

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: P345485

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 2000Lm3500K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345485  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-9)  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/03/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: PR4FS24D010 PR4M24WW8FSBZ 2000lm3500K  
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1817.6 lumens  
Efficiency: N/A  
Efficacy: 89.1 lumens/watt  
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1  
Luminous Opening: Circular (Dia: 0.4' x H: 0')  
CIE Type: Direct

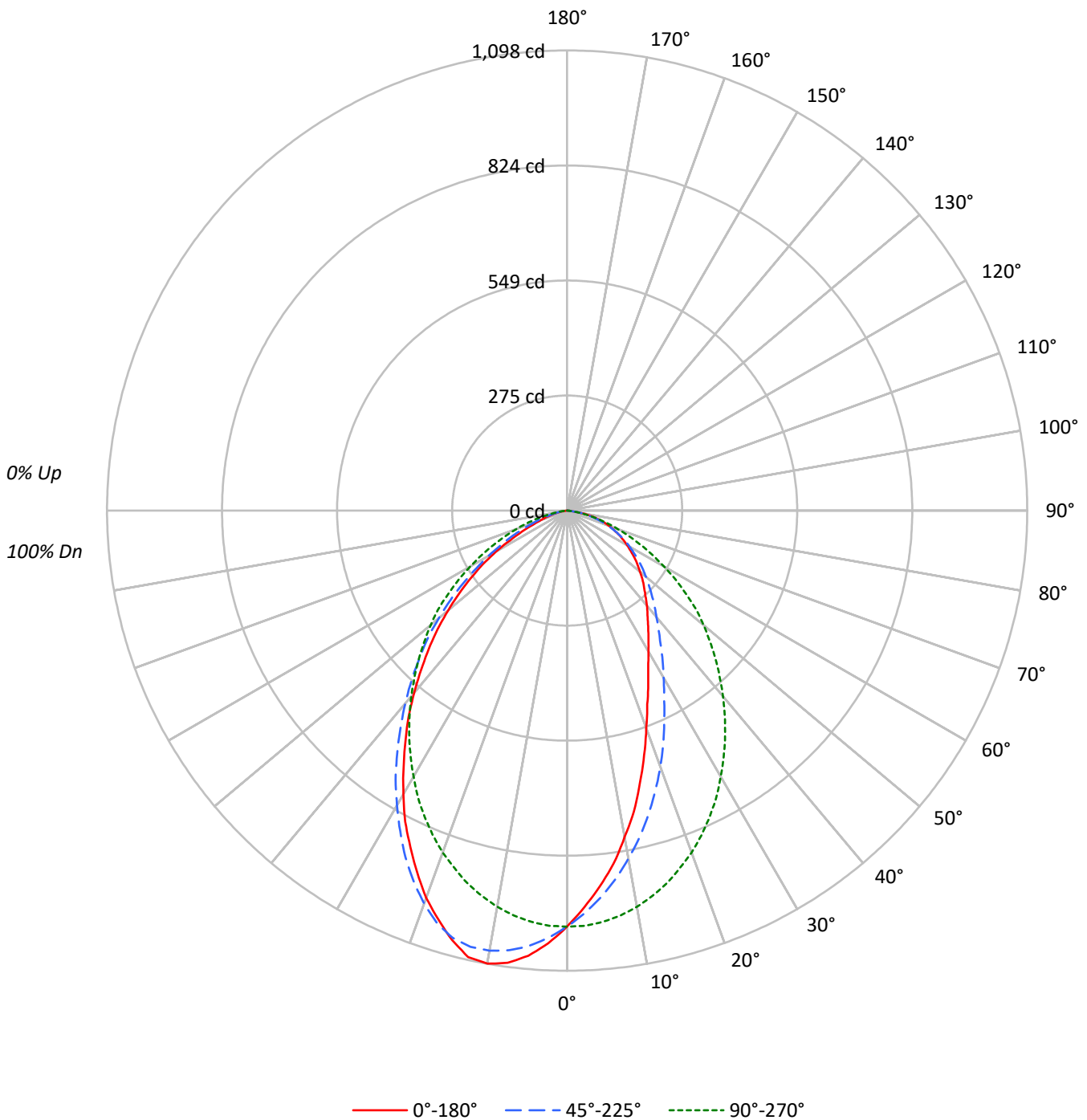
Input Watts (W): 20.4  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90					88				
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	84	80	78					76				
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68					66				
4	87	76	69	63	85	75	68	62	73	66	61	70	65	61	68	64	60					58				
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53					51				
6	75	63	55	49	73	62	54	49	60	53	48	59	53	48	57	52	48					46				
7	70	58	50	44	68	57	49	44	55	48	43	54	48	43	53	47	43					41				
8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39					37				
9	61	49	41	36	60	48	41	36	47	41	36	46	40	36	45	40	36					34				
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	42	37	33					31				

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

	0°	90°	180°
0°	86840	86840	86840
5°	78988	86478	93616
10°	70238	85266	97496
15°	60808	83365	96070
20°	51391	80815	91556
25°	44173	77711	85432
30°	39209	74044	78942
35°	35985	70155	71842
40°	33844	66032	64833
45°	32125	61974	57756
50°	30876	57820	50322
55°	29996	52795	42593
60°	28900	46569	34183
65°	28231	40173	24692
70°	27160	32863	17109
75°	25279	24806	11964
80°	17177	13197	5944
85°	1305	5219	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	93.0	5.1
10°-20°	251.5	13.8
20°-30°	338.6	18.6
30°-40°	354.7	19.5
40°-50°	318.1	17.5
50°-60°	243.5	13.4
60°-70°	148.3	8.2
70°-80°	63.0	3.5
80°-90°	7.1	0.4
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°	683.0	37.6
0°-40°	1037.7	57.1
0°-60°	1599.3	88.0
0°-90°	1817.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1817.6	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	993	993	993	993	993	
5°	900	926	985	1043	1066	83
15°	672	750	921	1056	1061	187
25°	458	548	805	913	885	211
35°	337	388	657	707	673	212
45°	260	286	501	498	467	201
