

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: P345427

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSMW 4000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345427
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 PR4M24WW9FSMW 4000Lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2652.1 lumens
Efficiency: N/A
Efficacy: 58.9 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

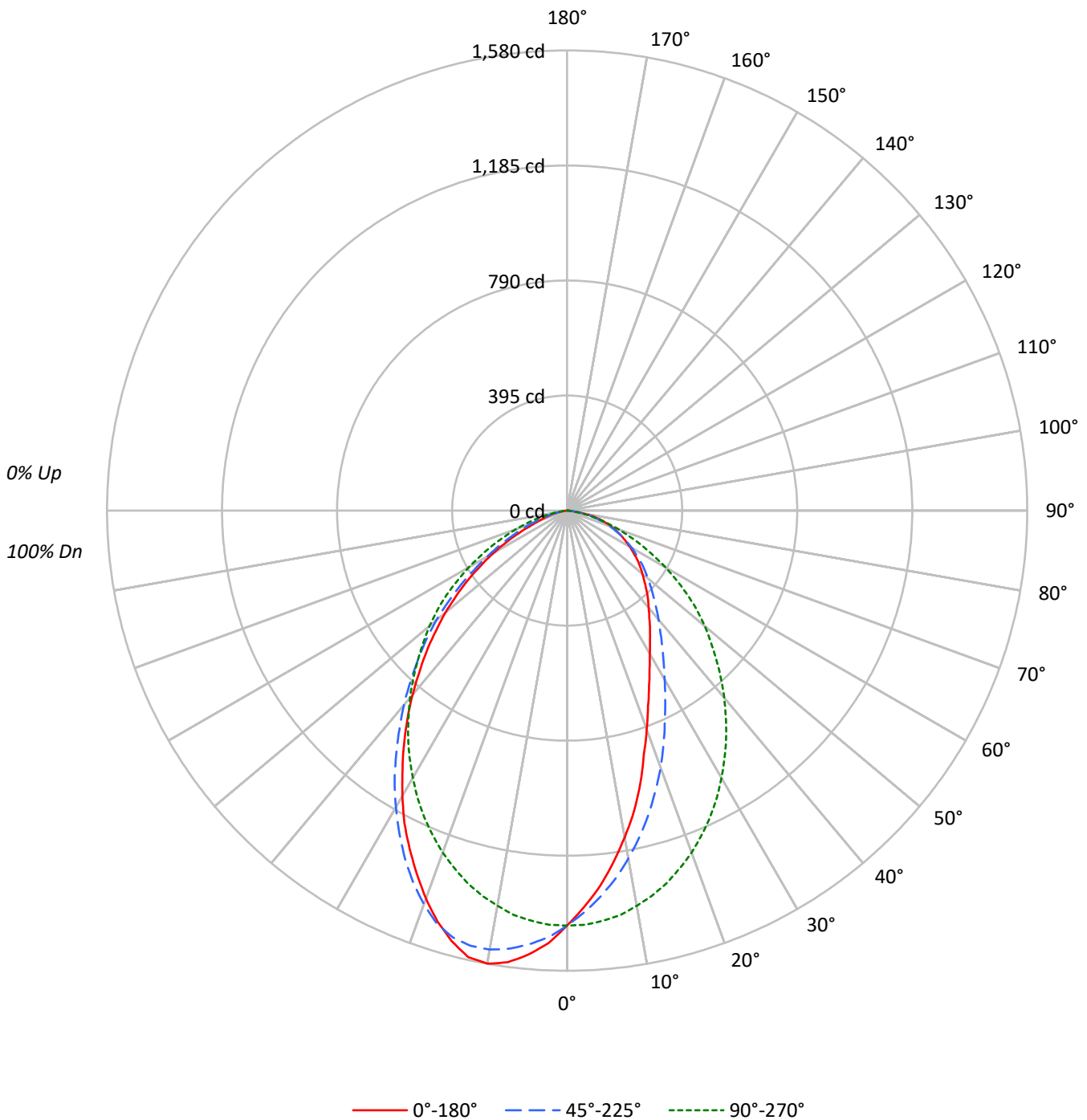
Input Watts (W): 45
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	124635	124635	124635
5°	113697	124119	134383
10°	101111	122375	140289
15°	87902	119822	138594
20°	74392	116326	131936
25°	64209	112060	123516
30°	57298	106990	114222
35°	52931	101634	104250
40°	49715	95777	94270
45°	47563	89534	84401
50°	45913	83865	74380
55°	44835	77027	63531
60°	43525	68261	51432
65°	42512	58117	37834
70°	41456	47722	26035
75°	39507	36296	19737
80°	27553	20904	11384
85°	11341	7527	3814



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	133.5	5.0
10°-20°	361.9	13.6
20°-30°	489.0	18.4
30°-40°	514.7	19.4
40°-50°	463.7	17.5
50°-60°	358.0	13.5
60°-70°	220.4	8.3
70°-80°	96.9	3.7
80°-90°	13.9	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°	984.4	37.1
0°-40°	1499.2	56.5
0°-60°	2320.9	87.5
0°-90°	2652.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2652.1	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1425	1425	1425	1425	1425	
5°	1295	1329	1414	1495	1530	119
15°	971	1080	1323	1517	1530	270
25°	665	794	1161	1318	1280	308
35°	496	569	952	1024	976	311
45°	384	420	724	724	682	297
55°	294	309	505	447	417	262
65°	205	205	281	213	183	203
75°	117	104	107	70	58	120
85°	11	9	8	6	4	20
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°	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9
2.5°	1360.9	1362.7	1362.7	1362.7	1364.6	1366.5	1366.5	1370.3	1372.2	1375.9	1379.7
5°	1294.9	1293.0	1293.0	1296.8	1300.5	1302.4	1302.4	1310.0	1315.6	1321.3	1328.8
7.5°	1217.6	1215.7	1221.4	1223.3	1227.0	1232.7	1236.5	1244.0	1249.7	1262.8	1274.2
10°	1138.4	1138.4	1142.2	1147.9	1153.5	1159.2	1162.9	1172.4	1183.7	1196.9	1212.0
12.5°	1059.3	1053.6	1059.3	1066.8	1072.5	1078.1	1083.8	1095.1	1112.1	1129.0	1147.9
15°	970.7	968.8	972.6	980.1	993.3	997.1	1002.7	1019.7	1036.7	1059.3	1080.0
17.5°	876.5	882.1	884.0	895.3	908.5	914.1	919.8	936.8	961.3	983.9	1008.4
