

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: P345412

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMW 2000Lm3000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345412  
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 2000Lm3000K  
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1697.0 lumens  
Efficiency: N/A  
Efficacy: 77.1 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

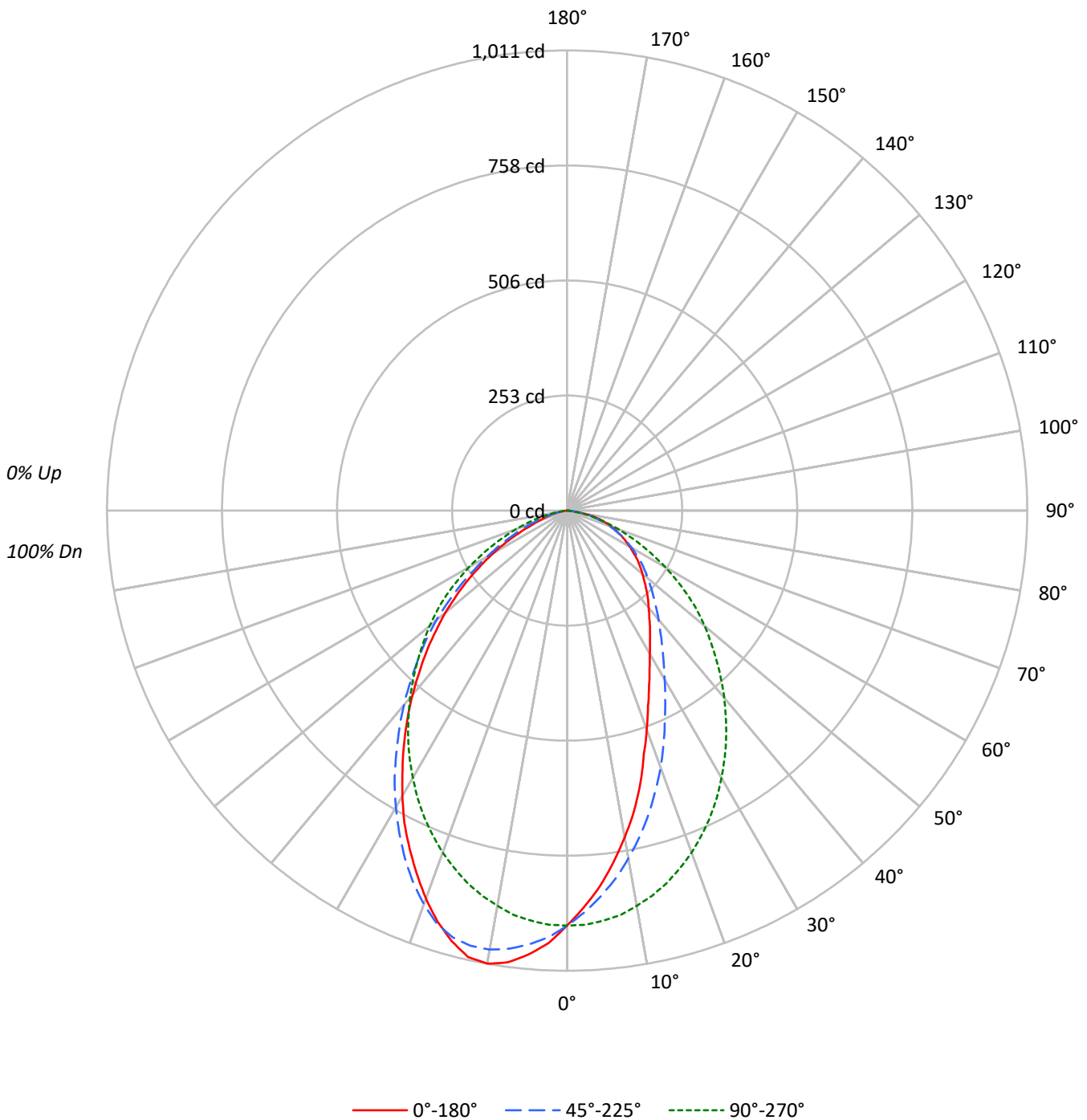
Input Watts (W): 22  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P345412

