

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: P345421

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSMW 3000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345421
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 PR4M24WW9FSMW 3000Lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1848.4 lumens
Efficiency: N/A
Efficacy: 64.9 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

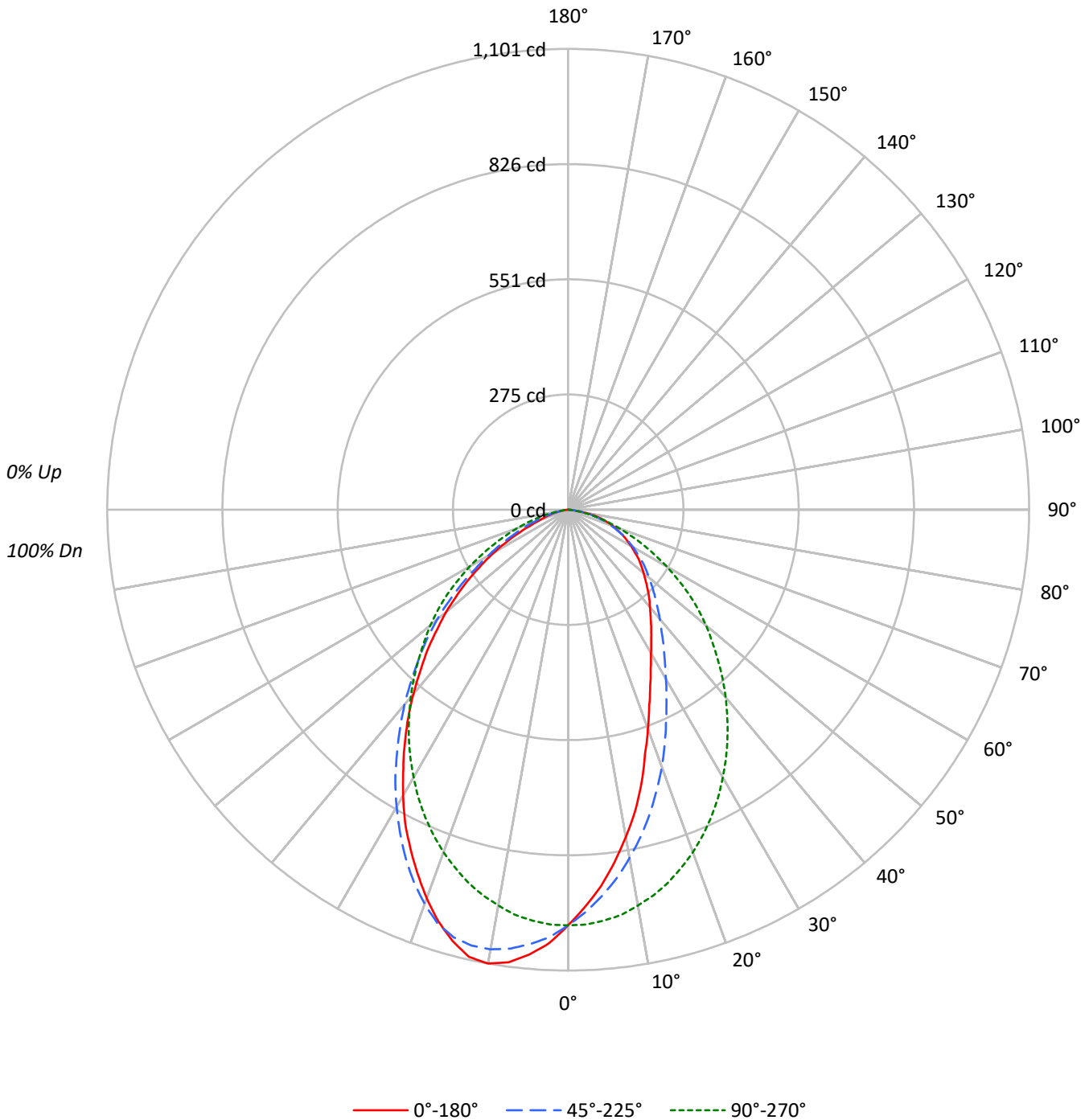
Input Watts (W): 28.5
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	86866	86866	86866
5°	79243	86513	93660
10°	70478	85293	97781
15°	61260	83510	96595
20°	51847	81075	91957
25°	44753	78097	86089
30°	39936	74569	79609
35°	36893	70838	72664
40°	34655	66752	65701
45°	33152	62407	58832
50°	31992	58459	51846
55°	31247	53695	44270
60°	30334	47566	35845
65°	29638	40504	26368
70°	28899	33272	18132
75°	27510	25313	13755
80°	19192	14557	7959
85°	7928	5319	2609



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	93.0	5.0
10°-20°	252.2	13.6
20°-30°	340.8	18.4
30°-40°	358.8	19.4
40°-50°	323.2	17.5
50°-60°	249.5	13.5
60°-70°	153.6	8.3
70°-80°	67.5	3.7
80°-90°	9.7	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°	686.1	37.1
0°-40°	1044.9	56.5
0°-60°	1617.6	87.5
0°-90°	1848.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1848.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	993	993	993	993	993	
5°	902	926	985	1042	1067	83
15°	676	753	922	1058	1067	188
25°	464	553	809	918	892	215
35°	346	397	663	713	680	217
45°	268	293	504	504	476	207
55°	205	215	352	311	290	183
65°	143	143	196	148	127	141
75°	81	72	75	49	41	84
85°	8	7	5	4	3	14
90°	0	0	0	0	0	



TEST NUMBER: P345421

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 3000lm3000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1
2.5°	948.5	949.8	949.8	949.8	951.1	952.4	952.4	955.0	956.4	959.0	961.6
5°	902.5	901.2	901.2	903.8	906.4	907.8	907.8	913.0	916.9	920.9	926.1
7.5°	848.6	847.3	851.3	852.6	855.2	859.1	861.8	867.0	871.0	880.2	888.0
10°	793.5	793.5	796.1	800.0	804.0	807.9	810.5	817.1	825.0	834.2	844.7
12.5°	738.3	734.3	738.3	743.5	747.5	751.4	755.4	763.2	775.1	786.9	800.0
15°	676.5	675.2	677.9	683.1	692.3	694.9	698.9	710.7	722.5	738.3	752.7
17.5°	610.9	614.8	616.1	624.0	633.2	637.1	641.1	652.9	670.0	685.7	702.8
