

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: P345497

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 4000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345497
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 PR4M24WW8FSBZ 4000lm3500K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3343.4 lumens
Efficiency: N/A
Efficacy: 85.7 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

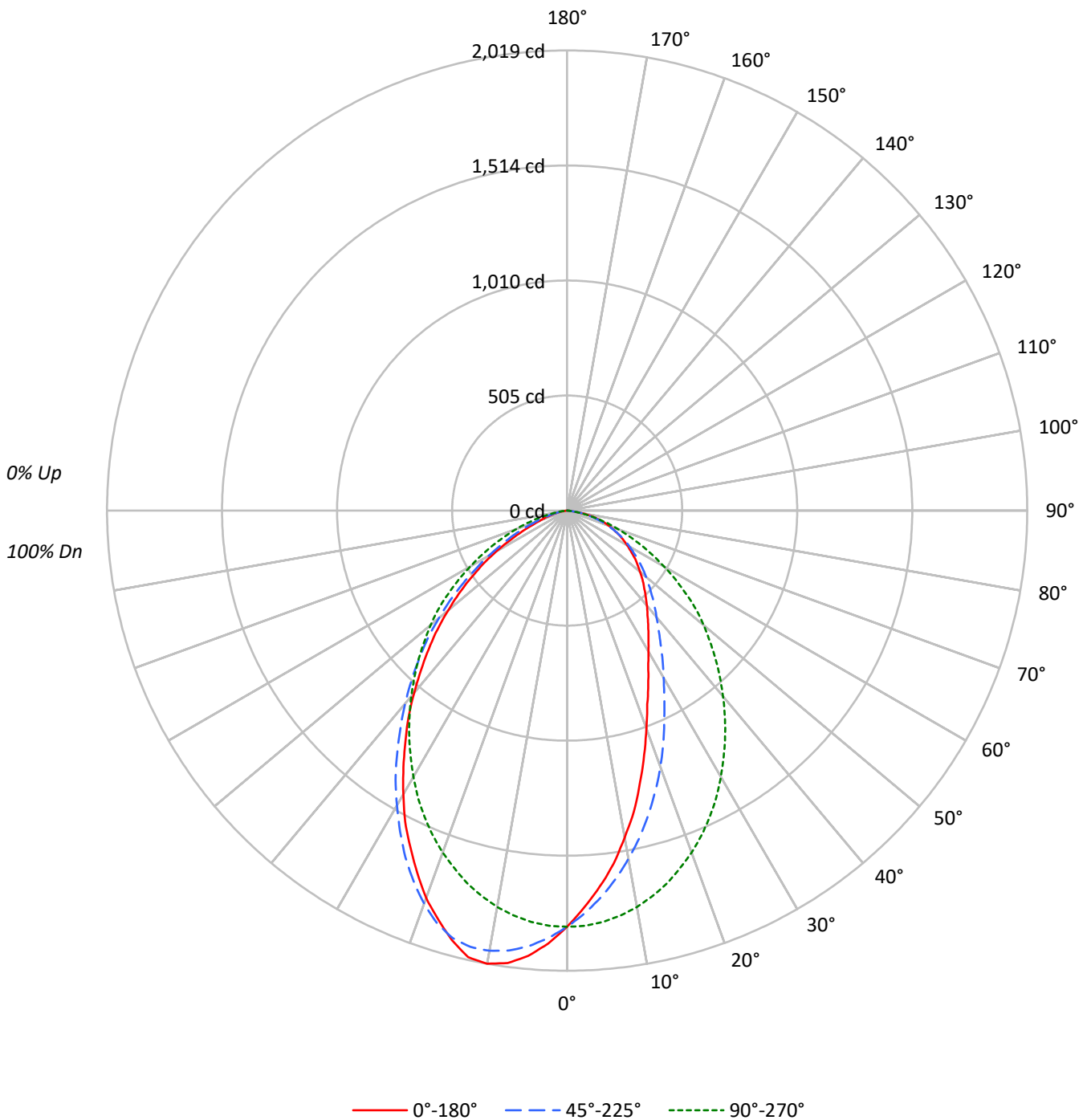
Input Watts (W): 39
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	159728	159728	159728
5°	145297	159065	172200
10°	129196	156836	179325
15°	111845	153346	176718
20°	94535	148644	168406
25°	81253	142944	157150
30°	72115	136190	145209
35°	66193	129044	132141
40°	62253	121468	119264
45°	59079	113990	106234
50°	56785	106359	92574
55°	55174	97111	78354
60°	53164	85668	62873
65°	51929	73888	45430
70°	49972	60458	31456
75°	46469	45658	22001
80°	31583	24279	10931
85°	2409	9635	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	171.0	5.1
10°-20°	462.6	13.8
20°-30°	622.8	18.6
30°-40°	652.4	19.5
40°-50°	585.0	17.5
50°-60°	447.9	13.4
60°-70°	272.8	8.2
70°-80°	115.9	3.5
80°-90°	13.0	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°	1256.4	37.6
0°-40°	1908.8	57.1
0°-60°	2941.7	88.0
0°-90°	3343.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3343.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1826	1826	1826	1826	1826	
5°	1655	1703	1812	1918	1961	152
15°	1235	1380	1693	1942	1952	344
25°	842	1008	1481	1679	1628	389
35°	620	714	1208	1300	1238	389
45°	478	526	922	917	859	370
55°	362	384	637	557	514	322
65°	251	253	357	265	220	247
75°	138	123	135	82	65	141
85°	2	5	10	2	0	16
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°	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1
2.5°	1741.6	1744.0	1748.9	1746.5	1751.3	1751.3	1751.3	1756.1	1760.9	1763.3	1768.2
5°	1654.8	1657.2	1659.6	1664.4	1666.9	1664.4	1671.7	1678.9	1686.2	1695.8	1703.0
7.5°	1563.1	1563.1	1560.7	1568.0	1577.6	1580.0	1584.8	1592.1	1601.7	1616.2	1630.7
10°	1454.6	1457.0	1461.8	1464.2	1478.7	1481.1	1488.4	1498.0	1514.9	1531.8	1551.1
12.5°	1353.3	1350.9	1353.3	1360.5	1370.2	1382.2	1389.5	1401.5	1423.2	1444.9	1469.1
15°	1235.1	1237.5	1244.7	1252.0	1266.4	1273.7	1285.7	1307.4	1329.1	1350.9	1379.8
17.5°	1124.1	1121.7	1131.3	1143.4	1155.5	1167.5	1177.2	1196.5	1225.4	1256.8	1288.1
