

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: P345410

Luminaire Tested: **PR4FS12D010 PR4M12WW9FSMW 2000Lm3500K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345410  
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: PR4FS12D010 PR4M12WW9FSMW 2000Lm3500K  
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1547.7 lumens  
Efficiency: N/A  
Efficacy: 78.2 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

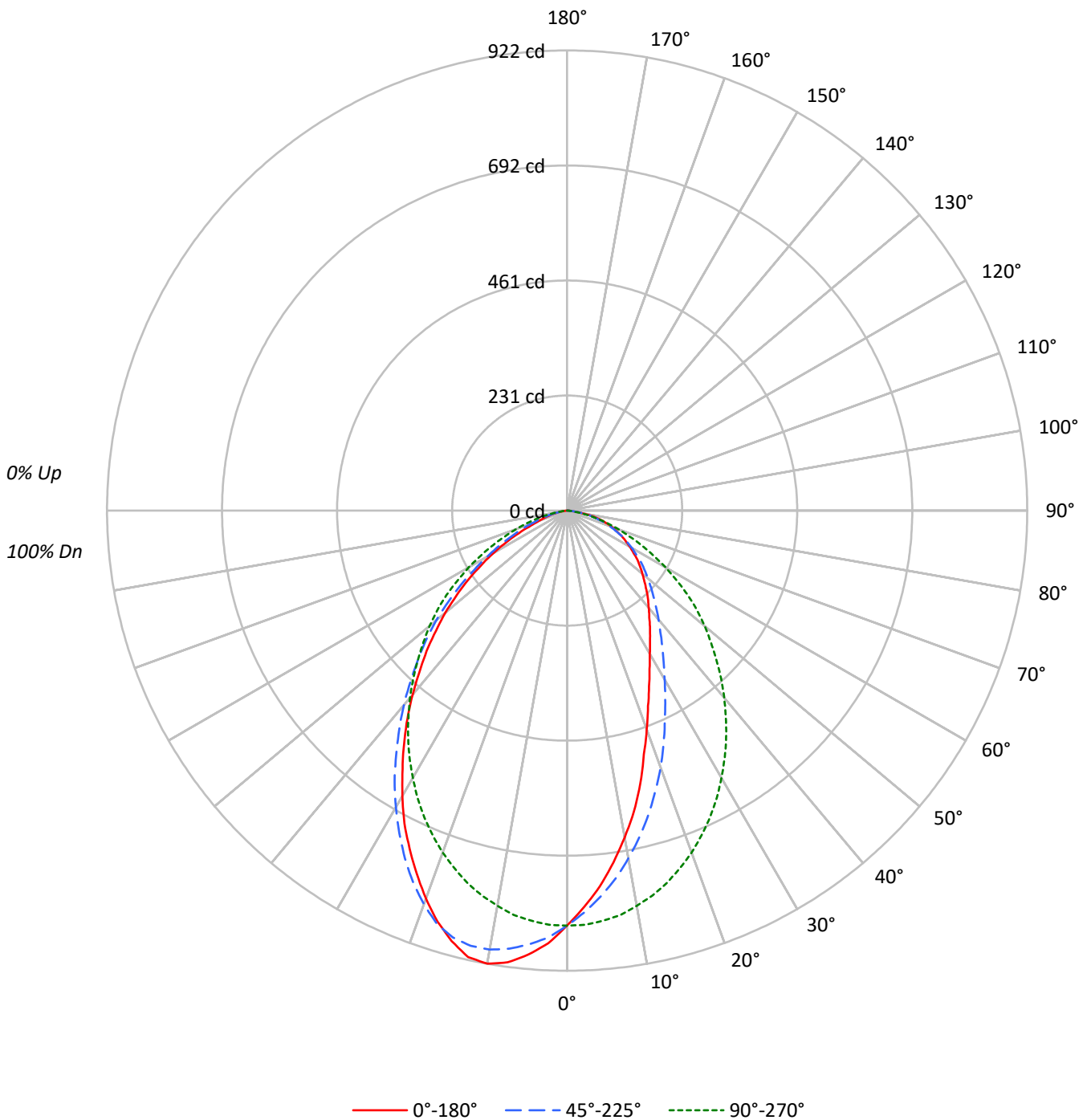
Input Watts (W): 19.8  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P345410