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000lm3000K

### Luminous Intensity Polar Plot





TEST NUMBER: P345412

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000Lm3000K

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

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

	0°	90°	180°
0°	79755	79755	79755
5°	72754	79427	85995
10°	64704	78312	89769
15°	56244	76673	88690
20°	47603	74429	84426
25°	41095	71708	79034
30°	36663	68458	73094
35°	33871	65040	66716
40°	31811	61282	60323
45°	30430	57286	54008
50°	29379	53669	47600
55°	28700	49287	40641
60°	27850	43682	32924
65°	27217	37193	24216
70°	26521	30536	16649
75°	25279	23218	12640
80°	17630	13348	7304
85°	7226	4817	2409



TEST NUMBER: P345412

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000Lm3000K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	85.4	5.0
10°-20°	231.6	13.6
20°-30°	312.9	18.4
30°-40°	329.4	19.4
40°-50°	296.7	17.5
50°-60°	229.1	13.5
60°-70°	141.0	8.3
70°-80°	62.0	3.7
80°-90°	8.9	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°	629.9	37.1
0°-40°	959.3	56.5
0°-60°	1485.1	87.5
0°-90°	1697.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1697.0	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	912	912	912	912	912	
5°	829	850	905	956	979	76
15°	621	691	847	971	979	172
25°	426	508	743	843	819	197
35°	317	364	609	655	625	199
45°	246	269	463	463	437	190
55°	188	198	323	286	266	168
65°	132	132	180	136	117	130
75°	75	66	69	45	37	77
85°	7	6	5	4	2	13
90°	0	0	0	0	0	



TEST NUMBER: P345412

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000lm3000K

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8
2.5°	870.8	872.0	872.0	872.0	873.2	874.4	874.4	876.8	878.0	880.5	882.9
5°	828.6	827.4	827.4	829.8	832.2	833.4	833.4	838.2	841.9	845.5	850.3
7.5°	779.1	777.9	781.6	782.8	785.2	788.8	791.2	796.0	799.6	808.1	815.3
10°	728.5	728.5	730.9	734.5	738.1	741.8	744.2	750.2	757.4	765.9	775.5
12.5°	677.8	674.2	677.8	682.7	686.3	689.9	693.5	700.7	711.6	722.5	734.5
15°	621.1	619.9	622.3	627.2	635.6	638.0	641.6	652.5	663.4	677.8	691.1
17.5°	560.8	564.5	565.7	572.9	581.3	585.0	588.6	599.4	615.1	629.6	645.3
20°	511.4	509.0	513.8	518.6	525.9	531.9	536.7	548.8	565.7	581.3	600.6
22.5°	464.3	463.1	466.8	472.8	478.8	483.6	488.5	500.5	513.8	531.9	553.6
25°	425.8	424.5	428.2	431.8	439.0	442.6	446.3	458.3	472.8	487.3	507.8
27.5°	392.0	392.0	394.4	396.8	402.8	406.5	411.3	420.9	433.0	447.5	466.8
30°	363.0	363.0	365.4	367.9	373.9	376.3	379.9	387.2	396.8	412.5	428.2
32.5°	338.9	338.9	340.1	343.7	346.2	348.6	352.2	358.2	367.9	379.9	394.4
35°	317.2	317.2	318.4	320.8	324.4	325.6	328.1	334.1	341.3	351.0	364.2
37.5°	296.7	297.9	297.9	300.3	302.7	303.9	306.3	311.2	317.2	325.6	336.5
40°	278.6	279.8	279.8	282.2	284.6	285.8	287.1	289.5	296.7	302.7	312.4
42.5°	262.9	262.9	262.9	264.1	266.5	267.8	269.0	272.6	276.2	282.2	289.5
45°	246.0	246.0	247.3	248.5	250.9	250.9	252.1	255.7	258.1	262.9	269.0
47.5°	230.4	230.4	231.6	231.6	234.0	234.0	235.2	237.6	240.0	244.8	249.7
50°	215.9	215.9	215.9	217.1	218.3	219.5	219.5	221.9	224.3	228.0	231.6
52.5°	201.4	201.4	201.4	201.4	202.6	203.8	203.8	206.2	208.7	211.1	214.7
55°	188.2	186.9	188.2	188.2	188.2	189.4	189.4	191.8	191.8	194.2	197.8
57.5°	172.5	173.7	173.7	172.5	173.7	174.9	174.9	174.9	176.1	178.5	179.7
60°	159.2	159.2	159.2	159.2	160.4	160.4	160.4	160.4	161.6	161.6	164.0
62.5°	144.7	144.7	145.9	145.9	144.7	145.9	145.9	145.9	147.1	147.1	147.1
65°	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5	131.5
67.5°	117.0	117.0	117.0	117.0	117.0	117.0	117.0	115.8	115.8	115.8	114.6
70°	103.7	103.7	103.7	102.5	102.5	102.5	102.5	101.3	101.3	100.1	98.9
72.5°	89.3	89.3	89.3	88.0	88.0	88.0	86.8	85.6	84.4	83.2	83.2
75°	74.8	74.8	73.6	72.4	72.4	71.2	71.2	70.0	70.0	67.5	66.3
77.5°	57.9	56.7	56.7	56.7	55.5	54.3	54.3	53.1	51.9	51.9	50.7
80°	35.0	35.0	36.2	35.0	36.2	35.0	35.0	36.2	35.0	33.8	33.8
82.5°	16.9	16.9	18.1	16.9	18.1	18.1	18.1	16.9	16.9	16.9	16.9
85°	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	6.0	6.0	6.0
87.5°	4.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
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: P345412

