

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: P345414

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMW 2000Lm4000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345414  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-7)  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/03/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: PR4FS24D010 PR4M24WW8FSMW 2000Lm4000K  
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1801.2 lumens  
Efficiency: N/A  
Efficacy: 81.9 lumens/watt  
Spacing Criteria (0/90/45): 0.95 / 1.12 / 1.11  
Luminous Opening: Circular (Dia: 0.4' x H: 0')  
CIE Type: Direct

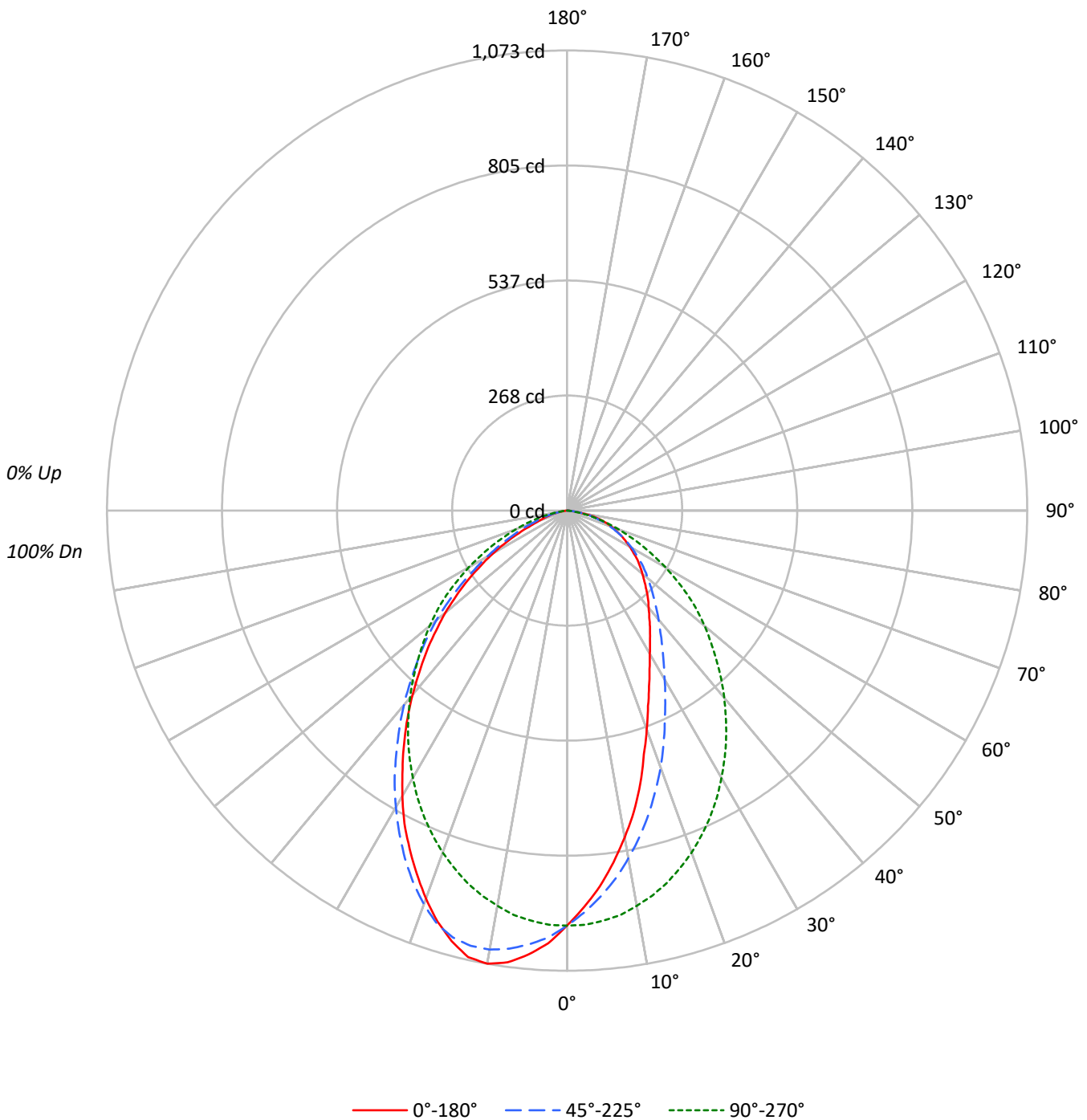
Input Watts (W): 22  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	100	100	100	100	100		
1	111	106	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87	87	87	87	87	87	87		
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75	75	75	75	75	75	75		
3	94	85	77	72	92	83	76	71	80	75	70	78	73	69	75	71	68	66	66	66	66	66	66	66		
4	87	76	68	62	85	75	67	62	72	66	61	70	65	60	68	63	59	57	57	57	57	57	57	57		
5	80	69	61	55	78	68	60	54	66	59	54	64	58	53	62	57	53	51	51	51	51	51	51	51		
6	75	63	54	49	73	62	54	48	60	53	48	58	52	48	57	51	47	45	45	45	45	45	45	45		
7	70	57	49	44	68	57	49	43	55	48	43	54	47	43	52	47	43	41	41	41	41	41	41	41		
8	65	53	45	39	64	52	45	39	51	44	39	50	43	39	48	43	39	37	37	37	37	37	37	37		
9	61	49	41	36	60	48	41	36	47	40	36	46	40	35	45	39	35	34	34	34	34	34	34	34		
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	36	32	31	31	31	31	31	31	31		

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

	0°	90°	180°
0°	84653	84653	84653
5°	77223	84300	91272
10°	68675	83117	95285
15°	59703	81382	94132
20°	50525	79000	89611
25°	43614	76109	83888
30°	38916	72660	77579
35°	35953	69034	70806
40°	33764	65050	64023
45°	32298	60811	57323
50°	31176	56962	50512
55°	30454	52322	43142
60°	29565	46359	34935
65°	28872	39469	25706
70°	28157	32403	17672
75°	26834	24671	13417
80°	18688	14205	7757
85°	7728	5118	2609



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	90.7	5.0
10°-20°	245.8	13.6
20°-30°	332.1	18.4
30°-40°	349.6	19.4
40°-50°	315.0	17.5
50°-60°	243.2	13.5
60°-70°	149.7	8.3
70°-80°	65.8	3.7
80°-90°	9.4	0.5
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°	668.6	37.1
0°-40°	1018.2	56.5
0°-60°	1576.3	87.5
0°-90°	1801.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1801.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	968	968	968	968	968	
