

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: P345488

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSBZ 2000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345488
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 2000lm3500K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1524.6 lumens
Efficiency: N/A
Efficacy: 74.7 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

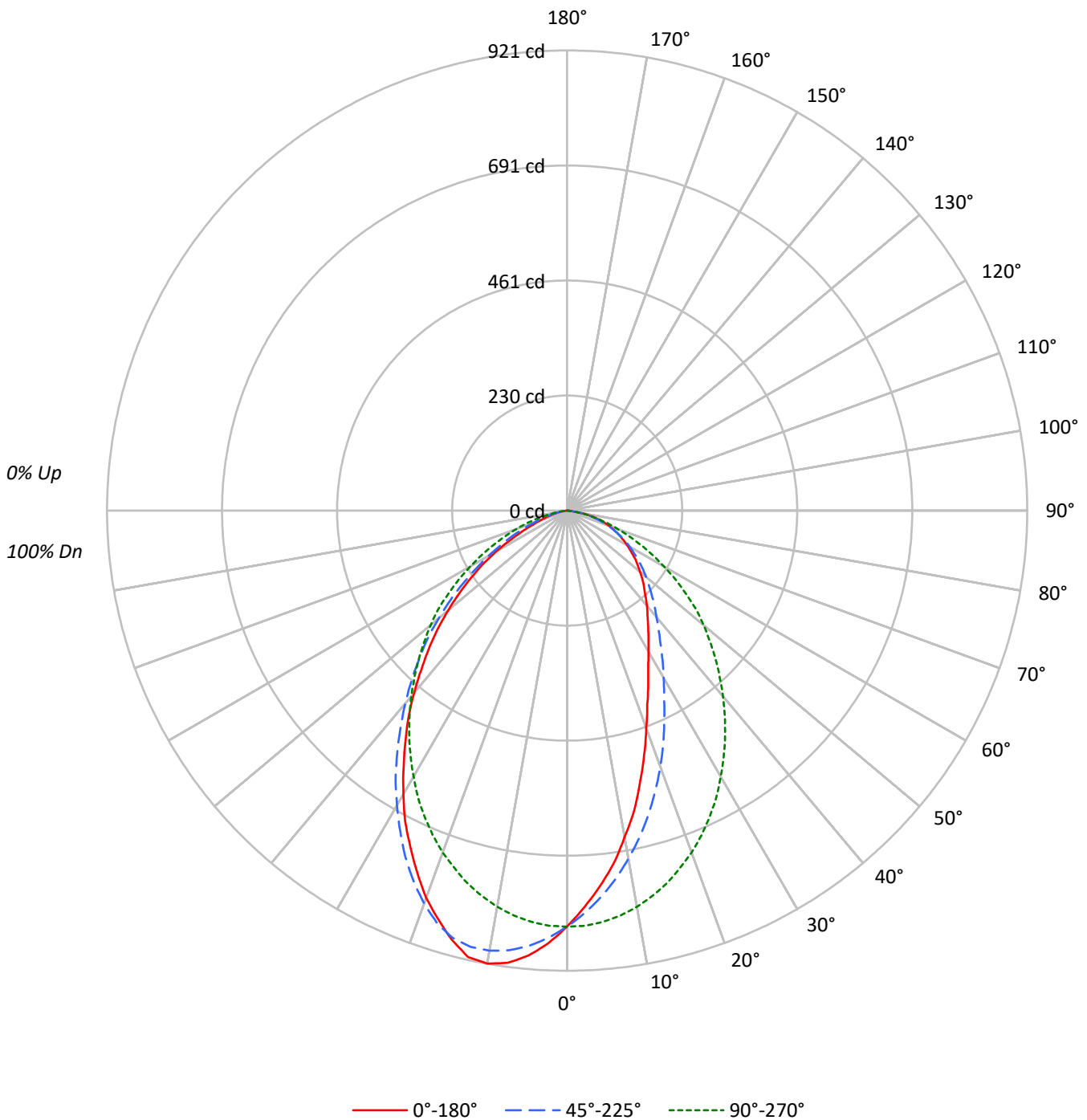
Input Watts (W): 20.4
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	72836	72836	72836
5°	66257	72535	78523
10°	58914	71517	81775
15°	51001	69927	80585
20°	43107	67783	76794
25°	37051	65184	71660
30°	32886	62106	66216
35°	30187	58847	60256
40°	28386	55390	54385
45°	26942	51979	48441
50°	25896	48498	42211
55°	25162	44286	35730
60°	24247	39064	28672
65°	23677	33695	20718
70°	22787	27569	14347
75°	21190	20818	10037
80°	14406	11082	4987
85°	1104	4416	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	78.0	5.1
10°-20°	211.0	13.8
20°-30°	284.0	18.6
30°-40°	297.5	19.5
40°-50°	266.8	17.5
50°-60°	204.2	13.4
60°-70°	124.4	8.2
70°-80°	52.8	3.5
80°-90°	5.9	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°	572.9	37.6
0°-40°	870.4	57.1
0°-60°	1341.4	88.0
0°-90°	1524.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1524.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	833	833	833	833	833	
5°	755	777	826	874	894	69
15°	563	629	772	886	890	157
25°	384	460	675	766	742	177
35°	283	326	551	593	564	178
45°	218	240	420	418	392	169
55°	165	175	290	254	234	147
65°	114	116	163	121	100	113
75°	63	56	62	37	30	65
85°	1	2	4	1	0	7
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°	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7
2.5°	794.2	795.3	797.5	796.4	798.6	798.6	798.6	800.8	803.0	804.1	806.3
5°	754.6	755.7	756.8	759.0	760.1	759.0	762.3	765.6	768.9	773.3	776.6
7.5°	712.8	712.8	711.7	715.0	719.4	720.5	722.7	726.0	730.4	737.0	743.6
10°	663.3	664.4	666.6	667.7	674.3	675.4	678.7	683.1	690.8	698.5	707.3
12.5°	617.1	616.0	617.1	620.4	624.8	630.3	633.6	639.1	649.0	658.9	669.9
15°	563.2	564.3	567.6	570.9	577.5	580.8	586.3	596.2	606.1	616.0	629.2
17.5°	512.6	511.5	515.9	521.4	526.9	532.4	536.8	545.6	558.8	573.1	587.4
