

Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State  
Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: HALO COMMERCIAL

Report Number: P242038

Luminaire Tested: **PRS410D010-S4M12-41SWWMB-3000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P242038  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1802-584-64)  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/03/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: PRS410D010-S4M12-41SWWMB-3000K  
Description: HALO COMMERCIAL 4" SQUARE, NEW CONSTRUCTION FRAME, WITH 4" WALL WASH DISTRIBUTION, WW TRIM MATTE BLACK  
Light Source: ARRAYS OF HIGH LUMEN LEDS 80CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 440.2 lumens  
Efficiency: N/A  
Efficacy: 44.0 lumens/watt  
Spacing Criteria (0/90/45): 0.96 / 0.94 / 1.03  
Luminous Opening: Rectangular (W 0.38' x L: 0.38' x H: 0')  
CIE Type: Direct

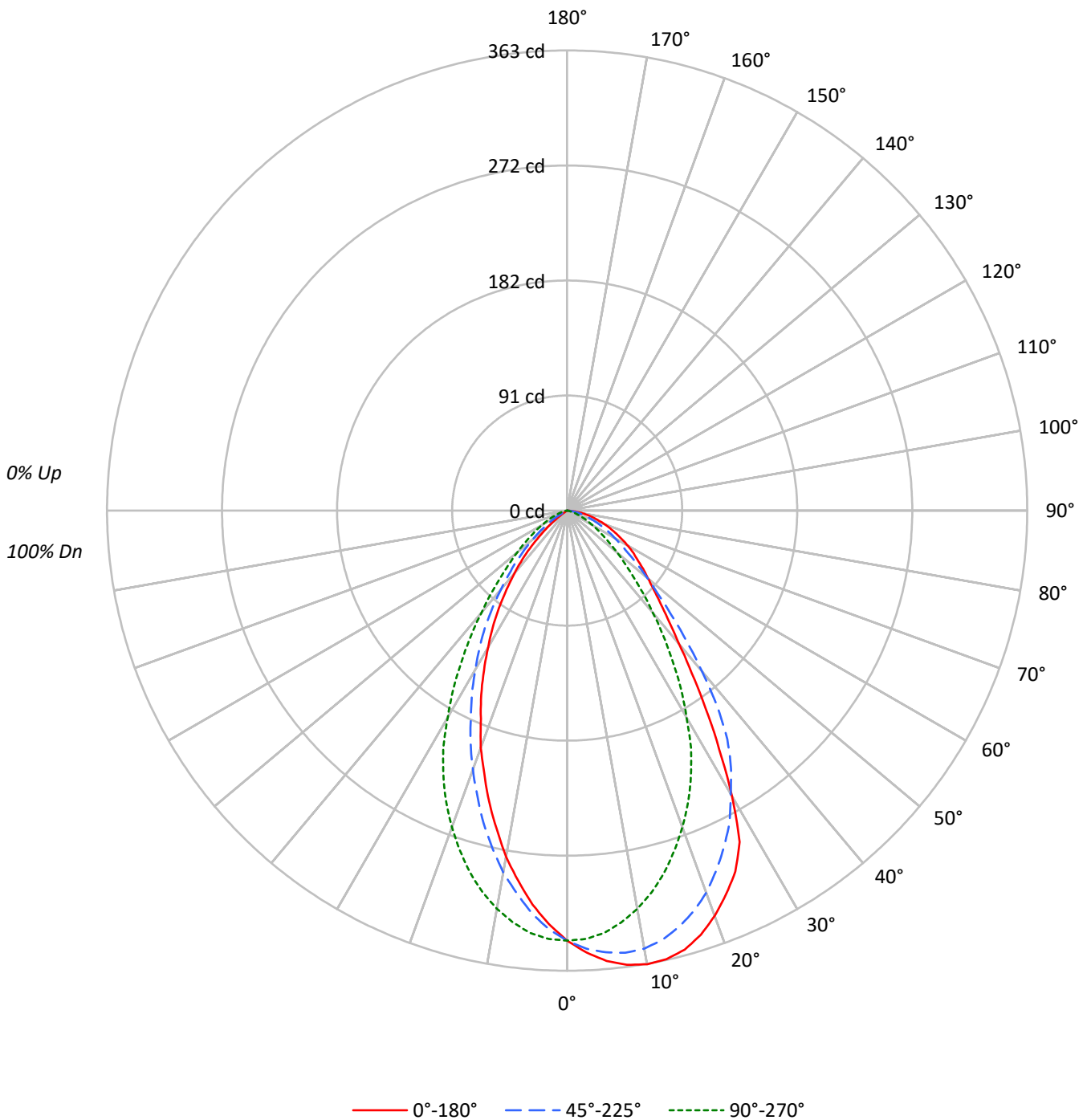
Input Watts (W): 10  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	112	108	105	103	109	106	104	101	102	100	98	98	97	95	95	93	92	90					90			
2	105	99	94	89	102	97	92	88	93	90	86	90	87	84	88	85	83	81					81			
3	98	90	84	79	96	88	83	78	86	81	77	83	79	76	81	77	74	73					73			
4	91	82	75	70	89	81	75	70	79	73	69	77	72	68	75	71	67	65					65			
5	86	75	68	63	84	74	68	63	73	67	62	71	66	62	69	65	61	59					59			
6	80	70	62	57	79	69	62	57	67	61	57	66	60	56	64	59	56	54					54			
7	76	64	57	52	74	64	57	52	62	56	52	61	56	51	60	55	51	50					50			
8	71	60	53	48	70	59	53	48	58	52	48	57	51	47	56	51	47	46					46			
9	67	56	49	44	66	55	49	44	54	48	44	53	48	44	52	47	44	42					42			
10	64	52	46	41	62	52	45	41	51	45	41	50	45	41	49	44	41	39					39			

