

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: P345428

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSMW 4000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345428
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: PR4FS24D010 PR4M24WW9FSMW 4000Lm3500K
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: 2903.2 lumens
Efficiency: N/A
Efficacy: 74.4 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

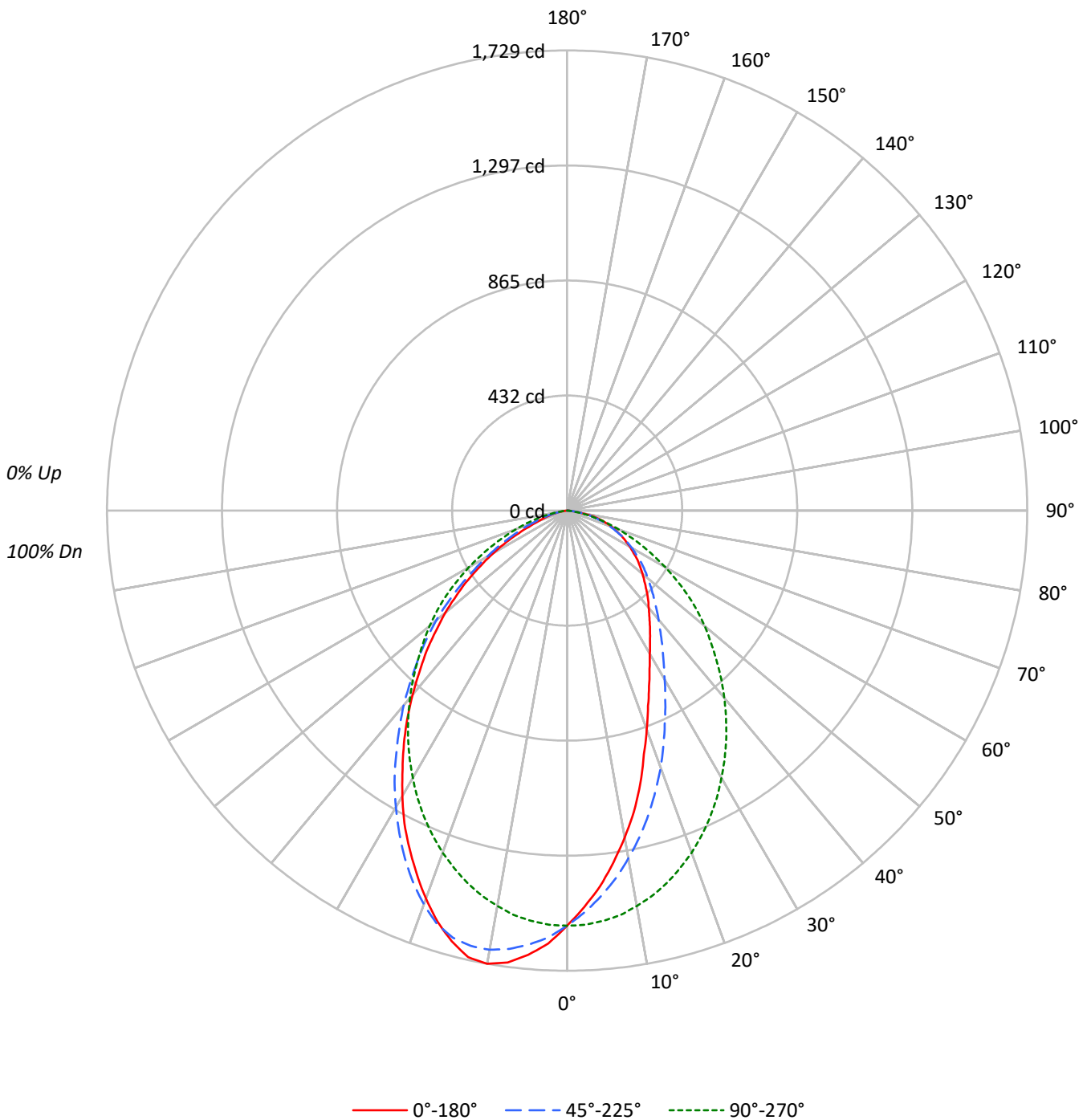
Input Watts (W): 39
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	136444	136444	136444
5°	124462	135876	147115
10°	110695	133965	153577
15°	96224	131169	151725
20°	81438	127338	144437
25°	70299	122667	135213
30°	62732	117121	125039
35°	57950	111265	114127
40°	54420	104843	103199
45°	52066	98008	92392
50°	50254	91812	81429
55°	49089	84332	69539
60°	47653	74716	56313
65°	46548	63623	41415
70°	45369	52248	28490
75°	43225	39744	21629
80°	30122	22869	12492
85°	12445	8330	4115