55°	197	208	346	303	279	175
65°	136	138	194	144	119	135
75°	75	67	73	45	35	77
85°	1	3	5	1	0	9
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°	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8
2.5°	946.9	948.2	950.8	949.5	952.1	952.1	952.1	954.7	957.3	958.7	961.3
5°	899.6	901.0	902.3	904.9	906.2	904.9	908.8	912.8	916.7	921.9	925.9
7.5°	849.8	849.8	848.5	852.4	857.7	859.0	861.6	865.5	870.8	878.7	886.5
10°	790.8	792.1	794.7	796.0	803.9	805.2	809.2	814.4	823.6	832.8	843.2
12.5°	735.7	734.4	735.7	739.6	744.9	751.4	755.4	761.9	773.7	785.5	798.7
15°	671.5	672.8	676.7	680.6	688.5	692.4	699.0	710.8	722.6	734.4	750.1
17.5°	611.1	609.8	615.1	621.6	628.2	634.7	640.0	650.5	666.2	683.3	700.3
20°	552.1	550.8	554.7	560.0	570.5	574.4	581.0	596.7	611.1	629.5	650.5
22.5°	499.7	499.7	503.6	510.1	516.7	520.6	527.2	540.3	557.4	578.3	599.3
25°	457.7	457.7	460.3	464.2	472.1	476.0	482.6	491.8	507.5	527.2	548.2
27.5°	418.3	421.0	422.3	426.2	432.8	436.7	440.6	451.1	464.2	481.3	501.0
30°	388.2	389.5	390.8	393.4	398.7	401.3	406.5	415.7	427.5	442.0	460.3
32.5°	360.6	362.0	362.0	365.9	369.8	373.8	376.4	384.2	392.1	406.5	423.6
35°	337.0	337.0	339.7	341.0	343.6	346.2	348.8	355.4	364.6	375.1	388.2
37.5°	314.7	314.7	316.1	318.7	321.3	323.9	325.2	330.5	338.3	347.5	358.0
40°	296.4	296.4	296.4	299.0	301.6	302.9	304.3	309.5	316.1	322.6	331.8
42.5°	276.7	278.0	279.3	280.6	282.0	284.6	285.9	288.5	293.8	299.0	308.2
45°	259.7	261.0	261.0	262.3	264.9	264.9	266.2	270.2	274.1	279.3	285.9
47.5°	243.9	243.9	243.9	245.2	246.5	247.9	249.2	251.8	255.7	258.4	264.9
50°	226.9	226.9	228.2	229.5	230.8	230.8	232.1	233.4	237.4	240.0	245.2
52.5°	211.1	211.1	212.5	212.5	213.8	213.8	215.1	217.7	219.0	222.9	226.9
55°	196.7	195.4	196.7	196.7	196.7	198.0	198.0	200.6	203.3	204.6	208.5
57.5°	179.7	181.0	181.0	182.3	182.3	182.3	183.6	183.6	186.2	187.5	188.8
60°	165.2	166.6	166.6	166.6	166.6	166.6	167.9	167.9	169.2	170.5	171.8
62.5°	150.8	150.8	150.8	150.8	150.8	152.1	152.1	152.1	152.1	153.4	154.7
65°	136.4	136.4	136.4	136.4	136.4	136.4	136.4	136.4	136.4	136.4	137.7
67.5°	120.7	120.7	120.7	122.0	120.7	120.7	120.7	120.7	120.7	120.7	119.3
70°	106.2	106.2	106.2	106.2	106.2	104.9	104.9	103.6	103.6	102.3	102.3
72.5°	90.5	90.5	90.5	89.2	89.2	89.2	87.9	86.6	85.2	85.2	85.2
75°	74.8	74.8	73.4	73.4	72.1	72.1	70.8	69.5	68.2	66.9	66.9
77.5°	56.4	56.4	56.4	56.4	55.1	53.8	53.8	52.5	51.1	51.1	49.8
80°	34.1	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	31.5	31.5
