

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: P345425

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMW 4000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345425
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 PR4M24WW8FSMW 4000Lm3500K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3394.1 lumens
Efficiency: N/A
Efficacy: 87.0 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

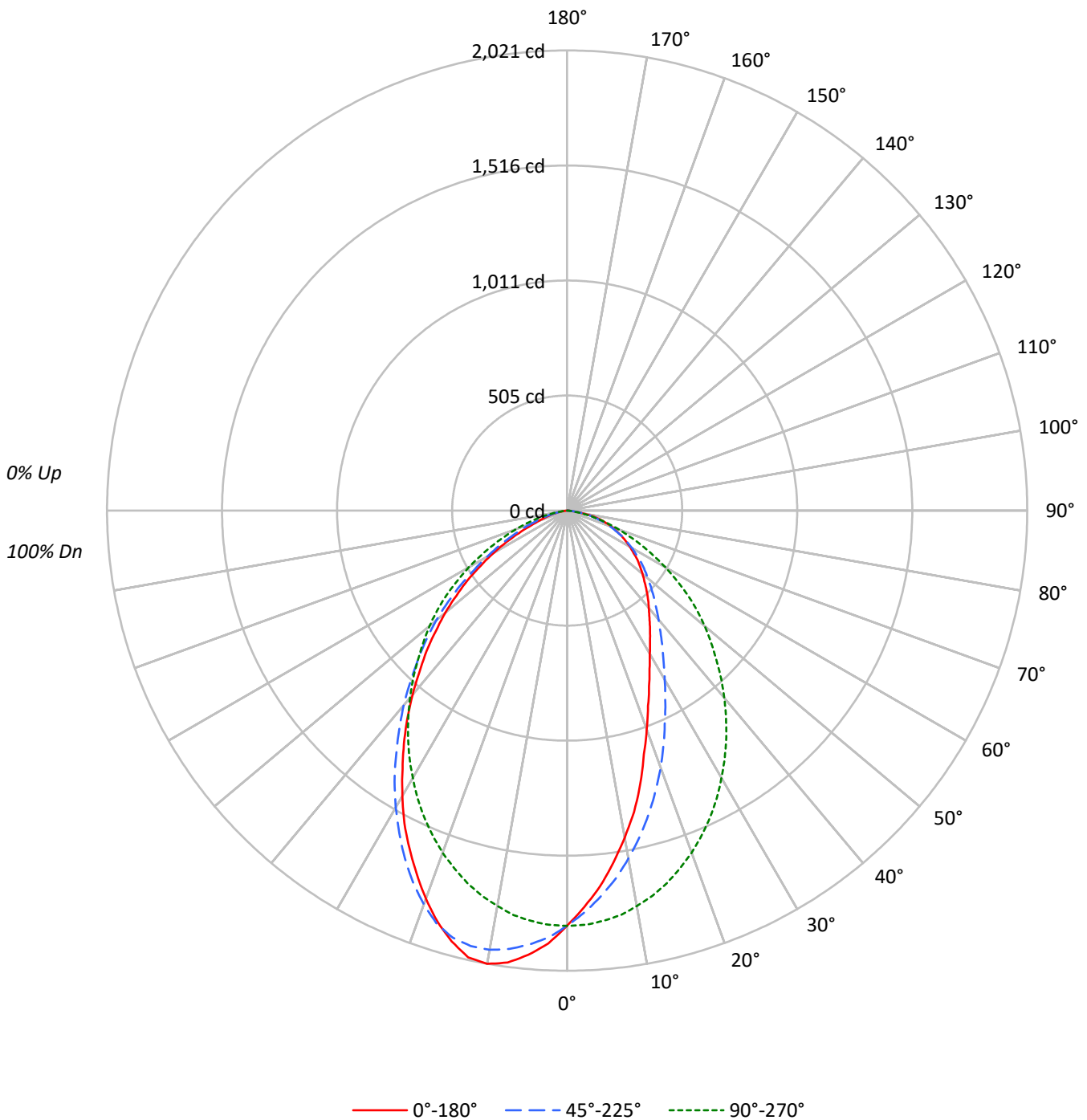
Input Watts (W): 39
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	159509	159509	159509
5°	145508	158854	171981
10°	129409	156614	179538
15°	112497	153346	177370
20°	95205	148868	168853
25°	82180	143407	158077
30°	73337	136927	146179
35°	67742	130080	133422
40°	63623	122564	120635
45°	60873	114584	108015
50°	58759	107339	95187
55°	57385	98590	81297
60°	55701	87347	65830
65°	54413	74385	48431
70°	53041	61072	33323
75°	50558	46469	25279
80°	35260	26747	14557
85°	14552	9635	4817



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	170.8	5.0
10°-20°	463.2	13.6
20°-30°	625.8	18.4
30°-40°	658.8	19.4
40°-50°	593.5	17.5
50°-60°	458.2	13.5
60°-70°	282.0	8.3
70°-80°	124.0	3.7
80°-90°	17.7	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°	1259.9	37.1
0°-40°	1918.6	56.5
0°-60°	2970.3	87.5
0°-90°	3394.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3394.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1824	1824	1824	1824	1824	
5°	1657	1701	1809	1913	1959	152
15°	1242	1382	1693	1942	1959	345
25°	852	1016	1486	1686	1638	394
35°	634	728	1218	1310	1250	398
45°	492	538	926	926	873	381
55°	376	396	646	572	533	335
65°	263	263	359	273	234	260
75°	150	133	138	89	75	154
85°	14	12	10	7	5	25
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°	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6
2.5°	1741.6	1744.0	1744.0	1744.0	1746.4	1748.8	1748.8	1753.7	1756.1	1760.9	1765.7
5°	1657.2	1654.8	1654.8	1659.6	1664.4	1666.8	1666.8	1676.5	1683.7	1691.0	1700.6
7.5°	1558.3	1555.9	1563.1	1565.5	1570.3	1577.6	1582.4	1592.1	1599.3	1616.2	1630.6
10°	1457.0	1457.0	1461.8	1469.0	1476.3	1483.5	1488.3	1500.4	1514.9	1531.7	1551.0
12.5°	1355.7	1348.4	1355.7	1365.3	1372.5	1379.8	1387.0	1401.5	1423.2	1444.9	1469.0
15°	1242.3	1239.9	1244.7	1254.3	1271.2	1276.1	1283.3	1305.0	1326.7	1355.7	1382.2
17.5°	1121.7	1128.9	1131.3	1145.8	1162.7	1169.9	1177.2	1198.9	1230.2	1259.2	1290.5
