

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: P345496

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSBZ 4000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345496
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 4000lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3010.4 lumens
Efficiency: N/A
Efficacy: 66.9 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

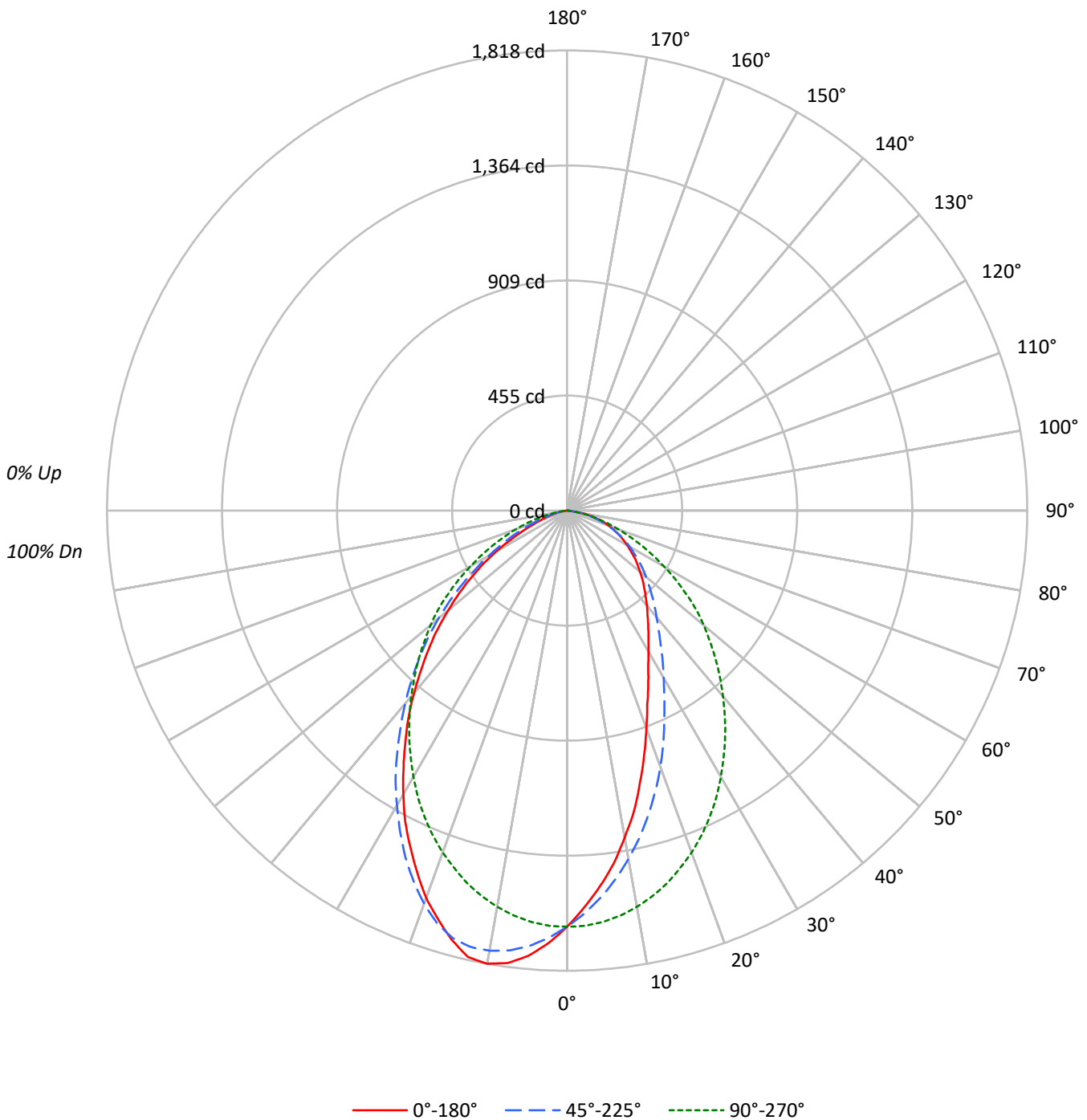
Input Watts (W): 45
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	143817	143817	143817
5°	130827	143225	155044
10°	116326	141213	161473
15°	100706	138069	159123
20°	85115	133844	151632
25°	73156	128708	141496
30°	64934	122635	130746
35°	59605	116199	118975
40°	56053	109376	107389
45°	53204	102634	95645
50°	51138	95758	83348
55°	49684	87443	70546
60°	47881	77131	56610
65°	46755	66541	40918
70°	44985	54448	28336
75°	41839	41095	19804
80°	28460	21861	9822
85°	2208	8731	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	154.0	5.1
10°-20°	416.5	13.8
20°-30°	560.8	18.6
30°-40°	587.4	19.5
40°-50°	526.8	17.5
50°-60°	403.3	13.4
60°-70°	245.6	8.2
70°-80°	104.3	3.5
80°-90°	11.7	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°	1131.3	37.6
0°-40°	1718.7	57.1
0°-60°	2648.8	88.0
0°-90°	3010.4	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3010.4	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1644	1644	1644	1644	1644	
5°	1490	1533	1631	1727	1766	137
15°	1112	1242	1525	1748	1757	310
25°	758	908	1334	1512	1466	350
35°	558	643	1088	1171	1114	351
45°	430	474	830	825	773	333
55°	326	345	573	502	463	290
65°	226	228	322	239	198	223
75°	124	111	122	74	59	127
85°	2	4	9	2	0	14
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°	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2
2.5°	1568.2	1570.4	1574.7	1572.5	1576.9	1576.9	1576.9	1581.2	1585.6	1587.7	1592.1
5°	1490.0	1492.2	1494.3	1498.7	1500.9	1498.7	1505.2	1511.7	1518.2	1526.9	1533.4
7.5°	1407.5	1407.5	1405.3	1411.8	1420.5	1422.7	1427.0	1433.5	1442.2	1455.2	1468.3
10°	1309.7	1311.9	1316.2	1318.4	1331.4	1333.6	1340.1	1348.8	1364.0	1379.2	1396.6
12.5°	1218.5	1216.3	1218.5	1225.0	1233.7	1244.6	1251.1	1261.9	1281.5	1301.0	1322.8
15°	1112.1	1114.2	1120.8	1127.3	1140.3	1146.8	1157.7	1177.2	1196.8	1216.3	1242.4
17.5°	1012.2	1010.0	1018.7	1029.5	1040.4	1051.2	1059.9	1077.3	1103.4	1131.6	1159.9
