

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: P345426

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMW 4000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345426
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 4000Lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3258.6 lumens
Efficiency: N/A
Efficacy: 72.4 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

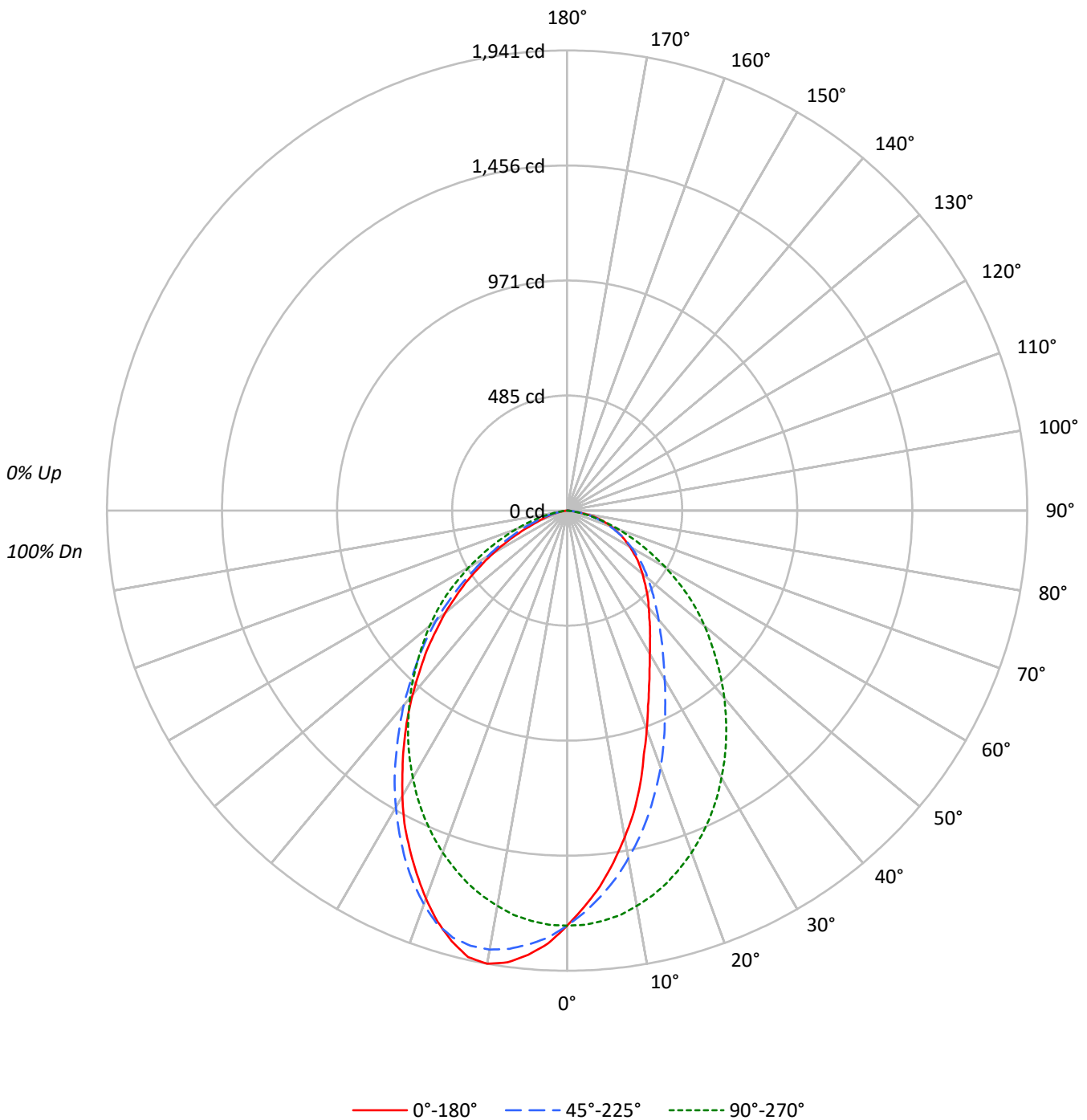
Input Watts (W): 45
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	153150	153150	153150
5°	139704	152515	165115
10°	124240	150370	172380
15°	108005	147224	170289
20°	91408	142929	162113
25°	78898	137684	151765
30°	70408	131463	140351
35°	65040	124890	128105
40°	61088	117677	115827
45°	58448	110007	103710
50°	56418	103052	91390
55°	55098	94656	78049
60°	53479	83866	63205
65°	52239	71425	46486
70°	50944	58642	31994
75°	48530	44610	24265
80°	33850	25690	14003
85°	13950	9333	4617



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	164.0	5.0
10°-20°	444.7	13.6
20°-30°	600.9	18.4
30°-40°	632.5	19.4
40°-50°	569.8	17.5
50°-60°	439.9	13.5
60°-70°	270.8	8.3
70°-80°	119.0	3.7
80°-90°	17.0	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°	1209.6	37.1
0°-40°	1842.1	56.5
0°-60°	2851.8	87.5
0°-90°	3258.6	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3258.6	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1751	1751	1751	1751	1751	
5°	1591	1633	1737	1836	1880	146
15°	1193	1327	1626	1864	1880	331
25°	818	975	1427	1619	1572	378
35°	609	699	1170	1258	1200	382
45°	472	516	889	889	838	366
55°	361	380	621	549	512	322
65°	252	252	345	262	225	249
75°	144	127	132	86	72	147
85°	14	12	9	7	5	24
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°	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9
2.5°	1672.1	1674.4	1674.4	1674.4	1676.7	1679.1	1679.1	1683.7	1686.0	1690.6	1695.3
5°	1591.1	1588.7	1588.7	1593.4	1598.0	1600.3	1600.3	1609.6	1616.5	1623.5	1632.7
7.5°	1496.1	1493.8	1500.7	1503.0	1507.7	1514.6	1519.3	1528.5	1535.5	1551.7	1565.6
10°	1398.8	1398.8	1403.5	1410.4	1417.4	1424.3	1428.9	1440.5	1454.4	1470.6	1489.2
12.5°	1301.6	1294.6	1301.6	1310.8	1317.8	1324.7	1331.7	1345.6	1366.4	1387.3	1410.4
15°	1192.7	1190.4	1195.0	1204.3	1220.5	1225.1	1232.1	1252.9	1273.8	1301.6	1327.0
17.5°	1076.9	1083.9	1086.2	1100.1	1116.3	1123.2	1130.2	1151.0	1181.1	1208.9	1239.0
