

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: P345487

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSBZ 2000Lm3000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345487  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-9)  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/03/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: HALO COMMERCIAL  
Catalog Number: PR4FS24D010 PR4M24WW9FSBZ 2000lm3000K  
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1425.4 lumens  
Efficiency: N/A  
Efficacy: 64.8 lumens/watt  
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1  
Luminous Opening: Circular (Dia: 0.4' x H: 0')  
CIE Type: Direct

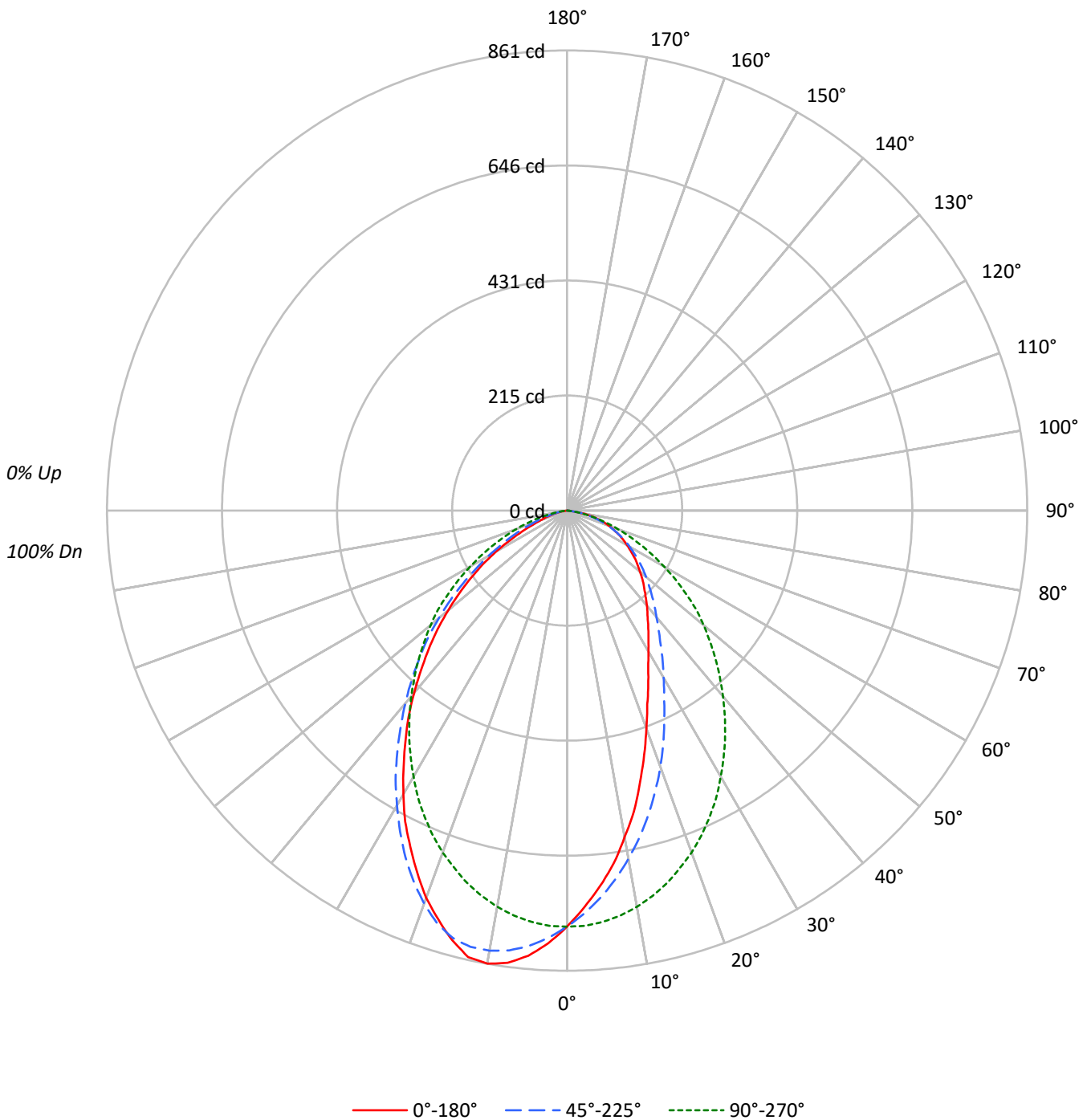
Input Watts (W): 22  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	107	103	100	108	104	101	98	100	98	95	96	94	92	93	91	90	88
2	102	95	89	84	100	93	88	83	90	85	81	86	83	79	84	80	78	76
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66
4	87	76	69	63	85	75	68	62	73	66	61	70	65	61	68	64	60	58
5	81	69	61	55	79	68	60	55	66	59	54	64	58	54	62	57	53	51
6	75	63	55	49	73	62	54	49	60	53	48	59	53	48	57	52	48	46
7	70	58	50	44	68	57	49	44	55	48	43	54	48	43	53	47	43	41
8	65	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37
9	61	49	41	36	60	48	41	36	47	41	36	46	40	36	45	40	36	34
10	58	46	38	33	57	45	38	33	44	38	33	43	37	33	42	37	33	31