20°	914.4	912.2	918.8	927.4	944.8	951.3	962.2	988.3	1012.2	1042.6	1077.3
22.5°	827.5	827.5	834.0	844.9	855.8	862.3	873.1	894.9	923.1	957.9	992.6
25°	758.0	758.0	762.4	768.9	781.9	788.4	799.3	814.5	840.6	873.1	907.9
27.5°	692.9	697.2	699.4	705.9	716.8	723.3	729.8	747.2	768.9	797.1	829.7
30°	642.9	645.1	647.3	651.6	660.3	664.6	673.3	688.5	708.1	732.0	762.4
32.5°	597.3	599.5	599.5	606.0	612.5	619.0	623.4	636.4	649.4	673.3	701.6
35°	558.2	558.2	562.5	564.7	569.1	573.4	577.8	588.6	603.8	621.2	642.9
37.5°	521.3	521.3	523.5	527.8	532.1	536.5	538.7	547.3	560.4	575.6	593.0
40°	490.9	490.9	490.9	495.2	499.6	501.7	503.9	512.6	523.5	534.3	549.5
42.5°	458.3	460.5	462.6	464.8	467.0	471.3	473.5	477.8	486.5	495.2	510.4
45°	430.1	432.2	432.2	434.4	438.7	438.7	440.9	447.4	453.9	462.6	473.5
47.5°	404.0	404.0	404.0	406.2	408.3	410.5	412.7	417.0	423.5	427.9	438.7
50°	375.8	375.8	377.9	380.1	382.3	382.3	384.4	386.6	393.1	397.5	406.2
52.5°	349.7	349.7	351.9	351.9	354.0	354.0	356.2	360.6	362.7	369.2	375.8
55°	325.8	323.6	325.8	325.8	325.8	328.0	328.0	332.3	336.7	338.8	345.3
57.5°	297.6	299.7	299.7	301.9	301.9	301.9	304.1	304.1	308.4	310.6	312.8
60°	273.7	275.8	275.8	275.8	275.8	275.8	278.0	278.0	280.2	282.4	284.5
62.5°	249.8	249.8	249.8	249.8	249.8	252.0	252.0	252.0	252.0	254.1	256.3
65°	225.9	225.9	225.9	225.9	225.9	225.9	225.9	225.9	225.9	225.9	228.1
67.5°	199.8	199.8	199.8	202.0	199.8	199.8	199.8	199.8	199.8	199.8	197.7
70°	175.9	175.9	175.9	175.9	175.9	173.8	173.8	171.6	171.6	169.4	169.4
72.5°	149.9	149.9	149.9	147.7	147.7	147.7	145.5	143.4	141.2	141.2	141.2
75°	123.8	123.8	121.6	121.6	119.5	119.5	117.3	115.1	112.9	110.8	110.8
77.5°	93.4	93.4	93.4	93.4	91.2	89.1	89.1	86.9	84.7	84.7	82.5
80°	56.5	54.3	54.3	54.3	54.3	54.3	54.3	54.3	54.3	52.1	52.1
82.5°	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7
85°	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	4.3
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	2.2	4.3
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2
2.5°	1596.4	1600.8	1607.3	1611.6	1613.8	1616.0	1622.5	1629.0	1635.5	1642.0	1646.4
5°	1544.3	1553.0	1561.7	1572.5	1576.9	1583.4	1596.4	1607.3	1618.1	1631.2	1642.0
7.5°	1481.3	1496.5	1511.7	1529.1	1535.6	1542.1	1559.5	1579.0	1594.3	1613.8	1631.2
10°	1416.1	1433.5	1453.1	1477.0	1487.8	1498.7	1520.4	1544.3	1566.0	1589.9	1611.6
