57	68	61	56	66	60	56	64	59	55	53
6	76	64	57	51	75	64	56	51	62	55	50	60	54	50	59	53	49	47
7	71	59	51	45	70	58	51	45	57	50	45	55	49	45	54	49	44	43
8	66	54	46	41	65	53	46	41	52	45	40	51	45	40	50	44	40	38
9	62	50	42	37	61	49	42	37	48	41	37	47	41	37	46	40	36	35
10	58	46	39	34	57	46	38	34	45	38	34	44	38	33	43	37	33	32

**AVERAGE LUMINANCE (cd/sqm):**

	0°	90°	180°
0°	19596	19596	19596
5°	18785	19037	19289
10°	18198	18823	19321
15°	17572	18507	19187
20°	17202	18390	18951
25°	16771	17973	18418
30°	16523	17491	17682
35°	16189	16785	16453
40°	15827	15623	14380
45°	15126	13612	11091
50°	13485	10438	7314
55°	11082	6684	4074
60°	8388	3532	2297
65°	6118	1844	1260
70°	3379	868	434
75°	1378	371	127
80°	439	151	151
85°	373	187	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture	% Lamp
0°-10°	31.0	4.3	4.4
10°-20°	90.5	12.7	12.7
20°-30°	139.6	19.5	19.6
30°-40°	166.6	23.3	23.4
40°-50°	150.5	21.1	21.2
50°-60°	90.2	12.6	12.7
60°-70°	38.1	5.3	5.4
70°-80°	6.9	1.0	1.0
80°-90°	0.9	0.1	0.1
90°-100°	0.0	0.0	0.0
100°-110°	0.0	0.0	0.0
110°-120°	0.0	0.0	0.0
120°-130°	0.0	0.0	0.0
130°-140°	0.0	0.0	0.0
140°-150°	0.0	0.0	0.0
150°-160°	0.0	0.0	0.0
160°-170°	0.0	0.0	0.0
170°-180°	0.0	0.0	0.0
0°-30°	261.1	36.6	36.7
0°-40°	427.7	59.9	60.2
0°-60°	668.4	93.6	94.0
0°-90°	714.3	100.0	100.5
90°-120°	0.0	0.0	0.0
90°-150°	0.0	0.0	0.0
90°-180°	0.0	0.0	0.0
0°-180°	714.3	100.0	100.5

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	328	328	328	328	328	
5°	321	322	325	328	329	30
15°	305	309	321	329	333	86
25°	286	290	307	313	314	132
35°	264	266	273	268	268	165
45°	227	225	204	166	166	173
55°	147	149	89	55	54	131
65°	68	70	20	15	14	67
75°	12	9	3	1	1	15
85°	2	1	1	0	0	2
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°	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3
2.5°	325.1	325.1	325.1	325.1	325.1	325.1	325.1	325.1	326.2	326.2	326.2
5°	320.8	319.7	319.7	320.8	320.8	320.8	320.8	320.8	320.8	321.8	321.8
7.5°	317.5	317.5	317.5	317.5	317.5	318.6	318.6	318.6	319.7	319.7	319.7
10°	314.3	314.3	314.3	314.3	315.4	315.4	315.4	316.4	316.4	317.5	318.6
12.5°	308.9	308.9	308.9	308.9	310.0	310.0	311.0	311.0	312.1	313.2	314.3
15°	304.6	304.6	304.6	304.6	304.6	305.6	306.7	306.7	307.8	308.9	310.0
17.5°	301.3	301.3	301.3	301.3	301.3	302.4	303.5	303.5	304.6	305.6	306.7
20°	297.0	297.0	297.0	297.0	298.1	298.1	299.2	300.2	301.3	302.4	303.5
22.5°	291.6	291.6	291.6	292.7	292.7	293.8	293.8	294.8	295.9	297.0	298.1
