

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: P345460

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMMS 4000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345460
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G1-1908-453-8)
Test Lab: INNOVATION CENTER(G1)
Issue Date: 03/03/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO COMMERCIAL
Catalog Number: PR4FS24D010 PR4M24WW8FSMMS 4000lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 3040.9 lumens
Efficiency: N/A
Efficacy: 67.6 lumens/watt
Spacing Criteria (0/90/45): 0.94 / 1.12 / 1.1
Luminous Opening: Circular (Dia: 0.38' x H: 0')
CIE Type: Direct

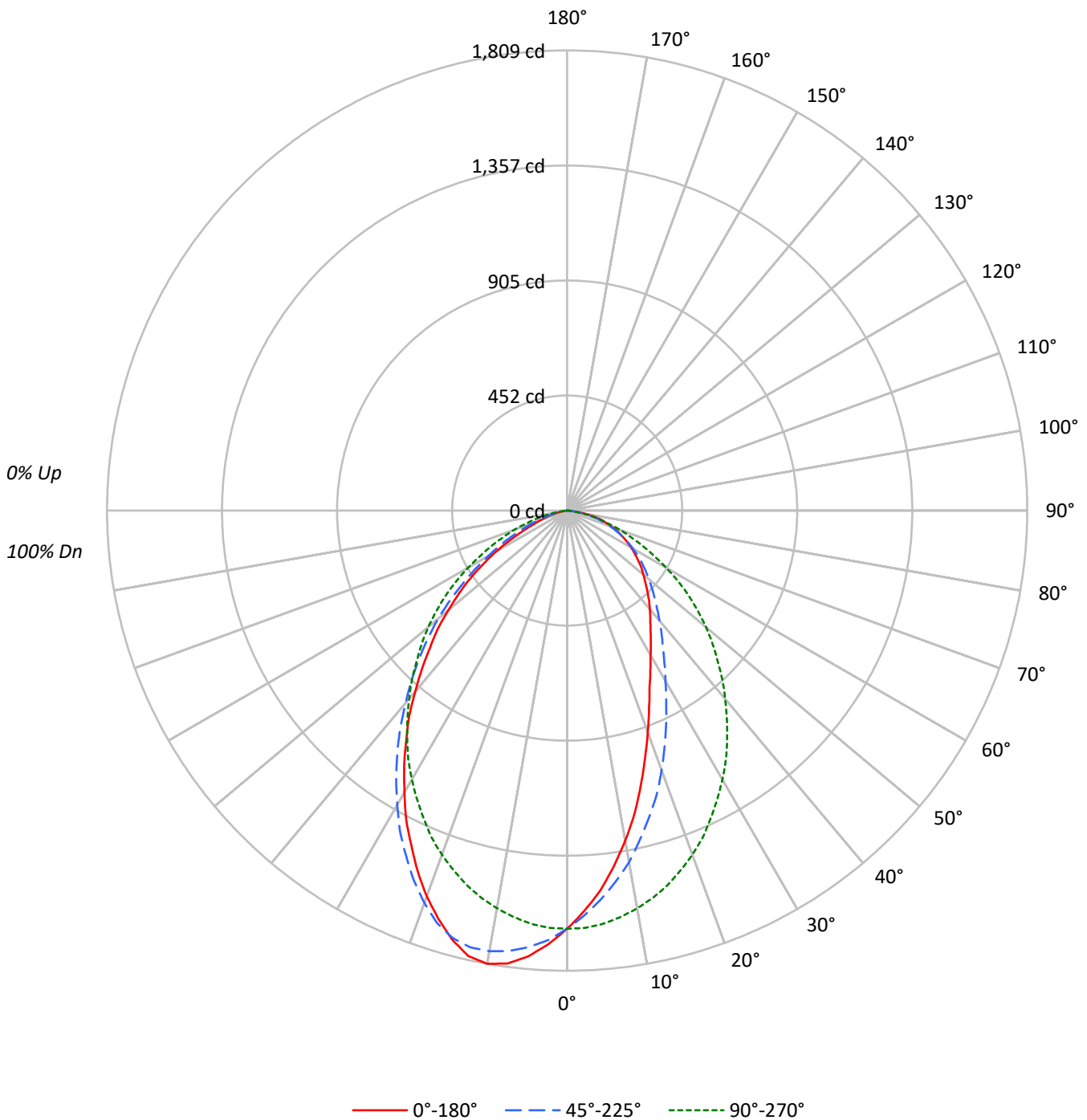
Input Watts (W): 45
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	36	45	39	35					34				
10	58	45	38	33	56	45	38	33	44	37	33	43	37	33	42	37	32					31				

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	160192	160192	160192
5°	146569	159532	172064
10°	130223	157082	179002
15°	112832	153796	176144
20°	96162	149305	167320
25°	82424	143600	155977
30°	73800	137326	143921
35°	67946	130455	131241
40°	64362	122935	118228
45°	61347	115223	105051
50°	59252	107982	92517
55°	57923	99246	78959
60°	56721	87615	63055
65°	55092	75108	45060
70°	53827	62489	32171
75°	51512	48236	22894
80°	36537	28006	13414
85°	9728	14537	2460



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	153.8	5.1
10°-20°	416.3	13.7
20°-30°	560.9	18.4
30°-40°	589.1	19.4
40°-50°	530.8	17.5
50°-60°	410.0	13.5
60°-70°	252.3	8.3
70°-80°	111.2	3.7
80°-90°	16.3	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°	1131.1	37.2
0°-40°	1720.2	56.6
0°-60°	2661.0	87.5
0°-90°	3040.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3040.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1644	1644	1644	1644	1644	
5°	1498	1533	1631	1722	1759	137
15°	1118	1246	1524	1739	1746	312
25°	766	921	1335	1498	1450	356
35°	571	656	1096	1164	1103	359
45°	445	486	836	823	762	345
55°	341	358	584	502	465	305
65°	239	239	326	241	195	237
75°	137	122	128	76	61	140
85°	9	11	13	6	2	21
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°	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7
2.5°	1574.2	1572.1	1569.9	1574.2	1574.2	1576.4	1576.4	1580.8	1580.8	1585.1	1591.6
5°	1498.2	1493.9	1496.1	1496.1	1502.6	1502.6	1506.9	1511.3	1517.8	1526.5	1533.0
7.5°	1409.2	1409.2	1411.4	1415.7	1422.3	1422.3	1428.8	1435.3	1446.1	1457.0	1470.0
10°	1315.9	1320.2	1322.4	1326.7	1337.6	1341.9	1344.1	1354.9	1370.1	1381.0	1402.7
