

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: P345498

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 4000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345498
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 4000lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3210.0 lumens
Efficiency: N/A
Efficacy: 71.3 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

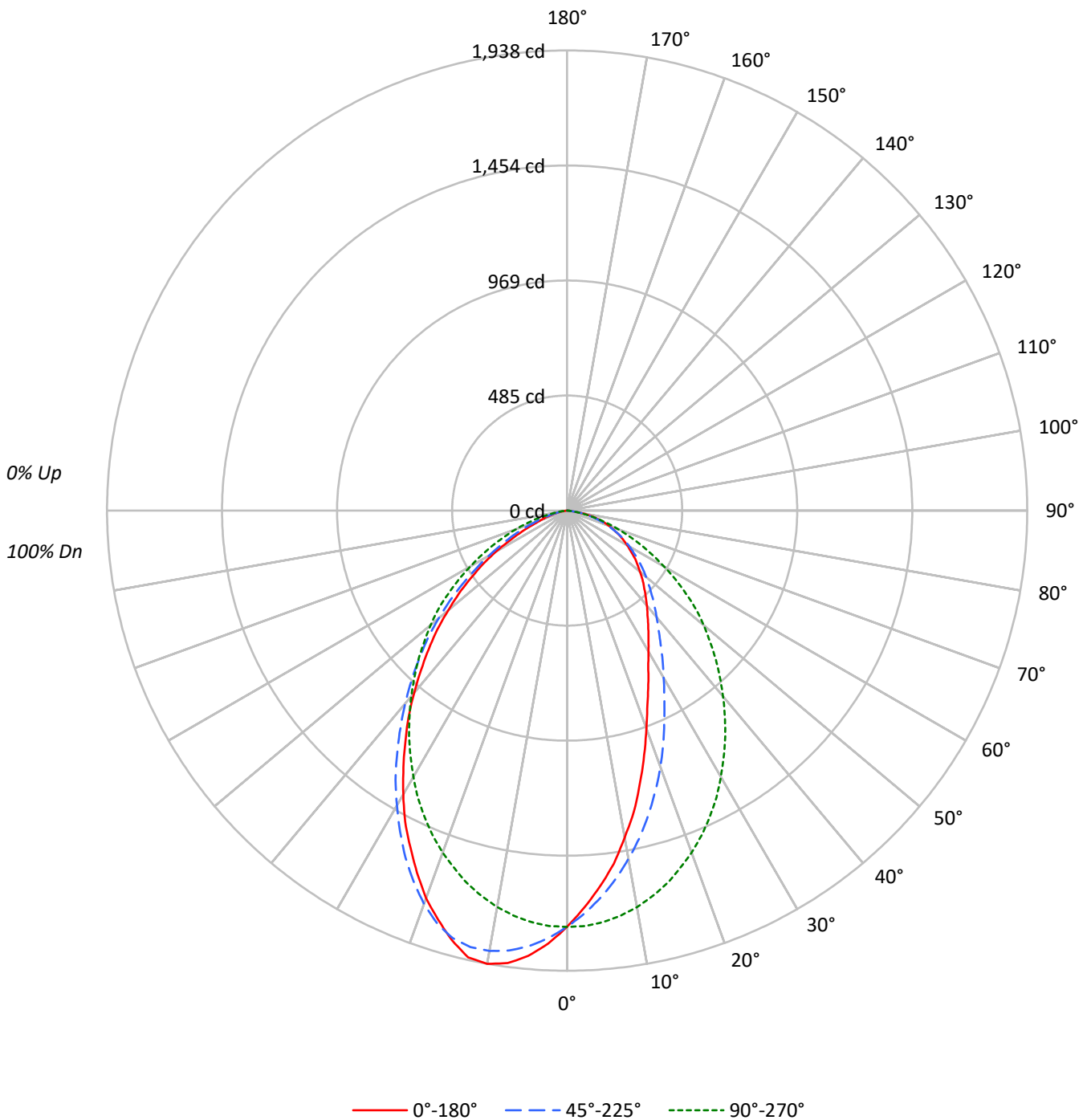
Input Watts (W): 45
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	153351	153351	153351
5°	139502	152717	165325
10°	124035	150575	172175
15°	107380	147224	169664
20°	90756	142715	161685
25°	78011	137240	150877
30°	69236	130756	139412
35°	63556	123897	126866
40°	59764	116615	114503
45°	56729	109438	101991
50°	54527	102113	88873
55°	52978	93237	75227
60°	51047	82239	60371
65°	49859	70949	43629
70°	47977	58054	30203
75°	44610	43833	21122
80°	30324	23322	10477
85°	2308	9333	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	164.2	5.1
10°-20°	444.2	13.8
20°-30°	597.9	18.6
30°-40°	626.3	19.5
40°-50°	561.7	17.5
50°-60°	430.0	13.4
60°-70°	261.9	8.2
70°-80°	111.3	3.5
80°-90°	12.5	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°	1206.3	37.6
0°-40°	1832.6	57.1
0°-60°	2824.3	88.0
0°-90°	3210.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3210.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1753	1753	1753	1753	1753	
5°	1589	1635	1739	1841	1883	146
15°	1186	1325	1626	1864	1874	330
25°	808	968	1422	1612	1563	373
35°	595	686	1160	1248	1188	374
45°	459	505	885	880	824	355
55°	347	368	611	535	493	309
65°	241	243	343	255	211	238
75°	132	118	130	79	62	136
85°	2	5	9	2	0	15
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°	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2
2.5°	1672.1	1674.5	1679.1	1676.8	1681.4	1681.4	1681.4	1686.0	1690.7	1693.0	1697.6
5°	1588.8	1591.1	1593.4	1598.0	1600.3	1598.0	1605.0	1611.9	1618.9	1628.1	1635.1
7.5°	1500.8	1500.8	1498.4	1505.4	1514.7	1517.0	1521.6	1528.5	1537.8	1551.7	1565.6
10°	1396.5	1398.9	1403.5	1405.8	1419.7	1422.0	1429.0	1438.2	1454.4	1470.6	1489.2
12.5°	1299.3	1296.9	1299.3	1306.2	1315.5	1327.1	1334.0	1345.6	1366.4	1387.3	1410.4
15°	1185.8	1188.1	1195.0	1202.0	1215.9	1222.8	1234.4	1255.3	1276.1	1296.9	1324.7
17.5°	1079.2	1076.9	1086.2	1097.8	1109.4	1120.9	1130.2	1148.7	1176.5	1206.6	1236.7