25°	286.2	286.2	286.2	286.2	287.3	287.3	288.4	288.4	289.4	290.5	292.7
27.5°	281.9	280.8	280.8	281.9	281.9	281.9	283.0	283.0	284.0	285.1	286.2
30°	276.5	276.5	276.5	276.5	277.6	277.6	277.6	278.6	278.6	279.7	280.8
32.5°	271.1	271.1	271.1	271.1	271.1	271.1	272.2	272.2	272.2	273.2	274.3
35°	263.5	263.5	263.5	263.5	264.6	264.6	264.6	264.6	264.6	265.7	265.7
37.5°	256.0	256.0	256.0	256.0	256.0	256.0	256.0	256.0	256.0	257.0	257.0
40°	248.4	248.4	248.4	248.4	248.4	248.4	248.4	247.3	247.3	248.4	248.4
42.5°	238.7	238.7	238.7	238.7	238.7	237.6	237.6	237.6	237.6	236.5	236.5
45°	226.8	226.8	226.8	225.7	225.7	225.7	225.7	224.6	224.6	224.6	223.6
47.5°	210.6	210.6	210.6	210.6	210.6	209.5	209.5	209.5	208.4	207.4	207.4
50°	191.2	191.2	191.2	191.2	191.2	191.2	190.1	190.1	190.1	189.0	187.9
52.5°	168.5	168.5	169.6	169.6	169.6	169.6	169.6	169.6	169.6	168.5	168.5
55°	146.9	146.9	146.9	148.0	148.0	149.0	149.0	149.0	149.0	149.0	149.0
57.5°	124.2	124.2	125.3	126.4	126.4	127.4	127.4	128.5	128.5	128.5	128.5
60°	102.6	103.7	103.7	104.8	105.8	106.9	106.9	108.0	108.0	108.0	108.0
62.5°	85.3	85.3	86.4	86.4	87.5	87.5	88.6	88.6	88.6	89.6	89.6
65°	68.0	68.0	68.0	69.1	69.1	69.1	69.1	69.1	69.1	70.2	70.2
67.5°	50.8	50.8	50.8	50.8	50.8	49.7	49.7	49.7	49.7	49.7	49.7
70°	33.5	33.5	33.5	33.5	32.4	32.4	31.3	31.3	30.2	30.2	30.2
72.5°	20.5	20.5	19.4	19.4	19.4	18.4	18.4	17.3	16.2	16.2	16.2
75°	11.9	11.9	10.8	10.8	10.8	9.7	9.7	9.7	8.6	8.6	8.6
77.5°	6.5	6.5	6.5	6.5	5.4	5.4	5.4	5.4	5.4	5.4	4.3
80°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
82.5°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
85°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	1.1	1.1
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
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°	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3
2.5°	326.2	326.2	326.2	326.2	327.2	327.2	327.2	327.2	327.2	327.2	328.3
5°	321.8	322.9	322.9	322.9	324.0	324.0	324.0	325.1	325.1	326.2	326.2
7.5°	320.8	320.8	321.8	322.9	322.9	324.0	325.1	325.1	326.2	326.2	327.2
10°	319.7	319.7	320.8	321.8	322.9	324.0	324.0	325.1	326.2	327.2	328.3
12.5°	315.4	316.4	317.5	318.6	319.7	320.8	321.8	324.0	325.1	325.1	327.2
15°	311.0	312.1	314.3	315.4	316.4	318.6	319.7	320.8	322.9	324.0	325.1
17.5°	308.9	310.0	311.0	313.2	315.4	316.4	318.6	319.7	320.8	322.9	324.0
20°	305.6	306.7	308.9	310.0	312.1	314.3	315.4	317.5	318.6	319.7	321.8
22.5°	300.2	301.3	303.5	305.6	307.8	308.9	311.0	312.1	314.3	315.4	316.4