CATALOG NUMBER: PR4FS12D010 PR4M12WW9FSMW 2000lm3500K

### Luminous Intensity Polar Plot





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CATALOG NUMBER: PR4F512D010 PR4M12WW9FSMW 2000Lm3500K

**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°	72740	72740	72740
5°	66353	72438	78426
10°	59011	71419	81873
15°	51299	69927	80884
20°	43414	67885	76998
25°	37476	65396	72085
30°	33441	62439	66661
35°	30892	59317	60844
40°	29014	55893	55013
45°	27758	52251	49258
50°	26794	48947	43409
55°	26169	44957	37072
60°	25401	39834	30020
65°	24816	33922	22084
70°	24193	27850	15191
75°	23049	21190	11524
80°	16069	12190	6649
85°	6624	4416	2208



TEST NUMBER: P345410

CATALOG NUMBER: PR4FS12D010 PR4M12WW9FSMW 2000Lm3500K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	77.9	5.0
10°-20°	211.2	13.6
20°-30°	285.4	18.4
30°-40°	300.4	19.4
40°-50°	270.6	17.5
50°-60°	208.9	13.5
60°-70°	128.6	8.3
70°-80°	56.5	3.7
80°-90°	8.1	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°	574.5	37.1
0°-40°	874.9	56.5
0°-60°	1354.5	87.5
0°-90°	1547.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1547.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	832	832	832	832	832	
5°	756	776	825	872	893	69
15°	566	630	772	886	893	157
25°	388	463	678	769	747	180
35°	289	332	556	597	570	181
45°	224	245	422	422	398	174
55°	172	180	295	261	243	153
65°	120	120	164	124	107	118
75°	68	60	63	41	34	70
85°	7	6	4	3	2	12
90°	0	0	0	0	0	



TEST NUMBER: P345410

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6
2.5°	794.2	795.3	795.3	795.3	796.4	797.5	797.5	799.7	800.8	803.0	805.2
5°	755.7	754.6	754.6	756.8	759.0	760.1	760.1	764.5	767.8	771.1	775.5
7.5°	710.6	709.5	712.8	713.9	716.1	719.4	721.6	726.0	729.3	737.0	743.6
10°	664.4	664.4	666.6	669.9	673.2	676.5	678.7	684.2	690.8	698.5	707.3
12.5°	618.2	614.9	618.2	622.6	625.9	629.2	632.5	639.1	649.0	658.9	669.9
15°	566.5	565.4	567.6	572.0	579.7	581.9	585.2	595.1	605.0	618.2	630.3
17.5°	511.5	514.8	515.9	522.5	530.2	533.5	536.8	546.7	561.0	574.2	588.5
20°	466.4	464.2	468.6	473.0	479.6	485.1	489.5	500.5	515.9	530.2	547.8
22.5°	423.5	422.4	425.7	431.2	436.7	441.1	445.5	456.5	468.6	485.1	504.9
25°	388.3	387.2	390.5	393.8	400.4	403.7	407.0	418.0	431.2	444.4	463.1
27.5°	357.5	357.5	359.7	361.9	367.4	370.7	375.1	383.9	394.9	408.1	425.7
30°	331.1	331.1	333.3	335.5	341.0	343.2	346.5	353.1	361.9	376.2	390.5
32.5°	309.1	309.1	310.2	313.5	315.7	317.9	321.2	326.7	335.5	346.5	359.7
35°	289.3	289.3	290.4	292.6	295.9	297.0	299.2	304.7	311.3	320.1	332.2
37.5°	270.6	271.7	271.7	273.9	276.1	277.2	279.4	283.8	289.3	297.0	306.9
40°	254.1	255.2	255.2	257.4	259.6	260.7	261.8	264.0	270.6	276.1	284.9
42.5°	239.8	239.8	239.8	240.9	243.1	244.2	245.3	248.6	251.9	257.4	264.0
45°	224.4	224.4	225.5	226.6	228.8	228.8	229.9	233.2	235.4	239.8	245.3
47.5°	210.1	210.1	211.2	211.2	213.4	213.4	214.5	216.7	218.9	223.3	227.7
50°	196.9	196.9	196.9	198.0	199.1	200.2	200.2	202.4	204.6	207.9	211.2
52.5°	183.7	183.7	183.7	183.7	184.8	185.9	185.9	188.1	190.3	192.5	195.8
55°	171.6	170.5	171.6	171.6	171.6	172.7	172.7	174.9	174.9	177.1	180.4
57.5°	157.3	158.4	158.4	157.3	158.4	159.5	159.5	159.5	160.6	162.8	163.9
60°	145.2	145.2	145.2	145.2	146.3	146.3	146.3	146.3	147.4	147.4	149.6
62.5°	132.0	132.0	133.1	133.1	132.0	133.1	133.1	133.1	134.2	134.2	134.2
65°	119.9	119.9	119.9	119.9	119.9	119.9	119.9	119.9	119.9	119.9	119.9
67.5°	106.7	106.7	106.7	106.7	106.7	106.7	106.7	105.6	105.6	105.6	104.5
70°	94.6	94.6	94.6	93.5	93.5	93.5	93.5	92.4	92.4	91.3	90.2
72.5°	81.4	81.4	81.4	80.3	80.3	80.3	79.2	78.1	77.0	75.9	75.9
75°	68.2	68.2	67.1	66.0	66.0	64.9	64.9	63.8	63.8	61.6	60.5
77.5°	52.8	51.7	51.7	51.7	50.6	49.5	49.5	48.4	47.3	47.3	46.2
80°	31.9	31.9	33.0	31.9	33.0	31.9	31.9	33.0	31.9	30.8	30.8
82.5°	15.4	15.4	16.5	15.4	16.5	16.5	16.5	15.4	15.4	15.4	15.4
85°	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	5.5	5.5	5.5
87.5°	4.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
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: P345410

