

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: P345448

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 2000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345448
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 2000lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1688.6 lumens
Efficiency: N/A
Efficacy: 76.8 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

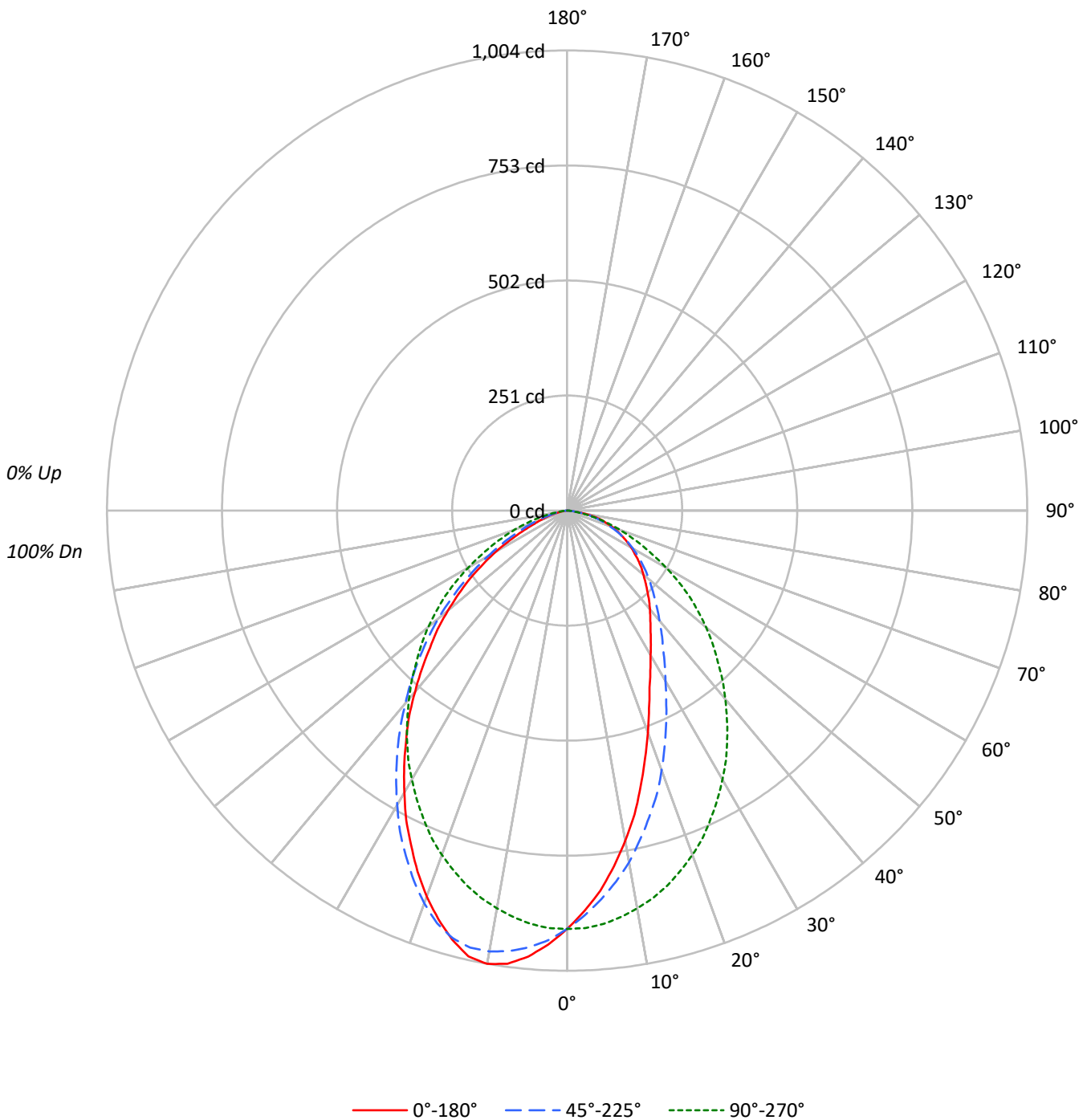
Input Watts (W): 22
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P345448

