

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: P345461

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 4000Lm3500K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345461  
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 4000lm3500K  
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3500K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 3377.2 lumens  
Efficiency: N/A  
Efficacy: 86.6 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

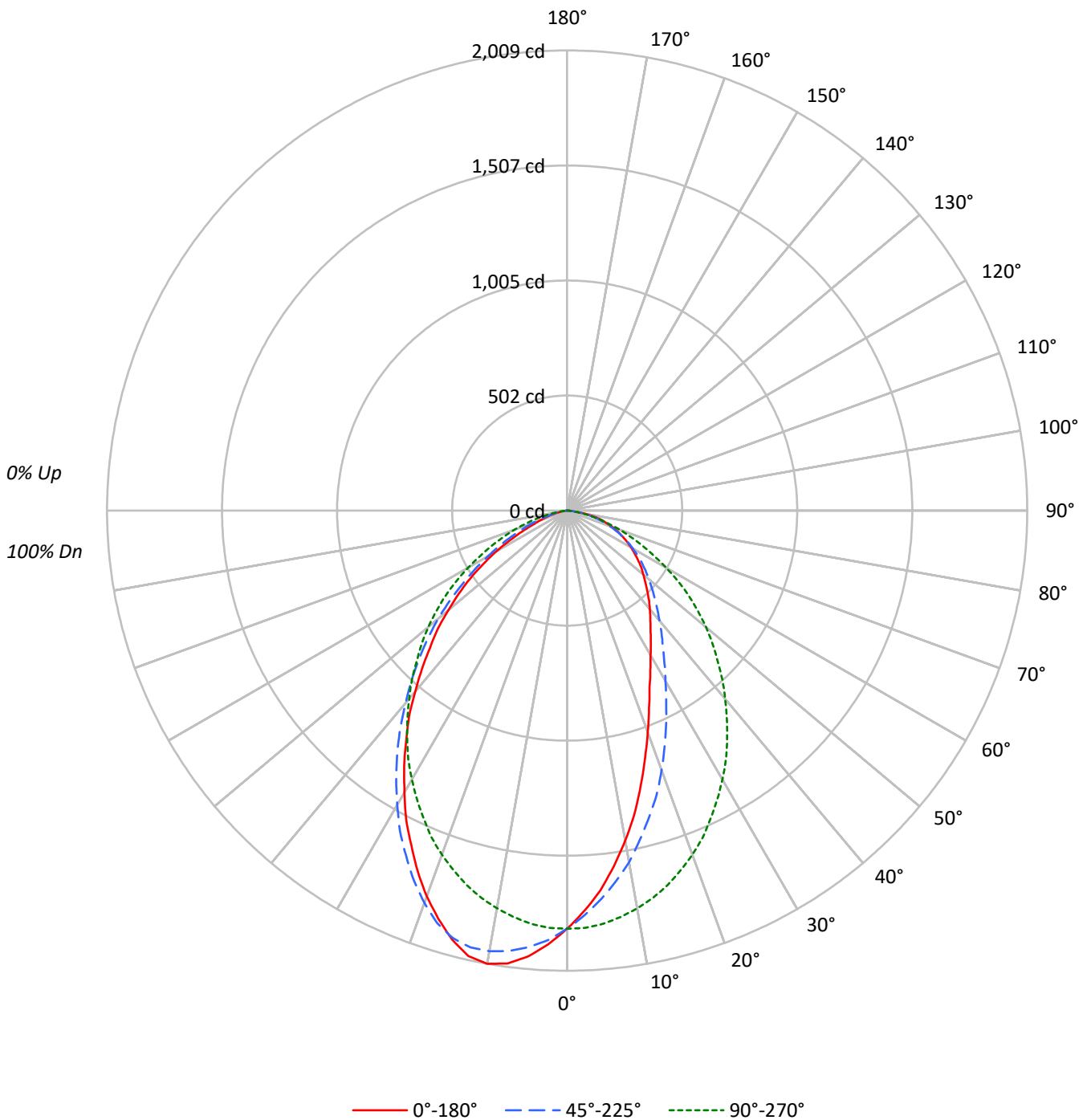
Input Watts (W): 39  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	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°	177910	177910	177910
5°	162790	177181	191092
10°	144622	174449	198794
15°	125303	170807	195627
20°	106793	165826	185832
25°	91543	159482	173225
30°	81959	152519	159845
35°	75454	144887	145755
40°	71486	136522	131306
45°	68141	127958	116670
50°	65817	119930	102736
55°	64329	110223	87692
60°	62977	97302	70033
65°	61180	83410	50041
70°	59782	69413	35733
75°	57198	53583	25417
80°	40578	31149	14873
85°	10735	16214	2684



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	170.8	5.1
10°-20°	462.4	13.7
20°-30°	623.0	18.4
30°-40°	654.3	19.4
40°-50°	589.5	17.5
50°-60°	455.4	13.5
60°-70°	280.2	8.3
70°-80°	123.5	3.7
80°-90°	18.1	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°	1256.2	37.2
0°-40°	1910.4	56.6
0°-60°	2955.4	87.5
0°-90°	3377.2	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3377.2	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1826	1826	1826	1826	1826	
5°	1664	1702	1811	1912	1953	153
15°	1242	1384	1693	1932	1939	346
25°	851	1022	1483	1664	1611	395
35°	634	728	1218	1293	1225	399
45°	494	540	928	914	846	383
55°	379	398	649	557	516	339
65°	265	265	362	268	217	263
75°	152	135	142	84	68	155
85°	10	12	14	7	2	23
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°	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5
2.5°	1748.4	1746.0	1743.5	1748.4	1748.4	1750.8	1750.8	1755.6	1755.6	1760.4	1767.7
5°	1664.0	1659.1	1661.6	1661.6	1668.8	1668.8	1673.6	1678.4	1685.7	1695.3	1702.5
7.5°	1565.1	1565.1	1567.5	1572.3	1579.6	1579.6	1586.8	1594.0	1606.1	1618.1	1632.6
10°	1461.4	1466.2	1468.6	1473.5	1485.5	1490.3	1492.7	1504.8	1521.7	1533.7	1557.9
12.5°	1357.7	1357.7	1362.5	1372.2	1381.8	1389.0	1393.9	1410.8	1427.6	1449.3	1471.0
15°	1241.9	1244.4	1251.6	1261.2	1278.1	1282.9	1292.6	1311.9	1336.0	1362.5	1384.2