CATALOG NUMBER: PR4FS12D010 PR4M12WW9FSMW 2000Lm3500K

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6
2.5°	807.4	810.7	811.8	815.1	816.2	818.4	820.6	823.9	827.2	830.5	832.7
5°	779.9	785.4	789.8	795.3	798.6	800.8	807.4	812.9	819.5	825.0	830.5
7.5°	750.2	756.8	766.7	773.3	776.6	782.1	789.8	798.6	807.4	817.3	825.0
10°	716.1	726.0	735.9	748.0	753.5	759.0	768.9	781.0	793.1	804.1	816.2
12.5°	679.8	693.0	706.2	718.3	726.0	732.6	748.0	761.2	775.5	789.8	803.0
15°	644.6	658.9	674.3	689.7	698.5	706.2	721.6	738.1	755.7	772.2	787.6
17.5°	606.1	622.6	640.2	657.8	666.6	676.5	696.3	713.9	733.7	751.3	770.0
20°	566.5	585.2	603.9	625.9	634.7	645.7	665.5	687.5	708.4	729.3	749.1
22.5°	525.8	546.7	567.6	590.7	602.8	613.8	636.9	658.9	682.0	704.0	726.0
25°	484.0	508.2	532.4	555.5	568.7	579.7	605.0	630.3	654.5	677.6	700.7
27.5°	445.5	468.6	495.0	520.3	533.5	545.6	573.1	597.3	623.7	649.0	672.1
30°	410.3	432.3	458.7	486.2	499.4	512.6	540.1	567.6	591.8	618.2	643.5
32.5°	377.3	397.1	423.5	451.0	466.4	478.5	507.1	533.5	561.0	587.4	612.7
35°	346.5	366.3	389.4	416.9	430.1	444.4	474.1	501.6	528.0	555.5	578.6
37.5°	320.1	335.5	356.4	382.8	397.1	411.4	441.1	468.6	495.0	522.5	546.7
40°	294.8	309.1	327.8	350.9	365.2	379.5	408.1	435.6	462.0	489.5	514.8
42.5°	273.9	284.9	300.3	322.3	334.4	348.7	377.3	403.7	430.1	456.5	480.7
45°	253.0	262.9	276.1	293.7	305.8	319.0	346.5	374.0	398.2	422.4	446.6
47.5°	233.2	240.9	253.0	268.4	278.3	290.4	316.8	343.2	367.4	390.5	412.5
50°	215.6	222.2	233.2	244.2	253.0	264.0	287.1	313.5	336.6	359.7	379.5
52.5°	199.1	204.6	212.3	223.3	229.9	238.7	260.7	283.8	306.9	327.8	346.5
55°	183.7	187.0	193.6	201.3	206.8	214.5	233.2	255.2	276.1	294.8	310.2
57.5°	166.1	170.5	174.9	180.4	185.9	190.3	204.6	224.4	243.1	259.6	275.0
60°	150.7	154.0	156.2	161.7	163.9	168.3	179.3	195.8	213.4	227.7	238.7
62.5°	135.3	136.4	138.6	143.0	144.1	147.4	155.1	168.3	181.5	194.7	205.7
65°	119.9	119.9	122.1	123.2	125.4	126.5	132.0	141.9	154.0	163.9	170.5
67.5°	104.5	104.5	105.6	105.6	107.8	107.8	111.1	118.8	126.5	135.3	140.8
70°	89.1	89.1	89.1	89.1	89.1	90.2	92.4	96.8	102.3	108.9	112.2
72.5°	74.8	73.7	73.7	72.6	72.6	72.6	73.7	75.9	80.3	84.7	88.0
75°	59.4	58.3	57.2	57.2	56.1	56.1	56.1	58.3	60.5	62.7	63.8
77.5°	44.0	44.0	42.9	40.7	40.7	39.6	39.6	39.6	40.7	42.9	41.8
80°	30.8	28.6	27.5	27.5	26.4	26.4	25.3	24.2	24.2	24.2	23.1
82.5°	14.3	14.3	14.3	13.2	13.2	13.2	13.2	12.1	12.1	11.0	11.0
85°	5.5	5.5	5.5	5.5	5.5	5.5	5.5	4.4	4.4	4.4	4.4
87.5°	3.3	3.3	3.3	3.3	3.3	2.2	2.2	2.2	2.2	2.2	2.2
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: P345410

