

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: P345450

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 2000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345450
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-8)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW8FSMMS 2000Lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1792.3 lumens
Efficiency: N/A
Efficacy: 81.5 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.38' x H: 0')
CIE Type: Direct

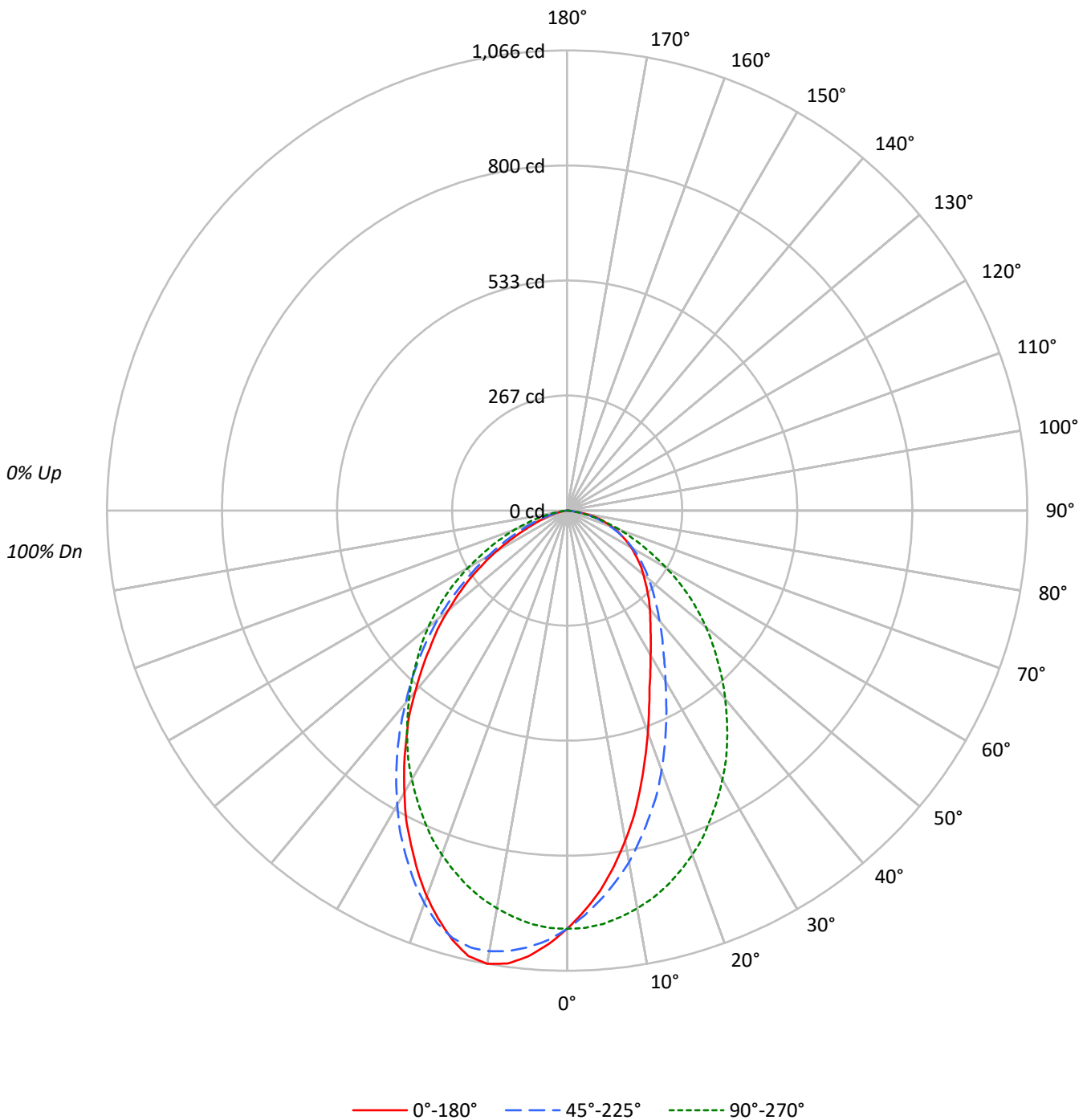
Input Watts (W): 22
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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			
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	36	45	39	35					34				
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	37	32					31				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	94417	94417	94417
5°	86394	94025	101411
10°	76755	92579	105503
15°	66501	90645	103822
20°	56679	88000	98620
25°	48583	84639	91930
30°	43495	80935	84829
35°	40047	76893	77345
40°	37938	72453	69692
45°	36166	67907	61912
50°	34933	63649	54522
55°	34136	58501	46539
60°	33428	51633	37171
65°	32469	44276	26566
70°	31715	36844	18949
75°	30350	28429	13480
80°	21552	16500	7913
85°	5703	8610	1454



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	90.7	5.1
10°-20°	245.4	13.7
20°-30°	330.6	18.4
30°-40°	347.2	19.4
40°-50°	312.9	17.5
50°-60°	241.7	13.5
60°-70°	148.7	8.3
70°-80°	65.5	3.7
80°-90°	9.6	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°	666.6	37.2
0°-40°	1013.9	56.6
0°-60°	1568.4	87.5
0°-90°	1792.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1792.3	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	969	969	969	969	969	
5°	883	904	961	1015	1037	81
15°	659	735	898	1025	1029	184
25°	452	543	787	883	855	210
35°	337	386	646	686	650	212
45°	262	287	493	485	449	203
55°	201	211	344	296	274	180
65°	141	141	192	142	115	140
75°	81	72	76	45	36	82
85°	5	6	8	4	1	12
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°	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8
2.5°	927.9	926.6	925.3	927.9	927.9	929.1	929.1	931.7	931.7	934.3	938.1
5°	883.1	880.5	881.8	881.8	885.6	885.6	888.2	890.7	894.6	899.7	903.5
7.5°	830.6	830.6	831.9	834.4	838.3	838.3	842.1	845.9	852.3	858.7	866.4
10°	775.6	778.1	779.4	782.0	788.4	790.9	792.2	798.6	807.6	813.9	826.7