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3000K

Luminous Intensity Polar Plot





TEST NUMBER: P345448

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 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	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°	88960	88960	88960
5°	81395	88585	95551
10°	72311	87225	99397
15°	62656	85408	97809
20°	53402	82908	92916
25°	45766	79736	86618
30°	40974	76254	79922
35°	37727	72443	72872
40°	35737	68268	65660
45°	34071	63979	58328
50°	32901	59965	51368
55°	32165	55120	43838
60°	31498	48651	35026
65°	30578	41717	25021
70°	29891	34707	17866
75°	28618	26773	12727
80°	20317	15546	7464
85°	5367	8051	1342



TEST NUMBER: P345448

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	85.4	5.1
10°-20°	231.2	13.7
20°-30°	311.5	18.4
30°-40°	327.1	19.4
40°-50°	294.8	17.5
50°-60°	227.7	13.5
60°-70°	140.1	8.3
70°-80°	61.8	3.7
80°-90°	9.0	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°	628.1	37.2
0°-40°	955.2	56.6
0°-60°	1477.7	87.5
0°-90°	1688.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1688.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	913	913	913	913	913	
5°	832	851	906	956	977	76
15°	621	692	846	966	969	173
25°	426	511	742	832	806	198
35°	317	364	609	646	612	200
45°	247	270	464	457	423	191
55°	189	199	324	278	258	169
65°	133	133	181	134	108	132
75°	76	68	71	42	34	78
85°	5	6	7	4	1	11
90°	0	0	0	0	0	



TEST NUMBER: P345448

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8
2.5°	874.2	873.0	871.8	874.2	874.2	875.4	875.4	877.8	877.8	880.2	883.8
5°	832.0	829.6	830.8	830.8	834.4	834.4	836.8	839.2	842.8	847.7	851.3
7.5°	782.5	782.5	783.8	786.2	789.8	789.8	793.4	797.0	803.0	809.1	816.3
10°	730.7	733.1	734.3	736.7	742.8	745.2	746.4	752.4	760.8	766.9	778.9
12.5°	678.8	678.8	681.3	686.1	690.9	694.5	696.9	705.4	713.8	724.7	735.5
15°	621.0	622.2	625.8	630.6	639.1	641.5	646.3	655.9	668.0	681.3	692.1
17.5°	565.5	567.9	570.3	577.6	583.6	587.2	594.4	605.3	618.6	633.0	649.9
20°	514.9	511.2	516.1	520.9	526.9	535.4	540.2	552.2	566.7	586.0	602.9
22.5°	466.6	466.6	470.3	473.9	479.9	485.9	492.0	501.6	517.3	536.6	555.9
25°	425.6	426.8	430.5	434.1	440.1	443.7	449.8	459.4	475.1	489.5	511.2
27.5°	393.1	394.3	395.5	400.3	405.1	408.8	412.4	422.0	434.1	449.8	467.8
30°	364.1	364.1	365.3	370.2	372.6	377.4	379.8	388.3	399.1	412.4	429.3
32.5°	340.0	340.0	341.2	343.6	348.5	350.9	352.1	360.5	369.0	382.2	395.5
35°	317.1	317.1	318.3	320.7	324.4	325.6	329.2	334.0	342.4	352.1	364.1
37.5°	297.8	297.8	299.0	300.2	302.6	305.1	307.5	312.3	317.1	326.8	338.8
40°	280.9	279.7	280.9	282.2	285.8	285.8	287.0	291.8	296.6	303.9	313.5
42.5°	264.1	264.1	264.1	265.3	267.7	268.9	270.1	272.5	277.3	283.4	290.6
45°	247.2	247.2	248.4	249.6	250.8	252.0	254.4	256.8	259.2	262.9	270.1
47.5°	231.5	232.7	232.7	233.9	235.1	236.3	237.5	239.9	242.4	246.0	250.8
50°	217.0	218.2	218.2	219.5	220.7	220.7	221.9	224.3	226.7	229.1	232.7
52.5°	203.8	203.8	202.6	203.8	205.0	205.0	206.2	207.4	209.8	213.4	215.8
55°	189.3	189.3	189.3	190.5	190.5	190.5	191.7	192.9	194.1	195.3	199.0
57.5°	174.8	174.8	176.0	174.8	176.0	176.0	176.0	177.2	178.5	180.9	182.1
60°	161.6	161.6	161.6	161.6	161.6	161.6	162.8	162.8	162.8	164.0	165.2
62.5°	147.1	147.1	147.1	147.1	147.1	147.1	147.1	147.1	148.3	148.3	149.5
65°	132.6	132.6	133.8	132.6	132.6	132.6	132.6	132.6	132.6	132.6	132.6
67.5°	119.4	118.2	119.4	118.2	118.2	118.2	118.2	117.0	117.0	117.0	115.8
70°	104.9	103.7	103.7	103.7	103.7	102.5	103.7	102.5	101.3	100.1	98.9
72.5°	89.2	89.2	89.2	89.2	89.2	88.0	86.8	86.8	85.6	84.4	83.2
75°	76.0	76.0	74.8	73.6	72.3	72.3	72.3	71.1	69.9	68.7	67.5
77.5°	59.1	57.9	57.9	56.7	55.5	54.3	55.5	54.3	53.1	51.8	50.6
80°	36.2	36.2	36.2	36.2	36.2	36.2	35.0	36.2	35.0	33.8	33.8
82.5°	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
85°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	6.0	6.0
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	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: P345448