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	146.1	5.0
10°-20°	396.2	13.6
20°-30°	535.3	18.4
30°-40°	563.5	19.4
40°-50°	507.7	17.5
50°-60°	391.9	13.5
60°-70°	241.3	8.3
70°-80°	106.1	3.7
80°-90°	15.2	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°	1077.7	37.1
0°-40°	1641.2	56.5
0°-60°	2540.8	87.5
0°-90°	2903.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2903.2	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1560	1560	1560	1560	1560	
5°	1418	1455	1548	1636	1676	130
15°	1063	1182	1448	1661	1676	295
25°	728	869	1271	1442	1401	337
35°	543	623	1042	1120	1069	340
45°	421	460	792	792	747	326
55°	322	338	553	489	456	287
65°	225	225	307	233	200	222
75°	128	114	118	76	64	131
85°	12	10	8	6	4	22
90°	0	0	0	0	0	



TEST NUMBER: P345428

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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9
2.5°	1489.8	1491.8	1491.8	1491.8	1493.9	1495.9	1495.9	1500.1	1502.1	1506.3	1510.4
5°	1417.5	1415.5	1415.5	1419.6	1423.7	1425.8	1425.8	1434.0	1440.2	1446.4	1454.7
7.5°	1332.9	1330.9	1337.1	1339.1	1343.3	1349.4	1353.6	1361.8	1368.0	1382.5	1394.8
10°	1246.3	1246.3	1250.4	1256.6	1262.8	1269.0	1273.1	1283.4	1295.8	1310.2	1326.7
12.5°	1159.6	1153.4	1159.6	1167.9	1174.1	1180.2	1186.4	1198.8	1217.4	1236.0	1256.6
15°	1062.6	1060.6	1064.7	1073.0	1087.4	1091.5	1097.7	1116.3	1134.9	1159.6	1182.3
17.5°	959.5	965.7	967.7	980.1	994.5	1000.7	1006.9	1025.5	1052.3	1077.1	1103.9
20°	874.9	870.7	879.0	887.2	899.6	909.9	918.2	938.8	967.7	994.5	1027.6
22.5°	794.4	792.3	798.5	808.8	819.2	827.4	835.7	856.3	879.0	909.9	947.1
25°	728.4	726.3	732.5	738.7	751.1	757.3	763.4	784.1	808.8	833.6	868.7
27.5°	670.6	670.6	674.7	678.8	689.2	695.4	703.6	720.1	740.8	765.5	798.5
30°	621.1	621.1	625.2	629.3	639.6	643.8	650.0	662.3	678.8	705.7	732.5
32.5°	579.8	579.8	581.9	588.1	592.2	596.3	602.5	612.8	629.3	650.0	674.7
35°	542.7	542.7	544.7	548.9	555.0	557.1	561.2	571.6	583.9	600.4	623.1
37.5°	507.6	509.7	509.7	513.8	517.9	520.0	524.1	532.3	542.7	557.1	575.7
40°	476.6	478.7	478.7	482.8	487.0	489.0	491.1	495.2	507.6	517.9	534.4
42.5°	449.8	449.8	449.8	451.9	456.0	458.1	460.1	466.3	472.5	482.8	495.2
45°	420.9	420.9	423.0	425.1	429.2	429.2	431.2	437.4	441.6	449.8	460.1
47.5°	394.1	394.1	396.2	396.2	400.3	400.3	402.4	406.5	410.6	418.9	427.1
50°	369.3	369.3	369.3	371.4	373.5	375.5	375.5	379.7	383.8	390.0	396.2
52.5°	344.6	344.6	344.6	344.6	346.6	348.7	348.7	352.8	357.0	361.1	367.3
55°	321.9	319.8	321.9	321.9	321.9	323.9	323.9	328.1	328.1	332.2	338.4
57.5°	295.1	297.1	297.1	295.1	297.1	299.2	299.2	299.2	301.3	305.4	307.4
60°	272.4	272.4	272.4	272.4	274.4	274.4	274.4	274.4	276.5	276.5	280.6
62.5°	247.6	247.6	249.7	249.7	247.6	249.7	249.7	249.7	251.7	251.7	251.7
65°	224.9	224.9	224.9	224.9	224.9	224.9	224.9	224.9	224.9	224.9	224.9
67.5°	200.1	200.1	200.1	200.1	200.1	200.1	200.1	198.1	198.1	198.1	196.0
70°	177.4	177.4	177.4	175.4	175.4	175.4	175.4	173.3	173.3	171.3	169.2
72.5°	152.7	152.7	152.7	150.6	150.6	150.6	148.6	146.5	144.4	142.4	142.4
75°	127.9	127.9	125.9	123.8	123.8	121.7	121.7	119.7	119.7	115.5	113.5
77.5°	99.0	97.0	97.0	97.0	94.9	92.9	92.9	90.8	88.7	88.7	86.7
80°	59.8	59.8	61.9	59.8	61.9	59.8	59.8	61.9	59.8	57.8	57.8
82.5°	28.9	28.9	31.0	28.9	31.0	31.0	31.0	28.9	28.9	28.9	28.9
85°	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.4	10.3	10.3	10.3
87.5°	8.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
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: P345428