5°	880	902	960	1015	1040	81
15°	659	734	899	1030	1040	183
25°	452	539	789	895	869	209
35°	337	387	646	695	663	211
45°	261	286	492	492	463	202
55°	200	210	343	303	283	178
65°	140	140	191	145	124	138
75°	79	70	73	47	40	81
85°	8	6	5	4	3	13
90°	0	0	0	0	0	



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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8
2.5°	924.3	925.5	925.5	925.5	926.8	928.1	928.1	930.7	931.9	934.5	937.1
5°	879.5	878.2	878.2	880.7	883.3	884.6	884.6	889.7	893.5	897.4	902.5
7.5°	827.0	825.7	829.5	830.8	833.4	837.2	839.8	844.9	848.7	857.7	865.4
10°	773.2	773.2	775.8	779.6	783.4	787.3	789.9	796.3	803.9	812.9	823.1
12.5°	719.4	715.6	719.4	724.6	728.4	732.2	736.1	743.8	755.3	766.8	779.6
15°	659.3	658.0	660.6	665.7	674.6	677.2	681.0	692.6	704.1	719.4	733.5
17.5°	595.3	599.1	600.4	608.1	617.0	620.9	624.7	636.2	652.9	668.2	684.9
20°	542.8	540.2	545.3	550.5	558.1	564.5	569.7	582.5	600.4	617.0	637.5
22.5°	492.9	491.6	495.4	501.8	508.2	513.3	518.5	531.3	545.3	564.5	587.6
25°	451.9	450.6	454.5	458.3	466.0	469.8	473.7	486.5	501.8	517.2	538.9
27.5°	416.0	416.0	418.6	421.2	427.6	431.4	436.5	446.8	459.6	474.9	495.4
30°	385.3	385.3	387.9	390.4	396.8	399.4	403.2	410.9	421.2	437.8	454.5
32.5°	359.7	359.7	361.0	364.8	367.4	370.0	373.8	380.2	390.4	403.2	418.6
35°	336.7	336.7	338.0	340.5	344.4	345.6	348.2	354.6	362.3	372.5	386.6
37.5°	314.9	316.2	316.2	318.8	321.3	322.6	325.2	330.3	336.7	345.6	357.2
40°	295.7	297.0	297.0	299.6	302.1	303.4	304.7	307.2	314.9	321.3	331.6
42.5°	279.1	279.1	279.1	280.4	282.9	284.2	285.5	289.3	293.2	299.6	307.2
45°	261.1	261.1	262.4	263.7	266.3	266.3	267.6	271.4	274.0	279.1	285.5
47.5°	244.5	244.5	245.8	245.8	248.3	248.3	249.6	252.2	254.7	259.9	265.0
50°	229.1	229.1	229.1	230.4	231.7	233.0	233.0	235.5	238.1	241.9	245.8
52.5°	213.8	213.8	213.8	213.8	215.1	216.3	216.3	218.9	221.5	224.0	227.9
55°	199.7	198.4	199.7	199.7	199.7	201.0	201.0	203.5	203.5	206.1	209.9
57.5°	183.1	184.3	184.3	183.1	184.3	185.6	185.6	185.6	186.9	189.5	190.7
60°	169.0	169.0	169.0	169.0	170.3	170.3	170.3	170.3	171.5	171.5	174.1
62.5°	153.6	153.6	154.9	154.9	153.6	154.9	154.9	154.9	156.2	156.2	156.2
65°	139.5	139.5	139.5	139.5	139.5	139.5	139.5	139.5	139.5	139.5	139.5
67.5°	124.2	124.2	124.2	124.2	124.2	124.2	124.2	122.9	122.9	122.9	121.6
70°	110.1	110.1	110.1	108.8	108.8	108.8	108.8	107.5	107.5	106.3	105.0
72.5°	94.7	94.7	94.7	93.5	93.5	93.5	92.2	90.9	89.6	88.3	88.3