12.5°	1342.3	1370.5	1396.6	1422.7	1433.5	1446.6	1474.8	1503.0	1531.3	1559.5	1585.6
15°	1268.5	1296.7	1329.3	1359.7	1374.9	1392.3	1424.8	1459.6	1492.2	1524.7	1555.2
17.5°	1194.6	1222.8	1257.6	1296.7	1316.2	1333.6	1368.4	1407.5	1446.6	1481.3	1520.4
20°	1112.1	1149.0	1190.3	1231.5	1251.1	1272.8	1314.1	1355.3	1398.8	1437.9	1479.1
22.5°	1031.7	1070.8	1120.8	1162.0	1183.7	1205.5	1253.2	1301.0	1344.5	1387.9	1429.2
25°	951.3	996.9	1044.7	1094.7	1118.6	1142.5	1192.4	1238.0	1288.0	1333.6	1381.4
27.5°	873.1	920.9	970.9	1023.0	1049.1	1075.1	1125.1	1177.2	1227.2	1277.1	1324.9
30°	799.3	844.9	899.2	953.5	979.6	1007.8	1059.9	1114.2	1164.2	1214.2	1266.3
32.5°	734.1	773.2	827.5	881.8	910.1	938.3	994.8	1049.1	1099.0	1151.2	1205.5
35°	673.3	710.2	758.0	814.5	842.7	871.0	927.4	983.9	1038.2	1088.2	1140.3
37.5°	621.2	653.8	695.0	745.0	777.6	805.8	862.3	918.8	970.9	1023.0	1073.0
40°	571.2	599.5	638.6	686.4	712.4	740.7	797.1	855.8	907.9	957.9	1007.8
42.5°	527.8	551.7	584.3	625.5	653.8	677.7	736.3	792.8	842.7	892.7	942.6
45°	488.7	508.2	534.3	569.1	593.0	623.4	677.7	729.8	779.7	829.7	877.5
47.5°	449.6	467.0	488.7	521.3	540.8	564.7	619.0	669.0	718.9	764.5	810.2
50°	417.0	430.1	447.4	473.5	493.0	510.4	560.4	612.5	658.1	703.7	745.0
52.5°	384.4	393.1	408.3	432.2	445.3	462.6	506.1	553.9	599.5	642.9	679.8
55°	351.9	360.6	371.4	388.8	401.8	414.9	451.8	497.4	538.7	573.4	610.3
57.5°	319.3	325.8	334.5	349.7	358.4	369.2	399.6	436.6	473.5	508.2	536.5
60°	291.0	295.4	301.9	310.6	317.1	323.6	345.3	380.1	414.9	440.9	467.0
62.5°	258.5	260.6	265.0	273.7	278.0	282.4	297.6	328.0	356.2	380.1	401.8
65°	228.1	230.2	232.4	236.7	241.1	243.3	256.3	278.0	301.9	321.5	336.7
67.5°	197.7	199.8	199.8	204.2	204.2	208.5	215.0	228.1	249.8	265.0	278.0
70°	167.2	169.4	169.4	171.6	169.4	171.6	178.1	186.8	199.8	212.9	221.5
72.5°	139.0	136.8	136.8	136.8	136.8	139.0	141.2	145.5	156.4	167.2	169.4
75°	108.6	108.6	106.4	106.4	106.4	106.4	106.4	108.6	115.1	121.6	123.8
77.5°	80.4	78.2	78.2	76.0	76.0	76.0	73.8	73.8	76.0	80.4	80.4
80°	52.1	50.0	47.8	50.0	45.6	47.8	45.6	43.4	43.4	43.4	41.3
82.5°	21.7	21.7	21.7	21.7	21.7	21.7	21.7	21.7	19.5	19.5	19.5
85°	4.3	4.3	6.5	6.5	6.5	6.5	6.5	6.5	8.7	8.7	6.5
87.5°	4.3	4.3	4.3	6.5	6.5	6.5	6.5	6.5	8.7	8.7	8.7
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°	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2