20°	1022.8	1017.9	1027.6	1037.2	1051.7	1063.8	1073.4	1097.6	1131.3	1162.7	1201.3
22.5°	928.7	926.3	933.5	945.6	957.6	967.3	976.9	1001.1	1027.6	1063.8	1107.2
25°	851.5	849.1	856.3	863.6	878.0	885.3	892.5	916.6	945.6	974.5	1015.5
27.5°	784.0	784.0	788.8	793.6	805.7	812.9	822.6	841.9	866.0	894.9	933.5
30°	726.1	726.1	730.9	735.7	747.8	752.6	759.8	774.3	793.6	825.0	856.3
32.5°	677.8	677.8	680.2	687.5	692.3	697.1	704.4	716.4	735.7	759.8	788.8
35°	634.4	634.4	636.8	641.6	648.9	651.3	656.1	668.2	682.7	702.0	728.5
37.5°	593.4	595.8	595.8	600.6	605.5	607.9	612.7	622.3	634.4	651.3	673.0
40°	557.2	559.6	559.6	564.5	569.3	571.7	574.1	578.9	593.4	605.5	624.8
42.5°	525.9	525.9	525.9	528.3	533.1	535.5	537.9	545.2	552.4	564.5	578.9
45°	492.1	492.1	494.5	496.9	501.7	501.7	504.2	511.4	516.2	525.9	537.9
47.5°	460.7	460.7	463.1	463.1	468.0	468.0	470.4	475.2	480.0	489.7	499.3
50°	431.8	431.8	431.8	434.2	436.6	439.0	439.0	443.8	448.7	455.9	463.1
52.5°	402.8	402.8	402.8	402.8	405.3	407.7	407.7	412.5	417.3	422.1	429.4
55°	376.3	373.9	376.3	376.3	376.3	378.7	378.7	383.5	383.5	388.4	395.6
57.5°	344.9	347.4	347.4	344.9	347.4	349.8	349.8	349.8	352.2	357.0	359.4
60°	318.4	318.4	318.4	318.4	320.8	320.8	320.8	320.8	323.2	323.2	328.1
62.5°	289.5	289.5	291.9	291.9	289.5	291.9	291.9	291.9	294.3	294.3	294.3
65°	262.9	262.9	262.9	262.9	262.9	262.9	262.9	262.9	262.9	262.9	262.9
67.5°	234.0	234.0	234.0	234.0	234.0	234.0	234.0	231.6	231.6	231.6	229.2
70°	207.4	207.4	207.4	205.0	205.0	205.0	205.0	202.6	202.6	200.2	197.8
72.5°	178.5	178.5	178.5	176.1	176.1	176.1	173.7	171.3	168.9	166.4	166.4
75°	149.6	149.6	147.1	144.7	144.7	142.3	142.3	139.9	139.9	135.1	132.7
77.5°	115.8	113.4	113.4	113.4	111.0	108.5	108.5	106.1	103.7	103.7	101.3
80°	70.0	70.0	72.4	70.0	72.4	70.0	70.0	72.4	70.0	67.5	67.5
82.5°	33.8	33.8	36.2	33.8	36.2	36.2	36.2	33.8	33.8	33.8	33.8
85°	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	12.1	12.1	12.1
87.5°	9.6	7.2	7.2	7.2	7.2	7.2	7.2	7.2	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°	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6
2.5°	1770.6	1777.8	1780.2	1787.4	1789.9	1794.7	1799.5	1806.7	1814.0	1821.2	1826.0
5°	1710.3	1722.3	1732.0	1744.0	1751.3	1756.1	1770.6	1782.6	1797.1	1809.2	1821.2
7.5°	1645.1	1659.6	1681.3	1695.8	1703.0	1715.1	1732.0	1751.3	1770.6	1792.3	1809.2
10°	1570.3	1592.1	1613.8	1640.3	1652.4	1664.4	1686.1	1712.7	1739.2	1763.3	1789.9