75°	79.4	79.4	78.1	76.8	76.8	75.5	75.5	74.2	74.2	71.7	70.4
77.5°	61.4	60.2	60.2	60.2	58.9	57.6	57.6	56.3	55.0	55.0	53.8
80°	37.1	37.1	38.4	37.1	38.4	37.1	37.1	38.4	37.1	35.8	35.8
82.5°	17.9	17.9	19.2	17.9	19.2	19.2	19.2	17.9	17.9	17.9	17.9
85°	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	6.4	6.4	6.4
87.5°	5.1	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8
2.5°	939.6	943.5	944.7	948.6	949.9	952.4	955.0	958.8	962.7	966.5	969.1
5°	907.6	914.0	919.1	925.5	929.4	931.9	939.6	946.0	953.7	960.1	966.5
7.5°	873.1	880.7	892.3	899.9	903.8	910.2	919.1	929.4	939.6	951.1	960.1
10°	833.4	844.9	856.4	870.5	876.9	883.3	894.8	908.9	923.0	935.8	949.9
12.5°	791.1	806.5	821.9	835.9	844.9	852.6	870.5	885.9	902.5	919.1	934.5
15°	750.2	766.8	784.7	802.7	812.9	821.9	839.8	859.0	879.5	898.7	916.6
17.5°	705.4	724.6	745.0	765.5	775.8	787.3	810.3	830.8	853.9	874.3	896.1
20°	659.3	681.0	702.8	728.4	738.6	751.4	774.5	800.1	824.4	848.7	871.8
22.5°	611.9	636.2	660.6	687.4	701.5	714.3	741.2	766.8	793.7	819.3	844.9
25°	563.3	591.4	619.6	646.5	661.8	674.6	704.1	733.5	761.7	788.6	815.5
27.5°	518.5	545.3	576.1	605.5	620.9	635.0	667.0	695.1	725.8	755.3	782.2
30°	477.5	503.1	533.8	565.8	581.2	596.5	628.6	660.6	688.7	719.4	748.9
32.5°	439.1	462.1	492.9	524.9	542.8	556.9	590.1	620.9	652.9	683.6	713.0
35°	403.2	426.3	453.2	485.2	500.5	517.2	551.7	583.7	614.5	646.5	673.4
37.5°	372.5	390.4	414.8	445.5	462.1	478.8	513.3	545.3	576.1	608.1	636.2
40°	343.1	359.7	381.5	408.4	425.0	441.7	474.9	506.9	537.7	569.7	599.1
42.5°	318.8	331.6	349.5	375.1	389.2	405.8	439.1	469.8	500.5	531.3	559.4
45°	294.4	306.0	321.3	341.8	355.9	371.2	403.2	435.2	463.4	491.6	519.7
47.5°	271.4	280.4	294.4	312.4	323.9	338.0	368.7	399.4	427.6	454.5	480.1
50°	250.9	258.6	271.4	284.2	294.4	307.2	334.1	364.8	391.7	418.6	441.7
52.5°	231.7	238.1	247.1	259.9	267.6	277.8	303.4	330.3	357.2	381.5	403.2
55°	213.8	217.6	225.3	234.3	240.7	249.6	271.4	297.0	321.3	343.1	361.0
57.5°	193.3	198.4	203.5	209.9	216.3	221.5	238.1	261.1	282.9	302.1	320.0
60°	175.4	179.2	181.8	188.2	190.7	195.9	208.7	227.9	248.3	265.0	277.8
62.5°	157.5	158.7	161.3	166.4	167.7	171.5	180.5	195.9	211.2	226.6	239.4
65°	139.5	139.5	142.1	143.4	145.9	147.2	153.6	165.1	179.2	190.7	198.4
67.5°	121.6	121.6	122.9	122.9	125.5	125.5	129.3	138.3	147.2	157.5	163.9
70°	103.7	103.7	103.7	103.7	103.7	105.0	107.5	112.7	119.1	126.7	130.6
72.5°	87.0	85.8	85.8	84.5	84.5	84.5	85.8	88.3	93.5	98.6	102.4
