

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: P345500

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSBZ 4000Lm3500K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345500
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 PR4M24WW9FSBZ 4000lm3500K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3500K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2859.9 lumens
Efficiency: N/A
Efficacy: 73.3 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

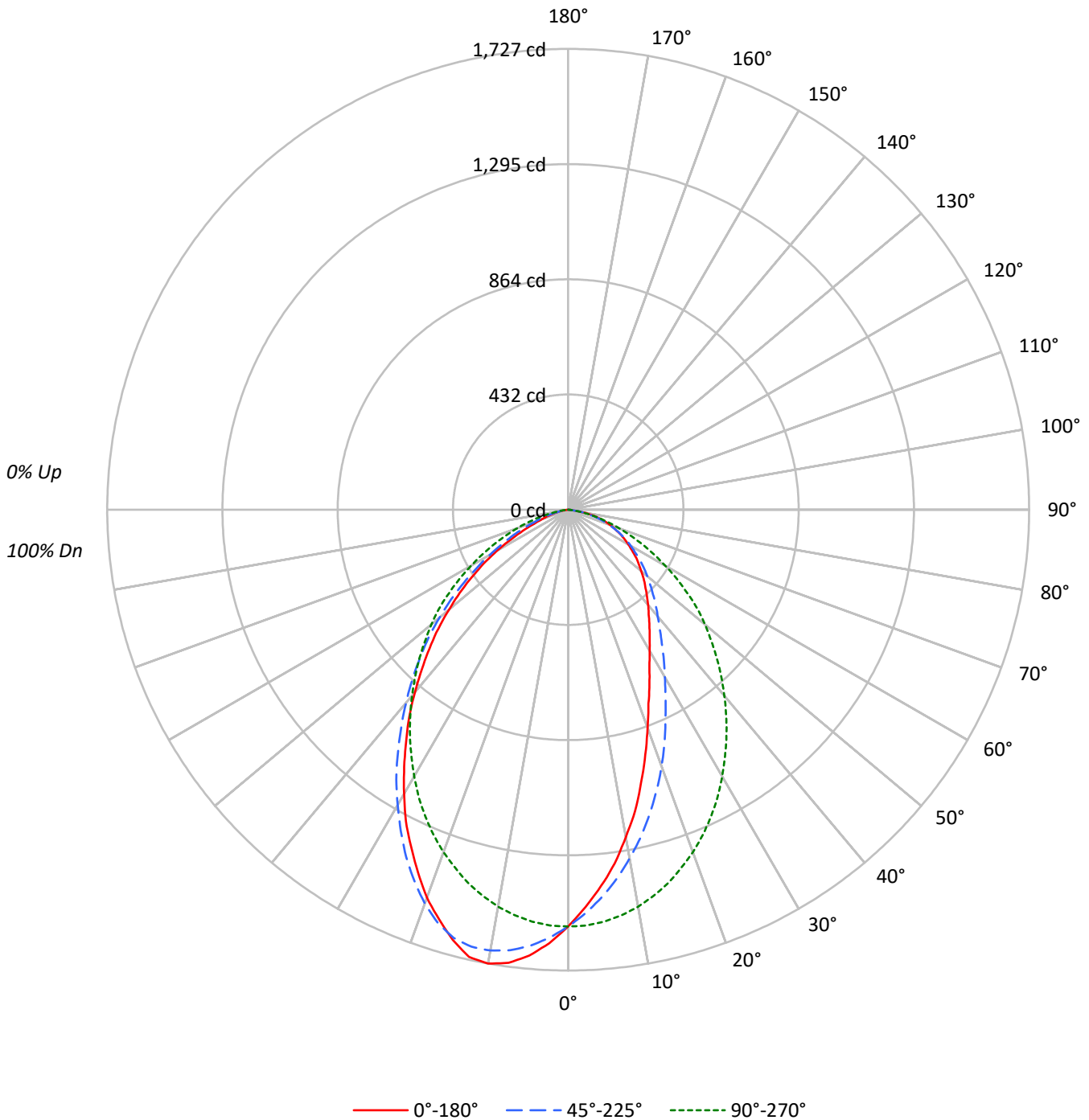
Input Watts (W): 39
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	136627	136627	136627
5°	124286	136060	147290
10°	110508	134152	153399
15°	95671	131169	151164
20°	80861	127151	144055
25°	69498	122271	134422
30°	61691	116495	124211
35°	56626	110390	113027
40°	53244	103907	102023
45°	50544	97501	90870
50°	48580	90968	79184
55°	47198	83066	67023
60°	45484	73282	53776
65°	44416	63209	38869
70°	42735	51711	26904
75°	39744	39068	18824
80°	26999	20803	9369
85°	2108	8330	0



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	146.3	5.1
10°-20°	395.7	13.8
20°-30°	532.7	18.6
30°-40°	558.0	19.5
40°-50°	500.4	17.5
50°-60°	383.1	13.4
60°-70°	233.3	8.2
70°-80°	99.1	3.5
80°-90°	11.1	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°	1074.7	37.6
0°-40°	1632.7	57.1
0°-60°	2516.3	88.0
0°-90°	2859.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2859.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1562	1562	1562	1562	1562	
5°	1416	1457	1550	1640	1678	130
15°	1056	1180	1448	1661	1669	294
25°	720	862	1267	1436	1393	333
35°	530	611	1034	1112	1058	333
45°	409	450	788	784	735	316
55°	310	328	545	477	440	276
65°	215	217	305	227	188	212
75°	118	105	116	70	56	121
85°	2	4	8	2	0	13
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°	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0
2.5°	1489.8	1491.8	1496.0	1493.9	1498.0	1498.0	1498.0	1502.2	1506.3	1508.3	1512.5
5°	1415.5	1417.6	1419.6	1423.7	1425.8	1423.7	1429.9	1436.1	1442.3	1450.6	1456.8
7.5°	1337.1	1337.1	1335.0	1341.2	1349.5	1351.5	1355.7	1361.8	1370.1	1382.5	1394.9
10°	1244.2	1246.3	1250.4	1252.5	1264.9	1266.9	1273.1	1281.4	1295.8	1310.3	1326.8
12.5°	1157.6	1155.5	1157.6	1163.8	1172.0	1182.3	1188.5	1198.8	1217.4	1236.0	1256.6
15°	1056.5	1058.5	1064.7	1070.9	1083.3	1089.5	1099.8	1118.4	1136.9	1155.5	1180.3