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3000K

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8
2.5°	886.2	888.7	892.3	894.7	895.9	897.1	900.7	904.3	907.9	911.6	914.0
5°	857.3	863.3	866.9	873.0	876.6	880.2	886.2	892.3	898.3	905.5	911.6
7.5°	822.3	832.0	839.2	847.7	852.5	857.3	865.7	875.4	885.0	894.7	904.3
10°	788.6	797.0	810.3	822.3	826.0	833.2	846.5	857.3	870.6	881.4	894.7
12.5°	750.0	760.8	775.3	789.8	798.2	805.5	821.1	835.6	851.3	865.7	881.4
15°	707.8	724.7	740.3	757.2	768.1	775.3	793.4	811.5	828.4	846.5	864.5
17.5°	665.6	684.9	704.2	724.7	733.1	744.0	764.5	783.8	804.2	823.5	844.0
20°	623.4	643.9	664.4	687.3	699.3	710.2	731.9	754.8	777.7	799.4	821.1
22.5°	578.8	600.5	624.6	649.9	663.2	672.8	698.1	723.5	747.6	772.9	795.8
25°	534.2	559.5	584.8	611.3	624.6	639.1	664.4	690.9	716.2	741.5	768.1
27.5°	490.7	517.3	543.8	573.9	587.2	601.7	629.4	655.9	683.7	710.2	736.7
30°	451.0	476.3	505.2	535.4	549.8	564.3	593.2	622.2	649.9	677.6	703.0
32.5°	414.8	436.5	466.6	496.8	512.5	526.9	557.1	587.2	616.1	645.1	670.4
35°	381.0	401.5	426.8	459.4	473.9	489.5	520.9	549.8	580.0	608.9	635.4
37.5°	350.9	370.2	393.1	420.8	438.9	453.4	484.7	514.9	543.8	572.7	599.3
40°	324.4	341.2	360.5	385.8	402.7	418.4	449.8	479.9	508.8	536.6	563.1
42.5°	300.2	313.5	331.6	354.5	367.8	383.4	416.0	444.9	473.9	501.6	525.7
45°	277.3	288.2	303.9	324.4	335.2	352.1	382.2	411.2	438.9	464.2	490.7
47.5°	256.8	266.5	278.5	295.4	306.3	319.5	349.7	378.6	405.1	430.5	453.4
50°	238.7	246.0	256.8	271.3	279.7	289.4	319.5	347.3	371.4	395.5	417.2
52.5°	220.7	225.5	233.9	246.0	254.4	262.9	288.2	314.7	338.8	359.3	382.2
55°	201.4	207.4	214.6	223.1	229.1	236.3	256.8	282.2	302.6	324.4	342.4
57.5°	184.5	188.1	192.9	200.2	205.0	211.0	226.7	248.4	268.9	287.0	305.1
60°	167.6	170.0	173.6	178.5	182.1	186.9	197.7	217.0	235.1	249.6	265.3
62.5°	150.7	150.7	153.1	156.8	159.2	162.8	172.4	186.9	202.6	213.4	226.7
65°	132.6	133.8	135.0	137.5	138.7	141.1	147.1	158.0	170.0	180.9	190.5
67.5°	115.8	115.8	117.0	118.2	118.2	119.4	123.0	130.2	142.3	149.5	156.8
70°	98.9	98.9	98.9	98.9	100.1	98.9	101.3	106.1	114.5	121.8	125.4
72.5°	83.2	82.0	80.8	80.8	80.8	80.8	82.0	85.6	90.4	94.1	98.9
75°	66.3	65.1	63.9	62.7	63.9	63.9	63.9	65.1	67.5	71.1	72.3
77.5°	49.4	49.4	47.0	45.8	47.0	45.8	44.6	44.6	45.8	47.0	47.0
80°	33.8	32.6	31.4	30.1	30.1	30.1	28.9	27.7	27.7	27.7	26.5
82.5°	16.9	16.9	15.7	15.7	15.7	15.7	15.7	14.5	14.5	13.3	13.3
85°	6.0	6.0	6.0	6.0	7.2	6.0	7.2	7.2	7.2	7.2	7.2
87.5°	3.6	3.6	4.8	4.8	4.8	4.8	4.8	6.0	6.0	6.0	4.8
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: P345448