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

	0°	90°	180°
0°	25964	25964	25964
5°	27400	25694	23980
10°	28245	24786	21561
15°	28409	23432	18836
20°	27711	21651	16218
25°	26528	19509	13547
30°	22980	16652	11022
35°	17791	13549	8756
40°	13709	10522	6465
45°	11301	7945	4287
50°	9896	6097	2191
55°	9021	4644	520
60°	8435	3552	153
65°	7697	2626	0
70°	7139	1723	0
75°	6299	1153	0
80°	5554	441	0
85°	3425	0	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	31.4	7.1
10°-20°	83.2	18.9
20°-30°	107.5	24.4
30°-40°	95.5	21.7
40°-50°	62.1	14.1
50°-60°	34.5	7.8
60°-70°	17.4	4.0
70°-80°	7.3	1.7
80°-90°	1.3	0.3
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°	222.1	50.5
0°-40°	317.6	72.1
0°-60°	414.2	94.1
0°-90°	440.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	440.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	339	339	339	339	339	
5°	357	350	334	319	312	34
15°	358	340	296	255	238	101
25°	314	293	231	180	160	142
35°	190	220	145	113	94	120
45°	104	116	73	56	40	82
55°	68	59	35	20	4	61
65°	42	31	14	1	0	42
75°	21	14	4	0	0	23
85°	4	2	0	0	0	5
90°	0	0	0	0	0	