CATALOG NUMBER: PR4FS12D010 PR4M12WW9FSMW 2000lm3500K

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6
2.5°	836.0	839.3	842.6	843.7	844.8	848.1	850.3	853.6	855.8	856.9	859.1
5°	837.1	842.6	848.1	851.4	853.6	859.1	863.5	869.0	872.3	877.8	881.1
7.5°	833.8	842.6	850.3	854.7	859.1	866.8	873.4	880.0	885.5	891.0	896.5
10°	827.2	838.2	849.2	853.6	859.1	867.9	877.8	885.5	893.2	899.8	906.4
12.5°	817.3	830.5	843.7	849.2	854.7	866.8	876.7	885.5	893.2	899.8	904.2
15°	804.1	819.5	833.8	841.5	848.1	860.2	870.1	878.9	885.5	889.9	893.2
17.5°	787.6	805.2	821.7	828.3	836.0	847.0	856.9	863.5	867.9	867.9	869.0
20°	768.9	787.6	804.1	811.8	819.5	828.3	836.0	839.3	839.3	839.3	837.1
22.5°	746.9	766.7	783.2	790.9	797.5	804.1	808.5	808.5	806.3	803.0	799.7
25°	721.6	742.5	757.9	765.6	768.9	774.4	773.3	772.2	768.9	765.6	761.2
27.5°	694.1	715.0	731.5	734.8	737.0	738.1	734.8	732.6	728.2	723.8	720.5
30°	665.5	685.3	698.5	699.6	701.8	700.7	696.3	690.8	686.4	680.9	676.5
32.5°	634.7	653.4	662.2	664.4	663.3	658.9	654.5	649.0	643.5	636.9	631.4
35°	601.7	619.3	624.8	623.7	622.6	617.1	610.5	605.0	597.3	592.9	585.2
37.5°	567.6	584.1	586.3	583.0	579.7	573.1	566.5	561.0	552.2	547.8	542.3
40°	533.5	544.5	544.5	541.2	539.0	532.4	523.6	515.9	509.3	501.6	498.3
42.5°	498.3	507.1	502.7	500.5	497.2	487.3	480.7	473.0	464.2	459.8	454.3
45°	463.1	468.6	463.1	458.7	455.4	446.6	440.0	430.1	422.4	418.0	411.4
47.5°	426.8	429.0	424.6	418.0	415.8	405.9	398.2	390.5	382.8	375.1	369.6
50°	393.8	391.6	385.0	380.6	377.3	366.3	357.5	348.7	342.1	335.5	330.0
52.5°	356.4	354.2	345.4	339.9	334.4	325.6	314.6	308.0	300.3	294.8	289.3
55°	317.9	311.3	304.7	299.2	293.7	284.9	275.0	266.2	260.7	254.1	250.8
57.5°	278.3	273.9	262.9	258.5	254.1	245.3	235.4	227.7	220.0	215.6	213.4
60°	243.1	235.4	226.6	221.1	216.7	207.9	199.1	191.4	185.9	183.7	180.4
62.5°	205.7	199.1	189.2	184.8	181.5	172.7	165.0	158.4	154.0	149.6	147.4
65°	171.6	163.9	156.2	151.8	147.4	139.7	134.2	129.8	124.3	121.0	118.8
67.5°	138.6	132.0	125.4	122.1	118.8	112.2	106.7	103.4	99.0	95.7	91.3
70°	108.9	103.4	99.0	95.7	92.4	86.9	82.5	79.2	75.9	72.6	69.3
72.5°	84.7	79.2	73.7	72.6	70.4	66.0	62.7	59.4	56.1	53.9	51.7
75°	60.5	58.3	53.9	51.7	50.6	47.3	44.0	41.8	40.7	38.5	37.4
77.5°	39.6	37.4	34.1	34.1	33.0	31.9	29.7	27.5	27.5	26.4	26.4
80°	22.0	20.9	19.8	18.7	19.8	18.7	17.6	16.5	16.5	16.5	15.4
82.5°	9.9	9.9	8.8	8.8	8.8	8.8	8.8	7.7	7.7	7.7	7.7
85°	4.4	4.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
87.5°	2.2	2.2	2.2	2.2	2.2	2.2	1.1	1.1	1.1	1.1	1.1
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: P345410

