

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: P345429

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345429  
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 4000Lm4000K  
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2766.7 lumens  
Efficiency: N/A  
Efficacy: 61.5 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

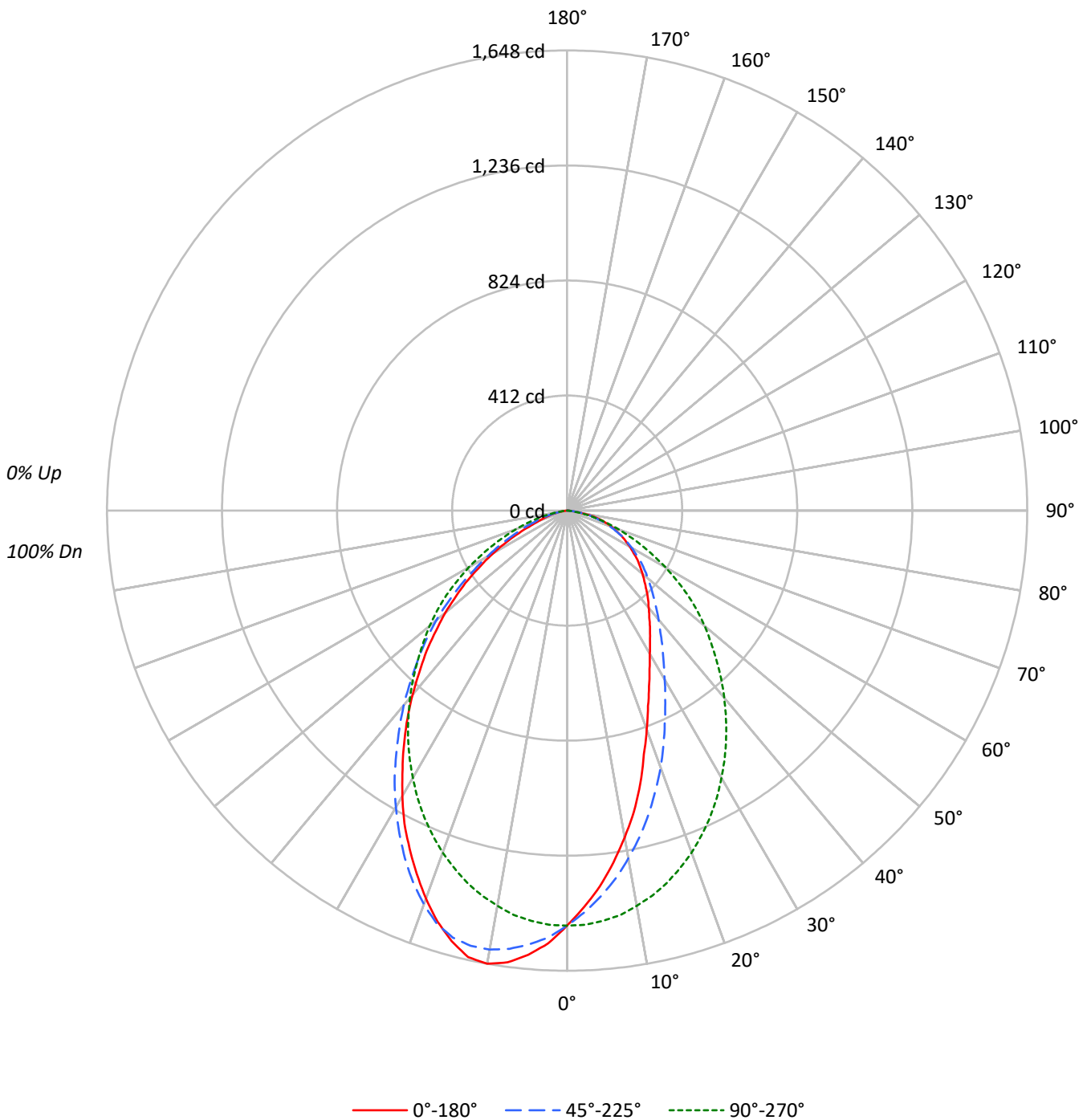
Input Watts (W): 45  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