12.5°	1490.7	1519.7	1548.6	1575.2	1592.1	1606.5	1640.3	1669.2	1700.6	1732.0	1760.9
15°	1413.6	1444.9	1478.7	1512.5	1531.7	1548.6	1582.4	1618.6	1657.2	1693.4	1727.1
17.5°	1329.1	1365.3	1403.9	1442.5	1461.8	1483.5	1526.9	1565.5	1608.9	1647.5	1688.5
20°	1242.3	1283.3	1324.3	1372.5	1391.8	1416.0	1459.4	1507.6	1553.5	1599.3	1642.7
22.5°	1153.0	1198.9	1244.7	1295.4	1321.9	1346.0	1396.7	1444.9	1495.6	1543.8	1592.1
25°	1061.4	1114.4	1167.5	1218.2	1247.1	1271.2	1326.7	1382.2	1435.3	1485.9	1536.6
27.5°	976.9	1027.6	1085.5	1141.0	1169.9	1196.5	1256.8	1309.8	1367.7	1423.2	1473.9
30°	899.8	948.0	1005.9	1066.2	1095.1	1124.1	1184.4	1244.7	1297.8	1355.7	1411.1
32.5°	827.4	870.8	928.7	989.0	1022.8	1049.3	1112.0	1169.9	1230.2	1288.1	1343.6
35°	759.8	803.3	853.9	914.2	943.2	974.5	1039.7	1100.0	1157.9	1218.2	1268.8
37.5°	702.0	735.7	781.6	839.4	870.8	902.2	967.3	1027.6	1085.5	1145.8	1198.9
40°	646.5	677.8	718.8	769.5	800.9	832.2	894.9	955.2	1013.1	1073.4	1128.9
42.5°	600.6	624.8	658.5	706.8	733.3	764.7	827.4	885.3	943.2	1001.1	1054.1
45°	554.8	576.5	605.5	644.1	670.6	699.5	759.8	820.1	873.2	926.3	979.4
47.5°	511.4	528.3	554.8	588.6	610.3	636.8	694.7	752.6	805.7	856.3	904.6
50°	472.8	487.3	511.4	535.5	554.8	578.9	629.6	687.5	738.1	788.8	832.2
52.5°	436.6	448.7	465.6	489.7	504.2	523.4	571.7	622.3	673.0	718.8	759.8
55°	402.8	410.1	424.5	441.4	453.5	470.4	511.4	559.6	605.5	646.5	680.2
57.5°	364.2	373.9	383.5	395.6	407.7	417.3	448.7	492.1	533.1	569.3	603.1
60°	330.5	337.7	342.5	354.6	359.4	369.1	393.2	429.4	468.0	499.3	523.4
62.5°	296.7	299.1	303.9	313.6	316.0	323.2	340.1	369.1	398.0	427.0	451.1
65°	262.9	262.9	267.8	270.2	275.0	277.4	289.5	311.2	337.7	359.4	373.9
67.5°	229.2	229.2	231.6	231.6	236.4	236.4	243.6	260.5	277.4	296.7	308.8
70°	195.4	195.4	195.4	195.4	195.4	197.8	202.6	212.3	224.3	238.8	246.0
72.5°	164.0	161.6	161.6	159.2	159.2	159.2	161.6	166.4	176.1	185.7	193.0
75°	130.3	127.8	125.4	125.4	123.0	123.0	123.0	127.8	132.7	137.5	139.9
77.5°	96.5	96.5	94.1	89.3	89.3	86.8	86.8	86.8	89.3	94.1	91.7
80°	67.5	62.7	60.3	60.3	57.9	57.9	55.5	53.1	53.1	53.1	50.7
82.5°	31.4	31.4	31.4	28.9	28.9	28.9	28.9	26.5	26.5	24.1	24.1
85°	12.1	12.1	12.1	12.1	12.1	12.1	12.1	9.6	9.6	9.6	9.6
87.5°	7.2	7.2	7.2	7.2	7.2	4.8	4.8	4.8	4.8	4.8	4.8
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°	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6