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000Lm3000K

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8
2.5°	885.3	888.9	890.1	893.7	894.9	897.3	899.8	903.4	907.0	910.6	913.0
5°	855.1	861.2	866.0	872.0	875.6	878.0	885.3	891.3	898.5	904.6	910.6
7.5°	822.6	829.8	840.7	847.9	851.5	857.5	866.0	875.6	885.3	896.1	904.6
10°	785.2	796.0	806.9	820.1	826.2	832.2	843.1	856.3	869.6	881.7	894.9
12.5°	745.4	759.8	774.3	787.6	796.0	803.3	820.1	834.6	850.3	866.0	880.5
15°	706.8	722.5	739.3	756.2	765.9	774.3	791.2	809.3	828.6	846.7	863.6
17.5°	664.6	682.7	702.0	721.2	730.9	741.8	763.5	782.8	804.5	823.8	844.3
20°	621.1	641.6	662.1	686.3	695.9	708.0	729.7	753.8	776.7	799.6	821.4
22.5°	576.5	599.4	622.3	647.7	660.9	673.0	698.3	722.5	747.8	771.9	796.0
25°	530.7	557.2	583.8	609.1	623.6	635.6	663.4	691.1	717.6	743.0	768.3
27.5°	488.5	513.8	542.7	570.5	585.0	598.2	628.4	654.9	683.9	711.6	736.9
30°	449.9	474.0	502.9	533.1	547.6	562.0	592.2	622.3	648.9	677.8	705.6
32.5°	413.7	435.4	464.3	494.5	511.4	524.7	556.0	585.0	615.1	644.1	671.8
35°	379.9	401.6	427.0	457.1	471.6	487.3	519.8	550.0	578.9	609.1	634.4
37.5°	351.0	367.9	390.8	419.7	435.4	451.1	483.6	513.8	542.7	572.9	599.4
40°	323.2	338.9	359.4	384.7	400.4	416.1	447.5	477.6	506.6	536.7	564.5
42.5°	300.3	312.4	329.3	353.4	366.7	382.3	413.7	442.6	471.6	500.5	527.1
45°	277.4	288.3	302.7	322.0	335.3	349.8	379.9	410.1	436.6	463.1	489.7
47.5°	255.7	264.1	277.4	294.3	305.1	318.4	347.4	376.3	402.8	428.2	452.3
50°	236.4	243.6	255.7	267.8	277.4	289.5	314.8	343.7	369.1	394.4	416.1
52.5°	218.3	224.3	232.8	244.8	252.1	261.7	285.8	311.2	336.5	359.4	379.9
55°	201.4	205.0	212.3	220.7	226.7	235.2	255.7	279.8	302.7	323.2	340.1
57.5°	182.1	186.9	191.8	197.8	203.8	208.7	224.3	246.0	266.5	284.6	301.5
60°	165.2	168.9	171.3	177.3	179.7	184.5	196.6	214.7	234.0	249.7	261.7
62.5°	148.4	149.6	152.0	156.8	158.0	161.6	170.1	184.5	199.0	213.5	225.5
65°	131.5	131.5	133.9	135.1	137.5	138.7	144.7	155.6	168.9	179.7	186.9
67.5°	114.6	114.6	115.8	115.8	118.2	118.2	121.8	130.3	138.7	148.4	154.4
70°	97.7	97.7	97.7	97.7	97.7	98.9	101.3	106.1	112.2	119.4	123.0
72.5°	82.0	80.8	80.8	79.6	79.6	79.6	80.8	83.2	88.0	92.9	96.5
75°	65.1	63.9	62.7	62.7	61.5	61.5	61.5	63.9	66.3	68.7	70.0
77.5°	48.2	48.2	47.0	44.6	44.6	43.4	43.4	43.4	44.6	47.0	45.8
80°	33.8	31.4	30.2	30.2	28.9	28.9	27.7	26.5	26.5	26.5	25.3
82.5°	15.7	15.7	15.7	14.5	14.5	14.5	14.5	13.3	13.3	12.1	12.1
85°	6.0	6.0	6.0	6.0	6.0	6.0	6.0	4.8	4.8	4.8	4.8
87.5°	3.6	3.6	3.6	3.6	3.6	2.4	2.4	2.4	2.4	2.4	2.4
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: P345412