25°	293.8	295.9	298.1	300.2	301.3	303.5	305.6	306.7	307.8	308.9	310.0
27.5°	288.4	289.4	291.6	293.8	295.9	297.0	299.2	300.2	301.3	302.4	303.5
30°	281.9	284.0	285.1	287.3	289.4	290.5	291.6	292.7	293.8	294.8	294.8
32.5°	275.4	276.5	278.6	279.7	280.8	283.0	283.0	284.0	285.1	285.1	285.1
35°	266.8	267.8	268.9	270.0	271.1	272.2	272.2	273.2	273.2	272.2	271.1
37.5°	258.1	258.1	259.2	260.3	260.3	260.3	260.3	259.2	258.1	257.0	254.9
40°	248.4	248.4	248.4	248.4	248.4	247.3	246.2	245.2	241.9	239.8	235.4
42.5°	236.5	236.5	235.4	234.4	233.3	231.1	229.0	226.8	222.5	218.2	212.8
45°	223.6	222.5	220.3	218.2	216.0	212.8	208.4	204.1	198.7	192.2	185.8
47.5°	206.3	205.2	202.0	198.7	193.3	189.0	183.6	178.2	171.7	164.2	156.6
50°	186.8	184.7	181.4	176.0	168.5	162.0	154.4	148.0	140.4	132.8	125.3
52.5°	167.4	164.2	158.8	152.3	142.6	133.9	124.2	116.6	110.2	102.6	95.0
55°	148.0	143.6	138.2	129.6	118.8	106.9	96.1	88.6	82.1	75.6	69.1
57.5°	127.4	124.2	117.7	108.0	95.0	82.1	71.3	62.6	57.2	52.9	48.6
60°	108.0	104.8	98.3	87.5	75.6	62.6	50.8	43.2	38.9	35.6	33.5
62.5°	88.6	86.4	79.9	71.3	59.4	46.4	36.7	30.2	25.9	24.8	23.8
65°	70.2	68.0	62.6	55.1	44.3	34.6	25.9	20.5	18.4	17.3	16.2
67.5°	49.7	48.6	45.4	38.9	31.3	23.8	17.3	14.0	11.9	10.8	10.8
70°	30.2	30.2	28.1	24.8	19.4	15.1	10.8	8.6	7.6	6.5	6.5
72.5°	16.2	16.2	15.1	14.0	10.8	8.6	6.5	4.3	4.3	4.3	3.2
75°	7.6	7.6	7.6	6.5	5.4	4.3	3.2	3.2	2.2	2.2	2.2
77.5°	4.3	4.3	4.3	3.2	3.2	3.2	2.2	2.2	2.2	1.1	1.1
80°	3.2	3.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1
82.5°	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
85°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.0	0.0	0.0
87.5°	1.1	1.1	1.1	1.1	0.0	0.0	0.0	0.0	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):**

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3
2.5°	328.3	328.3	328.3	328.3	328.3	328.3	328.3	328.3	329.4	329.4	329.4
5°	327.2	327.2	327.2	327.2	328.3	328.3	328.3	328.3	328.3	329.4	329.4
7.5°	328.3	328.3	328.3	329.4	329.4	329.4	330.5	330.5	330.5	331.6	331.6
10°	329.4	329.4	330.5	331.6	331.6	332.6	332.6	332.6	333.7	333.7	333.7
12.5°	328.3	328.3	329.4	330.5	330.5	331.6	331.6	332.6	332.6	332.6	333.7
15°	326.2	327.2	328.3	328.3	329.4	329.4	330.5	330.5	331.6	331.6	331.6
17.5°	325.1	325.1	326.2	327.2	327.2	328.3	328.3	329.4	329.4	330.5	330.5
20°	322.9	322.9	324.0	324.0	325.1	325.1	326.2	326.2	326.2	327.2	327.2
22.5°	317.5	318.6	318.6	319.7	319.7	320.8	320.8	320.8	320.8	321.8	321.8