75°	69.1	67.8	66.6	66.6	65.3	65.3	65.3	67.8	70.4	73.0	74.2
77.5°	51.2	51.2	49.9	47.4	47.4	46.1	46.1	46.1	47.4	49.9	48.6
80°	35.8	33.3	32.0	32.0	30.7	30.7	29.4	28.2	28.2	28.2	26.9
82.5°	16.6	16.6	16.6	15.4	15.4	15.4	15.4	14.1	14.1	12.8	12.8
85°	6.4	6.4	6.4	6.4	6.4	6.4	6.4	5.1	5.1	5.1	5.1
87.5°	3.8	3.8	3.8	3.8	3.8	2.6	2.6	2.6	2.6	2.6	2.6
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):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8
2.5°	972.9	976.8	980.6	981.9	983.2	987.0	989.6	993.4	996.0	997.2	999.8
5°	974.2	980.6	987.0	990.8	993.4	999.8	1004.9	1011.3	1015.2	1021.6	1025.4
7.5°	970.4	980.6	989.6	994.7	999.8	1008.8	1016.4	1024.1	1030.5	1036.9	1043.3
10°	962.7	975.5	988.3	993.4	999.8	1010.0	1021.6	1030.5	1039.5	1047.2	1054.8
12.5°	951.1	966.5	981.9	988.3	994.7	1008.8	1020.3	1030.5	1039.5	1047.2	1052.3
15°	935.8	953.7	970.4	979.3	987.0	1001.1	1012.6	1022.8	1030.5	1035.6	1039.5
17.5°	916.6	937.1	956.3	964.0	972.9	985.7	997.2	1004.9	1010.0	1010.0	1011.3
20°	894.8	916.6	935.8	944.7	953.7	964.0	972.9	976.8	976.8	976.8	974.2
22.5°	869.2	892.3	911.5	920.4	928.1	935.8	940.9	940.9	938.3	934.5	930.7
25°	839.8	864.1	882.0	891.0	894.8	901.2	899.9	898.7	894.8	891.0	885.9
27.5°	807.8	832.1	851.3	855.1	857.7	859.0	855.1	852.6	847.5	842.3	838.5
30°	774.5	797.5	812.9	814.2	816.7	815.5	810.3	803.9	798.8	792.4	787.3
32.5°	738.6	760.4	770.6	773.2	771.9	766.8	761.7	755.3	748.9	741.2	734.8
35°	700.2	720.7	727.1	725.8	724.6	718.2	710.5	704.1	695.1	690.0	681.0
37.5°	660.6	679.8	682.3	678.5	674.6	667.0	659.3	652.9	642.6	637.5	631.1
40°	620.9	633.7	633.7	629.8	627.3	619.6	609.3	600.4	592.7	583.7	579.9
42.5°	579.9	590.1	585.0	582.5	578.6	567.1	559.4	550.5	540.2	535.1	528.7
45°	538.9	545.3	538.9	533.8	530.0	519.7	512.1	500.5	491.6	486.5	478.8
47.5°	496.7	499.3	494.1	486.5	483.9	472.4	463.4	454.5	445.5	436.5	430.1
50°	458.3	455.7	448.1	442.9	439.1	426.3	416.0	405.8	398.1	390.4	384.0
52.5°	414.8	412.2	402.0	395.6	389.2	378.9	366.1	358.4	349.5	343.1	336.7
55°	370.0	362.3	354.6	348.2	341.8	331.6	320.0	309.8	303.4	295.7	291.9
57.5°	323.9	318.8	306.0	300.8	295.7	285.5	274.0	265.0	256.0	250.9	248.3
60°	282.9	274.0	263.7	257.3	252.2	241.9	231.7	222.7	216.3	213.8	209.9
62.5°	239.4	231.7	220.2	215.1	211.2	201.0	192.0	184.3	179.2	174.1	171.5
65°	199.7	190.7	181.8	176.7	171.5	162.6	156.2	151.1	144.7	140.8	138.3
67.5°	161.3	153.6	145.9	142.1	138.3	130.6	124.2	120.3	115.2	111.4	106.3
70°	126.7	120.3	115.2	111.4	107.5	101.1	96.0	92.2	88.3	84.5	80.6