20°	1015.6	1013.1	1020.4	1030.0	1049.3	1056.6	1068.6	1097.6	1124.1	1157.9	1196.5
22.5°	919.1	919.1	926.3	938.4	950.4	957.7	969.7	993.8	1025.2	1063.8	1102.4
25°	841.9	841.9	846.7	853.9	868.4	875.6	887.7	904.6	933.5	969.7	1008.3
27.5°	769.5	774.3	776.7	784.0	796.0	803.3	810.5	829.8	853.9	885.3	921.5
30°	714.0	716.4	718.8	723.7	733.3	738.1	747.8	764.7	786.4	812.9	846.7
32.5°	663.4	665.8	665.8	673.0	680.3	687.5	692.3	706.8	721.3	747.8	779.2
35°	619.9	619.9	624.8	627.2	632.0	636.8	641.7	653.7	670.6	689.9	714.0
37.5°	578.9	578.9	581.3	586.2	591.0	595.8	598.2	607.9	622.4	639.2	658.5
40°	545.2	545.2	545.2	550.0	554.8	557.2	559.6	569.3	581.3	593.4	610.3
42.5°	509.0	511.4	513.8	516.2	518.6	523.5	525.9	530.7	540.3	550.0	566.9
45°	477.6	480.0	480.0	482.4	487.3	487.3	489.7	496.9	504.2	513.8	525.9
47.5°	448.7	448.7	448.7	451.1	453.5	455.9	458.3	463.2	470.4	475.2	487.3
50°	417.3	417.3	419.7	422.1	424.6	424.6	427.0	429.4	436.6	441.4	451.1
52.5°	388.4	388.4	390.8	390.8	393.2	393.2	395.6	400.4	402.8	410.1	417.3
55°	361.8	359.4	361.8	361.8	361.8	364.2	364.2	369.1	373.9	376.3	383.5
57.5°	330.5	332.9	332.9	335.3	335.3	335.3	337.7	337.7	342.5	345.0	347.4
60°	303.9	306.4	306.4	306.4	306.4	306.4	308.8	308.8	311.2	313.6	316.0
62.5°	277.4	277.4	277.4	277.4	277.4	279.8	279.8	279.8	279.8	282.2	284.6
65°	250.9	250.9	250.9	250.9	250.9	250.9	250.9	250.9	250.9	250.9	253.3
67.5°	221.9	221.9	221.9	224.3	221.9	221.9	221.9	221.9	221.9	221.9	219.5
70°	195.4	195.4	195.4	195.4	195.4	193.0	193.0	190.6	190.6	188.2	188.2
72.5°	166.4	166.4	166.4	164.0	164.0	164.0	161.6	159.2	156.8	156.8	156.8
75°	137.5	137.5	135.1	135.1	132.7	132.7	130.3	127.8	125.4	123.0	123.0
77.5°	103.7	103.7	103.7	103.7	101.3	98.9	98.9	96.5	94.1	94.1	91.7
80°	62.7	60.3	60.3	60.3	60.3	60.3	60.3	60.3	60.3	57.9	57.9
82.5°	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1
85°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	4.8
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.4	2.4	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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1
2.5°	1773.0	1777.8	1785.1	1789.9	1792.3	1794.7	1801.9	1809.2	1816.4	1823.7	1828.5
5°	1715.1	1724.8	1734.4	1746.5	1751.3	1758.5	1773.0	1785.1	1797.1	1811.6	1823.7
7.5°	1645.1	1662.0	1678.9	1698.2	1705.5	1712.7	1732.0	1753.7	1770.6	1792.3	1811.6
10°	1572.8	1592.1	1613.8	1640.3	1652.4	1664.4	1688.6	1715.1	1739.2	1765.8	1789.9