TEST NUMBER: P345429

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K

### Luminous Intensity Polar Plot





TEST NUMBER: P345429

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K

**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°	130023	130023	130023
5°	118605	129484	140187
10°	105481	127668	146356
15°	91696	124993	144580
20°	77603	121352	137642
25°	66989	116895	128853
30°	59783	111616	119161
35°	55216	106033	108756
40°	51862	99910	98335
45°	49616	93406	88050
50°	47900	87498	77592
55°	46771	80367	66276
60°	45414	71200	53654
65°	44354	60642	39469
70°	43246	49793	27160
75°	41197	37885	20615
80°	28712	21811	11888
85°	11842	7928	3914



TEST NUMBER: P345429

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	139.3	5.0
10°-20°	377.6	13.6
20°-30°	510.2	18.4
30°-40°	537.0	19.4
40°-50°	483.8	17.5
50°-60°	373.5	13.5
60°-70°	229.9	8.3
70°-80°	101.1	3.7
80°-90°	14.5	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°	1027.0	37.1
0°-40°	1564.0	56.5
0°-60°	2421.2	87.5
0°-90°	2766.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2766.7	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1486	1486	1486	1486	1486	
5°	1351	1386	1475	1559	1597	124
15°	1013	1127	1380	1583	1597	281
25°	694	828	1211	1374	1335	321
35°	517	594	993	1068	1018	324
45°	401	438	755	755	712	310
55°	307	322	527	466	435	273
65°	214	214	293	222	191	212
75°	122	108	112	73	61	125
85°	12	10	8	6	4	21
90°	0	0	0	0	0	



TEST NUMBER: P345429

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5
2.5°	1419.7	1421.6	1421.6	1421.6	1423.6	1425.6	1425.6	1429.5	1431.5	1435.4	1439.3
5°	1350.8	1348.9	1348.9	1352.8	1356.7	1358.7	1358.7	1366.6	1372.5	1378.4	1386.2
7.5°	1270.2	1268.3	1274.2	1276.1	1280.1	1286.0	1289.9	1297.8	1303.7	1317.4	1329.2
10°	1187.6	1187.6	1191.6	1197.5	1203.4	1209.3	1213.2	1223.0	1234.8	1248.6	1264.3
12.5°	1105.1	1099.2	1105.1	1112.9	1118.8	1124.7	1130.6	1142.4	1160.1	1177.8	1197.5
15°	1012.6	1010.7	1014.6	1022.5	1036.2	1040.2	1046.1	1063.8	1081.5	1105.1	1126.7
17.5°	914.3	920.2	922.2	934.0	947.8	953.7	959.6	977.2	1002.8	1026.4	1052.0
20°	833.7	829.8	837.6	845.5	857.3	867.1	875.0	894.7	922.2	947.8	979.2
22.5°	757.0	755.1	761.0	770.8	780.6	788.5	796.3	816.0	837.6	867.1	902.5
25°	694.1	692.1	698.0	703.9	715.7	721.6	727.5	747.2	770.8	794.4	827.8
27.5°	639.0	639.0	643.0	646.9	656.7	662.6	670.5	686.2	705.9	729.5	761.0
30°	591.9	591.9	595.8	599.7	609.6	613.5	619.4	631.2	646.9	672.5	698.0
32.5°	552.5	552.5	554.5	560.4	564.3	568.3	574.2	584.0	599.7	619.4	643.0
35°	517.1	517.1	519.1	523.0	528.9	530.9	534.8	544.7	556.5	572.2	593.8
37.5°	483.7	485.7	485.7	489.6	493.5	495.5	499.4	507.3	517.1	530.9	548.6
40°	454.2	456.2	456.2	460.1	464.0	466.0	468.0	471.9	483.7	493.5	509.3
42.5°	428.7	428.7	428.7	430.6	434.6	436.5	438.5	444.4	450.3	460.1	471.9
45°	401.1	401.1	403.1	405.1	409.0	409.0	411.0	416.9	420.8	428.7	438.5
47.5°	375.6	375.6	377.5	377.5	381.5	381.5	383.4	387.4	391.3	399.2	407.0
50°	352.0	352.0	352.0	353.9	355.9	357.9	357.9	361.8	365.7	371.6	377.5
52.5°	328.4	328.4	328.4	328.4	330.3	332.3	332.3	336.2	340.2	344.1	350.0
55°	306.7	304.8	306.7	306.7	306.7	308.7	308.7	312.6	312.6	316.6	322.5
57.5°	281.2	283.1	283.1	281.2	283.1	285.1	285.1	285.1	287.1	291.0	293.0
60°	259.6	259.6	259.6	259.6	261.5	261.5	261.5	261.5	263.5	263.5	267.4
62.5°	236.0	236.0	237.9	237.9	236.0	237.9	237.9	237.9	239.9	239.9	239.9
65°	214.3	214.3	214.3	214.3	214.3	214.3	214.3	214.3	214.3	214.3	214.3
67.5°	190.7	190.7	190.7	190.7	190.7	190.7	190.7	188.8	188.8	188.8	186.8
70°	169.1	169.1	169.1	167.1	167.1	167.1	167.1	165.2	165.2	163.2	161.2
72.5°	145.5	145.5	145.5	143.5	143.5	143.5	141.6	139.6	137.6	135.7	135.7
75°	121.9	121.9	119.9	118.0	118.0	116.0	116.0	114.0	114.0	110.1	108.1
77.5°	94.4	92.4	92.4	92.4	90.4	88.5	88.5	86.5	84.6	84.6	82.6
80°	57.0	57.0	59.0	57.0	59.0	57.0	57.0	59.0	57.0	55.1	55.1
82.5°	27.5	27.5	29.5	27.5	29.5	29.5	29.5	27.5	27.5	27.5	27.5
85°	11.8	11.8	11.8	11.8	11.8	11.8	11.8	11.8	9.8	9.8	9.8
87.5°	7.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
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: P345429