20°	463.1	462.0	465.3	469.7	478.5	481.8	487.3	500.5	512.6	528.0	545.6
22.5°	419.1	419.1	422.4	427.9	433.4	436.7	442.2	453.2	467.5	485.1	502.7
25°	383.9	383.9	386.1	389.4	396.0	399.3	404.8	412.5	425.7	442.2	459.8
27.5°	350.9	353.1	354.2	357.5	363.0	366.3	369.6	378.4	389.4	403.7	420.2
30°	325.6	326.7	327.8	330.0	334.4	336.6	341.0	348.7	358.6	370.7	386.1
32.5°	302.5	303.6	303.6	306.9	310.2	313.5	315.7	322.3	328.9	341.0	355.3
35°	282.7	282.7	284.9	286.0	288.2	290.4	292.6	298.1	305.8	314.6	325.6
37.5°	264.0	264.0	265.1	267.3	269.5	271.7	272.8	277.2	283.8	291.5	300.3
40°	248.6	248.6	248.6	250.8	253.0	254.1	255.2	259.6	265.1	270.6	278.3
42.5°	232.1	233.2	234.3	235.4	236.5	238.7	239.8	242.0	246.4	250.8	258.5
45°	217.8	218.9	218.9	220.0	222.2	222.2	223.3	226.6	229.9	234.3	239.8
47.5°	204.6	204.6	204.6	205.7	206.8	207.9	209.0	211.2	214.5	216.7	222.2
50°	190.3	190.3	191.4	192.5	193.6	193.6	194.7	195.8	199.1	201.3	205.7
52.5°	177.1	177.1	178.2	178.2	179.3	179.3	180.4	182.6	183.7	187.0	190.3
55°	165.0	163.9	165.0	165.0	165.0	166.1	166.1	168.3	170.5	171.6	174.9
57.5°	150.7	151.8	151.8	152.9	152.9	152.9	154.0	154.0	156.2	157.3	158.4
60°	138.6	139.7	139.7	139.7	139.7	139.7	140.8	140.8	141.9	143.0	144.1
62.5°	126.5	126.5	126.5	126.5	126.5	127.6	127.6	127.6	127.6	128.7	129.8
65°	114.4	114.4	114.4	114.4	114.4	114.4	114.4	114.4	114.4	114.4	115.5
67.5°	101.2	101.2	101.2	102.3	101.2	101.2	101.2	101.2	101.2	101.2	100.1
70°	89.1	89.1	89.1	89.1	89.1	88.0	88.0	86.9	86.9	85.8	85.8
72.5°	75.9	75.9	75.9	74.8	74.8	74.8	73.7	72.6	71.5	71.5	71.5
75°	62.7	62.7	61.6	61.6	60.5	60.5	59.4	58.3	57.2	56.1	56.1
77.5°	47.3	47.3	47.3	47.3	46.2	45.1	45.1	44.0	42.9	42.9	41.8
80°	28.6	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	26.4	26.4
82.5°	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
85°	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	2.2
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	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



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7
2.5°	808.5	810.7	814.0	816.2	817.3	818.4	821.7	825.0	828.3	831.6	833.8
5°	782.1	786.5	790.9	796.4	798.6	801.9	808.5	814.0	819.5	826.1	831.6
7.5°	750.2	757.9	765.6	774.4	777.7	781.0	789.8	799.7	807.4	817.3	826.1