17.5°	961.5	959.5	967.7	978.1	988.4	998.7	1006.9	1023.4	1048.2	1075.0	1101.9
20°	868.7	866.6	872.8	881.1	897.6	903.8	914.1	938.8	961.5	990.4	1023.4
22.5°	786.2	786.2	792.3	802.7	813.0	819.2	829.5	850.1	876.9	910.0	943.0
25°	720.1	720.1	724.3	730.4	742.8	749.0	759.3	773.8	798.5	829.5	862.5
27.5°	658.2	662.4	664.4	670.6	680.9	687.1	693.3	709.8	730.4	757.3	788.2
30°	610.8	612.8	614.9	619.0	627.3	631.4	639.7	654.1	672.7	695.4	724.3
32.5°	567.4	569.5	569.5	575.7	581.9	588.1	592.2	604.6	617.0	639.7	666.5
35°	530.3	530.3	534.4	536.5	540.6	544.7	548.9	559.2	573.6	590.1	610.8
37.5°	495.2	495.2	497.3	501.4	505.5	509.7	511.7	520.0	532.4	546.8	563.3
40°	466.3	466.3	466.3	470.5	474.6	476.6	478.7	487.0	497.3	507.6	522.0
42.5°	435.4	437.4	439.5	441.6	443.6	447.8	449.8	453.9	462.2	470.5	484.9
45°	408.6	410.6	410.6	412.7	416.8	416.8	418.9	425.1	431.3	439.5	449.8
47.5°	383.8	383.8	383.8	385.9	387.9	390.0	392.0	396.2	402.4	406.5	416.8
50°	357.0	357.0	359.0	361.1	363.2	363.2	365.2	367.3	373.5	377.6	385.9
52.5°	332.2	332.2	334.3	334.3	336.3	336.3	338.4	342.5	344.6	350.8	357.0
55°	309.5	307.4	309.5	309.5	309.5	311.6	311.6	315.7	319.8	321.9	328.1
57.5°	282.7	284.7	284.7	286.8	286.8	286.8	288.9	288.9	293.0	295.1	297.1
60°	260.0	262.1	262.1	262.1	262.1	262.1	264.1	264.1	266.2	268.2	270.3
62.5°	237.3	237.3	237.3	237.3	237.3	239.4	239.4	239.4	239.4	241.4	243.5
65°	214.6	214.6	214.6	214.6	214.6	214.6	214.6	214.6	214.6	214.6	216.7
67.5°	189.8	189.8	189.8	191.9	189.8	189.8	189.8	189.8	189.8	189.8	187.8
70°	167.1	167.1	167.1	167.1	167.1	165.1	165.1	163.0	163.0	160.9	160.9
72.5°	142.4	142.4	142.4	140.3	140.3	140.3	138.2	136.2	134.1	134.1	134.1
75°	117.6	117.6	115.6	115.6	113.5	113.5	111.4	109.4	107.3	105.2	105.2
77.5°	88.7	88.7	88.7	88.7	86.7	84.6	84.6	82.5	80.5	80.5	78.4
80°	53.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	49.5	49.5
82.5°	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6
85°	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	4.1
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	2.1	4.1
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°	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0
2.5°	1516.6	1520.7	1526.9	1531.0	1533.1	1535.2	1541.4	1547.6	1553.7	1559.9	1564.1
5°	1467.1	1475.3	1483.6	1493.9	1498.0	1504.2	1516.6	1526.9	1537.2	1549.6	1559.9
7.5°	1407.2	1421.7	1436.1	1452.6	1458.8	1465.0	1481.5	1500.1	1514.5	1533.1	1549.6