20°	975.0	972.7	979.7	988.9	1007.5	1014.4	1026.0	1053.8	1079.2	1111.7	1148.7
22.5°	882.4	882.4	889.3	900.9	912.5	919.4	931.0	954.2	984.3	1021.3	1058.4
25°	808.3	808.3	812.9	819.9	833.8	840.7	852.3	868.5	896.3	931.0	968.1
27.5°	738.8	743.4	745.7	752.7	764.3	771.2	778.2	796.7	819.9	850.0	884.7
30°	685.5	687.8	690.2	694.8	704.1	708.7	718.0	734.2	755.0	780.5	812.9
32.5°	636.9	639.2	639.2	646.2	653.1	660.1	664.7	678.6	692.5	718.0	748.1
35°	595.2	595.2	599.8	602.2	606.8	611.4	616.1	627.6	643.8	662.4	685.5
37.5°	555.8	555.8	558.2	562.8	567.4	572.0	574.4	583.6	597.5	613.7	632.3
40°	523.4	523.4	523.4	528.0	532.7	535.0	537.3	546.6	558.2	569.7	585.9
42.5°	488.7	491.0	493.3	495.6	497.9	502.6	504.9	509.5	518.8	528.0	544.3
45°	458.6	460.9	460.9	463.2	467.8	467.8	470.1	477.1	484.0	493.3	504.9
47.5°	430.8	430.8	430.8	433.1	435.4	437.7	440.0	444.7	451.6	456.2	467.8
50°	400.7	400.7	403.0	405.3	407.6	407.6	409.9	412.2	419.2	423.8	433.1
52.5°	372.9	372.9	375.2	375.2	377.5	377.5	379.8	384.5	386.8	393.7	400.7
55°	347.4	345.1	347.4	347.4	347.4	349.7	349.7	354.3	359.0	361.3	368.2
57.5°	317.3	319.6	319.6	321.9	321.9	321.9	324.2	324.2	328.9	331.2	333.5
60°	291.8	294.1	294.1	294.1	294.1	294.1	296.4	296.4	298.8	301.1	303.4
62.5°	266.3	266.3	266.3	266.3	266.3	268.7	268.7	268.7	268.7	271.0	273.3
65°	240.9	240.9	240.9	240.9	240.9	240.9	240.9	240.9	240.9	240.9	243.2
67.5°	213.1	213.1	213.1	215.4	213.1	213.1	213.1	213.1	213.1	213.1	210.8
70°	187.6	187.6	187.6	187.6	187.6	185.3	185.3	183.0	183.0	180.6	180.6
72.5°	159.8	159.8	159.8	157.5	157.5	157.5	155.2	152.9	150.5	150.5	150.5
75°	132.0	132.0	129.7	129.7	127.4	127.4	125.1	122.7	120.4	118.1	118.1
77.5°	99.6	99.6	99.6	99.6	97.3	95.0	95.0	92.6	90.3	90.3	88.0
80°	60.2	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	55.6	55.6
82.5°	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2
85°	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	4.6
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.3	2.3	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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2
2.5°	1702.2	1706.9	1713.8	1718.5	1720.8	1723.1	1730.0	1737.0	1743.9	1750.9	1755.5
5°	1646.7	1655.9	1665.2	1676.8	1681.4	1688.4	1702.2	1713.8	1725.4	1739.3	1750.9
7.5°	1579.5	1595.7	1611.9	1630.5	1637.4	1644.3	1662.9	1683.7	1699.9	1720.8	1739.3
10°	1510.0	1528.5	1549.4	1574.9	1586.4	1598.0	1621.2	1646.7	1669.8	1695.3	1718.5