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000Lm3000K

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8
2.5°	916.6	920.3	923.9	925.1	926.3	929.9	932.3	935.9	938.3	939.6	942.0
5°	917.8	923.9	929.9	933.5	935.9	942.0	946.8	952.8	956.4	962.5	966.1
7.5°	914.2	923.9	932.3	937.1	942.0	950.4	957.6	964.9	970.9	976.9	983.0
10°	907.0	919.0	931.1	935.9	942.0	951.6	962.5	970.9	979.4	986.6	993.8
12.5°	896.1	910.6	925.1	931.1	937.1	950.4	961.3	970.9	979.4	986.6	991.4
15°	881.7	898.5	914.2	922.7	929.9	943.2	954.0	963.7	970.9	975.7	979.4
17.5°	863.6	882.9	901.0	908.2	916.6	928.7	939.6	946.8	951.6	951.6	952.8
20°	843.1	863.6	881.7	890.1	898.5	908.2	916.6	920.3	920.3	920.3	917.8
22.5°	818.9	840.7	858.7	867.2	874.4	881.7	886.5	886.5	884.1	880.5	876.8
25°	791.2	814.1	831.0	839.4	843.1	849.1	847.9	846.7	843.1	839.4	834.6
27.5°	761.1	784.0	802.1	805.7	808.1	809.3	805.7	803.3	798.4	793.6	790.0
30°	729.7	751.4	765.9	767.1	769.5	768.3	763.5	757.4	752.6	746.6	741.8
32.5°	695.9	716.4	726.1	728.5	727.3	722.5	717.6	711.6	705.6	698.3	692.3
35°	659.7	679.0	685.1	683.9	682.7	676.6	669.4	663.4	654.9	650.1	641.6
37.5°	622.3	640.4	642.9	639.2	635.6	628.4	621.1	615.1	605.5	600.6	594.6
40°	585.0	597.0	597.0	593.4	591.0	583.8	574.1	565.7	558.4	550.0	546.4
42.5°	546.4	556.0	551.2	548.8	545.2	534.3	527.1	518.6	509.0	504.2	498.1
45°	507.8	513.8	507.8	502.9	499.3	489.7	482.4	471.6	463.1	458.3	451.1
47.5°	468.0	470.4	465.6	458.3	455.9	445.1	436.6	428.2	419.7	411.3	405.3
50°	431.8	429.4	422.1	417.3	413.7	401.6	392.0	382.3	375.1	367.9	361.8
52.5°	390.8	388.4	378.7	372.7	366.7	357.0	344.9	337.7	329.3	323.2	317.2
55°	348.6	341.3	334.1	328.1	322.0	312.4	301.5	291.9	285.8	278.6	275.0
57.5°	305.1	300.3	288.3	283.4	278.6	269.0	258.1	249.7	241.2	236.4	234.0
60°	266.5	258.1	248.5	242.4	237.6	228.0	218.3	209.9	203.8	201.4	197.8
62.5°	225.5	218.3	207.4	202.6	199.0	189.4	180.9	173.7	168.9	164.0	161.6
65°	188.2	179.7	171.3	166.4	161.6	153.2	147.1	142.3	136.3	132.7	130.3
67.5°	152.0	144.7	137.5	133.9	130.3	123.0	117.0	113.4	108.5	104.9	100.1
70°	119.4	113.4	108.5	104.9	101.3	95.3	90.5	86.8	83.2	79.6	76.0
72.5°	92.9	86.8	80.8	79.6	77.2	72.4	68.7	65.1	61.5	59.1	56.7
75°	66.3	63.9	59.1	56.7	55.5	51.9	48.2	45.8	44.6	42.2	41.0
77.5°	43.4	41.0	37.4	37.4	36.2	35.0	32.6	30.2	30.2	28.9	28.9
80°	24.1	22.9	21.7	20.5	21.7	20.5	19.3	18.1	18.1	18.1	16.9
82.5°	10.9	10.9	9.6	9.6	9.6	9.6	9.6	8.4	8.4	8.4	8.4
85°	4.8	4.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2	1.2	1.2
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: P345412