2.5°	1652.9	1659.4	1665.9	1668.1	1670.3	1676.8	1681.1	1687.6	1689.8	1694.2	1698.5
5°	1652.9	1665.9	1676.8	1683.3	1687.6	1698.5	1709.4	1715.9	1726.7	1733.3	1739.8
7.5°	1648.6	1665.9	1681.1	1689.8	1698.5	1711.5	1726.7	1739.8	1752.8	1761.5	1772.4
10°	1635.5	1657.2	1676.8	1687.6	1698.5	1718.1	1735.4	1750.6	1765.8	1778.9	1789.7
12.5°	1616.0	1642.0	1665.9	1679.0	1689.8	1713.7	1733.3	1750.6	1765.8	1776.7	1785.4
15°	1587.7	1620.3	1648.6	1661.6	1674.6	1700.7	1720.2	1735.4	1748.5	1755.0	1761.5
17.5°	1555.2	1589.9	1622.5	1637.7	1650.7	1674.6	1692.0	1702.9	1709.4	1713.7	1711.5
20°	1518.2	1555.2	1587.7	1602.9	1618.1	1637.7	1650.7	1655.1	1652.9	1650.7	1646.4
22.5°	1472.6	1511.7	1546.5	1559.5	1572.5	1587.7	1592.1	1589.9	1585.6	1581.2	1574.7
25°	1424.8	1463.9	1496.5	1507.4	1518.2	1524.7	1522.6	1518.2	1511.7	1505.2	1494.3
27.5°	1370.5	1411.8	1437.9	1450.9	1453.1	1453.1	1446.6	1440.0	1429.2	1420.5	1409.6
30°	1314.1	1348.8	1374.9	1379.2	1381.4	1377.1	1370.5	1359.7	1344.5	1338.0	1327.1
32.5°	1248.9	1285.8	1305.4	1305.4	1301.0	1294.5	1281.5	1270.6	1261.9	1246.7	1235.9
35°	1188.1	1216.3	1227.2	1227.2	1220.7	1209.8	1198.9	1183.7	1170.7	1162.0	1146.8
37.5°	1118.6	1146.8	1151.2	1144.6	1140.3	1127.3	1109.9	1096.9	1081.7	1070.8	1059.9
40°	1053.4	1073.0	1068.6	1062.1	1057.8	1044.7	1025.2	1010.0	994.8	981.7	970.9
42.5°	979.6	992.6	986.1	981.7	973.1	957.9	940.5	925.3	910.1	897.0	886.2
45°	912.2	918.8	907.9	899.2	892.7	875.3	862.3	840.6	825.4	812.3	803.6
47.5°	840.6	840.6	829.7	821.0	810.2	792.8	777.6	755.9	747.2	729.8	721.1
50°	771.1	764.5	751.5	740.7	732.0	712.4	692.9	677.7	662.5	649.4	640.7
52.5°	697.2	688.5	671.1	660.3	655.9	632.1	614.7	595.1	582.1	566.9	558.2
55°	623.4	610.3	590.8	582.1	573.4	553.9	534.3	514.8	501.7	490.9	482.2
57.5°	547.3	532.1	514.8	503.9	493.0	473.5	453.9	436.6	425.7	414.9	408.3
60°	469.2	458.3	440.9	430.1	419.2	401.8	380.1	367.1	358.4	345.3	343.2
62.5°	401.8	386.6	367.1	358.4	349.7	332.3	314.9	304.1	293.2	286.7	278.0
65°	334.5	319.3	301.9	293.2	286.7	271.5	258.5	247.6	238.9	230.2	223.7
67.5°	269.3	258.5	243.3	236.7	228.1	215.0	204.2	195.5	186.8	178.1	171.6
70°	215.0	202.0	189.0	184.6	180.3	167.2	158.6	149.9	141.2	134.7	128.1
72.5°	165.1	154.2	143.4	136.8	132.5	126.0	119.5	110.8	104.3	97.7	93.4
75°	117.3	110.8	102.1	97.7	93.4	89.1	80.4	76.0	73.8	69.5	65.2
77.5°	76.0	69.5	65.2	60.8	60.8	56.5	52.1	50.0	45.6	45.6	43.4