17.5°	1131.0	1135.8	1140.7	1155.1	1167.2	1174.4	1188.9	1210.6	1237.1	1266.1	1299.8
20°	1029.7	1022.5	1032.1	1041.8	1053.8	1070.7	1080.4	1104.5	1133.4	1172.0	1205.8
22.5°	933.3	933.3	940.5	947.7	959.8	971.9	983.9	1003.2	1034.6	1073.1	1111.7
25°	851.3	853.7	860.9	868.2	880.2	887.4	899.5	918.8	950.1	979.1	1022.5
27.5°	786.2	788.6	791.0	800.6	810.3	817.5	824.7	844.0	868.2	899.5	935.7
30°	728.3	728.3	730.7	740.3	745.2	754.8	759.6	776.5	798.2	824.7	858.5
32.5°	680.1	680.1	682.5	687.3	696.9	701.8	704.2	721.1	737.9	764.5	791.0
35°	634.2	634.2	636.6	641.5	648.7	651.1	658.4	668.0	684.9	704.2	728.3
37.5°	595.7	595.7	598.1	600.5	605.3	610.1	614.9	624.6	634.2	653.5	677.6
40°	561.9	559.5	561.9	564.3	571.5	571.5	573.9	583.6	593.2	607.7	627.0
42.5°	528.1	528.1	528.1	530.5	535.4	537.8	540.2	545.0	554.7	566.7	581.2
45°	494.4	494.4	496.8	499.2	501.6	504.0	508.8	513.7	518.5	525.7	540.2
47.5°	463.0	465.4	465.4	467.8	470.3	472.7	475.1	479.9	484.7	492.0	501.6
50°	434.1	436.5	436.5	438.9	441.3	441.3	443.7	448.5	453.4	458.2	465.4
52.5°	407.6	407.6	405.1	407.6	410.0	410.0	412.4	414.8	419.6	426.8	431.7
55°	378.6	378.6	378.6	381.0	381.0	381.0	383.4	385.8	388.3	390.7	397.9
57.5°	349.7	349.7	352.1	349.7	352.1	352.1	352.1	354.5	356.9	361.7	364.1
60°	323.1	323.1	323.1	323.1	323.1	323.1	325.6	325.6	325.6	328.0	330.4
62.5°	294.2	294.2	294.2	294.2	294.2	294.2	294.2	294.2	296.6	296.6	299.0
65°	265.3	265.3	267.7	265.3	265.3	265.3	265.3	265.3	265.3	265.3	265.3
67.5°	238.7	236.3	238.7	236.3	236.3	236.3	236.3	233.9	233.9	233.9	231.5
70°	209.8	207.4	207.4	207.4	207.4	205.0	207.4	205.0	202.6	200.2	197.7
72.5°	178.5	178.5	178.5	178.5	178.5	176.0	173.6	173.6	171.2	168.8	166.4
75°	151.9	151.9	149.5	147.1	144.7	144.7	144.7	142.3	139.9	137.5	135.0
77.5°	118.2	115.8	115.8	113.3	110.9	108.5	110.9	108.5	106.1	103.7	101.3
80°	72.3	72.3	72.3	72.3	72.3	72.3	69.9	72.3	69.9	67.5	67.5
82.5°	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8	33.8
85°	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	12.1	12.1
87.5°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	7.2	7.2	7.2
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°	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5
2.5°	1772.5	1777.3	1784.5	1789.4	1791.8	1794.2	1801.4	1808.7	1815.9	1823.1	1827.9
5°	1714.6	1726.7	1733.9	1746.0	1753.2	1760.4	1772.5	1784.5	1796.6	1811.1	1823.1
7.5°	1644.7	1664.0	1678.4	1695.3	1705.0	1714.6	1731.5	1750.8	1770.1	1789.4	1808.7