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000Lm3000K

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8
2.5°	917.6	921.2	923.6	926.0	927.2	929.6	933.3	935.7	938.1	940.5	942.9
5°	917.6	924.8	929.6	933.3	936.9	941.7	947.7	952.6	956.2	961.0	964.6
7.5°	914.0	923.6	932.1	936.9	941.7	948.9	956.2	963.4	969.4	975.5	980.3
10°	906.7	918.8	930.9	935.7	941.7	951.4	961.0	969.4	976.7	983.9	989.9
12.5°	895.9	910.4	924.8	930.9	936.9	948.9	959.8	969.4	976.7	982.7	986.3
15°	881.4	898.3	914.0	921.2	928.4	940.5	951.4	959.8	965.8	969.4	971.9
17.5°	863.3	881.4	898.3	906.7	915.2	927.2	935.7	940.5	944.1	944.1	942.9
20°	842.8	862.1	880.2	888.7	895.9	905.5	911.6	912.8	911.6	909.2	906.7
22.5°	817.5	839.2	857.3	864.5	870.6	877.8	877.8	876.6	874.2	870.6	869.4
25°	791.0	811.5	829.6	836.8	839.2	844.0	840.4	838.0	832.0	828.4	824.7
27.5°	762.0	783.8	797.0	801.8	804.2	801.8	798.2	793.4	789.8	783.8	778.9
30°	730.7	750.0	760.8	764.5	763.3	759.6	756.0	747.6	741.5	735.5	729.5
32.5°	694.5	713.8	722.3	723.5	719.8	713.8	707.8	701.8	694.5	687.3	683.7
35°	659.6	676.4	681.3	678.8	675.2	668.0	659.6	652.3	646.3	637.9	631.8
37.5°	622.2	636.6	636.6	633.0	630.6	622.2	613.7	606.5	598.1	590.8	582.4
40°	584.8	595.7	592.0	588.4	584.8	575.2	567.9	557.1	548.6	540.2	534.2
42.5°	547.4	553.4	548.6	543.8	539.0	529.3	522.1	510.0	502.8	494.4	489.5
45°	510.0	511.2	504.0	500.4	495.6	483.5	473.9	465.4	457.0	447.3	441.3
47.5°	471.5	469.0	460.6	455.8	451.0	440.1	430.5	420.8	411.2	403.9	396.7
50°	432.9	426.8	418.4	413.6	407.6	397.9	387.1	376.2	367.8	360.5	354.5
52.5°	390.7	385.8	376.2	369.0	364.1	350.9	341.2	331.6	321.9	314.7	309.9
55°	348.5	341.2	330.4	325.6	318.3	307.5	297.8	285.8	278.5	272.5	266.5
57.5°	306.3	297.8	288.2	282.2	274.9	264.1	253.2	246.0	238.7	231.5	227.9
60°	265.3	256.8	244.8	242.4	235.1	224.3	214.6	206.2	199.0	194.1	190.5
62.5°	226.7	218.2	206.2	201.4	196.5	185.7	177.2	170.0	165.2	160.4	156.8
65°	188.1	180.9	171.2	165.2	160.4	151.9	144.7	137.5	133.8	127.8	124.2
67.5°	153.1	144.7	137.5	132.6	129.0	120.6	114.5	109.7	104.9	101.3	96.5
70°	120.6	113.3	106.1	103.7	100.1	94.1	89.2	84.4	80.8	77.2	72.3
72.5°	92.8	88.0	80.8	78.4	76.0	71.1	67.5	63.9	59.1	56.7	54.3
75°	68.7	63.9	59.1	56.7	55.5	50.6	48.2	44.6	42.2	41.0	38.6
77.5°	44.6	41.0	38.6	37.4	36.2	33.8	31.4	30.1	27.7	26.5	26.5
80°	25.3	24.1	22.9	21.7	20.5	19.3	19.3	18.1	16.9	15.7	14.5
82.5°	12.1	12.1	10.9	10.9	10.9	9.6	9.6	8.4	8.4	7.2	7.2
85°	6.0	6.0	6.0	6.0	6.0	4.8	4.8	4.8	3.6	3.6	2.4
87.5°	4.8	4.8	4.8	4.8	4.8	3.6	3.6	3.6	2.4	2.4	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: P345448