12.5°	1431.3	1461.4	1489.2	1517.0	1528.5	1542.4	1572.6	1602.7	1632.8	1662.9	1690.7
15°	1352.5	1382.6	1417.4	1449.8	1466.0	1484.5	1519.3	1556.3	1591.1	1625.8	1658.2
17.5°	1273.8	1303.9	1341.0	1382.6	1403.5	1422.0	1459.1	1500.8	1542.4	1579.5	1621.2
20°	1185.8	1225.2	1269.2	1313.2	1334.0	1357.2	1401.2	1445.2	1491.5	1533.2	1577.2
22.5°	1100.1	1141.8	1195.0	1239.0	1262.2	1285.4	1336.3	1387.3	1433.6	1479.9	1523.9
25°	1014.4	1063.0	1114.0	1167.3	1192.7	1218.2	1271.5	1320.1	1373.4	1422.0	1473.0
27.5°	931.0	982.0	1035.2	1090.8	1118.6	1146.4	1199.7	1255.3	1308.5	1361.8	1412.7
30°	852.3	900.9	958.8	1016.7	1044.5	1074.6	1130.2	1188.1	1241.4	1294.6	1350.2
32.5°	782.8	824.5	882.4	940.3	970.4	1000.5	1060.7	1118.6	1171.9	1227.5	1285.4
35°	718.0	757.3	808.3	868.5	898.6	928.7	988.9	1049.1	1107.0	1160.3	1215.9
37.5°	662.4	697.1	741.1	794.4	829.1	859.2	919.4	979.7	1035.2	1090.8	1144.1
40°	609.1	639.2	680.9	731.9	759.6	789.7	850.0	912.5	968.1	1021.3	1074.6
42.5°	562.8	588.3	623.0	667.0	697.1	722.6	785.1	845.3	898.6	951.9	1005.1
45°	521.1	541.9	569.7	606.8	632.3	664.7	722.6	778.2	831.4	884.7	935.7
47.5°	479.4	497.9	521.1	555.8	576.7	602.2	660.1	713.3	766.6	815.2	863.9
50°	444.7	458.6	477.1	504.9	525.7	544.3	597.5	653.1	701.7	750.4	794.4
52.5°	409.9	419.2	435.4	460.9	474.8	493.3	539.6	590.6	639.2	685.5	724.9
55°	375.2	384.5	396.0	414.6	428.5	442.4	481.7	530.4	574.4	611.4	650.8
57.5°	340.4	347.4	356.7	372.9	382.1	393.7	426.1	465.5	504.9	541.9	572.0
60°	310.3	315.0	321.9	331.2	338.1	345.1	368.2	405.3	442.4	470.1	497.9
62.5°	275.6	277.9	282.5	291.8	296.4	301.1	317.3	349.7	379.8	405.3	428.5
65°	243.2	245.5	247.8	252.4	257.1	259.4	273.3	296.4	321.9	342.8	359.0
67.5°	210.8	213.1	213.1	217.7	217.7	222.3	229.3	243.2	266.3	282.5	296.4
70°	178.3	180.6	180.6	183.0	180.6	183.0	189.9	199.2	213.1	227.0	236.2
72.5°	148.2	145.9	145.9	145.9	145.9	148.2	150.5	155.2	166.8	178.3	180.6
75°	115.8	115.8	113.5	113.5	113.5	113.5	113.5	115.8	122.7	129.7	132.0
77.5°	85.7	83.4	83.4	81.1	81.1	81.1	78.7	78.7	81.1	85.7	85.7
80°	55.6	53.3	51.0	53.3	48.6	51.0	48.6	46.3	46.3	46.3	44.0
82.5°	23.2	23.2	23.2	23.2	23.2	23.2	23.2	23.2	20.8	20.8	20.8
85°	4.6	4.6	6.9	6.9	6.9	6.9	6.9	6.9	9.3	9.3	6.9
87.5°	4.6	4.6	4.6	6.9	6.9	6.9	6.9	6.9	9.3	9.3	9.3
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°	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2