12.5°	1490.8	1522.1	1551.1	1580.0	1592.1	1606.6	1637.9	1669.3	1700.6	1732.0	1760.9
15°	1408.7	1440.1	1476.3	1510.1	1526.9	1546.2	1582.4	1621.0	1657.2	1693.4	1727.2
17.5°	1326.7	1358.1	1396.7	1440.1	1461.8	1481.1	1519.7	1563.1	1606.6	1645.1	1688.6
20°	1235.1	1276.1	1321.9	1367.7	1389.5	1413.6	1459.4	1505.2	1553.5	1596.9	1642.7
22.5°	1145.8	1189.2	1244.7	1290.5	1314.7	1338.8	1391.9	1444.9	1493.2	1541.4	1587.3
25°	1056.6	1107.2	1160.3	1215.8	1242.3	1268.8	1324.3	1375.0	1430.5	1481.1	1534.2
27.5°	969.7	1022.8	1078.3	1136.2	1165.1	1194.1	1249.5	1307.4	1362.9	1418.4	1471.5
30°	887.7	938.4	998.7	1059.0	1087.9	1119.3	1177.2	1237.5	1293.0	1348.4	1406.3
32.5°	815.3	858.8	919.1	979.4	1010.7	1042.1	1104.8	1165.1	1220.6	1278.5	1338.8
35°	747.8	788.8	841.9	904.6	935.9	967.3	1030.0	1092.7	1153.1	1208.5	1266.4
37.5°	689.9	726.1	771.9	827.4	863.6	894.9	957.7	1020.4	1078.3	1136.2	1191.6
40°	634.4	665.8	709.2	762.3	791.2	822.6	885.3	950.4	1008.3	1063.8	1119.3
42.5°	586.2	612.7	648.9	694.7	726.1	752.6	817.7	880.5	935.9	991.4	1046.9
45°	542.8	564.5	593.4	632.0	658.5	692.3	752.6	810.5	866.0	921.5	974.5
47.5°	499.3	518.6	542.8	578.9	600.6	627.2	687.5	743.0	798.5	849.1	899.8
50°	463.2	477.6	496.9	525.9	547.6	566.9	622.4	680.3	730.9	781.6	827.4
52.5°	427.0	436.6	453.5	480.0	494.5	513.8	562.1	615.1	665.8	714.0	755.0
55°	390.8	400.4	412.5	431.8	446.3	460.7	501.7	552.4	598.2	636.8	677.8
57.5°	354.6	361.8	371.5	388.4	398.0	410.1	443.9	484.9	525.9	564.5	595.8
60°	323.2	328.1	335.3	345.0	352.2	359.4	383.5	422.1	460.7	489.7	518.6
62.5°	287.1	289.5	294.3	303.9	308.8	313.6	330.5	364.2	395.6	422.1	446.3
65°	253.3	255.7	258.1	262.9	267.8	270.2	284.6	308.8	335.3	357.0	373.9
67.5°	219.5	221.9	221.9	226.8	226.8	231.6	238.8	253.3	277.4	294.3	308.8
70°	185.7	188.2	188.2	190.6	188.2	190.6	197.8	207.5	221.9	236.4	246.0
72.5°	154.4	152.0	152.0	152.0	152.0	154.4	156.8	161.6	173.7	185.7	188.2
75°	120.6	120.6	118.2	118.2	118.2	118.2	118.2	120.6	127.8	135.1	137.5
77.5°	89.3	86.8	86.8	84.4	84.4	84.4	82.0	82.0	84.4	89.3	89.3
80°	57.9	55.5	53.1	55.5	50.7	53.1	50.7	48.2	48.2	48.2	45.8
82.5°	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	21.7	21.7	21.7
85°	4.8	4.8	7.2	7.2	7.2	7.2	7.2	7.2	9.6	9.6	7.2
87.5°	4.8	4.8	4.8	7.2	7.2	7.2	7.2	7.2	9.6	9.6	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°	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1