10°	717.2	726.0	735.9	748.0	753.5	759.0	770.0	782.1	793.1	805.2	816.2
12.5°	679.8	694.1	707.3	720.5	726.0	732.6	746.9	761.2	775.5	789.8	803.0
15°	642.4	656.7	673.2	688.6	696.3	705.1	721.6	739.2	755.7	772.2	787.6
17.5°	605.0	619.3	636.9	656.7	666.6	675.4	693.0	712.8	732.6	750.2	770.0
20°	563.2	581.9	602.8	623.7	633.6	644.6	665.5	686.4	708.4	728.2	749.1
22.5°	522.5	542.3	567.6	588.5	599.5	610.5	634.7	658.9	680.9	702.9	723.8
25°	481.8	504.9	529.1	554.4	566.5	578.6	603.9	627.0	652.3	675.4	699.6
27.5°	442.2	466.4	491.7	518.1	531.3	544.5	569.8	596.2	621.5	646.8	671.0
30°	404.8	427.9	455.4	482.9	496.1	510.4	536.8	564.3	589.6	614.9	641.3
32.5°	371.8	391.6	419.1	446.6	460.9	475.2	503.8	531.3	556.6	583.0	610.5
35°	341.0	359.7	383.9	412.5	426.8	441.1	469.7	498.3	525.8	551.1	577.5
37.5°	314.6	331.1	352.0	377.3	393.8	408.1	436.7	465.3	491.7	518.1	543.4
40°	289.3	303.6	323.4	347.6	360.8	375.1	403.7	433.4	459.8	485.1	510.4
42.5°	267.3	279.4	295.9	316.8	331.1	343.2	372.9	401.5	426.8	452.1	477.4
45°	247.5	257.4	270.6	288.2	300.3	315.7	343.2	369.6	394.9	420.2	444.4
47.5°	227.7	236.5	247.5	264.0	273.9	286.0	313.5	338.8	364.1	387.2	410.3
50°	211.2	217.8	226.6	239.8	249.7	258.5	283.8	310.2	333.3	356.4	377.3
52.5°	194.7	199.1	206.8	218.9	225.5	234.3	256.3	280.5	303.6	325.6	344.3
55°	178.2	182.6	188.1	196.9	203.5	210.1	228.8	251.9	272.8	290.4	309.1
57.5°	161.7	165.0	169.4	177.1	181.5	187.0	202.4	221.1	239.8	257.4	271.7
60°	147.4	149.6	152.9	157.3	160.6	163.9	174.9	192.5	210.1	223.3	236.5
62.5°	130.9	132.0	134.2	138.6	140.8	143.0	150.7	166.1	180.4	192.5	203.5
65°	115.5	116.6	117.7	119.9	122.1	123.2	129.8	140.8	152.9	162.8	170.5
67.5°	100.1	101.2	101.2	103.4	103.4	105.6	108.9	115.5	126.5	134.2	140.8
70°	84.7	85.8	85.8	86.9	85.8	86.9	90.2	94.6	101.2	107.8	112.2
72.5°	70.4	69.3	69.3	69.3	69.3	70.4	71.5	73.7	79.2	84.7	85.8
75°	55.0	55.0	53.9	53.9	53.9	53.9	53.9	55.0	58.3	61.6	62.7
77.5°	40.7	39.6	39.6	38.5	38.5	38.5	37.4	37.4	38.5	40.7	40.7
80°	26.4	25.3	24.2	25.3	23.1	24.2	23.1	22.0	22.0	22.0	20.9
82.5°	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	9.9	9.9	9.9
85°	2.2	2.2	3.3	3.3	3.3	3.3	3.3	3.3	4.4	4.4	3.3
87.5°	2.2	2.2	2.2	3.3	3.3	3.3	3.3	3.3	4.4	4.4	4.4