2.5°	1762.5	1769.4	1776.4	1778.7	1781.0	1787.9	1792.6	1799.5	1801.8	1806.5	1811.1
5°	1762.5	1776.4	1787.9	1794.9	1799.5	1811.1	1822.7	1829.6	1841.2	1848.2	1855.1
7.5°	1757.8	1776.4	1792.6	1801.8	1811.1	1825.0	1841.2	1855.1	1869.0	1878.3	1889.8
10°	1743.9	1767.1	1787.9	1799.5	1811.1	1831.9	1850.5	1866.7	1882.9	1896.8	1908.4
12.5°	1723.1	1750.9	1776.4	1790.3	1801.8	1827.3	1848.2	1866.7	1882.9	1894.5	1903.7
15°	1693.0	1727.7	1757.8	1771.7	1785.6	1813.4	1834.3	1850.5	1864.4	1871.3	1878.3
17.5°	1658.2	1695.3	1730.0	1746.2	1760.1	1785.6	1804.1	1815.7	1822.7	1827.3	1825.0
20°	1618.9	1658.2	1693.0	1709.2	1725.4	1746.2	1760.1	1764.8	1762.5	1760.1	1755.5
22.5°	1570.2	1611.9	1649.0	1662.9	1676.8	1693.0	1697.6	1695.3	1690.7	1686.0	1679.1
25°	1519.3	1561.0	1595.7	1607.3	1618.9	1625.8	1623.5	1618.9	1611.9	1605.0	1593.4
27.5°	1461.4	1505.4	1533.2	1547.1	1549.4	1549.4	1542.4	1535.5	1523.9	1514.7	1503.1
30°	1401.2	1438.2	1466.0	1470.6	1473.0	1468.3	1461.4	1449.8	1433.6	1426.6	1415.1
32.5°	1331.7	1371.1	1391.9	1391.9	1387.3	1380.3	1366.4	1354.8	1345.6	1329.4	1317.8
35°	1266.8	1296.9	1308.5	1308.5	1301.6	1290.0	1278.4	1262.2	1248.3	1239.0	1222.8
37.5°	1192.7	1222.8	1227.5	1220.5	1215.9	1202.0	1183.5	1169.6	1153.4	1141.8	1130.2
40°	1123.3	1144.1	1139.5	1132.5	1127.9	1114.0	1093.1	1076.9	1060.7	1046.8	1035.2
42.5°	1044.5	1058.4	1051.5	1046.8	1037.6	1021.3	1002.8	986.6	970.4	956.5	944.9
45°	972.7	979.7	968.1	958.8	951.9	933.3	919.4	896.3	880.1	866.2	856.9
47.5°	896.3	896.3	884.7	875.4	863.9	845.3	829.1	806.0	796.7	778.2	768.9
50°	822.2	815.2	801.3	789.7	780.5	759.6	738.8	722.6	706.4	692.5	683.2
52.5°	743.4	734.2	715.6	704.1	699.4	674.0	655.4	634.6	620.7	604.5	595.2
55°	664.7	650.8	629.9	620.7	611.4	590.6	569.7	548.9	535.0	523.4	514.1
57.5°	583.6	567.4	548.9	537.3	525.7	504.9	484.0	465.5	453.9	442.4	435.4
60°	500.3	488.7	470.1	458.6	447.0	428.5	405.3	391.4	382.1	368.2	365.9
62.5°	428.5	412.2	391.4	382.1	372.9	354.3	335.8	324.2	312.7	305.7	296.4
65°	356.7	340.4	321.9	312.7	305.7	289.5	275.6	264.0	254.8	245.5	238.5
67.5°	287.2	275.6	259.4	252.4	243.2	229.3	217.7	208.4	199.2	189.9	183.0
70°	229.3	215.4	201.5	196.9	192.2	178.3	169.1	159.8	150.5	143.6	136.6
72.5°	176.0	164.4	152.9	145.9	141.3	134.3	127.4	118.1	111.2	104.2	99.6
75°	125.1	118.1	108.9	104.2	99.6	95.0	85.7	81.1	78.7	74.1	69.5