20°	799.2	795.4	802.9	810.5	821.8	831.2	838.8	857.6	884.0	908.5	938.7
22.5°	725.7	723.8	729.4	738.9	748.3	755.8	763.4	782.2	802.9	831.2	865.1
25°	665.3	663.5	669.1	674.8	686.1	691.7	697.4	716.2	738.9	761.5	793.5
27.5°	612.6	612.6	616.3	620.1	629.5	635.2	642.7	657.8	676.7	699.3	729.4
30°	567.3	567.3	571.1	574.9	584.3	588.1	593.7	605.0	620.1	644.6	669.1
32.5°	529.6	529.6	531.5	537.2	540.9	544.7	550.4	559.8	574.9	593.7	616.3
35°	495.7	495.7	497.6	501.4	507.0	508.9	512.7	522.1	533.4	548.5	569.2
37.5°	463.7	465.6	465.6	469.3	473.1	475.0	478.7	486.3	495.7	508.9	525.9
40°	435.4	437.3	437.3	441.1	444.8	446.7	448.6	452.4	463.7	473.1	488.2
42.5°	410.9	410.9	410.9	412.8	416.6	418.4	420.3	426.0	431.6	441.1	452.4
45°	384.5	384.5	386.4	388.3	392.0	392.0	393.9	399.6	403.4	410.9	420.3
47.5°	360.0	360.0	361.9	361.9	365.7	365.7	367.5	371.3	375.1	382.6	390.2
50°	337.4	337.4	337.4	339.3	341.2	343.0	343.0	346.8	350.6	356.2	361.9
52.5°	314.8	314.8	314.8	314.8	316.7	318.5	318.5	322.3	326.1	329.8	335.5
55°	294.0	292.2	294.0	294.0	294.0	295.9	295.9	299.7	299.7	303.5	309.1
57.5°	269.5	271.4	271.4	269.5	271.4	273.3	273.3	273.3	275.2	279.0	280.8
60°	248.8	248.8	248.8	248.8	250.7	250.7	250.7	250.7	252.6	252.6	256.3
62.5°	226.2	226.2	228.1	228.1	226.2	228.1	228.1	228.1	230.0	230.0	230.0
65°	205.4	205.4	205.4	205.4	205.4	205.4	205.4	205.4	205.4	205.4	205.4
67.5°	182.8	182.8	182.8	182.8	182.8	182.8	182.8	180.9	180.9	180.9	179.1
70°	162.1	162.1	162.1	160.2	160.2	160.2	160.2	158.3	158.3	156.4	154.6
72.5°	139.5	139.5	139.5	137.6	137.6	137.6	135.7	133.8	131.9	130.1	130.1
75°	116.9	116.9	115.0	113.1	113.1	111.2	111.2	109.3	109.3	105.6	103.7
77.5°	90.5	88.6	88.6	88.6	86.7	84.8	84.8	82.9	81.0	81.0	79.2
80°	54.7	54.7	56.5	54.7	56.5	54.7	54.7	56.5	54.7	52.8	52.8
82.5°	26.4	26.4	28.3	26.4	28.3	28.3	28.3	26.4	26.4	26.4	26.4
85°	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	9.4	9.4	9.4
87.5°	7.5	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
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):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9
2.5°	1383.5	1389.1	1391.0	1396.7	1398.6	1402.3	1406.1	1411.7	1417.4	1423.1	1426.8
5°	1336.4	1345.8	1353.3	1362.7	1368.4	1372.2	1383.5	1392.9	1404.2	1413.6	1423.1
7.5°	1285.5	1296.8	1313.7	1325.0	1330.7	1340.1	1353.3	1368.4	1383.5	1400.4	1413.6