80°	39.1	36.9	34.8	34.8	34.8	30.4	28.2	28.2	26.1	23.9	23.9
82.5°	17.4	17.4	15.2	15.2	15.2	13.0	13.0	10.9	10.9	8.7	8.7
85°	6.5	6.5	6.5	6.5	6.5	4.3	4.3	4.3	2.2	2.2	2.2
87.5°	6.5	6.5	6.5	6.5	6.5	4.3	4.3	4.3	2.2	2.2	2.2
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: P345496

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSBZ 4000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2	1644.2
2.5°	1700.7	1705.0	1705.0	1707.2	1709.4	1711.5	1709.4	1711.5
5°	1746.3	1752.8	1755.0	1755.0	1759.3	1761.5	1765.8	1765.8
7.5°	1781.0	1787.6	1791.9	1794.1	1798.4	1802.8	1802.8	1802.8
10°	1798.4	1804.9	1807.1	1811.5	1813.6	1815.8	1818.0	1818.0
12.5°	1791.9	1798.4	1800.6	1800.6	1804.9	1804.9	1804.9	1807.1
15°	1763.7	1761.5	1761.5	1761.5	1759.3	1759.3	1759.3	1757.2
17.5°	1707.2	1705.0	1705.0	1705.0	1702.9	1700.7	1698.5	1694.2
20°	1644.2	1639.9	1635.5	1637.7	1633.3	1631.2	1629.0	1629.0
22.5°	1570.4	1563.8	1561.7	1559.5	1555.2	1553.0	1548.6	1548.6
25°	1490.0	1485.7	1479.1	1477.0	1474.8	1470.4	1466.1	1466.1
27.5°	1405.3	1398.8	1396.6	1392.3	1390.1	1385.7	1383.6	1385.7
30°	1318.4	1311.9	1309.7	1305.4	1296.7	1301.0	1296.7	1294.5
32.5°	1227.2	1220.7	1216.3	1212.0	1212.0	1205.5	1205.5	1203.3
35°	1138.1	1131.6	1127.3	1125.1	1120.8	1120.8	1116.4	1114.2
37.5°	1051.2	1044.7	1040.4	1038.2	1033.9	1029.5	1027.4	1029.5
40°	962.2	955.7	951.3	949.2	944.8	940.5	940.5	940.5
42.5°	875.3	868.8	868.8	864.5	857.9	855.8	853.6	853.6
45°	795.0	786.3	784.1	779.7	779.7	775.4	773.2	773.2
47.5°	710.2	703.7	701.6	699.4	697.2	695.0	695.0	695.0
50°	632.1	623.4	623.4	619.0	616.8	619.0	614.7	612.5
52.5°	553.9	547.3	545.2	545.2	540.8	540.8	540.8	538.7
55°	475.7	471.3	471.3	469.2	464.8	467.0	467.0	462.6
57.5°	404.0	397.5	397.5	395.3	395.3	395.3	391.0	395.3
60°	336.7	332.3	330.1	328.0	325.8	325.8	325.8	323.6
62.5°	273.7	269.3	267.2	265.0	260.6	260.6	256.3	254.1
65°	217.2	212.9	208.5	206.3	202.0	199.8	199.8	197.7
67.5°	165.1	160.7	156.4	154.2	149.9	147.7	145.5	145.5
70°	123.8	117.3	117.3	115.1	112.9	112.9	110.8	110.8
72.5°	89.1	89.1	86.9	86.9	84.7	84.7	84.7	84.7
75°	63.0	63.0	63.0	63.0	60.8	60.8	58.6	58.6
77.5°	41.3	41.3	41.3	39.1	39.1	39.1	39.1	39.1
80°	21.7	21.7	21.7	21.7	21.7	19.5	21.7	19.5
82.5°	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
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)