12.5°	1222.5	1222.5	1226.8	1235.5	1244.2	1250.7	1255.1	1270.3	1285.5	1305.0	1324.5
15°	1118.3	1120.4	1126.9	1135.6	1150.8	1155.2	1163.9	1181.2	1202.9	1226.8	1246.4
17.5°	1018.4	1022.7	1027.1	1040.1	1050.9	1057.5	1070.5	1090.0	1113.9	1140.0	1170.4
20°	927.2	920.7	929.3	938.0	948.9	964.1	972.8	994.5	1020.5	1055.3	1085.7
22.5°	840.3	840.3	846.8	853.4	864.2	875.1	885.9	903.3	931.5	966.3	1001.0
25°	766.5	768.7	775.2	781.7	792.6	799.1	809.9	827.3	855.5	881.6	920.7
27.5°	707.9	710.0	712.2	720.9	729.6	736.1	742.6	760.0	781.7	809.9	842.5
30°	655.8	655.8	657.9	666.6	671.0	679.6	684.0	699.2	718.7	742.6	773.0
32.5°	612.3	612.3	614.5	618.8	627.5	631.9	634.0	649.2	664.4	688.3	712.2
35°	571.1	571.1	573.2	577.6	584.1	586.3	592.8	601.5	616.7	634.0	655.8
37.5°	536.3	536.3	538.5	540.7	545.0	549.4	553.7	562.4	571.1	588.4	610.2
40°	505.9	503.8	505.9	508.1	514.6	514.6	516.8	525.5	534.2	547.2	564.6
42.5°	475.5	475.5	475.5	477.7	482.0	484.2	486.4	490.7	499.4	510.3	523.3
45°	445.1	445.1	447.3	449.5	451.6	453.8	458.2	462.5	466.8	473.4	486.4
47.5°	416.9	419.1	419.1	421.2	423.4	425.6	427.8	432.1	436.4	443.0	451.6
50°	390.8	393.0	393.0	395.2	397.4	397.4	399.5	403.9	408.2	412.6	419.1
52.5°	367.0	367.0	364.8	367.0	369.1	369.1	371.3	373.5	377.8	384.3	388.7
55°	340.9	340.9	340.9	343.1	343.1	343.1	345.2	347.4	349.6	351.8	358.3
57.5°	314.8	314.8	317.0	314.8	317.0	317.0	317.0	319.2	321.4	325.7	327.9
60°	291.0	291.0	291.0	291.0	291.0	291.0	293.1	293.1	293.1	295.3	297.5
62.5°	264.9	264.9	264.9	264.9	264.9	264.9	264.9	264.9	267.1	267.1	269.3
65°	238.9	238.9	241.0	238.9	238.9	238.9	238.9	238.9	238.9	238.9	238.9
67.5°	215.0	212.8	215.0	212.8	212.8	212.8	212.8	210.6	210.6	210.6	208.5
70°	188.9	186.7	186.7	186.7	186.7	184.6	186.7	184.6	182.4	180.2	178.1
72.5°	160.7	160.7	160.7	160.7	160.7	158.5	156.3	156.3	154.2	152.0	149.8
75°	136.8	136.8	134.6	132.5	130.3	130.3	130.3	128.1	125.9	123.8	121.6
77.5°	106.4	104.2	104.2	102.1	99.9	97.7	99.9	97.7	95.5	93.4	91.2
80°	65.1	65.1	65.1	65.1	65.1	65.1	63.0	65.1	63.0	60.8	60.8
82.5°	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.4	30.4
85°	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	10.9	10.9
87.5°	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	6.5	6.5	6.5
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°	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7
2.5°	1596.0	1600.3	1606.8	1611.2	1613.3	1615.5	1622.0	1628.5	1635.0	1641.6	1645.9