10°	1345.3	1361.8	1380.4	1403.1	1413.4	1423.7	1444.4	1467.1	1487.7	1510.4	1531.0
12.5°	1275.2	1302.0	1326.8	1351.5	1361.8	1374.2	1401.1	1427.9	1454.7	1481.5	1506.3
15°	1205.0	1231.9	1262.8	1291.7	1306.1	1322.6	1353.6	1386.6	1417.6	1448.5	1477.4
17.5°	1134.9	1161.7	1194.7	1231.9	1250.4	1266.9	1299.9	1337.1	1374.2	1407.2	1444.4
20°	1056.5	1091.5	1130.7	1169.9	1188.5	1209.2	1248.4	1287.6	1328.8	1366.0	1405.2
22.5°	980.1	1017.3	1064.7	1103.9	1124.6	1145.2	1190.6	1236.0	1277.2	1318.5	1357.7
25°	903.8	947.1	992.5	1040.0	1062.7	1085.4	1132.8	1176.1	1223.6	1266.9	1312.3
27.5°	829.5	874.9	922.3	971.9	996.6	1021.4	1068.8	1118.4	1165.8	1213.3	1258.7
30°	759.3	802.7	854.2	905.8	930.6	957.4	1006.9	1058.5	1106.0	1153.4	1203.0
32.5°	697.4	734.6	786.2	837.7	864.6	891.4	945.0	996.6	1044.1	1093.6	1145.2
35°	639.7	674.7	720.1	773.8	800.6	827.4	881.1	934.7	986.3	1033.8	1083.3
37.5°	590.1	621.1	660.3	707.7	738.7	765.5	819.2	872.8	922.3	971.9	1019.3
40°	542.7	569.5	606.6	652.0	676.8	703.6	757.3	813.0	862.5	910.0	957.4
42.5°	501.4	524.1	555.1	594.3	621.1	643.8	699.5	753.1	800.6	848.1	895.5
45°	464.3	482.8	507.6	540.6	563.3	592.2	643.8	693.3	740.8	788.2	833.6
47.5°	427.1	443.6	464.3	495.2	513.8	536.5	588.1	635.5	683.0	726.3	769.6
50°	396.2	408.6	425.1	449.8	468.4	484.9	532.4	581.9	625.2	668.5	707.7
52.5°	365.2	373.5	387.9	410.6	423.0	439.5	480.8	526.2	569.5	610.8	645.8
55°	334.3	342.5	352.8	369.3	381.7	394.1	429.2	472.5	511.7	544.7	579.8
57.5°	303.3	309.5	317.8	332.2	340.5	350.8	379.7	414.7	449.8	482.8	509.7
60°	276.5	280.6	286.8	295.1	301.3	307.4	328.1	361.1	394.1	418.9	443.6
62.5°	245.5	247.6	251.7	260.0	264.1	268.2	282.7	311.6	338.4	361.1	381.7
65°	216.7	218.7	220.8	224.9	229.0	231.1	243.5	264.1	286.8	305.4	319.8
67.5°	187.8	189.8	189.8	194.0	194.0	198.1	204.3	216.7	237.3	251.7	264.1
70°	158.9	160.9	160.9	163.0	160.9	163.0	169.2	177.5	189.8	202.2	210.5
72.5°	132.1	130.0	130.0	130.0	130.0	132.1	134.1	138.2	148.6	158.9	160.9
75°	103.2	103.2	101.1	101.1	101.1	101.1	101.1	103.2	109.4	115.6	117.6
77.5°	76.3	74.3	74.3	72.2	72.2	72.2	70.2	70.2	72.2	76.3	76.3
80°	49.5	47.5	45.4	47.5	43.3	45.4	43.3	41.3	41.3	41.3	39.2
82.5°	20.6	20.6	20.6	20.6	20.6	20.6	20.6	20.6	18.6	18.6	18.6
85°	4.1	4.1	6.2	6.2	6.2	6.2	6.2	6.2	8.3	8.3	6.2
87.5°	4.1	4.1	4.1	6.2	6.2	6.2	6.2	6.2	8.3	8.3	8.3
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°	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0