10°	1227.0	1244.0	1261.0	1281.7	1291.1	1300.5	1317.5	1338.2	1359.0	1377.8	1398.6
12.5°	1164.8	1187.5	1210.1	1230.8	1244.0	1255.3	1281.7	1304.3	1328.8	1353.3	1375.9
15°	1104.5	1129.0	1155.4	1181.8	1196.9	1210.1	1236.5	1264.7	1294.9	1323.2	1349.5
17.5°	1038.5	1066.8	1097.0	1127.1	1142.2	1159.2	1193.1	1223.3	1257.2	1287.3	1319.4
20°	970.7	1002.7	1034.8	1072.5	1087.6	1106.4	1140.3	1178.0	1213.8	1249.7	1283.6
22.5°	901.0	936.8	972.6	1012.2	1032.9	1051.7	1091.3	1129.0	1168.6	1206.3	1244.0
25°	829.3	870.8	912.3	951.8	974.5	993.3	1036.7	1080.0	1121.5	1161.1	1200.6
27.5°	763.4	802.9	848.2	891.5	914.1	934.9	982.0	1023.5	1068.7	1112.1	1151.6
30°	703.0	740.7	786.0	833.1	855.7	878.3	925.5	972.6	1014.0	1059.3	1102.6
32.5°	646.5	680.4	725.7	772.8	799.2	819.9	868.9	914.1	961.3	1006.5	1049.9
35°	593.7	627.7	667.2	714.4	737.0	761.5	812.4	859.5	904.7	951.8	991.4
37.5°	548.5	574.9	610.7	655.9	680.4	704.9	755.8	802.9	848.2	895.3	936.8
40°	505.1	529.6	561.7	601.3	625.8	650.3	699.3	746.4	791.6	838.8	882.1
42.5°	469.3	488.2	514.6	552.3	573.0	597.5	646.5	691.7	737.0	782.2	823.7
45°	433.5	450.5	473.1	503.3	524.0	546.6	593.7	640.8	682.3	723.8	765.2
47.5°	399.6	412.8	433.5	459.9	476.9	497.6	542.8	588.1	629.5	669.1	706.8
50°	369.4	380.7	399.6	418.4	433.5	452.4	491.9	537.2	576.8	616.3	650.3
52.5°	341.2	350.6	363.8	382.6	393.9	409.0	446.7	486.3	525.9	561.7	593.7
55°	314.8	320.4	331.7	344.9	354.4	367.5	399.6	437.3	473.1	505.1	531.5
57.5°	284.6	292.2	299.7	309.1	318.5	326.1	350.6	384.5	416.6	444.8	471.2
60°	258.2	263.9	267.6	277.1	280.8	288.4	307.2	335.5	365.7	390.2	409.0
62.5°	231.8	233.7	237.5	245.0	246.9	252.6	265.8	288.4	311.0	333.6	352.5
65°	205.4	205.4	209.2	211.1	214.9	216.8	226.2	243.1	263.9	280.8	292.2
67.5°	179.1	179.1	180.9	180.9	184.7	184.7	190.4	203.6	216.8	231.8	241.3
70°	152.7	152.7	152.7	152.7	152.7	154.6	158.3	165.9	175.3	186.6	192.3
72.5°	128.2	126.3	126.3	124.4	124.4	124.4	126.3	130.1	137.6	145.1	150.8
75°	101.8	99.9	98.0	98.0	96.1	96.1	96.1	99.9	103.7	107.4	109.3
77.5°	75.4	75.4	73.5	69.7	69.7	67.9	67.9	67.9	69.7	73.5	71.6
80°	52.8	49.0	47.1	47.1	45.2	45.2	43.4	41.5	41.5	41.5	39.6
82.5°	24.5	24.5	24.5	22.6	22.6	22.6	22.6	20.7	20.7	18.8	18.8
85°	9.4	9.4	9.4	9.4	9.4	9.4	9.4	7.5	7.5	7.5	7.5
87.5°	5.7	5.7	5.7	5.7	5.7	3.8	3.8	3.8	3.8	3.8	3.8
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°	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9