12.5°	720.5	720.5	723.1	728.2	733.3	737.2	739.7	748.7	757.6	769.2	780.7
15°	659.1	660.4	664.2	669.3	678.3	680.9	686.0	696.2	709.0	723.1	734.6
17.5°	600.2	602.8	605.3	613.0	619.4	623.3	630.9	642.5	656.5	671.9	689.8
20°	546.5	542.6	547.8	552.9	559.3	568.2	573.3	586.1	601.5	622.0	639.9
22.5°	495.3	495.3	499.1	503.0	509.4	515.8	522.2	532.4	549.0	569.5	590.0
25°	451.8	453.0	456.9	460.7	467.1	471.0	477.4	487.6	504.2	519.6	542.6
27.5°	417.2	418.5	419.8	424.9	430.0	433.9	437.7	447.9	460.7	477.4	496.6
30°	386.5	386.5	387.8	392.9	395.5	400.6	403.1	412.1	423.6	437.7	455.6
32.5°	360.9	360.9	362.2	364.7	369.9	372.4	373.7	382.7	391.6	405.7	419.8
35°	336.6	336.6	337.9	340.4	344.3	345.5	349.4	354.5	363.5	373.7	386.5
37.5°	316.1	316.1	317.4	318.7	321.2	323.8	326.3	331.5	336.6	346.8	359.6
40°	298.2	296.9	298.2	299.5	303.3	303.3	304.6	309.7	314.8	322.5	332.7
42.5°	280.3	280.3	280.3	281.6	284.1	285.4	286.7	289.2	294.4	300.8	308.4
45°	262.4	262.4	263.6	264.9	266.2	267.5	270.0	272.6	275.2	279.0	286.7
47.5°	245.7	247.0	247.0	248.3	249.6	250.8	252.1	254.7	257.2	261.1	266.2
50°	230.4	231.6	231.6	232.9	234.2	234.2	235.5	238.0	240.6	243.2	247.0
52.5°	216.3	216.3	215.0	216.3	217.6	217.6	218.8	220.1	222.7	226.5	229.1
55°	200.9	200.9	200.9	202.2	202.2	202.2	203.5	204.8	206.0	207.3	211.2
57.5°	185.6	185.6	186.9	185.6	186.9	186.9	186.9	188.1	189.4	192.0	193.2
60°	171.5	171.5	171.5	171.5	171.5	171.5	172.8	172.8	172.8	174.1	175.3
62.5°	156.1	156.1	156.1	156.1	156.1	156.1	156.1	156.1	157.4	157.4	158.7
65°	140.8	140.8	142.1	140.8	140.8	140.8	140.8	140.8	140.8	140.8	140.8
67.5°	126.7	125.4	126.7	125.4	125.4	125.4	125.4	124.1	124.1	124.1	122.9
70°	111.3	110.1	110.1	110.1	110.1	108.8	110.1	108.8	107.5	106.2	104.9
72.5°	94.7	94.7	94.7	94.7	94.7	93.4	92.1	92.1	90.9	89.6	88.3
75°	80.6	80.6	79.3	78.1	76.8	76.8	76.8	75.5	74.2	72.9	71.7
77.5°	62.7	61.4	61.4	60.2	58.9	57.6	58.9	57.6	56.3	55.0	53.8
80°	38.4	38.4	38.4	38.4	38.4	38.4	37.1	38.4	37.1	35.8	35.8
82.5°	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
85°	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	6.4	6.4
87.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	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°	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8
2.5°	940.6	943.2	947.0	949.6	950.9	952.2	956.0	959.8	963.7	967.5	970.1