77.5°	81.1	74.1	69.5	64.8	64.8	60.2	55.6	53.3	48.6	48.6	46.3
80°	41.7	39.4	37.1	37.1	37.1	32.4	30.1	30.1	27.8	25.5	25.5
82.5°	18.5	18.5	16.2	16.2	16.2	13.9	13.9	11.6	11.6	9.3	9.3
85°	6.9	6.9	6.9	6.9	6.9	4.6	4.6	4.6	2.3	2.3	2.3
87.5°	6.9	6.9	6.9	6.9	6.9	4.6	4.6	4.6	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: P345498

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSBZ 4000lm4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2	1753.2
2.5°	1813.4	1818.0	1818.0	1820.4	1822.7	1825.0	1822.7	1825.0
5°	1862.0	1869.0	1871.3	1871.3	1875.9	1878.3	1882.9	1882.9
7.5°	1899.1	1906.1	1910.7	1913.0	1917.6	1922.3	1922.3	1922.3
10°	1917.6	1924.6	1926.9	1931.5	1933.8	1936.2	1938.5	1938.5
12.5°	1910.7	1917.6	1919.9	1919.9	1924.6	1924.6	1924.6	1926.9
15°	1880.6	1878.3	1878.3	1878.3	1875.9	1875.9	1875.9	1873.6
17.5°	1820.4	1818.0	1818.0	1818.0	1815.7	1813.4	1811.1	1806.5
20°	1753.2	1748.6	1743.9	1746.2	1741.6	1739.3	1737.0	1737.0
22.5°	1674.5	1667.5	1665.2	1662.9	1658.2	1655.9	1651.3	1651.3
25°	1588.8	1584.1	1577.2	1574.9	1572.6	1567.9	1563.3	1563.3
27.5°	1498.4	1491.5	1489.2	1484.5	1482.2	1477.6	1475.3	1477.6
30°	1405.8	1398.9	1396.5	1391.9	1382.6	1387.3	1382.6	1380.3
32.5°	1308.5	1301.6	1296.9	1292.3	1292.3	1285.4	1285.4	1283.1
35°	1213.6	1206.6	1202.0	1199.7	1195.0	1195.0	1190.4	1188.1
37.5°	1120.9	1114.0	1109.4	1107.0	1102.4	1097.8	1095.5	1097.8
40°	1026.0	1019.0	1014.4	1012.1	1007.5	1002.8	1002.8	1002.8
42.5°	933.3	926.4	926.4	921.8	914.8	912.5	910.2	910.2
45°	847.6	838.4	836.1	831.4	831.4	826.8	824.5	824.5
47.5°	757.3	750.4	748.1	745.7	743.4	741.1	741.1	741.1
50°	674.0	664.7	664.7	660.1	657.7	660.1	655.4	653.1
52.5°	590.6	583.6	581.3	581.3	576.7	576.7	576.7	574.4
55°	507.2	502.6	502.6	500.3	495.6	497.9	497.9	493.3
57.5°	430.8	423.8	423.8	421.5	421.5	421.5	416.9	421.5
60°	359.0	354.3	352.0	349.7	347.4	347.4	347.4	345.1
62.5°	291.8	287.2	284.9	282.5	277.9	277.9	273.3	271.0
65°	231.6	227.0	222.3	220.0	215.4	213.1	213.1	210.8
67.5°	176.0	171.4	166.8	164.4	159.8	157.5	155.2	155.2
70°	132.0	125.1	125.1	122.7	120.4	120.4	118.1	118.1
72.5°	95.0	95.0	92.6	92.6	90.3	90.3	90.3	90.3
75°	67.2	67.2	67.2	67.2	64.8	64.8	62.5	62.5
77.5°	44.0	44.0	44.0	41.7	41.7	41.7	41.7	41.7
80°	23.2	23.2	23.2	23.2	23.2	20.8	23.2	20.8
82.5°	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
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)