2.5°	1432.5	1438.1	1443.8	1445.7	1447.6	1453.2	1457.0	1462.6	1466.4	1468.3	1472.1
5°	1434.4	1443.8	1453.2	1458.9	1462.6	1472.1	1479.6	1489.0	1494.7	1504.1	1509.8
7.5°	1428.7	1443.8	1457.0	1464.5	1472.1	1485.3	1496.6	1507.9	1517.3	1526.7	1536.1
10°	1417.4	1436.2	1455.1	1462.6	1472.1	1487.1	1504.1	1517.3	1530.5	1541.8	1553.1
12.5°	1400.4	1423.1	1445.7	1455.1	1464.5	1485.3	1502.2	1517.3	1530.5	1541.8	1549.3
15°	1377.8	1404.2	1428.7	1441.9	1453.2	1473.9	1490.9	1506.0	1517.3	1524.8	1530.5
17.5°	1349.5	1379.7	1408.0	1419.3	1432.5	1451.3	1468.3	1479.6	1487.1	1487.1	1489.0
20°	1317.5	1349.5	1377.8	1391.0	1404.2	1419.3	1432.5	1438.1	1438.1	1438.1	1434.4
22.5°	1279.8	1313.7	1342.0	1355.2	1366.5	1377.8	1385.4	1385.4	1381.6	1375.9	1370.3
25°	1236.5	1272.3	1298.7	1311.9	1317.5	1326.9	1325.0	1323.2	1317.5	1311.9	1304.3
27.5°	1189.3	1225.1	1253.4	1259.1	1262.8	1264.7	1259.1	1255.3	1247.8	1240.2	1234.6
30°	1140.3	1174.3	1196.9	1198.8	1202.5	1200.6	1193.1	1183.7	1176.1	1166.7	1159.2
32.5°	1087.6	1119.6	1134.7	1138.4	1136.6	1129.0	1121.5	1112.1	1102.6	1091.3	1081.9
35°	1031.0	1061.2	1070.6	1068.7	1066.8	1057.4	1046.1	1036.7	1023.5	1015.9	1002.7
37.5°	972.6	1000.9	1004.6	999.0	993.3	982.0	970.7	961.3	946.2	938.7	929.2
40°	914.1	933.0	933.0	927.3	923.6	912.3	897.2	884.0	872.7	859.5	853.8
42.5°	853.8	868.9	861.4	857.6	851.9	835.0	823.7	810.5	795.4	787.9	778.4
45°	793.5	802.9	793.5	786.0	780.3	765.2	753.9	737.0	723.8	716.2	704.9
47.5°	731.3	735.1	727.5	716.2	712.5	695.5	682.3	669.1	655.9	642.7	633.3
50°	674.8	671.0	659.7	652.2	646.5	627.7	612.6	597.5	586.2	574.9	565.5
52.5°	610.7	606.9	591.8	582.4	573.0	557.9	539.1	527.8	514.6	505.1	495.7
55°	544.7	533.4	522.1	512.7	503.3	488.2	471.2	456.1	446.7	435.4	429.7
57.5°	476.9	469.3	450.5	442.9	435.4	420.3	403.4	390.2	377.0	369.4	365.7
60°	416.6	403.4	388.3	378.9	371.3	356.2	341.2	328.0	318.5	314.8	309.1
62.5°	352.5	341.2	324.2	316.7	311.0	295.9	282.7	271.4	263.9	256.3	252.6
65°	294.0	280.8	267.6	260.1	252.6	239.4	230.0	222.4	213.0	207.3	203.6
67.5°	237.5	226.2	214.9	209.2	203.6	192.3	182.8	177.2	169.6	164.0	156.4
70°	186.6	177.2	169.6	164.0	158.3	148.9	141.4	135.7	130.1	124.4	118.7
72.5°	145.1	135.7	126.3	124.4	120.6	113.1	107.4	101.8	96.1	92.4	88.6
75°	103.7	99.9	92.4	88.6	86.7	81.0	75.4	71.6	69.7	66.0	64.1