TEST NUMBER: P242038

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2
2.5°	348.9	347.9	348.9	347.9	347.9	347.9	347.9	346.9	346.9	346.0	346.0
5°	356.6	356.6	355.6	355.6	354.7	354.7	354.7	353.7	352.7	351.8	349.8
7.5°	361.4	361.4	360.5	360.5	359.5	358.5	358.5	356.6	355.6	353.7	351.8
10°	363.4	363.4	362.4	361.4	360.5	359.5	359.5	357.6	355.6	352.7	350.8
12.5°	362.4	362.4	361.4	360.5	359.5	358.5	357.6	355.6	352.7	349.8	346.9
15°	358.5	358.5	357.6	356.6	354.7	353.7	352.7	350.8	347.9	344.0	340.2
17.5°	350.8	350.8	349.8	348.9	347.9	346.9	345.0	343.1	339.2	335.3	331.5
20°	340.2	340.2	340.2	339.2	337.3	336.3	335.3	332.4	329.5	325.7	320.8
22.5°	327.6	327.6	326.6	325.7	323.7	323.7	321.8	318.9	316.0	312.1	307.3
25°	314.1	313.1	312.1	312.1	309.2	308.3	307.3	304.4	301.5	297.6	292.8
27.5°	294.7	293.8	294.7	294.7	293.8	292.8	291.9	289.0	284.1	280.3	277.4
30°	260.0	260.9	260.9	262.9	266.7	269.6	271.6	271.6	267.7	263.8	258.0
32.5°	223.2	225.2	226.1	230.0	233.9	236.8	238.7	242.6	247.4	246.4	240.6
35°	190.4	192.3	193.3	196.2	201.0	202.9	205.8	211.6	217.4	222.3	220.3
37.5°	161.4	161.4	164.3	167.2	171.1	174.0	176.8	181.7	189.4	193.3	194.2
40°	137.2	138.2	139.2	143.0	145.9	148.8	150.8	155.6	162.4	165.3	165.3
42.5°	118.9	118.9	119.8	121.8	125.6	126.6	128.5	132.4	136.3	138.2	139.2
45°	104.4	104.4	104.4	106.3	108.2	109.2	111.1	114.0	115.0	116.0	116.0
47.5°	92.8	92.8	92.8	93.7	94.7	95.7	96.6	97.6	98.6	98.6	96.6
50°	83.1	83.1	84.1	84.1	84.1	85.0	85.0	85.0	84.1	83.1	82.1
52.5°	75.4	75.4	75.4	75.4	75.4	75.4	75.4	74.4	72.5	71.5	69.6
55°	67.6	68.6	68.6	68.6	67.6	67.6	66.7	65.7	62.8	60.9	58.9
57.5°	61.8	61.8	61.8	60.9	60.9	59.9	58.9	57.0	55.1	53.2	50.3
60°	55.1	55.1	55.1	54.1	54.1	53.2	52.2	50.3	48.3	45.4	43.5
62.5°	48.3	48.3	48.3	48.3	47.4	46.4	45.4	43.5	41.6	39.6	37.7
65°	42.5	42.5	42.5	42.5	40.6	39.6	38.7	36.7	34.8	32.9	30.9
67.5°	36.7	36.7	36.7	35.8	34.8	33.8	32.9	31.9	30.0	28.0	26.1
70°	31.9	31.9	30.9	30.0	29.0	29.0	28.0	26.1	25.1	23.2	21.3
72.5°	26.1	26.1	26.1	25.1	24.2	23.2	22.2	21.3	20.3	18.4	17.4
75°	21.3	21.3	21.3	20.3	19.3	18.4	18.4	16.4	15.5	14.5	13.5
77.5°	16.4	16.4	16.4	15.5	14.5	14.5	13.5	12.6	11.6	10.6	9.7
80°	12.6	12.6	11.6	11.6	10.6	10.6	9.7	9.7	8.7	7.7	6.8
82.5°	7.7	7.7	7.7	7.7	6.8	6.8	6.8	5.8	5.8	4.8	3.9
85°	3.9	3.9	3.9	3.9	2.9	2.9	2.9	2.9	2.9	1.9	1.9
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2
2.5°	345.0	344.0	343.1	342.1	342.1	341.1	341.1	340.2	339.2	338.2	337.3
5°	348.9	346.9	345.0	344.0	343.1	342.1	340.2	338.2	336.3	334.4	332.4
7.5°	348.9	346.9	344.0	342.1	340.2	339.2	336.3	333.4	330.5	327.6	324.7
10°	347.9	344.0	341.1	338.2	335.3	333.4	330.5	326.6	322.8	318.9	315.0
12.5°	343.1	339.2	335.3	331.5	328.6	326.6	321.8	317.0	313.1	308.3	303.4
15°	336.3	332.4	327.6	321.8	319.9	317.0	312.1	306.3	301.5	295.7	290.9
17.5°	327.6	321.8	317.0	311.2	308.3	305.4	299.6	292.8	288.0	281.2	275.4
20°	316.0	311.2	303.4	298.6	294.7	291.9	285.1	278.3	271.6	265.8	258.0
22.5°	302.5	296.7	289.9	283.2	280.3	276.4	269.6	261.9	256.1	249.3	241.6
25°	288.0	281.2	274.5	266.7	263.8	260.9	253.2	246.4	238.7	231.0	225.2
27.5°	270.6	264.8	258.0	250.3	247.4	243.5	234.8	227.1	219.4	211.6	204.9
30°	253.2	248.4	239.7	231.0	226.1	221.3	212.6	203.9	195.2	188.4	182.6
32.5°	235.8	226.1	216.5	206.8	201.0	196.2	188.4	180.7	173.0	167.2	160.4