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 2000Lm3000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	911.8	911.8	911.8	911.8	911.8	911.8	911.8	911.8
2.5°	944.4	945.6	946.8	948.0	949.2	949.2	950.4	951.6
5°	968.5	972.1	973.3	974.5	976.9	978.1	978.1	979.4
7.5°	987.8	992.6	993.8	996.2	998.7	999.9	1001.1	1001.1
10°	998.7	1002.3	1003.5	1005.9	1008.3	1009.5	1010.7	1010.7
12.5°	995.0	998.7	999.9	1001.1	1003.5	1004.7	1004.7	1004.7
15°	981.8	981.8	981.8	981.8	980.6	981.8	981.8	979.4
17.5°	951.6	950.4	951.6	949.2	948.0	948.0	946.8	946.8
20°	915.4	914.2	913.0	913.0	911.8	909.4	908.2	907.0
22.5°	874.4	872.0	870.8	870.8	868.4	867.2	866.0	863.6
25°	832.2	826.2	826.2	826.2	823.8	823.8	821.4	818.9
27.5°	784.0	780.3	780.3	777.9	775.5	774.3	773.1	774.3
30°	738.1	733.3	730.9	729.7	728.5	728.5	724.9	723.7
32.5°	687.5	683.9	681.4	680.2	677.8	676.6	675.4	673.0
35°	638.0	634.4	632.0	632.0	627.2	626.0	624.8	624.8
37.5°	587.4	585.0	583.8	580.1	578.9	577.7	577.7	576.5
40°	540.3	536.7	535.5	531.9	530.7	530.7	527.1	528.3
42.5°	492.1	487.3	486.1	484.9	483.6	481.2	482.4	480.0
45°	446.3	442.6	440.2	440.2	439.0	436.6	435.4	436.6
47.5°	401.6	396.8	396.8	395.6	394.4	393.2	393.2	390.8
50°	359.4	355.8	353.4	351.0	352.2	351.0	348.6	349.8
52.5°	313.6	310.0	308.8	308.8	307.6	307.6	306.3	306.3
55°	272.6	269.0	269.0	267.8	267.8	267.8	266.5	266.5
57.5°	231.6	229.2	228.0	228.0	225.5	226.7	225.5	224.3
60°	195.4	191.8	189.4	190.6	189.4	189.4	186.9	188.2
62.5°	158.0	155.6	154.4	154.4	152.0	152.0	149.6	150.8
65°	126.6	123.0	121.8	120.6	118.2	117.0	117.0	117.0
67.5°	97.7	95.3	94.1	91.7	89.3	88.0	86.8	85.6
70°	73.6	71.2	70.0	68.7	67.5	66.3	66.3	65.1
72.5°	55.5	53.1	53.1	51.9	51.9	50.7	50.7	50.7
75°	39.8	39.8	38.6	38.6	37.4	38.6	37.4	37.4
77.5°	27.7	26.5	27.7	26.5	25.3	25.3	25.3	25.3
80°	15.7	15.7	15.7	15.7	15.7	15.7	15.7	14.5
82.5°	8.4	8.4	8.4	7.2	7.2	7.2	7.2	7.2
85°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
87.5°	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)