20°	557.0	554.4	559.6	564.9	572.8	579.3	584.6	597.7	616.1	633.2	654.2
22.5°	505.8	504.5	508.4	515.0	521.5	526.8	532.0	545.2	559.6	579.3	603.0
25°	463.7	462.4	466.4	470.3	478.2	482.1	486.1	499.2	515.0	530.7	553.1
27.5°	426.9	426.9	429.6	432.2	438.8	442.7	448.0	458.5	471.6	487.4	508.4
30°	395.4	395.4	398.0	400.7	407.2	409.9	413.8	421.7	432.2	449.3	466.4
32.5°	369.1	369.1	370.5	374.4	377.0	379.7	383.6	390.2	400.7	413.8	429.6
35°	345.5	345.5	346.8	349.4	353.4	354.7	357.3	363.9	371.8	382.3	396.7
37.5°	323.2	324.5	324.5	327.1	329.7	331.0	333.7	338.9	345.5	354.7	366.5
40°	303.5	304.8	304.8	307.4	310.0	311.3	312.7	315.3	323.2	329.7	340.2
42.5°	286.4	286.4	286.4	287.7	290.3	291.6	293.0	296.9	300.8	307.4	315.3
45°	268.0	268.0	269.3	270.6	273.2	273.2	274.6	278.5	281.1	286.4	293.0
47.5°	250.9	250.9	252.2	252.2	254.9	254.9	256.2	258.8	261.4	266.7	271.9
50°	235.1	235.1	235.1	236.5	237.8	239.1	239.1	241.7	244.3	248.3	252.2
52.5°	219.4	219.4	219.4	219.4	220.7	222.0	222.0	224.6	227.3	229.9	233.8
55°	204.9	203.6	204.9	204.9	204.9	206.2	206.2	208.9	208.9	211.5	215.4
57.5°	187.9	189.2	189.2	187.9	189.2	190.5	190.5	190.5	191.8	194.4	195.7
60°	173.4	173.4	173.4	173.4	174.7	174.7	174.7	174.7	176.0	176.0	178.7
62.5°	157.6	157.6	159.0	159.0	157.6	159.0	159.0	159.0	160.3	160.3	160.3
65°	143.2	143.2	143.2	143.2	143.2	143.2	143.2	143.2	143.2	143.2	143.2
67.5°	127.4	127.4	127.4	127.4	127.4	127.4	127.4	126.1	126.1	126.1	124.8
70°	113.0	113.0	113.0	111.7	111.7	111.7	111.7	110.3	110.3	109.0	107.7
72.5°	97.2	97.2	97.2	95.9	95.9	95.9	94.6	93.3	92.0	90.6	90.6
75°	81.4	81.4	80.1	78.8	78.8	77.5	77.5	76.2	76.2	73.6	72.3
77.5°	63.1	61.7	61.7	61.7	60.4	59.1	59.1	57.8	56.5	56.5	55.2
80°	38.1	38.1	39.4	38.1	39.4	38.1	38.1	39.4	38.1	36.8	36.8
82.5°	18.4	18.4	19.7	18.4	19.7	19.7	19.7	18.4	18.4	18.4	18.4
85°	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	6.6	6.6	6.6
87.5°	5.3	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
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°	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1
2.5°	964.2	968.2	969.5	973.4	974.7	977.4	980.0	983.9	987.9	991.8	994.5
5°	931.4	938.0	943.2	949.8	953.7	956.4	964.2	970.8	978.7	985.3	991.8
7.5°	895.9	903.8	915.6	923.5	927.5	934.0	943.2	953.7	964.2	976.1	985.3