2.5°	1833.3	1840.5	1847.7	1850.2	1852.6	1859.8	1864.6	1871.9	1876.7	1879.1	1883.9
5°	1835.7	1847.7	1859.8	1867.0	1871.9	1883.9	1893.6	1905.6	1912.9	1924.9	1932.2
7.5°	1828.5	1847.7	1864.6	1874.3	1883.9	1900.8	1915.3	1929.8	1941.8	1953.9	1965.9
10°	1814.0	1838.1	1862.2	1871.9	1883.9	1903.2	1924.9	1941.8	1958.7	1973.2	1987.7
12.5°	1792.3	1821.2	1850.2	1862.2	1874.3	1900.8	1922.5	1941.8	1958.7	1973.2	1982.8
15°	1763.3	1797.1	1828.5	1845.3	1859.8	1886.3	1908.1	1927.4	1941.8	1951.5	1958.7
17.5°	1727.1	1765.7	1801.9	1816.4	1833.3	1857.4	1879.1	1893.6	1903.2	1903.2	1905.6
20°	1686.1	1727.1	1763.3	1780.2	1797.1	1816.4	1833.3	1840.5	1840.5	1840.5	1835.7
22.5°	1637.9	1681.3	1717.5	1734.4	1748.8	1763.3	1773.0	1773.0	1768.1	1760.9	1753.7
25°	1582.4	1628.2	1662.0	1678.9	1686.1	1698.2	1695.8	1693.4	1686.1	1678.9	1669.2
27.5°	1522.1	1567.9	1604.1	1611.4	1616.2	1618.6	1611.4	1606.5	1596.9	1587.2	1580.0
30°	1459.4	1502.8	1531.7	1534.2	1539.0	1536.6	1526.9	1514.9	1505.2	1493.2	1483.5
32.5°	1391.8	1432.8	1452.1	1457.0	1454.6	1444.9	1435.3	1423.2	1411.1	1396.7	1384.6
35°	1319.5	1358.1	1370.1	1367.7	1365.3	1353.2	1338.8	1326.7	1309.8	1300.2	1283.3
37.5°	1244.7	1280.9	1285.7	1278.5	1271.2	1256.8	1242.3	1230.2	1210.9	1201.3	1189.2
40°	1169.9	1194.0	1194.0	1186.8	1182.0	1167.5	1148.2	1131.3	1116.9	1100.0	1092.7
42.5°	1092.7	1112.0	1102.4	1097.6	1090.3	1068.6	1054.1	1037.2	1017.9	1008.3	996.2
45°	1015.5	1027.6	1015.5	1005.9	998.7	979.4	964.9	943.2	926.3	916.6	902.2
47.5°	935.9	940.8	931.1	916.6	911.8	890.1	873.2	856.3	839.4	822.6	810.5
50°	863.6	858.7	844.3	834.6	827.4	803.3	784.0	764.7	750.2	735.7	723.7
52.5°	781.6	776.7	757.4	745.4	733.3	714.0	689.9	675.4	658.5	646.5	634.4
55°	697.1	682.7	668.2	656.1	644.1	624.8	603.1	583.8	571.7	557.2	550.0
57.5°	610.3	600.6	576.5	566.9	557.2	537.9	516.2	499.3	482.4	472.8	468.0
60°	533.1	516.2	496.9	484.9	475.2	455.9	436.6	419.7	407.7	402.8	395.6
62.5°	451.1	436.6	414.9	405.3	398.0	378.7	361.8	347.4	337.7	328.1	323.2
65°	376.3	359.4	342.5	332.9	323.2	306.3	294.3	284.6	272.6	265.3	260.5
67.5°	303.9	289.5	275.0	267.8	260.5	246.0	234.0	226.7	217.1	209.9	200.2
70°	238.8	226.7	217.1	209.9	202.6	190.6	180.9	173.7	166.4	159.2	152.0
72.5°	185.7	173.7	161.6	159.2	154.4	144.7	137.5	130.3	123.0	118.2	113.4
75°	132.7	127.8	118.2	113.4	111.0	103.7	96.5	91.7	89.3	84.4	82.0