82.5°	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1
85°	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	2.6
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	1.3	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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8
2.5°	963.9	966.5	970.5	973.1	974.4	975.7	979.6	983.6	987.5	991.4	994.1
5°	932.4	937.7	942.9	949.5	952.1	956.0	963.9	970.5	977.0	984.9	991.4
7.5°	894.4	903.6	912.8	923.2	927.2	931.1	941.6	953.4	962.6	974.4	984.9
10°	855.1	865.5	877.3	891.8	898.3	904.9	918.0	932.4	945.5	960.0	973.1
12.5°	810.5	827.5	843.2	859.0	865.5	873.4	890.5	907.5	924.6	941.6	957.3
15°	765.9	782.9	802.6	821.0	830.1	840.6	860.3	881.3	901.0	920.6	939.0
17.5°	721.3	738.3	759.3	782.9	794.7	805.2	826.2	849.8	873.4	894.4	918.0
20°	671.5	693.7	718.7	743.6	755.4	768.5	793.4	818.3	844.6	868.2	893.1
22.5°	622.9	646.5	676.7	701.6	714.7	727.8	756.7	785.5	811.8	838.0	862.9
25°	574.4	601.9	630.8	661.0	675.4	689.8	720.0	747.5	777.7	805.2	834.1
27.5°	527.2	556.0	586.2	617.7	633.4	649.2	679.3	710.8	741.0	771.1	800.0
30°	482.6	510.1	542.9	575.7	591.5	608.5	640.0	672.8	702.9	733.1	764.6
32.5°	443.3	466.9	499.7	532.4	549.5	566.5	600.6	633.4	663.6	695.1	727.8
35°	406.5	428.8	457.7	491.8	508.8	525.9	560.0	594.1	626.9	657.0	688.5
37.5°	375.1	394.7	419.7	449.8	469.5	486.5	520.6	554.7	586.2	617.7	647.8
40°	344.9	362.0	385.6	414.4	430.1	447.2	481.3	516.7	548.2	578.3	608.5
42.5°	318.7	333.1	352.8	377.7	394.7	409.2	444.6	478.7	508.8	539.0	569.2
45°	295.1	306.9	322.6	343.6	358.0	376.4	409.2	440.6	470.8	501.0	529.8
47.5°	271.5	282.0	295.1	314.7	326.5	341.0	373.8	403.9	434.1	461.6	489.2
50°	251.8	259.7	270.2	285.9	297.7	308.2	338.3	369.8	397.4	424.9	449.8
52.5°	232.1	237.4	246.5	261.0	268.8	279.3	305.6	334.4	362.0	388.2	410.5
55°	212.5	217.7	224.3	234.7	242.6	250.5	272.8	300.3	325.2	346.2	368.5
57.5°	192.8	196.7	202.0	211.1	216.4	222.9	241.3	263.6	285.9	306.9	323.9
60°	175.7	178.4	182.3	187.5	191.5	195.4	208.5	229.5	250.5	266.2	282.0
62.5°	156.1	157.4	160.0	165.2	167.9	170.5	179.7	198.0	215.1	229.5	242.6
65°	137.7	139.0	140.3	142.9	145.6	146.9	154.7	167.9	182.3	194.1	203.3
67.5°	119.3	120.7	120.7	123.3	123.3	125.9	129.8	137.7	150.8	160.0	167.9
70°	101.0	102.3	102.3	103.6	102.3	103.6	107.5	112.8	120.7	128.5	133.8
72.5°	83.9	82.6	82.6	82.6	82.6	83.9	85.2	87.9	94.4	101.0	102.3
75°	65.6	65.6	64.3	64.3	64.3	64.3	64.3	65.6	69.5	73.4	74.8
77.5°	48.5	47.2	47.2	45.9	45.9	45.9	44.6	44.6	45.9	48.5	48.5