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K

**CANDELA DISTRIBUTION (continued):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5
2.5°	1443.3	1449.2	1451.1	1457.0	1459.0	1462.9	1466.9	1472.8	1478.7	1484.5	1488.5
5°	1394.1	1403.9	1411.8	1421.6	1427.5	1431.5	1443.3	1453.1	1464.9	1474.7	1484.5
7.5°	1341.0	1352.8	1370.5	1382.3	1388.2	1398.0	1411.8	1427.5	1443.3	1461.0	1474.7
10°	1280.1	1297.8	1315.4	1337.1	1346.9	1356.7	1374.4	1396.1	1417.7	1437.4	1459.0
12.5°	1215.2	1238.8	1262.4	1284.0	1297.8	1309.6	1337.1	1360.7	1386.2	1411.8	1435.4
15°	1152.2	1177.8	1205.3	1232.9	1248.6	1262.4	1289.9	1319.4	1350.8	1380.3	1407.9
17.5°	1083.4	1112.9	1144.4	1175.8	1191.6	1209.3	1244.7	1276.1	1311.5	1343.0	1376.4
20°	1012.6	1046.1	1079.5	1118.8	1134.6	1154.2	1189.6	1228.9	1266.3	1303.7	1339.0
22.5°	939.9	977.2	1014.6	1055.9	1077.5	1097.2	1138.5	1177.8	1219.1	1258.4	1297.8
25°	865.2	908.4	951.7	993.0	1016.6	1036.2	1081.5	1126.7	1169.9	1211.2	1252.5
27.5°	796.3	837.6	884.8	930.1	953.7	975.3	1024.4	1067.7	1114.9	1160.1	1201.4
30°	733.4	772.8	819.9	869.1	892.7	916.3	965.4	1014.6	1057.9	1105.1	1150.3
32.5°	674.4	709.8	757.0	806.2	833.7	855.3	906.5	953.7	1002.8	1050.0	1095.2
35°	619.4	654.8	696.1	745.2	768.8	794.4	847.5	896.6	943.8	993.0	1034.3
37.5°	572.2	599.7	637.1	684.3	709.8	735.4	788.5	837.6	884.8	934.0	977.2
40°	527.0	552.5	586.0	627.2	652.8	678.4	729.5	778.7	825.8	875.0	920.2
42.5°	489.6	509.3	536.8	576.1	597.8	623.3	674.4	721.6	768.8	816.0	859.3
45°	452.2	469.9	493.5	525.0	546.6	570.2	619.4	668.5	711.8	755.1	798.3
47.5°	416.9	430.6	452.2	479.8	497.5	519.1	566.3	613.5	656.7	698.0	737.4
50°	385.4	397.2	416.9	436.5	452.2	471.9	513.2	560.4	601.7	643.0	678.4
52.5°	355.9	365.7	379.5	399.2	411.0	426.7	466.0	507.3	548.6	586.0	619.4
55°	328.4	334.3	346.1	359.8	369.7	383.4	416.9	456.2	493.5	527.0	554.5
57.5°	296.9	304.8	312.6	322.5	332.3	340.2	365.7	401.1	434.6	464.0	491.6
60°	269.4	275.3	279.2	289.0	293.0	300.8	320.5	350.0	381.5	407.0	426.7
62.5°	241.9	243.8	247.8	255.6	257.6	263.5	277.2	300.8	324.4	348.0	367.7
65°	214.3	214.3	218.3	220.2	224.2	226.1	236.0	253.7	275.3	293.0	304.8
67.5°	186.8	186.8	188.8	188.8	192.7	192.7	198.6	212.4	226.1	241.9	251.7
70°	159.3	159.3	159.3	159.3	159.3	161.2	165.2	173.0	182.9	194.7	200.6
72.5°	133.7	131.7	131.7	129.8	129.8	129.8	131.7	135.7	143.5	151.4	157.3
75°	106.2	104.2	102.2	102.2	100.3	100.3	100.3	104.2	108.1	112.1	114.0
77.5°	78.7	78.7	76.7	72.8	72.8	70.8	70.8	70.8	72.8	76.7	74.7
80°	55.1	51.1	49.2	49.2	47.2	47.2	45.2	43.3	43.3	43.3	41.3
82.5°	25.6	25.6	25.6	23.6	23.6	23.6	23.6	21.6	21.6	19.7	19.7
85°	9.8	9.8	9.8	9.8	9.8	9.8	9.8	7.9	7.9	7.9	7.9
87.5°	5.9	5.9	5.9	5.9	5.9	3.9	3.9	3.9	3.9	3.9	3.9
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: P345429