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

	0°	90°	180°
0°	68095	68095	68095
5°	61945	67811	73413
10°	55077	66863	76455
15°	47677	65372	75342
20°	40305	63371	71795
25°	34638	60938	66999
30°	30745	58065	61904
35°	28222	55013	56337
40°	26536	51782	50846
45°	25185	48602	45287
50°	24208	45341	39463
55°	23530	41403	33412
60°	22672	36527	26801
65°	22146	31501	19372
70°	21303	25779	13401
75°	19804	19466	9395
80°	13449	10377	4685
85°	1004	4115	0



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	72.9	5.1
10°-20°	197.2	13.8
20°-30°	265.5	18.6
30°-40°	278.1	19.5
40°-50°	249.4	17.5
50°-60°	191.0	13.4
60°-70°	116.3	8.2
70°-80°	49.4	3.5
80°-90°	5.6	0.4
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°	535.6	37.6
0°-40°	813.8	57.1
0°-60°	1254.1	88.0
0°-90°	1425.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1425.4	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	778	778	778	778	778	
5°	706	726	772	818	836	65
15°	526	588	722	828	832	147
25°	359	430	631	716	694	166
35°	264	304	515	554	528	166
45°	204	224	393	391	366	158
55°	154	164	272	238	219	137
65°	107	108	152	113	94	106
75°	59	52	58	35	28	60
85°	1	2	4	1	0	7
90°	0	0	0	0	0	