20°	982.0	977.3	986.6	995.9	1009.8	1021.3	1030.6	1053.8	1086.2	1116.3	1153.3
22.5°	891.6	889.3	896.3	907.9	919.4	928.7	938.0	961.1	986.6	1021.3	1063.0
25°	817.5	815.2	822.2	829.1	843.0	850.0	856.9	880.1	907.9	935.6	975.0
27.5°	752.7	752.7	757.3	761.9	773.5	780.5	789.7	808.3	831.4	859.2	896.3
30°	697.1	697.1	701.7	706.4	717.9	722.6	729.5	743.4	761.9	792.1	822.2
32.5°	650.8	650.8	653.1	660.0	664.7	669.3	676.3	687.8	706.4	729.5	757.3
35°	609.1	609.1	611.4	616.0	623.0	625.3	629.9	641.5	655.4	673.9	699.4
37.5°	569.7	572.0	572.0	576.7	581.3	583.6	588.3	597.5	609.1	625.3	646.1
40°	535.0	537.3	537.3	541.9	546.6	548.9	551.2	555.8	569.7	581.3	599.8
42.5°	504.9	504.9	504.9	507.2	511.8	514.1	516.5	523.4	530.4	541.9	555.8
45°	472.5	472.5	474.8	477.1	481.7	481.7	484.0	491.0	495.6	504.9	516.5
47.5°	442.3	442.3	444.7	444.7	449.3	449.3	451.6	456.2	460.9	470.1	479.4
50°	414.6	414.6	414.6	416.9	419.2	421.5	421.5	426.1	430.8	437.7	444.7
52.5°	386.8	386.8	386.8	386.8	389.1	391.4	391.4	396.0	400.7	405.3	412.2
55°	361.3	359.0	361.3	361.3	361.3	363.6	363.6	368.2	368.2	372.9	379.8
57.5°	331.2	333.5	333.5	331.2	333.5	335.8	335.8	335.8	338.1	342.8	345.1
60°	305.7	305.7	305.7	305.7	308.0	308.0	308.0	308.0	310.3	310.3	315.0
62.5°	277.9	277.9	280.2	280.2	277.9	280.2	280.2	280.2	282.5	282.5	282.5
65°	252.4	252.4	252.4	252.4	252.4	252.4	252.4	252.4	252.4	252.4	252.4
67.5°	224.6	224.6	224.6	224.6	224.6	224.6	224.6	222.3	222.3	222.3	220.0
70°	199.2	199.2	199.2	196.9	196.9	196.9	196.9	194.5	194.5	192.2	189.9
72.5°	171.4	171.4	171.4	169.1	169.1	169.1	166.7	164.4	162.1	159.8	159.8
75°	143.6	143.6	141.3	139.0	139.0	136.6	136.6	134.3	134.3	129.7	127.4
77.5°	111.2	108.8	108.8	108.8	106.5	104.2	104.2	101.9	99.6	99.6	97.3
80°	67.2	67.2	69.5	67.2	69.5	67.2	67.2	69.5	67.2	64.8	64.8
82.5°	32.4	32.4	34.7	32.4	34.7	34.7	34.7	32.4	32.4	32.4	32.4
85°	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	11.6	11.6	11.6
87.5°	9.3	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
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°	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9
2.5°	1699.9	1706.9	1709.2	1716.1	1718.4	1723.1	1727.7	1734.6	1741.6	1748.5	1753.2
5°	1642.0	1653.6	1662.8	1674.4	1681.4	1686.0	1699.9	1711.5	1725.4	1737.0	1748.5
7.5°	1579.5	1593.4	1614.2	1628.1	1635.1	1646.6	1662.8	1681.4	1699.9	1720.7	1737.0
10°	1507.7	1528.5	1549.4	1574.8	1586.4	1598.0	1618.8	1644.3	1669.8	1693.0	1718.4