72.5°	98.6	92.2	85.8	84.5	81.9	76.8	73.0	69.1	65.3	62.7	60.2
75°	70.4	67.8	62.7	60.2	58.9	55.0	51.2	48.6	47.4	44.8	43.5
77.5°	46.1	43.5	39.7	39.7	38.4	37.1	34.6	32.0	32.0	30.7	30.7
80°	25.6	24.3	23.0	21.8	23.0	21.8	20.5	19.2	19.2	19.2	17.9
82.5°	11.5	11.5	10.2	10.2	10.2	10.2	10.2	9.0	9.0	9.0	9.0
85°	5.1	5.1	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
87.5°	2.6	2.6	2.6	2.6	2.6	2.6	1.3	1.3	1.3	1.3	1.3
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: P345414

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000Lm4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	967.8	967.8	967.8	967.8	967.8	967.8	967.8	967.8
2.5°	1002.4	1003.6	1004.9	1006.2	1007.5	1007.5	1008.8	1010.0
5°	1028.0	1031.8	1033.1	1034.4	1036.9	1038.2	1038.2	1039.5
7.5°	1048.4	1053.6	1054.8	1057.4	1060.0	1061.2	1062.5	1062.5
10°	1060.0	1063.8	1065.1	1067.6	1070.2	1071.5	1072.8	1072.8
12.5°	1056.1	1060.0	1061.2	1062.5	1065.1	1066.4	1066.4	1066.4
15°	1042.0	1042.0	1042.0	1042.0	1040.8	1042.0	1042.0	1039.5
17.5°	1010.0	1008.8	1010.0	1007.5	1006.2	1006.2	1004.9	1004.9
20°	971.6	970.4	969.1	969.1	967.8	965.2	964.0	962.7
22.5°	928.1	925.5	924.3	924.3	921.7	920.4	919.1	916.6
25°	883.3	876.9	876.9	876.9	874.3	874.3	871.8	869.2
27.5°	832.1	828.3	828.3	825.7	823.1	821.9	820.6	821.9
30°	783.4	778.3	775.8	774.5	773.2	773.2	769.4	768.1
32.5°	729.7	725.8	723.3	722.0	719.4	718.2	716.9	714.3
35°	677.2	673.4	670.8	670.8	665.7	664.4	663.1	663.1
37.5°	623.4	620.9	619.6	615.8	614.5	613.2	613.2	611.9
40°	573.5	569.7	568.4	564.5	563.3	563.3	559.4	560.7
42.5°	522.3	517.2	515.9	514.6	513.3	510.8	512.1	509.5
45°	473.7	469.8	467.3	467.3	466.0	463.4	462.1	463.4
47.5°	426.3	421.2	421.2	419.9	418.6	417.3	417.3	414.8
50°	381.5	377.6	375.1	372.5	373.8	372.5	370.0	371.2
52.5°	332.8	329.0	327.7	327.7	326.4	326.4	325.2	325.2
55°	289.3	285.5	285.5	284.2	284.2	284.2	282.9	282.9
57.5°	245.8	243.2	241.9	241.9	239.4	240.7	239.4	238.1
60°	207.4	203.5	201.0	202.3	201.0	201.0	198.4	199.7
62.5°	167.7	165.1	163.9	163.9	161.3	161.3	158.7	160.0
65°	134.4	130.6	129.3	128.0	125.5	124.2	124.2	124.2
67.5°	103.7	101.1	99.9	97.3	94.7	93.5	92.2	90.9
70°	78.1	75.5	74.2	73.0	71.7	70.4	70.4	69.1
72.5°	58.9	56.3	56.3	55.0	55.0	53.8	53.8	53.8
75°	42.2	42.2	41.0	41.0	39.7	41.0	39.7	39.7
77.5°	29.4	28.2	29.4	28.2	26.9	26.9	26.9	26.9
80°	16.6	16.6	16.6	16.6	16.6	16.6	16.6	15.4
82.5°	9.0	9.0	9.0	7.7	7.7	7.7	7.7	7.7
85°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)