35°	212.6	202.9	192.3	182.6	177.8	174.0	165.3	157.5	150.8	145.0	139.2
37.5°	188.4	178.8	169.1	159.5	155.6	151.7	143.0	136.3	129.5	124.7	118.9
40°	162.4	157.5	146.9	138.2	134.3	130.5	123.7	116.0	111.1	105.3	100.5
42.5°	138.2	133.4	125.6	117.9	114.0	111.1	104.4	98.6	93.7	88.9	85.0
45°	116.0	112.1	106.3	100.5	96.6	93.7	87.0	82.1	78.3	73.4	70.5
47.5°	96.6	93.7	89.9	84.1	81.2	78.3	72.5	68.6	64.7	61.8	58.9
50°	80.2	78.3	74.4	70.5	67.6	65.7	60.9	57.0	54.1	51.2	49.3
52.5°	67.6	64.7	61.8	58.0	56.1	54.1	51.2	47.4	45.4	42.5	40.6
55°	57.0	55.1	52.2	48.3	46.4	45.4	42.5	39.6	36.7	34.8	32.9
57.5°	48.3	46.4	43.5	40.6	39.6	37.7	34.8	31.9	30.0	29.0	27.1
60°	41.6	38.7	36.7	33.8	31.9	30.9	28.0	26.1	24.2	23.2	21.3
62.5°	34.8	32.9	30.0	27.1	26.1	25.1	23.2	21.3	19.3	18.4	16.4
65°	29.0	27.1	25.1	22.2	21.3	20.3	18.4	16.4	15.5	14.5	13.5
67.5°	24.2	22.2	20.3	18.4	17.4	15.5	14.5	13.5	11.6	10.6	9.7
70°	19.3	17.4	15.5	13.5	13.5	12.6	10.6	9.7	8.7	7.7	6.8
72.5°	15.5	13.5	12.6	10.6	9.7	9.7	8.7	7.7	6.8	5.8	4.8
75°	11.6	10.6	8.7	7.7	6.8	6.8	5.8	4.8	4.8	3.9	2.9
77.5°	8.7	7.7	6.8	5.8	4.8	4.8	3.9	2.9	2.9	1.9	1.9
80°	5.8	4.8	3.9	2.9	2.9	2.9	1.9	1.9	1.9	1.0	1.0
82.5°	2.9	2.9	1.9	1.9	1.9	1.9	1.0	1.0	1.0	1.0	0.0
85°	1.0	1.0	1.0	1.0	1.0	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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2
2.5°	336.3	335.3	334.4	334.4	333.4	332.4	331.5	331.5	330.5	329.5	329.5
5°	330.5	328.6	326.6	325.7	324.7	322.8	321.8	319.9	318.9	317.0	316.0
7.5°	321.8	318.9	316.0	315.0	314.1	312.1	309.2	306.3	304.4	303.4	301.5
10°	312.1	308.3	304.4	302.5	301.5	297.6	294.7	291.9	289.9	287.0	284.1
12.5°	298.6	294.7	290.9	289.0	287.0	283.2	280.3	276.4	272.5	269.6	266.7
15°	285.1	280.3	275.4	273.5	270.6	266.7	262.9	259.0	255.1	251.3	248.4
17.5°	269.6	264.8	259.0	256.1	254.2	249.3	243.5	240.6	235.8	232.9	229.0
20°	253.2	247.4	241.6	239.7	236.8	231.0	226.1	221.3	217.4	213.6	209.7
22.5°	235.8	229.0	223.2	221.3	218.4	212.6	207.8	203.9	199.1	194.2	190.4
25°	218.4	211.6	205.8	202.0	199.1	194.2	188.4	184.6	179.7	175.9	173.0
27.5°	199.1	192.3	186.5	183.6	181.7	176.8	172.0	167.2	162.4	158.5	154.6
30°	176.8	172.0	167.2	165.3	162.4	158.5	153.7	149.8	145.0	141.1	137.2
32.5°	155.6	150.8	145.9	145.0	143.0	139.2	136.3	132.4	128.5	124.7	121.8
35°	135.3	130.5	127.6	125.6	123.7	120.8	117.9	116.0	113.1	109.2	106.3
37.5°	115.0	113.1	108.2	107.3	106.3	103.4	101.5	99.5	96.6	94.7	91.8
40°	97.6	94.7	91.8	90.8	88.9	87.0	85.0	83.1	81.2	80.2	77.3
42.5°	81.2	79.2	76.3	76.3	74.4	72.5	70.5	69.6	67.6	65.7	64.7
45°	68.6	65.7	64.7	62.8	62.8	60.9	58.9	58.0	56.1	54.1	52.2
47.5°	57.0	55.1	53.2	52.2	52.2	50.3	48.3	46.4	45.4	42.5	40.6
50°	47.4	45.4	44.5	43.5	42.5	41.6	39.6	37.7	35.8	33.8	30.9
52.5°	38.7	37.7	35.8	35.8	34.8	32.9	30.9	29.0	27.1	25.1	22.2
55°	31.9	30.0	29.0	28.0	27.1	26.1	24.2	22.2	20.3	17.4	15.5
57.5°	25.1	24.2	22.2	22.2	21.3	19.3	17.4	15.5	13.5	10.6	8.7
60°	20.3	18.4	17.4	16.4	15.5	14.5	11.6	9.7	7.7	5.8	2.9
62.5°	15.5	14.5	12.6	12.6	11.6	9.7	7.7	5.8	2.9	1.0	0.0
65°	11.6	10.6	9.7	8.7	7.7	5.8	3.9	1.9	1.0	0.0	0.0
67.5°	8.7	7.7	5.8	5.8	4.8	2.9	1.0	0.0	0.0	0.0	0.0
70°	5.8	4.8	3.9	2.9	1.9	1.0	0.0	0.0	0.0	0.0	0.0
72.5°	3.9	2.9	1.9	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	2.9	1.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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