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 2000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	912.8	912.8	912.8	912.8	912.8	912.8	912.8	912.8
2.5°	942.9	944.1	945.3	946.5	946.5	947.7	948.9	947.7
5°	967.0	970.6	971.9	973.1	974.3	975.5	976.7	976.7
7.5°	985.1	989.9	991.1	991.1	994.8	996.0	997.2	997.2
10°	994.8	997.2	999.6	999.6	1002.0	1002.0	1004.4	1004.4
12.5°	989.9	992.3	993.6	994.8	994.8	996.0	996.0	996.0
15°	973.1	971.9	971.9	970.6	970.6	969.4	969.4	969.4
17.5°	941.7	940.5	939.3	939.3	936.9	936.9	934.5	934.5
20°	904.3	901.9	900.7	899.5	899.5	898.3	895.9	895.9
22.5°	864.5	862.1	859.7	857.3	854.9	853.7	852.5	852.5
25°	819.9	816.3	815.1	813.9	810.3	809.1	806.7	805.5
27.5°	774.1	768.1	766.9	765.7	763.3	762.0	760.8	760.8
30°	725.9	722.3	719.8	718.6	715.0	713.8	710.2	710.2
32.5°	677.6	671.6	669.2	668.0	665.6	663.2	662.0	662.0
35°	627.0	623.4	622.2	618.6	614.9	614.9	612.5	612.5
37.5°	578.8	575.2	571.5	570.3	567.9	564.3	563.1	566.7
40°	530.5	525.7	523.3	522.1	519.7	516.1	516.1	516.1
42.5°	483.5	479.9	478.7	476.3	473.9	472.7	470.3	469.0
45°	435.3	432.9	431.7	429.3	428.0	425.6	423.2	423.2
47.5°	393.1	388.3	388.3	385.8	383.4	382.2	382.2	383.4
50°	350.9	347.3	344.9	343.6	341.2	341.2	340.0	338.8
52.5°	305.1	302.6	301.4	301.4	299.0	299.0	297.8	297.8
55°	262.9	262.9	261.7	260.4	258.0	258.0	258.0	258.0
57.5°	225.5	223.1	221.9	220.7	219.5	218.2	218.2	217.0
60°	186.9	185.7	183.3	184.5	180.9	180.9	180.9	179.7
62.5°	151.9	149.5	148.3	147.1	144.7	144.7	142.3	141.1
65°	121.8	118.2	115.8	115.8	113.3	110.9	109.7	108.5
67.5°	91.6	89.2	88.0	86.8	84.4	82.0	82.0	80.8
70°	69.9	67.5	66.3	65.1	63.9	62.7	62.7	62.7
72.5°	51.8	50.6	49.4	49.4	48.2	47.0	47.0	48.2
75°	37.4	36.2	36.2	36.2	35.0	35.0	35.0	33.8
77.5°	25.3	24.1	24.1	22.9	22.9	22.9	22.9	22.9
80°	14.5	13.3	13.3	13.3	13.3	13.3	13.3	13.3
82.5°	6.0	6.0	6.0	6.0	4.8	4.8	4.8	4.8
85°	2.4	2.4	2.4	2.4	2.4	1.2	1.2	1.2
87.5°	1.2	1.2	1.2	1.2	1.2	1.2	0.0	1.2
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)