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°	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7
2.5°	837.1	840.4	843.7	844.8	845.9	849.2	851.4	854.7	855.8	858.0	860.2
5°	837.1	843.7	849.2	852.5	854.7	860.2	865.7	869.0	874.5	877.8	881.1
7.5°	834.9	843.7	851.4	855.8	860.2	866.8	874.5	881.1	887.7	892.1	897.6
10°	828.3	839.3	849.2	854.7	860.2	870.1	878.9	886.6	894.3	900.9	906.4
12.5°	818.4	831.6	843.7	850.3	855.8	867.9	877.8	886.6	894.3	899.8	904.2
15°	804.1	820.6	834.9	841.5	848.1	861.3	871.2	878.9	885.5	888.8	892.1
17.5°	787.6	805.2	821.7	829.4	836.0	848.1	856.9	862.4	865.7	867.9	866.8
20°	768.9	787.6	804.1	811.8	819.5	829.4	836.0	838.2	837.1	836.0	833.8
22.5°	745.8	765.6	783.2	789.8	796.4	804.1	806.3	805.2	803.0	800.8	797.5
25°	721.6	741.4	757.9	763.4	768.9	772.2	771.1	768.9	765.6	762.3	756.8
27.5°	694.1	715.0	728.2	734.8	735.9	735.9	732.6	729.3	723.8	719.4	713.9
30°	665.5	683.1	696.3	698.5	699.6	697.4	694.1	688.6	680.9	677.6	672.1
32.5°	632.5	651.2	661.1	661.1	658.9	655.6	649.0	643.5	639.1	631.4	625.9
35°	601.7	616.0	621.5	621.5	618.2	612.7	607.2	599.5	592.9	588.5	580.8
37.5°	566.5	580.8	583.0	579.7	577.5	570.9	562.1	555.5	547.8	542.3	536.8
40°	533.5	543.4	541.2	537.9	535.7	529.1	519.2	511.5	503.8	497.2	491.7
42.5°	496.1	502.7	499.4	497.2	492.8	485.1	476.3	468.6	460.9	454.3	448.8
45°	462.0	465.3	459.8	455.4	452.1	443.3	436.7	425.7	418.0	411.4	407.0
47.5°	425.7	425.7	420.2	415.8	410.3	401.5	393.8	382.8	378.4	369.6	365.2
50°	390.5	387.2	380.6	375.1	370.7	360.8	350.9	343.2	335.5	328.9	324.5
52.5°	353.1	348.7	339.9	334.4	332.2	320.1	311.3	301.4	294.8	287.1	282.7
55°	315.7	309.1	299.2	294.8	290.4	280.5	270.6	260.7	254.1	248.6	244.2
57.5°	277.2	269.5	260.7	255.2	249.7	239.8	229.9	221.1	215.6	210.1	206.8
60°	237.6	232.1	223.3	217.8	212.3	203.5	192.5	185.9	181.5	174.9	173.8
62.5°	203.5	195.8	185.9	181.5	177.1	168.3	159.5	154.0	148.5	145.2	140.8
65°	169.4	161.7	152.9	148.5	145.2	137.5	130.9	125.4	121.0	116.6	113.3
67.5°	136.4	130.9	123.2	119.9	115.5	108.9	103.4	99.0	94.6	90.2	86.9
70°	108.9	102.3	95.7	93.5	91.3	84.7	80.3	75.9	71.5	68.2	64.9
72.5°	83.6	78.1	72.6	69.3	67.1	63.8	60.5	56.1	52.8	49.5	47.3
75°	59.4	56.1	51.7	49.5	47.3	45.1	40.7	38.5	37.4	35.2	33.0
77.5°	38.5	35.2	33.0	30.8	30.8	28.6	26.4	25.3	23.1	23.1	22.0