25°	311.0	312.1	312.1	312.1	313.2	313.2	313.2	313.2	313.2	314.3	314.3
27.5°	303.5	303.5	303.5	304.6	304.6	304.6	304.6	304.6	304.6	305.6	305.6
30°	294.8	294.8	294.8	294.8	294.8	294.8	294.8	294.8	294.8	295.9	295.9
32.5°	284.0	284.0	284.0	283.0	283.0	283.0	283.0	283.0	283.0	283.0	283.0
35°	270.0	268.9	268.9	267.8	267.8	267.8	267.8	267.8	267.8	267.8	267.8
37.5°	252.7	250.6	249.5	248.4	248.4	248.4	248.4	248.4	248.4	248.4	248.4
40°	232.2	229.0	226.8	225.7	224.6	224.6	224.6	224.6	224.6	224.6	224.6
42.5°	207.4	203.0	199.8	197.6	197.6	196.6	197.6	197.6	197.6	197.6	197.6
45°	179.3	172.8	169.6	167.4	166.3	166.3	166.3	166.3	166.3	166.3	166.3
47.5°	149.0	142.6	138.2	136.1	135.0	135.0	135.0	135.0	135.0	135.0	135.0
50°	117.7	112.3	108.0	105.8	104.8	103.7	103.7	103.7	103.7	104.8	103.7
52.5°	88.6	83.2	79.9	77.8	77.8	76.7	76.7	76.7	76.7	76.7	76.7
55°	63.7	60.5	57.2	56.2	56.2	55.1	55.1	55.1	55.1	55.1	54.0
57.5°	45.4	43.2	41.0	41.0	40.0	40.0	40.0	38.9	38.9	38.9	38.9
60°	32.4	31.3	30.2	30.2	30.2	29.2	29.2	29.2	29.2	28.1	28.1
62.5°	23.8	22.7	22.7	21.6	21.6	21.6	21.6	20.5	20.5	20.5	20.5
65°	16.2	16.2	15.1	15.1	15.1	15.1	14.0	14.0	14.0	14.0	14.0
67.5°	9.7	9.7	9.7	9.7	8.6	8.6	8.6	8.6	8.6	8.6	8.6
70°	5.4	5.4	5.4	5.4	5.4	5.4	5.4	4.3	4.3	4.3	4.3
72.5°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	2.2	2.2	2.2
75°	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
80°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
82.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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°	328.3	328.3	328.3	328.3
2.5°	329.4	329.4	329.4	329.4
5°	329.4	329.4	329.4	329.4
7.5°	331.6	331.6	331.6	331.6
10°	333.7	333.7	333.7	333.7
12.5°	333.7	333.7	333.7	333.7
15°	331.6	331.6	331.6	332.6
17.5°	330.5	330.5	330.5	330.5
20°	327.2	327.2	327.2	327.2
22.5°	321.8	321.8	321.8	321.8
25°	314.3	314.3	314.3	314.3
27.5°	305.6	305.6	305.6	305.6
30°	295.9	295.9	295.9	295.9
32.5°	283.0	283.0	283.0	284.0
35°	267.8	267.8	267.8	267.8
37.5°	248.4	248.4	248.4	248.4
40°	225.7	225.7	225.7	225.7
42.5°	197.6	194.4	197.6	197.6
45°	166.3	166.3	166.3	166.3
47.5°	135.0	135.0	135.0	135.0
50°	103.7	103.7	103.7	103.7
52.5°	76.7	76.7	76.7	76.7
55°	54.0	54.0	54.0	54.0
57.5°	38.9	38.9	37.8	37.8
60°	28.1	28.1	28.1	28.1
62.5°	20.5	20.5	20.5	20.5
65°	14.0	14.0	14.0	14.0
67.5°	8.6	8.6	8.6	8.6
70°	4.3	4.3	4.3	4.3
72.5°	2.2	2.2	2.2	2.2
75°	1.1	1.1	1.1	1.1
77.5°	1.1	1.1	1.1	1.1
80°	1.1	1.1	1.1	1.1
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)