5°	1543.8	1554.7	1561.2	1572.1	1578.6	1585.1	1596.0	1606.8	1617.7	1630.7	1641.6
7.5°	1480.9	1498.2	1511.3	1526.5	1535.2	1543.8	1559.0	1576.4	1593.8	1611.2	1628.5
10°	1420.1	1435.3	1459.2	1480.9	1487.4	1500.4	1524.3	1543.8	1567.7	1587.3	1611.2
12.5°	1350.6	1370.1	1396.2	1422.3	1437.5	1450.5	1478.7	1504.8	1533.0	1559.0	1587.3
15°	1274.6	1305.0	1333.2	1363.6	1383.2	1396.2	1428.8	1461.3	1491.7	1524.3	1556.9
17.5°	1198.6	1233.3	1268.1	1305.0	1320.2	1339.7	1376.7	1411.4	1448.3	1483.0	1520.0
20°	1122.6	1159.5	1196.4	1237.7	1259.4	1278.9	1318.0	1359.3	1400.5	1439.6	1478.7
22.5°	1042.3	1081.3	1124.8	1170.4	1194.3	1211.6	1257.2	1302.8	1346.3	1391.9	1433.1
25°	961.9	1007.5	1053.1	1100.9	1124.8	1150.8	1196.4	1244.2	1289.8	1335.4	1383.2
27.5°	883.7	931.5	979.3	1033.6	1057.5	1083.5	1133.5	1181.2	1231.2	1278.9	1326.7
30°	812.1	857.7	909.8	964.1	990.1	1016.2	1068.3	1120.4	1170.4	1220.3	1265.9
32.5°	747.0	786.0	840.3	894.6	922.8	948.9	1003.2	1057.5	1109.6	1161.7	1207.3
35°	686.2	723.1	768.7	827.3	853.4	881.6	938.0	990.1	1044.4	1096.5	1144.3
37.5°	631.9	666.6	707.9	757.8	790.4	816.4	872.9	927.2	979.3	1031.4	1079.2
40°	584.1	614.5	649.2	694.8	725.2	753.5	809.9	864.2	916.3	966.3	1014.0
42.5°	540.7	564.6	597.1	638.4	662.3	690.5	749.1	801.2	853.4	903.3	946.7
45°	499.4	519.0	547.2	584.1	603.6	634.0	688.3	740.4	790.4	836.0	883.7
47.5°	462.5	479.9	501.6	532.0	551.5	575.4	629.7	681.8	729.6	775.2	816.4
50°	429.9	443.0	462.5	488.6	503.8	521.1	575.4	625.4	668.8	712.2	751.3
52.5°	397.4	406.0	421.2	443.0	458.2	473.4	519.0	566.7	610.2	647.1	688.3
55°	362.6	373.5	386.5	401.7	412.6	425.6	462.5	508.1	545.0	584.1	616.7
57.5°	332.2	338.7	347.4	360.4	369.1	380.0	408.2	447.3	484.2	516.8	549.4
60°	301.8	306.2	312.7	321.4	327.9	336.6	356.1	390.8	423.4	449.5	477.7
62.5°	271.4	271.4	275.8	282.3	286.6	293.1	310.5	336.6	364.8	384.3	408.2
65°	238.9	241.0	243.2	247.5	249.7	254.1	264.9	284.5	306.2	325.7	343.1
67.5°	208.5	208.5	210.6	212.8	212.8	215.0	221.5	234.5	256.2	269.3	282.3
70°	178.1	178.1	178.1	178.1	180.2	178.1	182.4	191.1	206.3	219.3	225.8
72.5°	149.8	147.7	145.5	145.5	145.5	145.5	147.7	154.2	162.9	169.4	178.1
75°	119.4	117.3	115.1	112.9	115.1	115.1	115.1	117.3	121.6	128.1	130.3
77.5°	89.0	89.0	84.7	82.5	84.7	82.5	80.3	80.3	82.5	84.7	84.7
80°	60.8	58.6	56.5	54.3	54.3	54.3	52.1	49.9	49.9	49.9	47.8
82.5°	30.4	30.4	28.2	28.2	28.2	28.2	28.2	26.1	26.1	23.9	23.9
85°	10.9	10.9	10.9	10.9	13.0	10.9	13.0	13.0	13.0	13.0	13.0