2.5°	1835.7	1843.0	1850.2	1852.6	1855.0	1862.2	1867.1	1874.3	1876.7	1881.5	1886.4
5°	1835.7	1850.2	1862.2	1869.5	1874.3	1886.4	1898.4	1905.7	1917.7	1925.0	1932.2
7.5°	1830.9	1850.2	1867.1	1876.7	1886.4	1900.8	1917.7	1932.2	1946.7	1956.3	1968.4
10°	1816.4	1840.5	1862.2	1874.3	1886.4	1908.1	1927.4	1944.3	1961.2	1975.6	1987.7
12.5°	1794.7	1823.7	1850.2	1864.7	1876.7	1903.3	1925.0	1944.3	1961.2	1973.2	1982.9
15°	1763.3	1799.5	1830.9	1845.4	1859.8	1888.8	1910.5	1927.4	1941.9	1949.1	1956.3
17.5°	1727.2	1765.8	1801.9	1818.8	1833.3	1859.8	1879.1	1891.2	1898.4	1903.3	1900.8
20°	1686.2	1727.2	1763.3	1780.2	1797.1	1818.8	1833.3	1838.1	1835.7	1833.3	1828.5
22.5°	1635.5	1678.9	1717.5	1732.0	1746.5	1763.3	1768.2	1765.8	1760.9	1756.1	1748.9
25°	1582.4	1625.9	1662.0	1674.1	1686.2	1693.4	1691.0	1686.2	1678.9	1671.7	1659.6
27.5°	1522.1	1568.0	1596.9	1611.4	1613.8	1613.8	1606.6	1599.3	1587.3	1577.6	1565.5
30°	1459.4	1498.0	1526.9	1531.8	1534.2	1529.4	1522.1	1510.1	1493.2	1485.9	1473.9
32.5°	1387.0	1428.0	1449.8	1449.8	1444.9	1437.7	1423.2	1411.2	1401.5	1384.6	1372.6
35°	1319.5	1350.9	1362.9	1362.9	1355.7	1343.6	1331.6	1314.7	1300.2	1290.5	1273.7
37.5°	1242.3	1273.7	1278.5	1271.3	1266.4	1252.0	1232.7	1218.2	1201.3	1189.2	1177.2
40°	1169.9	1191.6	1186.8	1179.6	1174.8	1160.3	1138.6	1121.7	1104.8	1090.3	1078.3
42.5°	1087.9	1102.4	1095.2	1090.3	1080.7	1063.8	1044.5	1027.6	1010.7	996.3	984.2
45°	1013.1	1020.4	1008.3	998.7	991.4	972.1	957.7	933.5	916.7	902.2	892.5
47.5°	933.5	933.5	921.5	911.8	899.8	880.5	863.6	839.5	829.8	810.5	800.9
50°	856.3	849.1	834.6	822.6	812.9	791.2	769.5	752.6	735.7	721.3	711.6
52.5°	774.3	764.7	745.4	733.3	728.5	702.0	682.7	661.0	646.5	629.6	619.9
55°	692.3	677.8	656.1	646.5	636.8	615.1	593.4	571.7	557.2	545.2	535.5
57.5°	607.9	591.0	571.7	559.6	547.6	525.9	504.2	484.9	472.8	460.7	453.5
60°	521.0	509.0	489.7	477.6	465.6	446.3	422.1	407.7	398.0	383.5	381.1
62.5°	446.3	429.4	407.7	398.0	388.4	369.1	349.8	337.7	325.7	318.4	308.8
65°	371.5	354.6	335.3	325.7	318.4	301.5	287.1	275.0	265.3	255.7	248.5
67.5°	299.1	287.1	270.2	262.9	253.3	238.8	226.8	217.1	207.5	197.8	190.6
70°	238.8	224.3	209.9	205.0	200.2	185.7	176.1	166.4	156.8	149.6	142.3
72.5°	183.3	171.3	159.2	152.0	147.1	139.9	132.7	123.0	115.8	108.6	103.7
75°	130.3	123.0	113.4	108.6	103.7	98.9	89.3	84.4	82.0	77.2	72.4