12.5°	1431.3	1459.0	1486.8	1512.3	1528.5	1542.4	1574.8	1602.6	1632.7	1662.8	1690.6
15°	1357.1	1387.3	1419.7	1452.1	1470.6	1486.8	1519.3	1554.0	1591.1	1625.8	1658.2
17.5°	1276.1	1310.8	1347.9	1384.9	1403.5	1424.3	1466.0	1503.0	1544.7	1581.8	1621.2
20°	1192.7	1232.1	1271.5	1317.8	1336.3	1359.5	1401.1	1447.5	1491.5	1535.5	1577.2
22.5°	1107.0	1151.0	1195.0	1243.7	1269.1	1292.3	1340.9	1387.3	1435.9	1482.2	1528.5
25°	1019.0	1070.0	1120.9	1169.6	1197.3	1220.5	1273.8	1327.0	1378.0	1426.6	1475.3
27.5°	938.0	986.6	1042.2	1095.4	1123.2	1148.7	1206.6	1257.6	1313.1	1366.4	1415.0
30°	863.8	910.2	965.7	1023.6	1051.4	1079.2	1137.1	1195.0	1246.0	1301.6	1354.8
32.5°	794.4	836.1	891.6	949.5	982.0	1007.4	1067.7	1123.2	1181.1	1236.7	1290.0
35°	729.5	771.2	819.8	877.7	905.5	935.6	998.2	1056.1	1111.7	1169.6	1218.2
37.5°	673.9	706.4	750.4	805.9	836.1	866.2	928.7	986.6	1042.2	1100.1	1151.0
40°	620.7	650.8	690.2	738.8	768.9	799.0	859.2	917.1	972.7	1030.6	1083.9
42.5°	576.7	599.8	632.3	678.6	704.0	734.2	794.4	850.0	905.5	961.1	1012.1
45°	532.7	553.5	581.3	618.4	643.8	671.6	729.5	787.4	838.4	889.3	940.3
47.5°	491.0	507.2	532.7	565.1	585.9	611.4	667.0	722.6	773.5	822.2	868.5
50°	453.9	467.8	491.0	514.1	532.7	555.8	604.5	660.0	708.7	757.3	799.0
52.5°	419.2	430.8	447.0	470.1	484.0	502.6	548.9	597.5	646.1	690.2	729.5
55°	386.8	393.7	407.6	423.8	435.4	451.6	491.0	537.3	581.3	620.7	653.1
57.5°	349.7	359.0	368.2	379.8	391.4	400.7	430.8	472.5	511.8	546.6	579.0
60°	317.3	324.2	328.9	340.4	345.1	354.3	377.5	412.2	449.3	479.4	502.6
62.5°	284.9	287.2	291.8	301.1	303.4	310.3	326.5	354.3	382.1	409.9	433.1
65°	252.4	252.4	257.1	259.4	264.0	266.3	277.9	298.8	324.2	345.1	359.0
67.5°	220.0	220.0	222.3	222.3	227.0	227.0	233.9	250.1	266.3	284.9	296.4
70°	187.6	187.6	187.6	187.6	187.6	189.9	194.5	203.8	215.4	229.3	236.2
72.5°	157.5	155.2	155.2	152.9	152.9	152.9	155.2	159.8	169.1	178.3	185.3
75°	125.1	122.7	120.4	120.4	118.1	118.1	118.1	122.7	127.4	132.0	134.3
77.5°	92.6	92.6	90.3	85.7	85.7	83.4	83.4	83.4	85.7	90.3	88.0
80°	64.8	60.2	57.9	57.9	55.6	55.6	53.3	51.0	51.0	51.0	48.6
82.5°	30.1	30.1	30.1	27.8	27.8	27.8	27.8	25.5	25.5	23.2	23.2
85°	11.6	11.6	11.6	11.6	11.6	11.6	11.6	9.3	9.3	9.3	9.3
87.5°	6.9	6.9	6.9	6.9	6.9	4.6	4.6	4.6	4.6	4.6	4.6
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°	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9