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000lm3500K

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9
2.5°	1514.5	1520.7	1522.8	1529.0	1531.0	1535.1	1539.3	1545.5	1551.7	1557.8	1562.0
5°	1462.9	1473.2	1481.5	1491.8	1498.0	1502.1	1514.5	1524.8	1537.2	1547.5	1557.8
7.5°	1407.2	1419.6	1438.2	1450.6	1456.7	1467.1	1481.5	1498.0	1514.5	1533.1	1547.5
10°	1343.3	1361.8	1380.4	1403.1	1413.4	1423.7	1442.3	1465.0	1487.7	1508.3	1531.0
12.5°	1275.2	1299.9	1324.7	1347.4	1361.8	1374.2	1403.1	1427.9	1454.7	1481.5	1506.3
15°	1209.1	1236.0	1264.8	1293.7	1310.2	1324.7	1353.6	1384.5	1417.5	1448.5	1477.4
17.5°	1136.9	1167.9	1200.9	1233.9	1250.4	1269.0	1306.1	1339.1	1376.3	1409.3	1444.4
20°	1062.6	1097.7	1132.8	1174.1	1190.6	1211.2	1248.3	1289.6	1328.8	1368.0	1405.2
22.5°	986.3	1025.5	1064.7	1108.0	1130.7	1151.4	1194.7	1236.0	1279.3	1320.6	1361.8
25°	907.9	953.3	998.7	1042.0	1066.8	1087.4	1134.9	1182.3	1227.7	1271.0	1314.4
27.5°	835.7	879.0	928.5	976.0	1000.7	1023.4	1075.0	1120.4	1169.9	1217.4	1260.7
30°	769.6	810.9	860.4	912.0	936.8	961.5	1013.1	1064.7	1110.1	1159.6	1207.1
32.5°	707.7	744.9	794.4	846.0	874.9	897.6	951.2	1000.7	1052.3	1101.8	1149.3
35°	650.0	687.1	730.4	782.0	806.8	833.6	889.3	940.9	990.4	1042.0	1085.3
37.5°	600.4	629.3	668.5	718.1	744.9	771.7	827.4	879.0	928.5	980.1	1025.5
40°	553.0	579.8	614.9	658.2	685.0	711.9	765.5	817.1	866.6	918.2	965.7
42.5°	513.8	534.4	563.3	604.6	627.3	654.1	707.7	757.3	806.8	856.3	901.7
45°	474.6	493.1	517.9	550.9	573.6	598.4	650.0	701.5	746.9	792.3	837.7
47.5°	437.4	451.9	474.6	503.5	522.0	544.7	594.3	643.8	689.2	732.5	773.8
50°	404.4	416.8	437.4	458.1	474.6	495.2	538.5	588.1	631.4	674.7	711.9
52.5°	373.5	383.8	398.2	418.9	431.2	447.8	489.0	532.3	575.7	614.9	650.0
55°	344.6	350.8	363.2	377.6	387.9	402.4	437.4	478.7	517.9	553.0	581.9
57.5°	311.6	319.8	328.1	338.4	348.7	357.0	383.8	420.9	456.0	487.0	515.8
60°	282.7	288.9	293.0	303.3	307.4	315.7	336.3	367.3	400.3	427.1	447.8
62.5°	253.8	255.9	260.0	268.2	270.3	276.5	290.9	315.7	340.5	365.2	385.9
65°	224.9	224.9	229.0	231.1	235.2	237.3	247.6	266.2	288.9	307.4	319.8
67.5°	196.0	196.0	198.1	198.1	202.2	202.2	208.4	222.8	237.3	253.8	264.1
70°	167.1	167.1	167.1	167.1	167.1	169.2	173.3	181.6	191.9	204.3	210.5
72.5°	140.3	138.2	138.2	136.2	136.2	136.2	138.2	142.4	150.6	158.9	165.1
75°	111.4	109.4	107.3	107.3	105.2	105.2	105.2	109.4	113.5	117.6	119.7
77.5°	82.5	82.5	80.5	76.3	76.3	74.3	74.3	74.3	76.3	80.5	78.4
80°	57.8	53.6	51.6	51.6	49.5	49.5	47.5	45.4	45.4	45.4	43.3
82.5°	26.8	26.8	26.8	24.8	24.8	24.8	24.8	22.7	22.7	20.6	20.6
85°	10.3	10.3	10.3	10.3	10.3	10.3	10.3	8.3	8.3	8.3	8.3
87.5°	6.2	6.2	6.2	6.2	6.2	4.1	4.1	4.1	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