5°	909.9	916.3	920.2	926.6	930.4	934.3	940.6	947.0	953.4	961.1	967.5
7.5°	872.8	883.1	890.7	899.7	904.8	909.9	918.9	929.1	939.4	949.6	959.8
10°	837.0	845.9	860.0	872.8	876.7	884.3	898.4	909.9	924.0	935.5	949.6
12.5°	796.0	807.6	822.9	838.3	847.2	854.9	871.5	886.9	903.5	918.9	935.5
15°	751.2	769.2	785.8	803.7	815.2	822.9	842.1	861.3	879.2	898.4	917.6
17.5°	706.4	726.9	747.4	769.2	778.1	789.6	811.4	831.9	853.6	874.1	895.9
20°	661.7	683.4	705.2	729.5	742.3	753.8	776.8	801.2	825.5	848.5	871.5
22.5°	614.3	637.3	662.9	689.8	703.9	714.1	741.0	767.9	793.5	820.3	844.7
25°	566.9	593.8	620.7	648.9	662.9	678.3	705.2	733.3	760.2	787.1	815.2
27.5°	520.9	549.0	577.2	609.2	623.3	638.6	668.1	696.2	725.6	753.8	782.0
30°	478.6	505.5	536.2	568.2	583.6	598.9	629.7	660.4	689.8	719.2	746.1
32.5°	440.2	463.3	495.3	527.3	543.9	559.3	591.3	623.3	654.0	684.7	711.6
35°	404.4	426.2	453.0	487.6	503.0	519.6	552.9	583.6	615.6	646.3	674.5
37.5°	372.4	392.9	417.2	446.6	465.8	481.2	514.5	546.5	577.2	607.9	636.1
40°	344.3	362.2	382.7	409.5	427.5	444.1	477.4	509.4	540.1	569.5	597.7
42.5°	318.7	332.7	351.9	376.3	390.3	407.0	441.5	472.2	503.0	532.4	558.0
45°	294.4	305.9	322.5	344.3	355.8	373.7	405.7	436.4	465.8	492.7	520.9
47.5°	272.6	282.8	295.6	313.5	325.1	339.1	371.1	401.9	430.0	456.9	481.2
50°	253.4	261.1	272.6	288.0	296.9	307.2	339.1	368.6	394.2	419.8	442.8
52.5°	234.2	239.3	248.3	261.1	270.0	279.0	305.9	334.0	359.6	381.4	405.7
55°	213.7	220.1	227.8	236.8	243.2	250.8	272.6	299.5	321.2	344.3	363.5
57.5°	195.8	199.6	204.8	212.4	217.6	224.0	240.6	263.6	285.4	304.6	323.8
60°	177.9	180.5	184.3	189.4	193.2	198.4	209.9	230.4	249.6	264.9	281.6
62.5°	160.0	160.0	162.5	166.4	168.9	172.8	183.0	198.4	215.0	226.5	240.6
65°	140.8	142.1	143.3	145.9	147.2	149.7	156.1	167.7	180.5	192.0	202.2
67.5°	122.9	122.9	124.1	125.4	125.4	126.7	130.5	138.2	151.0	158.7	166.4
70°	104.9	104.9	104.9	104.9	106.2	104.9	107.5	112.6	121.6	129.3	133.1
72.5°	88.3	87.0	85.7	85.7	85.7	85.7	87.0	90.9	96.0	99.8	104.9
75°	70.4	69.1	67.8	66.5	67.8	67.8	67.8	69.1	71.7	75.5	76.8
77.5°	52.5	52.5	49.9	48.6	49.9	48.6	47.4	47.4	48.6	49.9	49.9
80°	35.8	34.6	33.3	32.0	32.0	32.0	30.7	29.4	29.4	29.4	28.2
82.5°	17.9	17.9	16.6	16.6	16.6	16.6	16.6	15.4	15.4	14.1	14.1
85°	6.4	6.4	6.4	6.4	7.7	6.4	7.7	7.7	7.7	7.7	7.7