10°	1577.1	1594.0	1620.6	1644.7	1651.9	1666.4	1692.9	1714.6	1741.1	1762.8	1789.4
12.5°	1500.0	1521.7	1550.6	1579.6	1596.4	1610.9	1642.3	1671.2	1702.5	1731.5	1762.8
15°	1415.6	1449.3	1480.7	1514.4	1536.2	1550.6	1586.8	1623.0	1656.7	1692.9	1729.1
17.5°	1331.2	1369.8	1408.3	1449.3	1466.2	1487.9	1528.9	1567.5	1608.5	1647.1	1688.1
20°	1246.8	1287.8	1328.8	1374.6	1398.7	1420.4	1463.8	1509.6	1555.4	1598.9	1642.3
22.5°	1157.5	1200.9	1249.2	1299.8	1326.3	1345.6	1396.3	1446.9	1495.2	1545.8	1591.6
25°	1068.3	1119.0	1169.6	1222.7	1249.2	1278.1	1328.8	1381.8	1432.5	1483.1	1536.2
27.5°	981.5	1034.6	1087.6	1147.9	1174.4	1203.4	1258.8	1311.9	1367.3	1420.4	1473.5
30°	901.9	952.6	1010.4	1070.7	1099.7	1128.6	1186.5	1244.4	1299.8	1355.3	1405.9
32.5°	829.6	873.0	933.3	993.6	1024.9	1053.8	1114.1	1174.4	1232.3	1290.2	1340.8
35°	762.0	803.0	853.7	918.8	947.7	979.1	1041.8	1099.7	1160.0	1217.8	1270.9
37.5°	701.8	740.3	786.2	841.6	877.8	906.7	969.4	1029.7	1087.6	1145.5	1198.5
40°	648.7	682.5	721.1	771.7	805.5	836.8	899.5	959.8	1017.7	1073.1	1126.2
42.5°	600.5	627.0	663.2	709.0	735.5	766.9	832.0	889.9	947.7	1003.2	1051.4
45°	554.7	576.4	607.7	648.7	670.4	704.2	764.5	822.3	877.8	928.4	981.5
47.5°	513.7	533.0	557.1	590.8	612.5	639.1	699.3	757.2	810.3	860.9	906.7
50°	477.5	492.0	513.7	542.6	559.5	578.8	639.1	694.5	742.8	791.0	834.4
52.5°	441.3	451.0	467.8	492.0	508.8	525.7	576.4	629.4	677.6	718.6	764.5
55°	402.7	414.8	429.3	446.1	458.2	472.7	513.7	564.3	605.3	648.7	684.9
57.5°	369.0	376.2	385.8	400.3	410.0	422.0	453.4	496.8	537.8	573.9	610.1
60°	335.2	340.0	347.3	356.9	364.1	373.8	395.5	434.1	470.3	499.2	530.5
62.5°	301.4	301.4	306.3	313.5	318.3	325.6	344.9	373.8	405.1	426.8	453.4
65°	265.3	267.7	270.1	274.9	277.3	282.2	294.2	315.9	340.0	361.7	381.0
67.5°	231.5	231.5	233.9	236.3	236.3	238.7	246.0	260.4	284.6	299.0	313.5
70°	197.7	197.7	197.7	197.7	200.2	197.7	202.6	212.2	229.1	243.6	250.8
72.5°	166.4	164.0	161.6	161.6	161.6	161.6	164.0	171.2	180.9	188.1	197.7
75°	132.6	130.2	127.8	125.4	127.8	127.8	127.8	130.2	135.0	142.3	144.7
77.5°	98.9	98.9	94.1	91.6	94.1	91.6	89.2	89.2	91.6	94.1	94.1
80°	67.5	65.1	62.7	60.3	60.3	60.3	57.9	55.5	55.5	55.5	53.1
82.5°	33.8	33.8	31.4	31.4	31.4	31.4	31.4	28.9	28.9	26.5	26.5
85°	12.1	12.1	12.1	12.1	14.5	12.1	14.5	14.5	14.5	14.5	14.5
87.5°	7.2	7.2	9.6	9.6	9.6	9.6	9.6	12.1	12.1	12.1	9.6
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°	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5