TEST NUMBER: P242038

CATALOG NUMBER: PRS410D010-S4M12-41SWWMB-3000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	339.2	339.2	339.2	339.2	339.2	339.2	339.2	339.2
2.5°	328.6	327.6	328.6	327.6	327.6	326.6	327.6	326.6
5°	315.0	314.1	314.1	313.1	313.1	313.1	312.1	312.1
7.5°	299.6	298.6	297.6	297.6	296.7	295.7	295.7	294.7
10°	283.2	281.2	279.3	280.3	278.3	278.3	277.4	277.4
12.5°	264.8	262.9	262.9	260.9	259.0	259.0	257.1	257.1
15°	246.4	244.5	242.6	241.6	239.7	239.7	238.7	237.7
17.5°	226.1	224.2	222.3	221.3	220.3	219.4	218.4	217.4
20°	206.8	203.9	202.9	202.0	200.0	199.1	198.1	199.1
22.5°	188.4	184.6	183.6	182.6	181.7	179.7	178.8	177.8
25°	169.1	166.2	164.3	164.3	162.4	161.4	159.5	160.4
27.5°	150.8	148.8	146.9	145.9	144.0	143.0	142.1	142.1
30°	134.3	131.4	130.5	128.5	127.6	125.6	124.7	124.7
32.5°	117.9	115.0	114.0	113.1	111.1	109.2	109.2	109.2
35°	103.4	100.5	99.5	97.6	95.7	93.7	93.7	93.7
37.5°	88.9	86.0	84.1	83.1	81.2	80.2	78.3	78.3
40°	75.4	72.5	70.5	69.6	67.6	65.7	64.7	64.7
42.5°	61.8	59.9	58.0	57.0	55.1	53.2	52.2	52.2
45°	49.3	47.4	46.4	45.4	43.5	40.6	39.6	39.6
47.5°	38.7	36.7	35.8	33.8	31.9	30.0	28.0	28.0
50°	29.0	27.1	25.1	24.2	22.2	20.3	18.4	18.4
52.5°	20.3	18.4	17.4	15.5	13.5	11.6	10.6	9.7
55°	12.6	10.6	9.7	8.7	6.8	5.8	3.9	3.9
57.5°	6.8	4.8	3.9	2.9	1.9	1.0	1.0	1.0
60°	1.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0
62.5°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
65°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82.5°	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
87.5°	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

(END OF REPORT)