87.5°	3.8	3.8	5.1	5.1	5.1	5.1	5.1	6.4	6.4	6.4	5.1
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°	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8
2.5°	973.9	977.8	980.3	982.9	984.2	986.7	990.6	993.1	995.7	998.2	1000.8
5°	973.9	981.6	986.7	990.6	994.4	999.5	1005.9	1011.0	1014.9	1020.0	1023.8
7.5°	970.1	980.3	989.3	994.4	999.5	1007.2	1014.9	1022.6	1029.0	1035.4	1040.5
10°	962.4	975.2	988.0	993.1	999.5	1009.8	1020.0	1029.0	1036.6	1044.3	1050.7
12.5°	950.9	966.2	981.6	988.0	994.4	1007.2	1018.7	1029.0	1036.6	1043.0	1046.9
15°	935.5	953.4	970.1	977.8	985.4	998.2	1009.8	1018.7	1025.1	1029.0	1031.5
17.5°	916.3	935.5	953.4	962.4	971.4	984.2	993.1	998.2	1002.1	1002.1	1000.8
20°	894.6	915.1	934.3	943.2	950.9	961.1	967.5	968.8	967.5	965.0	962.4
22.5°	867.7	890.7	909.9	917.6	924.0	931.7	931.7	930.4	927.9	924.0	922.7
25°	839.5	861.3	880.5	888.2	890.7	895.9	892.0	889.5	883.1	879.2	875.4
27.5°	808.8	831.9	845.9	851.1	853.6	851.1	847.2	842.1	838.3	831.9	826.7
30°	775.6	796.0	807.6	811.4	810.1	806.3	802.4	793.5	787.1	780.7	774.3
32.5°	737.2	757.6	766.6	767.9	764.0	757.6	751.2	744.8	737.2	729.5	725.6
35°	700.0	718.0	723.1	720.5	716.7	709.0	700.0	692.4	686.0	677.0	670.6
37.5°	660.4	675.7	675.7	671.9	669.3	660.4	651.4	643.7	634.8	627.1	618.1
40°	620.7	632.2	628.4	624.5	620.7	610.5	602.8	591.3	582.3	573.3	566.9
42.5°	581.0	587.4	582.3	577.2	572.1	561.8	554.2	541.4	533.7	524.7	519.6
45°	541.4	542.6	535.0	531.1	526.0	513.2	503.0	494.0	485.0	474.8	468.4
47.5°	500.4	497.8	488.9	483.8	478.6	467.1	456.9	446.6	436.4	428.7	421.1
50°	459.4	453.0	444.1	439.0	432.6	422.3	410.8	399.3	390.3	382.7	376.3
52.5°	414.7	409.5	399.3	391.6	386.5	372.4	362.2	351.9	341.7	334.0	328.9
55°	369.9	362.2	350.7	345.5	337.9	326.3	316.1	303.3	295.6	289.2	282.8
57.5°	325.1	316.1	305.9	299.5	291.8	280.3	268.8	261.1	253.4	245.7	241.9
60°	281.6	272.6	259.8	257.2	249.6	238.0	227.8	218.8	211.2	206.0	202.2
62.5°	240.6	231.6	218.8	213.7	208.6	197.1	188.1	180.5	175.3	170.2	166.4
65°	199.6	192.0	181.7	175.3	170.2	161.3	153.6	145.9	142.1	135.7	131.8
67.5°	162.5	153.6	145.9	140.8	136.9	128.0	121.6	116.5	111.3	107.5	102.4
70°	128.0	120.3	112.6	110.1	106.2	99.8	94.7	89.6	85.7	81.9	76.8
72.5°	98.5	93.4	85.7	83.2	80.6	75.5	71.7	67.8	62.7	60.2	57.6
75°	72.9	67.8	62.7	60.2	58.9	53.8	51.2	47.4	44.8	43.5	41.0
77.5°	47.4	43.5	41.0	39.7	38.4	35.8	33.3	32.0	29.4	28.2	28.2