77.5°	84.4	77.2	72.4	67.5	67.5	62.7	57.9	55.5	50.7	50.7	48.2
80°	43.4	41.0	38.6	38.6	38.6	33.8	31.4	31.4	28.9	26.5	26.5
82.5°	19.3	19.3	16.9	16.9	16.9	14.5	14.5	12.1	12.1	9.6	9.6
85°	7.2	7.2	7.2	7.2	7.2	4.8	4.8	4.8	2.4	2.4	2.4
87.5°	7.2	7.2	7.2	7.2	7.2	4.8	4.8	4.8	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: P345497

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSBZ 4000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1	1826.1
2.5°	1888.8	1893.6	1893.6	1896.0	1898.4	1900.8	1898.4	1900.8
5°	1939.4	1946.7	1949.1	1949.1	1953.9	1956.3	1961.2	1961.2
7.5°	1978.0	1985.3	1990.1	1992.5	1997.3	2002.2	2002.2	2002.2
10°	1997.3	2004.6	2007.0	2011.8	2014.2	2016.6	2019.0	2019.0
12.5°	1990.1	1997.3	1999.7	1999.7	2004.6	2004.6	2004.6	2007.0
15°	1958.7	1956.3	1956.3	1956.3	1953.9	1953.9	1953.9	1951.5
17.5°	1896.0	1893.6	1893.6	1893.6	1891.2	1888.8	1886.4	1881.5
20°	1826.1	1821.2	1816.4	1818.8	1814.0	1811.6	1809.2	1809.2
22.5°	1744.0	1736.8	1734.4	1732.0	1727.2	1724.8	1719.9	1719.9
25°	1654.8	1650.0	1642.7	1640.3	1637.9	1633.1	1628.3	1628.3
27.5°	1560.7	1553.5	1551.1	1546.2	1543.8	1539.0	1536.6	1539.0
30°	1464.2	1457.0	1454.6	1449.8	1440.1	1444.9	1440.1	1437.7
32.5°	1362.9	1355.7	1350.9	1346.0	1346.0	1338.8	1338.8	1336.4
35°	1264.0	1256.8	1252.0	1249.5	1244.7	1244.7	1239.9	1237.5
37.5°	1167.5	1160.3	1155.5	1153.1	1148.2	1143.4	1141.0	1143.4
40°	1068.6	1061.4	1056.6	1054.1	1049.3	1044.5	1044.5	1044.5
42.5°	972.1	964.9	964.9	960.1	952.8	950.4	948.0	948.0
45°	882.9	873.2	870.8	866.0	866.0	861.2	858.8	858.8
47.5°	788.8	781.6	779.2	776.7	774.3	771.9	771.9	771.9
50°	702.0	692.3	692.3	687.5	685.1	687.5	682.7	680.3
52.5°	615.1	607.9	605.5	605.5	600.6	600.6	600.6	598.2
55°	528.3	523.5	523.5	521.0	516.2	518.6	518.6	513.8
57.5°	448.7	441.4	441.4	439.0	439.0	439.0	434.2	439.0
60°	373.9	369.1	366.7	364.2	361.8	361.8	361.8	359.4
62.5°	303.9	299.1	296.7	294.3	289.5	289.5	284.6	282.2
65°	241.2	236.4	231.6	229.2	224.3	221.9	221.9	219.5
67.5°	183.3	178.5	173.7	171.3	166.4	164.0	161.6	161.6
70°	137.5	130.3	130.3	127.8	125.4	125.4	123.0	123.0
72.5°	98.9	98.9	96.5	96.5	94.1	94.1	94.1	94.1
75°	70.0	70.0	70.0	70.0	67.5	67.5	65.1	65.1
77.5°	45.8	45.8	45.8	43.4	43.4	43.4	43.4	43.4
80°	24.1	24.1	24.1	24.1	24.1	21.7	24.1	21.7
82.5°	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
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

(END OF REPORT)