77.5°	86.8	82.0	74.8	74.8	72.4	70.0	65.1	60.3	60.3	57.9	57.9
80°	48.2	45.8	43.4	41.0	43.4	41.0	38.6	36.2	36.2	36.2	33.8
82.5°	21.7	21.7	19.3	19.3	19.3	19.3	19.3	16.9	16.9	16.9	16.9
85°	9.6	9.6	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
87.5°	4.8	4.8	4.8	4.8	4.8	4.8	2.4	2.4	2.4	2.4	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: P345425

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 4000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6	1823.6
2.5°	1888.8	1891.2	1893.6	1896.0	1898.4	1898.4	1900.8	1903.2
5°	1937.0	1944.2	1946.6	1949.1	1953.9	1956.3	1956.3	1958.7
7.5°	1975.6	1985.2	1987.7	1992.5	1997.3	1999.7	2002.1	2002.1
10°	1997.3	2004.5	2007.0	2011.8	2016.6	2019.0	2021.4	2021.4
12.5°	1990.1	1997.3	1999.7	2002.1	2007.0	2009.4	2009.4	2009.4
15°	1963.5	1963.5	1963.5	1963.5	1961.1	1963.5	1963.5	1958.7
17.5°	1903.2	1900.8	1903.2	1898.4	1896.0	1896.0	1893.6	1893.6
20°	1830.9	1828.5	1826.0	1826.0	1823.6	1818.8	1816.4	1814.0
22.5°	1748.8	1744.0	1741.6	1741.6	1736.8	1734.4	1732.0	1727.1
25°	1664.4	1652.4	1652.4	1652.4	1647.5	1647.5	1642.7	1637.9
27.5°	1567.9	1560.7	1560.7	1555.9	1551.0	1548.6	1546.2	1548.6
30°	1476.3	1466.6	1461.8	1459.4	1457.0	1457.0	1449.7	1447.3
32.5°	1375.0	1367.7	1362.9	1360.5	1355.7	1353.2	1350.8	1346.0
35°	1276.1	1268.8	1264.0	1264.0	1254.3	1251.9	1249.5	1249.5
37.5°	1174.7	1169.9	1167.5	1160.3	1157.9	1155.4	1155.4	1153.0
40°	1080.7	1073.4	1071.0	1063.8	1061.4	1061.4	1054.1	1056.5
42.5°	984.2	974.5	972.1	969.7	967.3	962.5	964.9	960.1
45°	892.5	885.3	880.5	880.5	878.0	873.2	870.8	873.2
47.5°	803.3	793.6	793.6	791.2	788.8	786.4	786.4	781.6
50°	718.8	711.6	706.8	702.0	704.4	702.0	697.1	699.5
52.5°	627.2	619.9	617.5	617.5	615.1	615.1	612.7	612.7
55°	545.2	537.9	537.9	535.5	535.5	535.5	533.1	533.1
57.5°	463.1	458.3	455.9	455.9	451.1	453.5	451.1	448.7
60°	390.8	383.5	378.7	381.1	378.7	378.7	373.9	376.3
62.5°	316.0	311.2	308.8	308.8	303.9	303.9	299.1	301.5
65°	253.3	246.0	243.6	241.2	236.4	234.0	234.0	234.0
67.5°	195.4	190.6	188.2	183.3	178.5	176.1	173.7	171.3
70°	147.1	142.3	139.9	137.5	135.1	132.7	132.7	130.3
72.5°	111.0	106.1	106.1	103.7	103.7	101.3	101.3	101.3
75°	79.6	79.6	77.2	77.2	74.8	77.2	74.8	74.8
77.5°	55.5	53.1	55.5	53.1	50.7	50.7	50.7	50.7
80°	31.4	31.4	31.4	31.4	31.4	31.4	31.4	28.9
82.5°	16.9	16.9	16.9	14.5	14.5	14.5	14.5	14.5
85°	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)