TEST NUMBER: P345487

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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5
2.5°	742.5	743.5	745.6	744.6	746.6	746.6	746.6	748.7	750.7	751.8	753.8
5°	705.5	706.5	707.5	709.6	710.6	709.6	712.7	715.8	718.9	723.0	726.1
7.5°	666.4	666.4	665.4	668.5	672.6	673.6	675.7	678.8	682.9	689.0	695.2
10°	620.1	621.2	623.2	624.2	630.4	631.4	634.5	638.6	645.8	653.0	661.3
12.5°	576.9	575.9	576.9	580.0	584.1	589.3	592.4	597.5	606.8	616.0	626.3
15°	526.5	527.6	530.7	533.7	539.9	543.0	548.1	557.4	566.7	575.9	588.3
17.5°	479.2	478.2	482.3	487.5	492.6	497.8	501.9	510.1	522.4	535.8	549.2
20°	433.0	431.9	435.0	439.1	447.4	450.4	455.6	467.9	479.2	493.6	510.1
22.5°	391.8	391.8	394.9	400.1	405.2	408.3	413.4	423.7	437.1	453.5	470.0
25°	358.9	358.9	361.0	364.1	370.2	373.3	378.5	385.7	398.0	413.4	429.9
27.5°	328.1	330.1	331.1	334.2	339.4	342.5	345.5	353.8	364.1	377.4	392.9
30°	304.4	305.4	306.5	308.5	312.6	314.7	318.8	326.0	335.3	346.6	361.0
32.5°	282.8	283.8	283.8	286.9	290.0	293.1	295.2	301.3	307.5	318.8	332.2
35°	264.3	264.3	266.4	267.4	269.4	271.5	273.6	278.7	285.9	294.1	304.4
37.5°	246.8	246.8	247.8	249.9	252.0	254.0	255.0	259.2	265.3	272.5	280.8
40°	232.4	232.4	232.4	234.5	236.5	237.6	238.6	242.7	247.8	253.0	260.2
42.5°	217.0	218.0	219.1	220.1	221.1	223.2	224.2	226.3	230.4	234.5	241.7
45°	203.6	204.7	204.7	205.7	207.7	207.7	208.8	211.9	214.9	219.1	224.2
47.5°	191.3	191.3	191.3	192.3	193.3	194.4	195.4	197.5	200.5	202.6	207.7
50°	177.9	177.9	178.9	180.0	181.0	181.0	182.0	183.1	186.1	188.2	192.3
52.5°	165.6	165.6	166.6	166.6	167.6	167.6	168.7	170.7	171.7	174.8	177.9
55°	154.3	153.2	154.3	154.3	154.3	155.3	155.3	157.3	159.4	160.4	163.5
57.5°	140.9	141.9	141.9	142.9	142.9	142.9	144.0	144.0	146.0	147.1	148.1
60°	129.6	130.6	130.6	130.6	130.6	130.6	131.6	131.6	132.7	133.7	134.7
62.5°	118.3	118.3	118.3	118.3	118.3	119.3	119.3	119.3	119.3	120.3	121.4
65°	107.0	107.0	107.0	107.0	107.0	107.0	107.0	107.0	107.0	107.0	108.0
67.5°	94.6	94.6	94.6	95.6	94.6	94.6	94.6	94.6	94.6	94.6	93.6
70°	83.3	83.3	83.3	83.3	83.3	82.3	82.3	81.2	81.2	80.2	80.2
72.5°	71.0	71.0	71.0	69.9	69.9	69.9	68.9	67.9	66.8	66.8	66.8
75°	58.6	58.6	57.6	57.6	56.6	56.6	55.5	54.5	53.5	52.4	52.4
77.5°	44.2	44.2	44.2	44.2	43.2	42.2	42.2	41.1	40.1	40.1	39.1
80°	26.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	25.7	24.7	24.7
82.5°	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3
85°	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.1
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	1.0	2.1
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5
2.5°	755.9	757.9	761.0	763.1	764.1	765.1	768.2	771.3	774.4	777.5	779.5
5°	731.2	735.3	739.4	744.6	746.6	749.7	755.9	761.0	766.2	772.3	777.5
7.5°	701.4	708.6	715.8	724.0	727.1	730.2	738.4	747.7	754.9	764.1	772.3
10°	670.5	678.8	688.0	699.3	704.5	709.6	719.9	731.2	741.5	752.8	763.1
12.5°	635.6	648.9	661.3	673.6	678.8	684.9	698.3	711.7	725.0	738.4	750.7
15°	600.6	614.0	629.4	643.8	651.0	659.2	674.6	691.1	706.5	721.9	736.3
17.5°	565.6	579.0	595.4	614.0	623.2	631.4	647.9	666.4	684.9	701.4	719.9
20°	526.5	544.0	563.6	583.1	592.4	602.6	622.2	641.7	662.3	680.8	700.3
22.5°	488.5	507.0	530.7	550.2	560.5	570.8	593.4	616.0	636.6	657.2	676.7
25°	450.4	472.0	494.7	518.3	529.6	540.9	564.6	586.2	609.8	631.4	654.1
27.5°	413.4	436.0	459.7	484.4	496.7	509.1	532.7	557.4	581.1	604.7	627.3
30°	378.5	400.1	425.8	451.5	463.8	477.2	501.9	527.6	551.2	574.9	599.6
32.5°	347.6	366.1	391.8	417.5	430.9	444.3	471.0	496.7	520.4	545.1	570.8
35°	318.8	336.3	358.9	385.7	399.0	412.4	439.1	465.9	491.6	515.2	539.9
37.5°	294.1	309.6	329.1	352.7	368.2	381.5	408.3	435.0	459.7	484.4	508.0
40°	270.5	283.8	302.4	325.0	337.3	350.7	377.4	405.2	429.9	453.5	477.2