2.5°	1570.3	1576.4	1582.6	1584.7	1586.8	1592.9	1597.1	1603.3	1605.3	1609.5	1613.6
5°	1570.3	1582.6	1592.9	1599.1	1603.3	1613.6	1623.9	1630.1	1640.4	1646.6	1652.8
7.5°	1566.1	1582.6	1597.1	1605.3	1613.6	1626.0	1640.4	1652.8	1665.2	1673.4	1683.7
10°	1553.7	1574.4	1592.9	1603.3	1613.6	1632.2	1648.7	1663.1	1677.5	1689.9	1700.2
12.5°	1535.2	1559.9	1582.6	1595.0	1605.3	1628.0	1646.6	1663.1	1677.5	1687.9	1696.1
15°	1508.3	1539.3	1566.1	1578.5	1590.9	1615.6	1634.2	1648.7	1661.0	1667.2	1673.4
17.5°	1477.4	1510.4	1541.4	1555.8	1568.2	1590.9	1607.4	1617.7	1623.9	1628.0	1626.0
20°	1442.3	1477.4	1508.3	1522.8	1537.2	1555.8	1568.2	1572.3	1570.3	1568.2	1564.1
22.5°	1399.0	1436.1	1469.1	1481.5	1493.9	1508.3	1512.5	1510.4	1506.3	1502.2	1496.0
25°	1353.6	1390.7	1421.7	1432.0	1442.3	1448.5	1446.4	1442.3	1436.1	1429.9	1419.6
27.5°	1302.0	1341.2	1366.0	1378.4	1380.4	1380.4	1374.2	1368.0	1357.7	1349.5	1339.1
30°	1248.4	1281.4	1306.1	1310.3	1312.3	1308.2	1302.0	1291.7	1277.2	1271.1	1260.7
32.5°	1186.5	1221.5	1240.1	1240.1	1236.0	1229.8	1217.4	1207.1	1198.8	1184.4	1174.1
35°	1128.7	1155.5	1165.8	1165.8	1159.6	1149.3	1139.0	1124.6	1112.2	1103.9	1089.5
37.5°	1062.7	1089.5	1093.6	1087.4	1083.3	1070.9	1054.4	1042.0	1027.6	1017.3	1006.9
40°	1000.8	1019.3	1015.2	1009.0	1004.9	992.5	973.9	959.5	945.0	932.7	922.3
42.5°	930.6	943.0	936.8	932.7	924.4	910.0	893.5	879.0	864.6	852.2	841.9
45°	866.6	872.8	862.5	854.2	848.1	831.6	819.2	798.5	784.1	771.7	763.5
47.5°	798.5	798.5	788.2	780.0	769.6	753.1	738.7	718.1	709.8	693.3	685.0
50°	732.5	726.3	713.9	703.6	695.4	676.8	658.2	643.8	629.3	617.0	608.7
52.5°	662.4	654.1	637.6	627.3	623.1	600.5	583.9	565.4	553.0	538.5	530.3
55°	592.2	579.8	561.2	553.0	544.7	526.2	507.6	489.0	476.6	466.3	458.1
57.5°	520.0	505.5	489.0	478.7	468.4	449.8	431.3	414.7	404.4	394.1	387.9
60°	445.7	435.4	418.9	408.6	398.2	381.7	361.1	348.7	340.5	328.1	326.0
62.5°	381.7	367.3	348.7	340.5	332.2	315.7	299.2	288.9	278.6	272.4	264.1
65°	317.8	303.3	286.8	278.6	272.4	257.9	245.5	235.2	227.0	218.7	212.5
67.5°	255.9	245.5	231.1	224.9	216.7	204.3	194.0	185.7	177.5	169.2	163.0
70°	204.3	191.9	179.5	175.4	171.3	158.9	150.6	142.4	134.1	127.9	121.7
72.5°	156.8	146.5	136.2	130.0	125.9	119.7	113.5	105.2	99.0	92.9	88.7
75°	111.4	105.2	97.0	92.9	88.7	84.6	76.3	72.2	70.2	66.0	61.9