2.5°	1835.2	1842.4	1847.2	1852.1	1854.5	1859.3	1866.5	1871.4	1876.2	1881.0	1885.8
5°	1835.2	1849.7	1859.3	1866.5	1873.8	1883.4	1895.5	1905.1	1912.4	1922.0	1929.2
7.5°	1827.9	1847.2	1864.1	1873.8	1883.4	1897.9	1912.4	1926.8	1938.9	1950.9	1960.6
10°	1813.5	1837.6	1861.7	1871.4	1883.4	1902.7	1922.0	1938.9	1953.3	1967.8	1979.9
12.5°	1791.8	1820.7	1849.7	1861.7	1873.8	1897.9	1919.6	1938.9	1953.3	1965.4	1972.6
15°	1762.8	1796.6	1827.9	1842.4	1856.9	1881.0	1902.7	1919.6	1931.6	1938.9	1943.7
17.5°	1726.7	1762.8	1796.6	1813.5	1830.4	1854.5	1871.4	1881.0	1888.2	1888.2	1885.8
20°	1685.7	1724.3	1760.4	1777.3	1791.8	1811.1	1823.1	1825.5	1823.1	1818.3	1813.5
22.5°	1635.0	1678.4	1714.6	1729.1	1741.1	1755.6	1755.6	1753.2	1748.4	1741.1	1738.7
25°	1582.0	1623.0	1659.1	1673.6	1678.4	1688.1	1680.8	1676.0	1664.0	1656.7	1649.5
27.5°	1524.1	1567.5	1594.0	1603.7	1608.5	1603.7	1596.4	1586.8	1579.6	1567.5	1557.9
30°	1461.4	1500.0	1521.7	1528.9	1526.5	1519.3	1512.0	1495.2	1483.1	1471.0	1459.0
32.5°	1389.0	1427.6	1444.5	1446.9	1439.7	1427.6	1415.6	1403.5	1389.0	1374.6	1367.3
35°	1319.1	1352.9	1362.5	1357.7	1350.5	1336.0	1319.1	1304.6	1292.6	1275.7	1263.6
37.5°	1244.4	1273.3	1273.3	1266.1	1261.2	1244.4	1227.5	1213.0	1196.1	1181.7	1164.8
40°	1169.6	1191.3	1184.1	1176.8	1169.6	1150.3	1135.8	1114.1	1097.3	1080.4	1068.3
42.5°	1094.8	1106.9	1097.3	1087.6	1078.0	1058.7	1044.2	1020.1	1005.6	988.7	979.1
45°	1020.1	1022.5	1008.0	1000.8	991.1	967.0	947.7	930.9	914.0	894.7	882.6
47.5°	942.9	938.1	921.2	911.6	901.9	880.2	860.9	841.6	822.3	807.9	793.4
50°	865.7	853.7	836.8	827.2	815.1	795.8	774.1	752.4	735.5	721.1	709.0
52.5°	781.3	771.7	752.4	737.9	728.3	701.8	682.5	663.2	643.9	629.4	619.8
55°	696.9	682.5	660.8	651.1	636.6	614.9	595.7	571.5	557.1	545.0	533.0
57.5°	612.5	595.7	576.4	564.3	549.8	528.1	506.4	492.0	477.5	463.0	455.8
60°	530.5	513.7	489.5	484.7	470.3	448.5	429.3	412.4	397.9	388.3	381.0
62.5°	453.4	436.5	412.4	402.7	393.1	371.4	354.5	340.0	330.4	320.7	313.5
65°	376.2	361.7	342.4	330.4	320.7	303.9	289.4	274.9	267.7	255.6	248.4
67.5°	306.3	289.4	274.9	265.3	258.0	241.2	229.1	219.5	209.8	202.6	192.9
70°	241.2	226.7	212.2	207.4	200.2	188.1	178.5	168.8	161.6	154.3	144.7
72.5°	185.7	176.0	161.6	156.8	151.9	142.3	135.0	127.8	118.2	113.3	108.5
75°	137.5	127.8	118.2	113.3	110.9	101.3	96.5	89.2	84.4	82.0	77.2
77.5°	89.2	82.0	77.2	74.8	72.3	67.5	62.7	60.3	55.5	53.1	53.1