80°	19.8	18.7	17.6	17.6	17.6	15.4	14.3	14.3	13.2	12.1	12.1
82.5°	8.8	8.8	7.7	7.7	7.7	6.6	6.6	5.5	5.5	4.4	4.4
85°	3.3	3.3	3.3	3.3	3.3	2.2	2.2	2.2	1.1	1.1	1.1
87.5°	3.3	3.3	3.3	3.3	3.3	2.2	2.2	2.2	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: P345488

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 2000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	832.7	832.7	832.7	832.7	832.7	832.7	832.7	832.7
2.5°	861.3	863.5	863.5	864.6	865.7	866.8	865.7	866.8
5°	884.4	887.7	888.8	888.8	891.0	892.1	894.3	894.3
7.5°	902.0	905.3	907.5	908.6	910.8	913.0	913.0	913.0
10°	910.8	914.1	915.2	917.4	918.5	919.6	920.7	920.7
12.5°	907.5	910.8	911.9	911.9	914.1	914.1	914.1	915.2
15°	893.2	892.1	892.1	892.1	891.0	891.0	891.0	889.9
17.5°	864.6	863.5	863.5	863.5	862.4	861.3	860.2	858.0
20°	832.7	830.5	828.3	829.4	827.2	826.1	825.0	825.0
22.5°	795.3	792.0	790.9	789.8	787.6	786.5	784.3	784.3
25°	754.6	752.4	749.1	748.0	746.9	744.7	742.5	742.5
27.5°	711.7	708.4	707.3	705.1	704.0	701.8	700.7	701.8
30°	667.7	664.4	663.3	661.1	656.7	658.9	656.7	655.6
32.5°	621.5	618.2	616.0	613.8	613.8	610.5	610.5	609.4
35°	576.4	573.1	570.9	569.8	567.6	567.6	565.4	564.3
37.5°	532.4	529.1	526.9	525.8	523.6	521.4	520.3	521.4
40°	487.3	484.0	481.8	480.7	478.5	476.3	476.3	476.3
42.5°	443.3	440.0	440.0	437.8	434.5	433.4	432.3	432.3
45°	402.6	398.2	397.1	394.9	394.9	392.7	391.6	391.6
47.5°	359.7	356.4	355.3	354.2	353.1	352.0	352.0	352.0
50°	320.1	315.7	315.7	313.5	312.4	313.5	311.3	310.2
52.5°	280.5	277.2	276.1	276.1	273.9	273.9	273.9	272.8
55°	240.9	238.7	238.7	237.6	235.4	236.5	236.5	234.3
57.5°	204.6	201.3	201.3	200.2	200.2	200.2	198.0	200.2
60°	170.5	168.3	167.2	166.1	165.0	165.0	165.0	163.9
62.5°	138.6	136.4	135.3	134.2	132.0	132.0	129.8	128.7
65°	110.0	107.8	105.6	104.5	102.3	101.2	101.2	100.1
67.5°	83.6	81.4	79.2	78.1	75.9	74.8	73.7	73.7
70°	62.7	59.4	59.4	58.3	57.2	57.2	56.1	56.1
72.5°	45.1	45.1	44.0	44.0	42.9	42.9	42.9	42.9
75°	31.9	31.9	31.9	31.9	30.8	30.8	29.7	29.7
77.5°	20.9	20.9	20.9	19.8	19.8	19.8	19.8	19.8
80°	11.0	11.0	11.0	11.0	11.0	9.9	11.0	9.9
82.5°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
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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