80°	31.5	30.2	28.9	30.2	27.5	28.9	27.5	26.2	26.2	26.2	24.9
82.5°	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	11.8	11.8	11.8
85°	2.6	2.6	3.9	3.9	3.9	3.9	3.9	3.9	5.2	5.2	3.9
87.5°	2.6	2.6	2.6	3.9	3.9	3.9	3.9	3.9	5.2	5.2	5.2
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°	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8
2.5°	998.0	1001.9	1005.9	1007.2	1008.5	1012.4	1015.0	1019.0	1020.3	1022.9	1025.5
5°	998.0	1005.9	1012.4	1016.4	1019.0	1025.5	1032.1	1036.0	1042.6	1046.5	1050.5
7.5°	995.4	1005.9	1015.0	1020.3	1025.5	1033.4	1042.6	1050.5	1058.3	1063.6	1070.1
10°	987.5	1000.6	1012.4	1019.0	1025.5	1037.3	1047.8	1057.0	1066.2	1074.1	1080.6
12.5°	975.7	991.4	1005.9	1013.7	1020.3	1034.7	1046.5	1057.0	1066.2	1072.7	1078.0
15°	958.7	978.3	995.4	1003.2	1011.1	1026.8	1038.7	1047.8	1055.7	1059.6	1063.6
17.5°	939.0	960.0	979.6	988.8	996.7	1011.1	1021.6	1028.2	1032.1	1034.7	1033.4
20°	916.7	939.0	958.7	967.8	977.0	988.8	996.7	999.3	998.0	996.7	994.1
22.5°	889.1	912.8	933.7	941.6	949.5	958.7	961.3	960.0	957.3	954.7	950.8
25°	860.3	883.9	903.6	910.1	916.7	920.6	919.3	916.7	912.8	908.8	902.3
27.5°	827.5	852.4	868.2	876.0	877.3	877.3	873.4	869.5	862.9	857.7	851.1
30°	793.4	814.4	830.1	832.8	834.1	831.4	827.5	821.0	811.8	807.8	801.3
32.5°	754.1	776.4	788.2	788.2	785.5	781.6	773.7	767.2	761.9	752.8	746.2
35°	717.4	734.4	741.0	741.0	737.0	730.5	723.9	714.7	706.9	701.6	692.4
37.5°	675.4	692.4	695.1	691.1	688.5	680.6	670.1	662.3	653.1	646.5	640.0
40°	636.0	647.8	645.2	641.3	638.7	630.8	619.0	609.8	600.6	592.8	586.2
42.5°	591.5	599.3	595.4	592.8	587.5	578.3	567.8	558.7	549.5	541.6	535.1
45°	550.8	554.7	548.2	542.9	539.0	528.5	520.6	507.5	498.3	490.5	485.2
47.5°	507.5	507.5	501.0	495.7	489.2	478.7	469.5	456.4	451.1	440.6	435.4
50°	465.6	461.6	453.8	447.2	442.0	430.1	418.3	409.2	400.0	392.1	386.9
52.5°	421.0	415.7	405.2	398.7	396.1	381.6	371.1	359.3	351.5	342.3	337.0
55°	376.4	368.5	356.7	351.5	346.2	334.4	322.6	310.8	302.9	296.4	291.1
57.5°	330.5	321.3	310.8	304.3	297.7	285.9	274.1	263.6	257.0	250.5	246.5
60°	283.3	276.7	266.2	259.7	253.1	242.6	229.5	221.6	216.4	208.5	207.2
62.5°	242.6	233.4	221.6	216.4	211.1	200.6	190.2	183.6	177.0	173.1	167.9
65°	202.0	192.8	182.3	177.0	173.1	163.9	156.1	149.5	144.3	139.0	135.1
67.5°	162.6	156.1	146.9	142.9	137.7	129.8	123.3	118.0	112.8	107.5	103.6
70°	129.8	122.0	114.1	111.5	108.8	101.0	95.7	90.5	85.2	81.3	77.4
72.5°	99.7	93.1	86.6	82.6	80.0	76.1	72.1	66.9	62.9	59.0	56.4