87.5°	6.5	6.5	8.7	8.7	8.7	8.7	8.7	10.9	10.9	10.9	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°	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7
2.5°	1652.4	1658.9	1663.3	1667.6	1669.8	1674.1	1680.6	1685.0	1689.3	1693.7	1698.0
5°	1652.4	1665.4	1674.1	1680.6	1687.2	1695.8	1706.7	1715.4	1721.9	1730.6	1737.1
7.5°	1645.9	1663.3	1678.5	1687.2	1695.8	1708.9	1721.9	1734.9	1745.8	1756.6	1765.3
10°	1632.9	1654.6	1676.3	1685.0	1695.8	1713.2	1730.6	1745.8	1758.8	1771.8	1782.7
12.5°	1613.3	1639.4	1665.4	1676.3	1687.2	1708.9	1728.4	1745.8	1758.8	1769.7	1776.2
15°	1587.3	1617.7	1645.9	1658.9	1672.0	1693.7	1713.2	1728.4	1739.3	1745.8	1750.1
17.5°	1554.7	1587.3	1617.7	1632.9	1648.1	1669.8	1685.0	1693.7	1700.2	1700.2	1698.0
20°	1517.8	1552.5	1585.1	1600.3	1613.3	1630.7	1641.6	1643.7	1641.6	1637.2	1632.9
22.5°	1472.2	1511.3	1543.8	1556.9	1567.7	1580.8	1580.8	1578.6	1574.2	1567.7	1565.6
25°	1424.4	1461.3	1493.9	1506.9	1511.3	1520.0	1513.4	1509.1	1498.2	1491.7	1485.2
27.5°	1372.3	1411.4	1435.3	1444.0	1448.3	1444.0	1437.5	1428.8	1422.3	1411.4	1402.7
30°	1315.9	1350.6	1370.1	1376.7	1374.5	1368.0	1361.5	1346.3	1335.4	1324.5	1313.7
32.5°	1250.7	1285.5	1300.7	1302.8	1296.3	1285.5	1274.6	1263.7	1250.7	1237.7	1231.2
35°	1187.7	1218.1	1226.8	1222.5	1216.0	1202.9	1187.7	1174.7	1163.9	1148.7	1137.8
37.5°	1120.4	1146.5	1146.5	1140.0	1135.6	1120.4	1105.2	1092.2	1077.0	1064.0	1048.8
40°	1053.1	1072.7	1066.1	1059.6	1053.1	1035.7	1022.7	1003.2	988.0	972.8	961.9
42.5°	985.8	996.7	988.0	979.3	970.6	953.2	940.2	918.5	905.5	890.3	881.6
45°	918.5	920.7	907.6	901.1	892.4	870.7	853.4	838.2	823.0	805.6	794.7
47.5°	849.0	844.7	829.5	820.8	812.1	792.6	775.2	757.8	740.4	727.4	714.4
50°	779.5	768.7	753.5	744.8	733.9	716.6	697.0	677.5	662.3	649.2	638.4
52.5°	703.5	694.8	677.5	664.4	655.8	631.9	614.5	597.1	579.8	566.7	558.0
55°	627.5	614.5	595.0	586.3	573.2	553.7	536.3	514.6	501.6	490.7	479.9
57.5°	551.5	536.3	519.0	508.1	495.1	475.5	456.0	443.0	429.9	416.9	410.4
60°	477.7	462.5	440.8	436.4	423.4	403.9	386.5	371.3	358.3	349.6	343.1
62.5°	408.2	393.0	371.3	362.6	353.9	334.4	319.2	306.2	297.5	288.8	282.3
65°	338.7	325.7	308.3	297.5	288.8	273.6	260.6	247.5	241.0	230.2	223.7
67.5°	275.8	260.6	247.5	238.9	232.3	217.1	206.3	197.6	188.9	182.4	173.7
70°	217.1	204.1	191.1	186.7	180.2	169.4	160.7	152.0	145.5	139.0	130.3
72.5°	167.2	158.5	145.5	141.1	136.8	128.1	121.6	115.1	106.4	102.1	97.7
75°	123.8	115.1	106.4	102.1	99.9	91.2	86.9	80.3	76.0	73.8	69.5