2.5°	1760.1	1767.1	1774.0	1776.3	1778.6	1785.6	1790.2	1797.2	1801.8	1804.1	1808.8
5°	1762.4	1774.0	1785.6	1792.5	1797.2	1808.8	1818.0	1829.6	1836.5	1848.1	1855.1
7.5°	1755.5	1774.0	1790.2	1799.5	1808.8	1825.0	1838.9	1852.8	1864.3	1875.9	1887.5
10°	1741.6	1764.8	1787.9	1797.2	1808.8	1827.3	1848.1	1864.3	1880.5	1894.4	1908.3
12.5°	1720.7	1748.5	1776.3	1787.9	1799.5	1825.0	1845.8	1864.3	1880.5	1894.4	1903.7
15°	1693.0	1725.4	1755.5	1771.7	1785.6	1811.1	1831.9	1850.4	1864.3	1873.6	1880.5
17.5°	1658.2	1695.3	1730.0	1743.9	1760.1	1783.3	1804.1	1818.0	1827.3	1827.3	1829.6
20°	1618.8	1658.2	1693.0	1709.2	1725.4	1743.9	1760.1	1767.1	1767.1	1767.1	1762.4
22.5°	1572.5	1614.2	1649.0	1665.2	1679.1	1693.0	1702.2	1702.2	1697.6	1690.6	1683.7
25°	1519.3	1563.3	1595.7	1611.9	1618.8	1630.4	1628.1	1625.8	1618.8	1611.9	1602.6
27.5°	1461.4	1505.4	1540.1	1547.1	1551.7	1554.0	1547.1	1542.4	1533.2	1523.9	1516.9
30°	1401.1	1442.8	1470.6	1472.9	1477.6	1475.3	1466.0	1454.4	1445.2	1433.6	1424.3
32.5°	1336.3	1375.7	1394.2	1398.8	1396.5	1387.3	1378.0	1366.4	1354.8	1340.9	1329.4
35°	1266.8	1303.9	1315.5	1313.1	1310.8	1299.2	1285.3	1273.8	1257.6	1248.3	1232.1
37.5°	1195.0	1229.8	1234.4	1227.5	1220.5	1206.6	1192.7	1181.1	1162.6	1153.3	1141.8
40°	1123.2	1146.4	1146.4	1139.4	1134.8	1120.9	1102.4	1086.2	1072.3	1056.1	1049.1
42.5°	1049.1	1067.7	1058.4	1053.8	1046.8	1026.0	1012.1	995.9	977.3	968.1	956.5
45°	975.0	986.6	975.0	965.7	958.8	940.3	926.4	905.5	889.3	880.1	866.2
47.5°	898.6	903.2	894.0	880.1	875.4	854.6	838.4	822.2	805.9	789.7	778.2
50°	829.1	824.5	810.6	801.3	794.4	771.2	752.7	734.2	720.3	706.4	694.8
52.5°	750.4	745.7	727.2	715.6	704.0	685.5	662.4	648.5	632.3	620.7	609.1
55°	669.3	655.4	641.5	629.9	618.4	599.8	579.0	560.5	548.9	535.0	528.0
57.5°	585.9	576.7	553.5	544.2	535.0	516.5	495.6	479.4	463.2	453.9	449.3
60°	511.8	495.6	477.1	465.5	456.2	437.7	419.2	403.0	391.4	386.8	379.8
62.5°	433.1	419.2	398.3	389.1	382.1	363.6	347.4	333.5	324.2	315.0	310.3
65°	361.3	345.1	328.9	319.6	310.3	294.1	282.5	273.3	261.7	254.8	250.1
67.5°	291.8	277.9	264.0	257.1	250.1	236.2	224.6	217.7	208.4	201.5	192.2
70°	229.3	217.7	208.4	201.5	194.5	183.0	173.7	166.7	159.8	152.9	145.9
72.5°	178.3	166.7	155.2	152.9	148.2	139.0	132.0	125.1	118.1	113.5	108.8
75°	127.4	122.7	113.5	108.8	106.5	99.6	92.6	88.0	85.7	81.1	78.7
77.5°	83.4	78.7	71.8	71.8	69.5	67.2	62.5	57.9	57.9	55.6	55.6