TEST NUMBER: P345428

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000lm3500K

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9
2.5°	1568.2	1574.4	1580.5	1582.6	1584.7	1590.9	1595.0	1601.2	1605.3	1607.4	1611.5
5°	1570.2	1580.5	1590.9	1597.0	1601.2	1611.5	1619.7	1630.1	1636.3	1646.6	1652.8
7.5°	1564.0	1580.5	1595.0	1603.2	1611.5	1625.9	1638.3	1650.7	1661.0	1671.3	1681.6
10°	1551.7	1572.3	1592.9	1601.2	1611.5	1628.0	1646.6	1661.0	1675.5	1687.8	1700.2
12.5°	1533.1	1557.8	1582.6	1592.9	1603.2	1625.9	1644.5	1661.0	1675.5	1687.8	1696.1
15°	1508.3	1537.2	1564.0	1578.5	1590.9	1613.6	1632.1	1648.6	1661.0	1669.3	1675.5
17.5°	1477.4	1510.4	1541.3	1553.7	1568.2	1588.8	1607.4	1619.7	1628.0	1628.0	1630.1
20°	1442.3	1477.4	1508.3	1522.8	1537.2	1553.7	1568.2	1574.4	1574.4	1574.4	1570.2
22.5°	1401.0	1438.2	1469.1	1483.6	1495.9	1508.3	1516.6	1516.6	1512.5	1506.3	1500.1
25°	1353.6	1392.8	1421.7	1436.1	1442.3	1452.6	1450.6	1448.5	1442.3	1436.1	1427.9
27.5°	1302.0	1341.2	1372.1	1378.3	1382.5	1384.5	1378.3	1374.2	1366.0	1357.7	1351.5
30°	1248.3	1285.5	1310.2	1312.3	1316.4	1314.4	1306.1	1295.8	1287.5	1277.2	1269.0
32.5°	1190.6	1225.6	1242.1	1246.3	1244.2	1236.0	1227.7	1217.4	1207.1	1194.7	1184.4
35°	1128.7	1161.7	1172.0	1169.9	1167.9	1157.6	1145.2	1134.9	1120.4	1112.2	1097.7
37.5°	1064.7	1095.7	1099.8	1093.6	1087.4	1075.0	1062.6	1052.3	1035.8	1027.6	1017.2
40°	1000.7	1021.4	1021.4	1015.2	1011.1	998.7	982.2	967.7	955.3	940.9	934.7
42.5°	934.7	951.2	943.0	938.8	932.6	914.1	901.7	887.2	870.7	862.5	852.2
45°	868.7	879.0	868.7	860.4	854.2	837.7	825.3	806.8	792.3	784.1	771.7
47.5°	800.6	804.7	796.5	784.1	780.0	761.4	746.9	732.5	718.1	703.6	693.3
50°	738.7	734.6	722.2	713.9	707.7	687.1	670.6	654.1	641.7	629.3	619.0
52.5°	668.5	664.4	647.9	637.6	627.3	610.8	590.1	577.7	563.3	553.0	542.7
55°	596.3	583.9	571.6	561.2	550.9	534.4	515.8	499.3	489.0	476.6	470.4
57.5°	522.0	513.8	493.1	484.9	476.6	460.1	441.6	427.1	412.7	404.4	400.3
60°	456.0	441.6	425.1	414.7	406.5	390.0	373.5	359.0	348.7	344.6	338.4
62.5°	385.9	373.5	354.9	346.6	340.5	323.9	309.5	297.1	288.9	280.6	276.5
65°	321.9	307.4	293.0	284.7	276.5	262.0	251.7	243.5	233.2	227.0	222.8
67.5°	260.0	247.6	235.2	229.0	222.8	210.5	200.1	194.0	185.7	179.5	171.3
70°	204.3	194.0	185.7	179.5	173.3	163.0	154.8	148.6	142.4	136.2	130.0
72.5°	158.9	148.6	138.2	136.2	132.1	123.8	117.6	111.4	105.2	101.1	97.0
75°	113.5	109.4	101.1	97.0	94.9	88.7	82.5	78.4	76.3	72.2	70.2
77.5°	74.3	70.2	64.0	64.0	61.9	59.8	55.7	51.6	51.6	49.5	49.5
80°	41.3	39.2	37.1	35.1	37.1	35.1	33.0	31.0	31.0	31.0	28.9
82.5°	18.6	18.6	16.5	16.5	16.5	16.5	16.5	14.4	14.4	14.4	14.4
85°	8.3	8.3	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
87.5°	4.1	4.1	4.1	4.1	4.1	4.1	2.1	2.1	2.1	2.1	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