10°	855.2	867.0	878.9	893.3	899.9	906.4	918.3	932.7	947.2	960.3	974.7
12.5°	811.9	827.6	843.4	857.8	867.0	874.9	893.3	909.1	926.1	943.2	959.0
15°	769.8	786.9	805.3	823.7	834.2	843.4	861.8	881.5	902.5	922.2	940.6
17.5°	723.8	743.5	764.6	785.6	796.1	807.9	831.6	852.6	876.2	897.2	919.6
20°	676.5	698.9	721.2	747.5	758.0	771.1	794.8	821.0	846.0	871.0	894.6
22.5°	627.9	652.9	677.9	705.4	719.9	733.0	760.6	786.9	814.5	840.8	867.0
25°	578.0	606.9	635.8	663.4	679.2	692.3	722.5	752.7	781.6	809.2	836.8
27.5°	532.0	559.6	591.2	621.4	637.1	651.6	684.4	713.3	744.9	775.1	802.7
30°	490.0	516.3	547.8	580.6	596.4	612.2	645.0	677.9	706.8	738.3	768.5
32.5°	450.6	474.2	505.8	538.6	557.0	571.4	605.6	637.1	670.0	701.5	731.7
35°	413.8	437.5	465.0	497.9	513.6	530.7	566.2	599.0	630.6	663.4	691.0
37.5°	382.3	400.7	425.6	457.2	474.2	491.3	526.8	559.6	591.2	624.0	652.9
40°	352.1	369.1	391.5	419.1	436.1	453.2	487.4	520.2	551.7	584.6	614.8
42.5°	327.1	340.2	358.6	384.9	399.4	416.4	450.6	482.1	513.6	545.2	574.1
45°	302.1	314.0	329.7	350.8	365.2	381.0	413.8	446.7	475.6	504.5	533.4
47.5°	278.5	287.7	302.1	320.5	332.4	346.8	378.3	409.9	438.8	466.4	492.6
50°	257.5	265.4	278.5	291.6	302.1	315.3	342.9	374.4	402.0	429.6	453.2
52.5°	237.8	244.3	253.5	266.7	274.6	285.1	311.3	338.9	366.5	391.5	413.8
55°	219.4	223.3	231.2	240.4	247.0	256.2	278.5	304.8	329.7	352.1	370.5
57.5°	198.4	203.6	208.9	215.4	222.0	227.3	244.3	268.0	290.3	310.0	328.4
60°	180.0	183.9	186.5	193.1	195.7	201.0	214.1	233.8	254.9	271.9	285.1
62.5°	161.6	162.9	165.5	170.8	172.1	176.0	185.2	201.0	216.8	232.5	245.7
65°	143.2	143.2	145.8	147.1	149.8	151.1	157.6	169.5	183.9	195.7	203.6
67.5°	124.8	124.8	126.1	126.1	128.7	128.7	132.7	141.9	151.1	161.6	168.2
70°	106.4	106.4	106.4	106.4	106.4	107.7	110.3	115.6	122.2	130.1	134.0
72.5°	89.3	88.0	88.0	86.7	86.7	86.7	88.0	90.6	95.9	101.2	105.1
75°	70.9	69.6	68.3	68.3	67.0	67.0	67.0	69.6	72.3	74.9	76.2
77.5°	52.5	52.5	51.2	48.6	48.6	47.3	47.3	47.3	48.6	51.2	49.9
80°	36.8	34.2	32.8	32.8	31.5	31.5	30.2	28.9	28.9	28.9	27.6
82.5°	17.1	17.1	17.1	15.8	15.8	15.8	15.8	14.5	14.5	13.1	13.1
85°	6.6	6.6	6.6	6.6	6.6	6.6	6.6	5.3	5.3	5.3	5.3
87.5°	3.9	3.9	3.9	3.9	3.9	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°	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1