80°	26.9	25.6	24.3	23.0	21.8	20.5	20.5	19.2	17.9	16.6	15.4
82.5°	12.8	12.8	11.5	11.5	11.5	10.2	10.2	9.0	9.0	7.7	7.7
85°	6.4	6.4	6.4	6.4	6.4	5.1	5.1	5.1	3.8	3.8	2.6
87.5°	5.1	5.1	5.1	5.1	5.1	3.8	3.8	3.8	2.6	2.6	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: P345450

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000Lm4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	968.8	968.8	968.8	968.8	968.8	968.8	968.8	968.8
2.5°	1000.8	1002.1	1003.4	1004.6	1004.6	1005.9	1007.2	1005.9
5°	1026.4	1030.2	1031.5	1032.8	1034.1	1035.4	1036.6	1036.6
7.5°	1045.6	1050.7	1052.0	1052.0	1055.8	1057.1	1058.4	1058.4
10°	1055.8	1058.4	1061.0	1061.0	1063.5	1063.5	1066.1	1066.1
12.5°	1050.7	1053.3	1054.6	1055.8	1055.8	1057.1	1057.1	1057.1
15°	1032.8	1031.5	1031.5	1030.2	1030.2	1029.0	1029.0	1029.0
17.5°	999.5	998.2	997.0	997.0	994.4	994.4	991.8	991.8
20°	959.8	957.3	956.0	954.7	954.7	953.4	950.9	950.9
22.5°	917.6	915.1	912.5	909.9	907.4	906.1	904.8	904.8
25°	870.3	866.4	865.1	863.9	860.0	858.7	856.2	854.9
27.5°	821.6	815.2	813.9	812.7	810.1	808.8	807.6	807.6
30°	770.4	766.6	764.0	762.8	758.9	757.6	753.8	753.8
32.5°	719.2	712.8	710.3	709.0	706.4	703.9	702.6	702.6
35°	665.5	661.7	660.4	656.5	652.7	652.7	650.1	650.1
37.5°	614.3	610.5	606.6	605.3	602.8	598.9	597.7	601.5
40°	563.1	558.0	555.4	554.2	551.6	547.8	547.8	547.8
42.5°	513.2	509.4	508.1	505.5	503.0	501.7	499.1	497.8
45°	462.0	459.4	458.2	455.6	454.3	451.8	449.2	449.2
47.5°	417.2	412.1	412.1	409.5	407.0	405.7	405.7	407.0
50°	372.4	368.6	366.0	364.7	362.2	362.2	360.9	359.6
52.5°	323.8	321.2	319.9	319.9	317.4	317.4	316.1	316.1
55°	279.0	279.0	277.7	276.4	273.9	273.9	273.9	273.9
57.5°	239.3	236.8	235.5	234.2	232.9	231.6	231.6	230.4
60°	198.4	197.1	194.5	195.8	192.0	192.0	192.0	190.7
62.5°	161.3	158.7	157.4	156.1	153.6	153.6	151.0	149.7
65°	129.3	125.4	122.9	122.9	120.3	117.7	116.5	115.2
67.5°	97.3	94.7	93.4	92.1	89.6	87.0	87.0	85.7
70°	74.2	71.7	70.4	69.1	67.8	66.5	66.5	66.5
72.5°	55.0	53.8	52.5	52.5	51.2	49.9	49.9	51.2
75°	39.7	38.4	38.4	38.4	37.1	37.1	37.1	35.8
77.5°	26.9	25.6	25.6	24.3	24.3	24.3	24.3	24.3
80°	15.4	14.1	14.1	14.1	14.1	14.1	14.1	14.1
82.5°	6.4	6.4	6.4	6.4	5.1	5.1	5.1	5.1
85°	2.6	2.6	2.6	2.6	2.6	1.3	1.3	1.3
87.5°	1.3	1.3	1.3	1.3	1.3	1.3	0.0	1.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)