CATALOG NUMBER: PR4FS12D010 PR4M12WW9FSMW 2000lm3500K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	831.6	831.6	831.6	831.6	831.6	831.6	831.6	831.6
2.5°	861.3	862.4	863.5	864.6	865.7	865.7	866.8	867.9
5°	883.3	886.6	887.7	888.8	891.0	892.1	892.1	893.2
7.5°	900.9	905.3	906.4	908.6	910.8	911.9	913.0	913.0
10°	910.8	914.1	915.2	917.4	919.6	920.7	921.8	921.8
12.5°	907.5	910.8	911.9	913.0	915.2	916.3	916.3	916.3
15°	895.4	895.4	895.4	895.4	894.3	895.4	895.4	893.2
17.5°	867.9	866.8	867.9	865.7	864.6	864.6	863.5	863.5
20°	834.9	833.8	832.7	832.7	831.6	829.4	828.3	827.2
22.5°	797.5	795.3	794.2	794.2	792.0	790.9	789.8	787.6
25°	759.0	753.5	753.5	753.5	751.3	751.3	749.1	746.9
27.5°	715.0	711.7	711.7	709.5	707.3	706.2	705.1	706.2
30°	673.2	668.8	666.6	665.5	664.4	664.4	661.1	660.0
32.5°	627.0	623.7	621.5	620.4	618.2	617.1	616.0	613.8
35°	581.9	578.6	576.4	576.4	572.0	570.9	569.8	569.8
37.5°	535.7	533.5	532.4	529.1	528.0	526.9	526.9	525.8
40°	492.8	489.5	488.4	485.1	484.0	484.0	480.7	481.8
42.5°	448.8	444.4	443.3	442.2	441.1	438.9	440.0	437.8
45°	407.0	403.7	401.5	401.5	400.4	398.2	397.1	398.2
47.5°	366.3	361.9	361.9	360.8	359.7	358.6	358.6	356.4
50°	327.8	324.5	322.3	320.1	321.2	320.1	317.9	319.0
52.5°	286.0	282.7	281.6	281.6	280.5	280.5	279.4	279.4
55°	248.6	245.3	245.3	244.2	244.2	244.2	243.1	243.1
57.5°	211.2	209.0	207.9	207.9	205.7	206.8	205.7	204.6
60°	178.2	174.9	172.7	173.8	172.7	172.7	170.5	171.6
62.5°	144.1	141.9	140.8	140.8	138.6	138.6	136.4	137.5
65°	115.5	112.2	111.1	110.0	107.8	106.7	106.7	106.7
67.5°	89.1	86.9	85.8	83.6	81.4	80.3	79.2	78.1
70°	67.1	64.9	63.8	62.7	61.6	60.5	60.5	59.4
72.5°	50.6	48.4	48.4	47.3	47.3	46.2	46.2	46.2
75°	36.3	36.3	35.2	35.2	34.1	35.2	34.1	34.1
77.5°	25.3	24.2	25.3	24.2	23.1	23.1	23.1	23.1
80°	14.3	14.3	14.3	14.3	14.3	14.3	14.3	13.2
82.5°	7.7	7.7	7.7	6.6	6.6	6.6	6.6	6.6
85°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
87.5°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)