77.5°	72.2	66.0	61.9	57.8	57.8	53.6	49.5	47.5	43.3	43.3	41.3
80°	37.1	35.1	33.0	33.0	33.0	28.9	26.8	26.8	24.8	22.7	22.7
82.5°	16.5	16.5	14.4	14.4	14.4	12.4	12.4	10.3	10.3	8.3	8.3
85°	6.2	6.2	6.2	6.2	6.2	4.1	4.1	4.1	2.1	2.1	2.1
87.5°	6.2	6.2	6.2	6.2	6.2	4.1	4.1	4.1	2.1	2.1	2.1
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: P345500

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 4000lm3500K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0	1562.0
2.5°	1615.6	1619.8	1619.8	1621.8	1623.9	1626.0	1623.9	1626.0
5°	1659.0	1665.2	1667.2	1667.2	1671.4	1673.4	1677.5	1677.5
7.5°	1692.0	1698.2	1702.3	1704.4	1708.5	1712.6	1712.6	1712.6
10°	1708.5	1714.7	1716.8	1720.9	1722.9	1725.0	1727.1	1727.1
12.5°	1702.3	1708.5	1710.6	1710.6	1714.7	1714.7	1714.7	1716.8
15°	1675.5	1673.4	1673.4	1673.4	1671.4	1671.4	1671.4	1669.3
17.5°	1621.8	1619.8	1619.8	1619.8	1617.7	1615.6	1613.6	1609.5
20°	1562.0	1557.9	1553.7	1555.8	1551.7	1549.6	1547.6	1547.6
22.5°	1491.8	1485.7	1483.6	1481.5	1477.4	1475.3	1471.2	1471.2
25°	1415.5	1411.4	1405.2	1403.1	1401.1	1396.9	1392.8	1392.8
27.5°	1335.0	1328.8	1326.8	1322.6	1320.6	1316.5	1314.4	1316.5
30°	1252.5	1246.3	1244.2	1240.1	1231.9	1236.0	1231.9	1229.8
32.5°	1165.8	1159.6	1155.5	1151.4	1151.4	1145.2	1145.2	1143.1
35°	1081.2	1075.0	1070.9	1068.8	1064.7	1064.7	1060.6	1058.5
37.5°	998.7	992.5	988.4	986.3	982.2	978.1	976.0	978.1
40°	914.1	907.9	903.8	901.7	897.6	893.5	893.5	893.5
42.5°	831.6	825.4	825.4	821.2	815.0	813.0	810.9	810.9
45°	755.2	747.0	744.9	740.8	740.8	736.6	734.6	734.6
47.5°	674.7	668.5	666.5	664.4	662.4	660.3	660.3	660.3
50°	600.5	592.2	592.2	588.1	586.0	588.1	583.9	581.9
52.5°	526.2	520.0	517.9	517.9	513.8	513.8	513.8	511.7
55°	451.9	447.8	447.8	445.7	441.6	443.6	443.6	439.5
57.5°	383.8	377.6	377.6	375.5	375.5	375.5	371.4	375.5
60°	319.8	315.7	313.6	311.6	309.5	309.5	309.5	307.4
62.5°	260.0	255.9	253.8	251.7	247.6	247.6	243.5	241.4
65°	206.3	202.2	198.1	196.0	191.9	189.8	189.8	187.8
67.5°	156.8	152.7	148.6	146.5	142.4	140.3	138.2	138.2
70°	117.6	111.4	111.4	109.4	107.3	107.3	105.2	105.2
72.5°	84.6	84.6	82.5	82.5	80.5	80.5	80.5	80.5
75°	59.8	59.8	59.8	59.8	57.8	57.8	55.7	55.7
77.5°	39.2	39.2	39.2	37.1	37.1	37.1	37.1	37.1
80°	20.6	20.6	20.6	20.6	20.6	18.6	20.6	18.6
82.5°	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
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)