42.5°	249.9	261.2	276.6	296.2	309.6	320.9	348.6	375.4	399.0	422.7	446.3
45°	231.4	240.6	253.0	269.4	280.8	295.2	320.9	345.5	369.2	392.9	415.5
47.5°	212.9	221.1	231.4	246.8	256.1	267.4	293.1	316.8	340.4	362.0	383.6
50°	197.5	203.6	211.9	224.2	233.4	241.7	265.3	290.0	311.6	333.2	352.7
52.5°	182.0	186.1	193.3	204.7	210.8	219.1	239.6	262.2	283.8	304.4	321.9
55°	166.6	170.7	175.9	184.1	190.3	196.4	213.9	235.5	255.0	271.5	289.0
57.5°	151.2	154.3	158.4	165.6	169.7	174.8	189.2	206.7	224.2	240.6	254.0
60°	137.8	139.9	142.9	147.1	150.1	153.2	163.5	180.0	196.4	208.8	221.1
62.5°	122.4	123.4	125.5	129.6	131.6	133.7	140.9	155.3	168.7	180.0	190.3
65°	108.0	109.0	110.0	112.1	114.2	115.2	121.4	131.6	142.9	152.2	159.4
67.5°	93.6	94.6	94.6	96.7	96.7	98.7	101.8	108.0	118.3	125.5	131.6
70°	79.2	80.2	80.2	81.2	80.2	81.2	84.3	88.4	94.6	100.8	104.9
72.5°	65.8	64.8	64.8	64.8	64.8	65.8	66.8	68.9	74.0	79.2	80.2
75°	51.4	51.4	50.4	50.4	50.4	50.4	50.4	51.4	54.5	57.6	58.6
77.5°	38.1	37.0	37.0	36.0	36.0	36.0	35.0	35.0	36.0	38.1	38.1
80°	24.7	23.7	22.6	23.7	21.6	22.6	21.6	20.6	20.6	20.6	19.5
82.5°	10.3	10.3	10.3	10.3	10.3	10.3	10.3	10.3	9.3	9.3	9.3
85°	2.1	2.1	3.1	3.1	3.1	3.1	3.1	3.1	4.1	4.1	3.1
87.5°	2.1	2.1	2.1	3.1	3.1	3.1	3.1	3.1	4.1	4.1	4.1
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°	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5
2.5°	782.6	785.7	788.8	789.8	790.8	793.9	796.0	799.1	800.1	802.2	804.2
5°	782.6	788.8	793.9	797.0	799.1	804.2	809.4	812.4	817.6	820.7	823.8
7.5°	780.6	788.8	796.0	800.1	804.2	810.4	817.6	823.8	829.9	834.0	839.2
10°	774.4	784.7	793.9	799.1	804.2	813.5	821.7	828.9	836.1	842.3	847.4
12.5°	765.1	777.5	788.8	795.0	800.1	811.4	820.7	828.9	836.1	841.2	845.4
15°	751.8	767.2	780.6	786.7	792.9	805.2	814.5	821.7	827.9	831.0	834.0
17.5°	736.3	752.8	768.2	775.4	781.6	792.9	801.1	806.3	809.4	811.4	810.4
20°	718.9	736.3	751.8	759.0	766.2	775.4	781.6	783.6	782.6	781.6	779.5
22.5°	697.3	715.8	732.2	738.4	744.6	751.8	753.8	752.8	750.7	748.7	745.6
25°	674.6	693.1	708.6	713.7	718.9	721.9	720.9	718.9	715.8	712.7	707.5
27.5°	648.9	668.5	680.8	687.0	688.0	688.0	684.9	681.8	676.7	672.6	667.4
30°	622.2	638.6	651.0	653.0	654.1	652.0	648.9	643.8	636.6	633.5	628.4
32.5°	591.3	608.8	618.1	618.1	616.0	612.9	606.8	601.6	597.5	590.3	585.2
35°	562.5	575.9	581.1	581.1	578.0	572.8	567.7	560.5	554.3	550.2	543.0
37.5°	529.6	543.0	545.1	542.0	539.9	533.7	525.5	519.3	512.1	507.0	501.9
40°	498.8	508.0	506.0	502.9	500.8	494.7	485.4	478.2	471.0	464.8	459.7
42.5°	463.8	470.0	466.9	464.8	460.7	453.5	445.3	438.1	430.9	424.7	419.6
45°	431.9	435.0	429.9	425.8	422.7	414.4	408.3	398.0	390.8	384.6	380.5
47.5°	398.0	398.0	392.9	388.7	383.6	375.4	368.2	357.9	353.8	345.5	341.4
50°	365.1	362.0	355.8	350.7	346.6	337.3	328.1	320.9	313.7	307.5	303.4
52.5°	330.1	326.0	317.8	312.6	310.6	299.3	291.0	281.8	275.6	268.4	264.3
55°	295.2	289.0	279.7	275.6	271.5	262.2	253.0	243.7	237.6	232.4	228.3
57.5°	259.2	252.0	243.7	238.6	233.4	224.2	214.9	206.7	201.6	196.4	193.3
60°	222.1	217.0	208.8	203.6	198.5	190.3	180.0	173.8	169.7	163.5	162.5
62.5°	190.3	183.1	173.8	169.7	165.6	157.3	149.1	144.0	138.8	135.8	131.6
65°	158.4	151.2	142.9	138.8	135.8	128.6	122.4	117.2	113.1	109.0	105.9
67.5°	127.5	122.4	115.2	112.1	108.0	101.8	96.7	92.6	88.4	84.3	81.2
70°	101.8	95.6	89.5	87.4	85.4	79.2	75.1	71.0	66.8	63.8	60.7
72.5°	78.2	73.0	67.9	64.8	62.7	59.6	56.6	52.4	49.4	46.3	44.2
75°	55.5	52.4	48.3	46.3	44.2	42.2	38.1	36.0	35.0	32.9	30.9
77.5°	36.0	32.9	30.9	28.8	28.8	26.7	24.7	23.7	21.6	21.6	20.6
80°	18.5	17.5	16.5	16.5	16.5	14.4	13.4	13.4	12.3	11.3	11.3
82.5°	8.2	8.2	7.2	7.2	7.2	6.2	6.2	5.1	5.1	4.1	4.1
85°	3.1	3.1	3.1	3.1	3.1	2.1	2.1	2.1	1.0	1.0	1.0
87.5°	3.1	3.1	3.1	3.1	3.1	2.1	2.1	2.1	1.0	1.0	1.0
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: P345487