77.5°	80.3	73.8	69.5	67.3	65.1	60.8	56.5	54.3	49.9	47.8	47.8
80°	45.6	43.4	41.3	39.1	36.9	34.7	34.7	32.6	30.4	28.2	26.1
82.5°	21.7	21.7	19.5	19.5	19.5	17.4	17.4	15.2	15.2	13.0	13.0
85°	10.9	10.9	10.9	10.9	10.9	8.7	8.7	8.7	6.5	6.5	4.3
87.5°	8.7	8.7	8.7	8.7	8.7	6.5	6.5	6.5	4.3	4.3	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: P345460

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMMS 4000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7	1643.7
2.5°	1698.0	1700.2	1702.4	1704.5	1704.5	1706.7	1708.9	1706.7
5°	1741.4	1748.0	1750.1	1752.3	1754.5	1756.6	1758.8	1758.8
7.5°	1774.0	1782.7	1784.9	1784.9	1791.4	1793.6	1795.7	1795.7
10°	1791.4	1795.7	1800.1	1800.1	1804.4	1804.4	1808.8	1808.8
12.5°	1782.7	1787.0	1789.2	1791.4	1791.4	1793.6	1793.6	1793.6
15°	1752.3	1750.1	1750.1	1748.0	1748.0	1745.8	1745.8	1745.8
17.5°	1695.8	1693.7	1691.5	1691.5	1687.2	1687.2	1682.8	1682.8
20°	1628.5	1624.2	1622.0	1619.8	1619.8	1617.7	1613.3	1613.3
22.5°	1556.9	1552.5	1548.2	1543.8	1539.5	1537.3	1535.2	1535.2
25°	1476.5	1470.0	1467.8	1465.7	1459.2	1457.0	1452.6	1450.5
27.5°	1394.0	1383.2	1381.0	1378.8	1374.5	1372.3	1370.1	1370.1
30°	1307.2	1300.7	1296.3	1294.1	1287.6	1285.5	1278.9	1278.9
32.5°	1220.3	1209.5	1205.1	1202.9	1198.6	1194.3	1192.1	1192.1
35°	1129.1	1122.6	1120.4	1113.9	1107.4	1107.4	1103.1	1103.1
37.5°	1042.3	1035.7	1029.2	1027.1	1022.7	1016.2	1014.0	1020.5
40°	955.4	946.7	942.4	940.2	935.9	929.3	929.3	929.3
42.5°	870.7	864.2	862.0	857.7	853.4	851.2	846.8	844.7
45°	783.9	779.5	777.4	773.0	770.8	766.5	762.2	762.2
47.5°	707.9	699.2	699.2	694.8	690.5	688.3	688.3	690.5
50°	631.9	625.4	621.0	618.8	614.5	614.5	612.3	610.2
52.5°	549.4	545.0	542.8	542.8	538.5	538.5	536.3	536.3
55°	473.4	473.4	471.2	469.0	464.7	464.7	464.7	464.7
57.5°	406.0	401.7	399.5	397.4	395.2	393.0	393.0	390.8
60°	336.6	334.4	330.0	332.2	325.7	325.7	325.7	323.5
62.5°	273.6	269.3	267.1	264.9	260.6	260.6	256.2	254.1
65°	219.3	212.8	208.5	208.5	204.1	199.8	197.6	195.4
67.5°	165.0	160.7	158.5	156.3	152.0	147.7	147.7	145.5
70°	125.9	121.6	119.4	117.3	115.1	112.9	112.9	112.9
72.5°	93.4	91.2	89.0	89.0	86.9	84.7	84.7	86.9
75°	67.3	65.1	65.1	65.1	63.0	63.0	63.0	60.8
77.5°	45.6	43.4	43.4	41.3	41.3	41.3	41.3	41.3
80°	26.1	23.9	23.9	23.9	23.9	23.9	23.9	23.9
82.5°	10.9	10.9	10.9	10.9	8.7	8.7	8.7	8.7
85°	4.3	4.3	4.3	4.3	4.3	2.2	2.2	2.2
87.5°	2.2	2.2	2.2	2.2	2.2	2.2	0.0	2.2
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)