2.5°	998.4	1002.3	1006.3	1007.6	1008.9	1012.8	1015.5	1019.4	1022.0	1023.4	1026.0
5°	999.7	1006.3	1012.8	1016.8	1019.4	1026.0	1031.2	1037.8	1041.7	1048.3	1052.3
7.5°	995.8	1006.3	1015.5	1020.7	1026.0	1035.2	1043.1	1050.9	1057.5	1064.1	1070.6
10°	987.9	1001.0	1014.2	1019.4	1026.0	1036.5	1048.3	1057.5	1066.7	1074.6	1082.5
12.5°	976.1	991.8	1007.6	1014.2	1020.7	1035.2	1047.0	1057.5	1066.7	1074.6	1079.8
15°	960.3	978.7	995.8	1005.0	1012.8	1027.3	1039.1	1049.6	1057.5	1062.8	1066.7
17.5°	940.6	961.6	981.3	989.2	998.4	1011.5	1023.4	1031.2	1036.5	1036.5	1037.8
20°	918.3	940.6	960.3	969.5	978.7	989.2	998.4	1002.3	1002.3	1002.3	999.7
22.5°	892.0	915.6	935.3	944.5	952.4	960.3	965.6	965.6	962.9	959.0	955.0
25°	861.8	886.7	905.1	914.3	918.3	924.8	923.5	922.2	918.3	914.3	909.1
27.5°	828.9	853.9	873.6	877.5	880.2	881.5	877.5	874.9	869.7	864.4	860.5
30°	794.8	818.4	834.2	835.5	838.1	836.8	831.6	825.0	819.7	813.2	807.9
32.5°	758.0	780.3	790.8	793.5	792.1	786.9	781.6	775.1	768.5	760.6	754.1
35°	718.6	739.6	746.2	744.9	743.5	737.0	729.1	722.5	713.3	708.1	698.9
37.5°	677.9	697.6	700.2	696.2	692.3	684.4	676.5	670.0	659.5	654.2	647.6
40°	637.1	650.3	650.3	646.3	643.7	635.8	625.3	616.1	608.2	599.0	595.1
42.5°	595.1	605.6	600.4	597.7	593.8	582.0	574.1	564.9	554.4	549.1	542.5
45°	553.1	559.6	553.1	547.8	543.9	533.4	525.5	513.6	504.5	499.2	491.3
47.5°	509.7	512.3	507.1	499.2	496.6	484.7	475.6	466.4	457.2	448.0	441.4
50°	470.3	467.7	459.8	454.5	450.6	437.5	426.9	416.4	408.6	400.7	394.1
52.5°	425.6	423.0	412.5	405.9	399.4	388.8	375.7	367.8	358.6	352.1	345.5
55°	379.7	371.8	363.9	357.3	350.8	340.2	328.4	317.9	311.3	303.5	299.5
57.5°	332.4	327.1	314.0	308.7	303.5	293.0	281.1	271.9	262.7	257.5	254.9
60°	290.3	281.1	270.6	264.0	258.8	248.3	237.8	228.6	222.0	219.4	215.4
62.5°	245.7	237.8	226.0	220.7	216.8	206.2	197.1	189.2	183.9	178.7	176.0
65°	204.9	195.7	186.5	181.3	176.0	166.8	160.3	155.0	148.4	144.5	141.9
67.5°	165.5	157.6	149.8	145.8	141.9	134.0	127.4	123.5	118.2	114.3	109.0
70°	130.1	123.5	118.2	114.3	110.3	103.8	98.5	94.6	90.6	86.7	82.8
72.5°	101.2	94.6	88.0	86.7	84.1	78.8	74.9	70.9	67.0	64.4	61.7
75°	72.3	69.6	64.4	61.7	60.4	56.5	52.5	49.9	48.6	46.0	44.7