TEST NUMBER: P345428

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9	1559.9
2.5°	1615.6	1617.7	1619.7	1621.8	1623.9	1623.9	1625.9	1628.0
5°	1656.9	1663.1	1665.1	1667.2	1671.3	1673.4	1673.4	1675.5
7.5°	1689.9	1698.2	1700.2	1704.3	1708.5	1710.5	1712.6	1712.6
10°	1708.5	1714.7	1716.7	1720.9	1725.0	1727.0	1729.1	1729.1
12.5°	1702.3	1708.5	1710.5	1712.6	1716.7	1718.8	1718.8	1718.8
15°	1679.6	1679.6	1679.6	1679.6	1677.5	1679.6	1679.6	1675.5
17.5°	1628.0	1625.9	1628.0	1623.9	1621.8	1621.8	1619.7	1619.7
20°	1566.1	1564.0	1562.0	1562.0	1559.9	1555.8	1553.7	1551.7
22.5°	1495.9	1491.8	1489.8	1489.8	1485.6	1483.6	1481.5	1477.4
25°	1423.7	1413.4	1413.4	1413.4	1409.3	1409.3	1405.2	1401.0
27.5°	1341.2	1335.0	1335.0	1330.9	1326.7	1324.7	1322.6	1324.7
30°	1262.8	1254.5	1250.4	1248.3	1246.3	1246.3	1240.1	1238.0
32.5°	1176.1	1169.9	1165.8	1163.7	1159.6	1157.6	1155.5	1151.4
35°	1091.5	1085.3	1081.2	1081.2	1073.0	1070.9	1068.8	1068.8
37.5°	1004.9	1000.7	998.7	992.5	990.4	988.4	988.4	986.3
40°	924.4	918.2	916.1	909.9	907.9	907.9	901.7	903.8
42.5°	841.9	833.6	831.5	829.5	827.4	823.3	825.3	821.2
45°	763.4	757.3	753.1	753.1	751.1	746.9	744.9	746.9
47.5°	687.1	678.8	678.8	676.8	674.7	672.7	672.7	668.5
50°	614.9	608.7	604.6	600.4	602.5	600.4	596.3	598.4
52.5°	536.5	530.3	528.2	528.2	526.2	526.2	524.1	524.1
55°	466.3	460.1	460.1	458.1	458.1	458.1	456.0	456.0
57.5°	396.2	392.0	390.0	390.0	385.9	387.9	385.9	383.8
60°	334.3	328.1	323.9	326.0	323.9	323.9	319.8	321.9
62.5°	270.3	266.2	264.1	264.1	260.0	260.0	255.9	257.9
65°	216.7	210.5	208.4	206.3	202.2	200.1	200.1	200.1
67.5°	167.1	163.0	160.9	156.8	152.7	150.6	148.6	146.5
70°	125.9	121.7	119.7	117.6	115.5	113.5	113.5	111.4
72.5°	94.9	90.8	90.8	88.7	88.7	86.7	86.7	86.7
75°	68.1	68.1	66.0	66.0	64.0	66.0	64.0	64.0
77.5°	47.5	45.4	47.5	45.4	43.3	43.3	43.3	43.3
80°	26.8	26.8	26.8	26.8	26.8	26.8	26.8	24.8
82.5°	14.4	14.4	14.4	12.4	12.4	12.4	12.4	12.4
85°	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
87.5°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)