80°	50.6	48.2	45.8	43.4	41.0	38.6	38.6	36.2	33.8	31.4	28.9
82.5°	24.1	24.1	21.7	21.7	21.7	19.3	19.3	16.9	16.9	14.5	14.5
85°	12.1	12.1	12.1	12.1	12.1	9.6	9.6	9.6	7.2	7.2	4.8
87.5°	9.6	9.6	9.6	9.6	9.6	7.2	7.2	7.2	4.8	4.8	2.4
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: P345461

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 4000lm3500K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5	1825.5
2.5°	1885.8	1888.2	1890.6	1893.1	1893.1	1895.5	1897.9	1895.5
5°	1934.1	1941.3	1943.7	1946.1	1948.5	1950.9	1953.3	1953.3
7.5°	1970.2	1979.9	1982.3	1982.3	1989.5	1991.9	1994.3	1994.3
10°	1989.5	1994.3	1999.2	1999.2	2004.0	2004.0	2008.8	2008.8
12.5°	1979.9	1984.7	1987.1	1989.5	1989.5	1991.9	1991.9	1991.9
15°	1946.1	1943.7	1943.7	1941.3	1941.3	1938.9	1938.9	1938.9
17.5°	1883.4	1881.0	1878.6	1878.6	1873.8	1873.8	1868.9	1868.9
20°	1808.7	1803.8	1801.4	1799.0	1799.0	1796.6	1791.8	1791.8
22.5°	1729.1	1724.3	1719.4	1714.6	1709.8	1707.4	1705.0	1705.0
25°	1639.8	1632.6	1630.2	1627.8	1620.6	1618.1	1613.3	1610.9
27.5°	1548.2	1536.2	1533.7	1531.3	1526.5	1524.1	1521.7	1521.7
30°	1451.7	1444.5	1439.7	1437.3	1430.0	1427.6	1420.4	1420.4
32.5°	1355.3	1343.2	1338.4	1336.0	1331.2	1326.3	1323.9	1323.9
35°	1254.0	1246.8	1244.4	1237.1	1229.9	1229.9	1225.1	1225.1
37.5°	1157.5	1150.3	1143.1	1140.7	1135.8	1128.6	1126.2	1133.4
40°	1061.1	1051.4	1046.6	1044.2	1039.4	1032.1	1032.1	1032.1
42.5°	967.0	959.8	957.4	952.6	947.7	945.3	940.5	938.1
45°	870.6	865.7	863.3	858.5	856.1	851.3	846.5	846.5
47.5°	786.2	776.5	776.5	771.7	766.9	764.5	764.5	766.9
50°	701.8	694.5	689.7	687.3	682.5	682.5	680.1	677.6
52.5°	610.1	605.3	602.9	602.9	598.1	598.1	595.7	595.7
55°	525.7	525.7	523.3	520.9	516.1	516.1	516.1	516.1
57.5°	451.0	446.1	443.7	441.3	438.9	436.5	436.5	434.1
60°	373.8	371.4	366.6	369.0	361.7	361.7	361.7	359.3
62.5°	303.9	299.0	296.6	294.2	289.4	289.4	284.6	282.2
65°	243.6	236.3	231.5	231.5	226.7	221.9	219.5	217.0
67.5°	183.3	178.5	176.0	173.6	168.8	164.0	164.0	161.6
70°	139.9	135.0	132.6	130.2	127.8	125.4	125.4	125.4
72.5°	103.7	101.3	98.9	98.9	96.5	94.1	94.1	96.5
75°	74.8	72.3	72.3	72.3	69.9	69.9	69.9	67.5
77.5°	50.6	48.2	48.2	45.8	45.8	45.8	45.8	45.8
80°	28.9	26.5	26.5	26.5	26.5	26.5	26.5	26.5
82.5°	12.1	12.1	12.1	12.1	9.6	9.6	9.6	9.6
85°	4.8	4.8	4.8	4.8	4.8	2.4	2.4	2.4
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	0.0	2.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)