75°	70.8	66.9	61.6	59.0	56.4	53.8	48.5	45.9	44.6	42.0	39.3
77.5°	45.9	42.0	39.3	36.7	36.7	34.1	31.5	30.2	27.5	27.5	26.2
80°	23.6	22.3	21.0	21.0	21.0	18.4	17.0	17.0	15.7	14.4	14.4
82.5°	10.5	10.5	9.2	9.2	9.2	7.9	7.9	6.6	6.6	5.2	5.2
85°	3.9	3.9	3.9	3.9	3.9	2.6	2.6	2.6	1.3	1.3	1.3
87.5°	3.9	3.9	3.9	3.9	3.9	2.6	2.6	2.6	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: P345485

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSBZ 2000lm3500K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	992.8	992.8	992.8	992.8	992.8	992.8	992.8	992.8
2.5°	1026.8	1029.5	1029.5	1030.8	1032.1	1033.4	1032.1	1033.4
5°	1054.4	1058.3	1059.6	1059.6	1062.3	1063.6	1066.2	1066.2
7.5°	1075.4	1079.3	1081.9	1083.2	1085.9	1088.5	1088.5	1088.5
10°	1085.9	1089.8	1091.1	1093.7	1095.0	1096.4	1097.7	1097.7
12.5°	1081.9	1085.9	1087.2	1087.2	1089.8	1089.8	1089.8	1091.1
15°	1064.9	1063.6	1063.6	1063.6	1062.3	1062.3	1062.3	1060.9
17.5°	1030.8	1029.5	1029.5	1029.5	1028.2	1026.8	1025.5	1022.9
20°	992.8	990.1	987.5	988.8	986.2	984.9	983.6	983.6
22.5°	948.2	944.2	942.9	941.6	939.0	937.7	935.0	935.0
25°	899.6	897.0	893.1	891.8	890.5	887.8	885.2	885.2
27.5°	848.5	844.6	843.2	840.6	839.3	836.7	835.4	836.7
30°	796.0	792.1	790.8	788.2	782.9	785.5	782.9	781.6
32.5°	741.0	737.0	734.4	731.8	731.8	727.8	727.8	726.5
35°	687.2	683.3	680.6	679.3	676.7	676.7	674.1	672.8
37.5°	634.7	630.8	628.2	626.9	624.2	621.6	620.3	621.6
40°	581.0	577.0	574.4	573.1	570.5	567.8	567.8	567.8
42.5°	528.5	524.6	524.6	521.9	518.0	516.7	515.4	515.4
45°	480.0	474.7	473.4	470.8	470.8	468.2	466.9	466.9
47.5°	428.8	424.9	423.6	422.3	421.0	419.7	419.7	419.7
50°	381.6	376.4	376.4	373.8	372.4	373.8	371.1	369.8
52.5°	334.4	330.5	329.2	329.2	326.5	326.5	326.5	325.2
55°	287.2	284.6	284.6	283.3	280.6	282.0	282.0	279.3
57.5°	243.9	240.0	240.0	238.7	238.7	238.7	236.1	238.7
60°	203.3	200.6	199.3	198.0	196.7	196.7	196.7	195.4
62.5°	165.2	162.6	161.3	160.0	157.4	157.4	154.7	153.4
65°	131.1	128.5	125.9	124.6	122.0	120.7	120.7	119.3
67.5°	99.7	97.0	94.4	93.1	90.5	89.2	87.9	87.9
70°	74.8	70.8	70.8	69.5	68.2	68.2	66.9	66.9
72.5°	53.8	53.8	52.5	52.5	51.1	51.1	51.1	51.1
75°	38.0	38.0	38.0	38.0	36.7	36.7	35.4	35.4
77.5°	24.9	24.9	24.9	23.6	23.6	23.6	23.6	23.6
80°	13.1	13.1	13.1	13.1	13.1	11.8	13.1	11.8
82.5°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
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

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