77.5°	47.3	44.7	40.7	40.7	39.4	38.1	35.5	32.8	32.8	31.5	31.5
80°	26.3	25.0	23.6	22.3	23.6	22.3	21.0	19.7	19.7	19.7	18.4
82.5°	11.8	11.8	10.5	10.5	10.5	10.5	10.5	9.2	9.2	9.2	9.2
85°	5.3	5.3	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
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: P345421

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 3000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	993.1	993.1	993.1	993.1	993.1	993.1	993.1	993.1
2.5°	1028.6	1029.9	1031.2	1032.6	1033.9	1033.9	1035.2	1036.5
5°	1054.9	1058.8	1060.1	1061.5	1064.1	1065.4	1065.4	1066.7
7.5°	1075.9	1081.2	1082.5	1085.1	1087.7	1089.0	1090.4	1090.4
10°	1087.7	1091.7	1093.0	1095.6	1098.2	1099.5	1100.9	1100.9
12.5°	1083.8	1087.7	1089.0	1090.4	1093.0	1094.3	1094.3	1094.3
15°	1069.3	1069.3	1069.3	1069.3	1068.0	1069.3	1069.3	1066.7
17.5°	1036.5	1035.2	1036.5	1033.9	1032.6	1032.6	1031.2	1031.2
20°	997.1	995.8	994.5	994.5	993.1	990.5	989.2	987.9
22.5°	952.4	949.8	948.5	948.5	945.8	944.5	943.2	940.6
25°	906.4	899.9	899.9	899.9	897.2	897.2	894.6	892.0
27.5°	853.9	849.9	849.9	847.3	844.7	843.4	842.1	843.4
30°	804.0	798.7	796.1	794.8	793.5	793.5	789.5	788.2
32.5°	748.8	744.9	742.2	740.9	738.3	737.0	735.7	733.0
35°	694.9	691.0	688.4	688.4	683.1	681.8	680.5	680.5
37.5°	639.8	637.1	635.8	631.9	630.6	629.3	629.3	627.9
40°	588.5	584.6	583.3	579.3	578.0	578.0	574.1	575.4
42.5°	536.0	530.7	529.4	528.1	526.8	524.2	525.5	522.8
45°	486.1	482.1	479.5	479.5	478.2	475.6	474.2	475.6
47.5°	437.5	432.2	432.2	430.9	429.6	428.3	428.3	425.6
50°	391.5	387.5	384.9	382.3	383.6	382.3	379.7	381.0
52.5°	341.6	337.6	336.3	336.3	335.0	335.0	333.7	333.7
55°	296.9	293.0	293.0	291.6	291.6	291.6	290.3	290.3
57.5°	252.2	249.6	248.3	248.3	245.7	247.0	245.7	244.3
60°	212.8	208.9	206.2	207.6	206.2	206.2	203.6	204.9
62.5°	172.1	169.5	168.2	168.2	165.5	165.5	162.9	164.2
65°	137.9	134.0	132.7	131.4	128.7	127.4	127.4	127.4
67.5°	106.4	103.8	102.5	99.8	97.2	95.9	94.6	93.3
70°	80.1	77.5	76.2	74.9	73.6	72.3	72.3	70.9
72.5°	60.4	57.8	57.8	56.5	56.5	55.2	55.2	55.2
75°	43.4	43.4	42.0	42.0	40.7	42.0	40.7	40.7
77.5°	30.2	28.9	30.2	28.9	27.6	27.6	27.6	27.6
80°	17.1	17.1	17.1	17.1	17.1	17.1	17.1	15.8
82.5°	9.2	9.2	9.2	7.9	7.9	7.9	7.9	7.9
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)