80°	46.3	44.0	41.7	39.4	41.7	39.4	37.1	34.7	34.7	34.7	32.4
82.5°	20.8	20.8	18.5	18.5	18.5	18.5	18.5	16.2	16.2	16.2	16.2
85°	9.3	9.3	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
87.5°	4.6	4.6	4.6	4.6	4.6	4.6	2.3	2.3	2.3	2.3	2.3
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: P345426

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 4000Lm4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9	1750.9
2.5°	1813.4	1815.7	1818.0	1820.3	1822.6	1822.6	1825.0	1827.3
5°	1859.7	1866.7	1869.0	1871.3	1875.9	1878.2	1878.2	1880.5
7.5°	1896.8	1906.0	1908.3	1913.0	1917.6	1919.9	1922.2	1922.2
10°	1917.6	1924.6	1926.9	1931.5	1936.1	1938.4	1940.8	1940.8
12.5°	1910.7	1917.6	1919.9	1922.2	1926.9	1929.2	1929.2	1929.2
15°	1885.2	1885.2	1885.2	1885.2	1882.9	1885.2	1885.2	1880.5
17.5°	1827.3	1825.0	1827.3	1822.6	1820.3	1820.3	1818.0	1818.0
20°	1757.8	1755.5	1753.2	1753.2	1750.9	1746.2	1743.9	1741.6
22.5°	1679.1	1674.4	1672.1	1672.1	1667.5	1665.2	1662.8	1658.2
25°	1598.0	1586.4	1586.4	1586.4	1581.8	1581.8	1577.2	1572.5
27.5°	1505.4	1498.4	1498.4	1493.8	1489.2	1486.8	1484.5	1486.8
30°	1417.4	1408.1	1403.5	1401.1	1398.8	1398.8	1391.9	1389.6
32.5°	1320.1	1313.1	1308.5	1306.2	1301.6	1299.2	1296.9	1292.3
35°	1225.1	1218.2	1213.6	1213.6	1204.3	1202.0	1199.7	1199.7
37.5°	1127.9	1123.2	1120.9	1114.0	1111.7	1109.3	1109.3	1107.0
40°	1037.5	1030.6	1028.3	1021.3	1019.0	1019.0	1012.1	1014.4
42.5°	944.9	935.6	933.3	931.0	928.7	924.1	926.4	921.7
45°	856.9	850.0	845.3	845.3	843.0	838.4	836.1	838.4
47.5°	771.2	761.9	761.9	759.6	757.3	755.0	755.0	750.4
50°	690.2	683.2	678.6	673.9	676.3	673.9	669.3	671.6
52.5°	602.1	595.2	592.9	592.9	590.6	590.6	588.3	588.3
55°	523.4	516.5	516.5	514.1	514.1	514.1	511.8	511.8
57.5°	444.7	440.0	437.7	437.7	433.1	435.4	433.1	430.8
60°	375.2	368.2	363.6	365.9	363.6	363.6	359.0	361.3
62.5°	303.4	298.8	296.4	296.4	291.8	291.8	287.2	289.5
65°	243.2	236.2	233.9	231.6	227.0	224.6	224.6	224.6
67.5°	187.6	183.0	180.6	176.0	171.4	169.1	166.7	164.4
70°	141.3	136.6	134.3	132.0	129.7	127.4	127.4	125.1
72.5°	106.5	101.9	101.9	99.6	99.6	97.3	97.3	97.3
75°	76.4	76.4	74.1	74.1	71.8	74.1	71.8	71.8
77.5°	53.3	51.0	53.3	51.0	48.6	48.6	48.6	48.6
80°	30.1	30.1	30.1	30.1	30.1	30.1	30.1	27.8
82.5°	16.2	16.2	16.2	13.9	13.9	13.9	13.9	13.9
85°	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
87.5°	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)