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 2000lm3000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	778.5	778.5	778.5	778.5	778.5	778.5	778.5	778.5
2.5°	805.2	807.3	807.3	808.3	809.4	810.4	809.4	810.4
5°	826.8	829.9	831.0	831.0	833.0	834.0	836.1	836.1
7.5°	843.3	846.4	848.4	849.5	851.5	853.6	853.6	853.6
10°	851.5	854.6	855.6	857.7	858.7	859.8	860.8	860.8
12.5°	848.4	851.5	852.6	852.6	854.6	854.6	854.6	855.6
15°	835.1	834.0	834.0	834.0	833.0	833.0	833.0	832.0
17.5°	808.3	807.3	807.3	807.3	806.3	805.2	804.2	802.2
20°	778.5	776.5	774.4	775.4	773.4	772.3	771.3	771.3
22.5°	743.5	740.5	739.4	738.4	736.3	735.3	733.3	733.3
25°	705.5	703.4	700.3	699.3	698.3	696.2	694.2	694.2
27.5°	665.4	662.3	661.3	659.2	658.2	656.1	655.1	656.1
30°	624.2	621.2	620.1	618.1	614.0	616.0	614.0	612.9
32.5°	581.1	578.0	575.9	573.9	573.9	570.8	570.8	569.7
35°	538.9	535.8	533.7	532.7	530.7	530.7	528.6	527.6
37.5°	497.8	494.7	492.6	491.6	489.5	487.5	486.4	487.5
40°	455.6	452.5	450.4	449.4	447.4	445.3	445.3	445.3
42.5°	414.4	411.4	411.4	409.3	406.2	405.2	404.2	404.2
45°	376.4	372.3	371.3	369.2	369.2	367.1	366.1	366.1
47.5°	336.3	333.2	332.2	331.1	330.1	329.1	329.1	329.1
50°	299.3	295.2	295.2	293.1	292.1	293.1	291.0	290.0
52.5°	262.2	259.2	258.1	258.1	256.1	256.1	256.1	255.0
55°	225.2	223.2	223.2	222.1	220.1	221.1	221.1	219.1
57.5°	191.3	188.2	188.2	187.2	187.2	187.2	185.1	187.2
60°	159.4	157.3	156.3	155.3	154.3	154.3	154.3	153.2
62.5°	129.6	127.5	126.5	125.5	123.4	123.4	121.4	120.3
65°	102.8	100.8	98.7	97.7	95.6	94.6	94.6	93.6
67.5°	78.2	76.1	74.0	73.0	71.0	69.9	68.9	68.9
70°	58.6	55.5	55.5	54.5	53.5	53.5	52.4	52.4
72.5°	42.2	42.2	41.1	41.1	40.1	40.1	40.1	40.1
75°	29.8	29.8	29.8	29.8	28.8	28.8	27.8	27.8
77.5°	19.5	19.5	19.5	18.5	18.5	18.5	18.5	18.5
80°	10.3	10.3	10.3	10.3	10.3	9.3	10.3	9.3
82.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
85°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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