77.5°	67.9	64.1	58.4	58.4	56.5	54.7	50.9	47.1	47.1	45.2	45.2
80°	37.7	35.8	33.9	32.0	33.9	32.0	30.2	28.3	28.3	28.3	26.4
82.5°	17.0	17.0	15.1	15.1	15.1	15.1	15.1	13.2	13.2	13.2	13.2
85°	7.5	7.5	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
87.5°	3.8	3.8	3.8	3.8	3.8	3.8	1.9	1.9	1.9	1.9	1.9
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: P345427

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9	1424.9
2.5°	1475.8	1477.7	1479.6	1481.5	1483.4	1483.4	1485.3	1487.1
5°	1513.5	1519.2	1521.1	1523.0	1526.7	1528.6	1528.6	1530.5
7.5°	1543.7	1551.2	1553.1	1556.9	1560.6	1562.5	1564.4	1564.4
10°	1560.6	1566.3	1568.2	1572.0	1575.7	1577.6	1579.5	1579.5
12.5°	1555.0	1560.6	1562.5	1564.4	1568.2	1570.1	1570.1	1570.1
15°	1534.3	1534.3	1534.3	1534.3	1532.4	1534.3	1534.3	1530.5
17.5°	1487.1	1485.3	1487.1	1483.4	1481.5	1481.5	1479.6	1479.6
20°	1430.6	1428.7	1426.8	1426.8	1424.9	1421.2	1419.3	1417.4
22.5°	1366.5	1362.7	1360.9	1360.9	1357.1	1355.2	1353.3	1349.5
25°	1300.5	1291.1	1291.1	1291.1	1287.3	1287.3	1283.6	1279.8
27.5°	1225.1	1219.5	1219.5	1215.7	1212.0	1210.1	1208.2	1210.1
30°	1153.5	1146.0	1142.2	1140.3	1138.4	1138.4	1132.8	1130.9
32.5°	1074.4	1068.7	1064.9	1063.1	1059.3	1057.4	1055.5	1051.7
35°	997.1	991.4	987.7	987.7	980.1	978.2	976.3	976.3
37.5°	917.9	914.1	912.3	906.6	904.7	902.8	902.8	901.0
40°	844.4	838.8	836.9	831.2	829.3	829.3	823.7	825.6
42.5°	769.0	761.5	759.6	757.7	755.8	752.1	753.9	750.2
45°	697.4	691.7	688.0	688.0	686.1	682.3	680.4	682.3
47.5°	627.7	620.1	620.1	618.2	616.3	614.5	614.5	610.7
50°	561.7	556.0	552.3	548.5	550.4	548.5	544.7	546.6
52.5°	490.1	484.4	482.5	482.5	480.6	480.6	478.7	478.7
55°	426.0	420.3	420.3	418.4	418.4	418.4	416.6	416.6
57.5°	361.9	358.1	356.2	356.2	352.5	354.4	352.5	350.6
60°	305.3	299.7	295.9	297.8	295.9	295.9	292.2	294.0
62.5°	246.9	243.1	241.3	241.3	237.5	237.5	233.7	235.6
65°	197.9	192.3	190.4	188.5	184.7	182.8	182.8	182.8
67.5°	152.7	148.9	147.0	143.2	139.5	137.6	135.7	133.8
70°	115.0	111.2	109.3	107.4	105.6	103.7	103.7	101.8
72.5°	86.7	82.9	82.9	81.0	81.0	79.2	79.2	79.2
75°	62.2	62.2	60.3	60.3	58.4	60.3	58.4	58.4
77.5°	43.4	41.5	43.4	41.5	39.6	39.6	39.6	39.6
80°	24.5	24.5	24.5	24.5	24.5	24.5	24.5	22.6
82.5°	13.2	13.2	13.2	11.3	11.3	11.3	11.3	11.3
85°	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
87.5°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)