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K

**CANDELA DISTRIBUTION (continued):**

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5
2.5°	1494.4	1500.3	1506.2	1508.1	1510.1	1516.0	1519.9	1525.8	1529.8	1531.7	1535.7
5°	1496.3	1506.2	1516.0	1521.9	1525.8	1535.7	1543.5	1553.4	1559.3	1569.1	1575.0
7.5°	1490.4	1506.2	1519.9	1527.8	1535.7	1549.4	1561.2	1573.0	1582.9	1592.7	1602.5
10°	1478.7	1498.3	1518.0	1525.8	1535.7	1551.4	1569.1	1582.9	1596.6	1608.4	1620.2
12.5°	1461.0	1484.5	1508.1	1518.0	1527.8	1549.4	1567.1	1582.9	1596.6	1608.4	1616.3
15°	1437.4	1464.9	1490.4	1504.2	1516.0	1537.6	1555.3	1571.1	1582.9	1590.7	1596.6
17.5°	1407.9	1439.3	1468.8	1480.6	1494.4	1514.0	1531.7	1543.5	1551.4	1551.4	1553.4
20°	1374.4	1407.9	1437.4	1451.1	1464.9	1480.6	1494.4	1500.3	1500.3	1500.3	1496.3
22.5°	1335.1	1370.5	1400.0	1413.8	1425.6	1437.4	1445.2	1445.2	1441.3	1435.4	1429.5
25°	1289.9	1327.2	1354.8	1368.5	1374.4	1384.3	1382.3	1380.3	1374.4	1368.5	1360.7
27.5°	1240.7	1278.1	1307.6	1313.5	1317.4	1319.4	1313.5	1309.6	1301.7	1293.8	1287.9
30°	1189.6	1225.0	1248.6	1250.6	1254.5	1252.5	1244.7	1234.8	1227.0	1217.1	1209.3
32.5°	1134.6	1168.0	1183.7	1187.6	1185.7	1177.8	1169.9	1160.1	1150.3	1138.5	1128.7
35°	1075.6	1107.0	1116.9	1114.9	1112.9	1103.1	1091.3	1081.5	1067.7	1059.8	1046.1
37.5°	1014.6	1044.1	1048.0	1042.1	1036.2	1024.4	1012.6	1002.8	987.1	979.2	969.4
40°	953.7	973.3	973.3	967.4	963.5	951.7	936.0	922.2	910.4	896.6	890.7
42.5°	890.7	906.5	898.6	894.7	888.8	871.1	859.3	845.5	829.8	821.9	812.1
45°	827.8	837.6	827.8	819.9	814.0	798.3	786.5	768.8	755.1	747.2	735.4
47.5°	762.9	766.9	759.0	747.2	743.3	725.6	711.8	698.0	684.3	670.5	660.7
50°	703.9	700.0	688.2	680.3	674.4	654.8	639.0	623.3	611.5	599.7	589.9
52.5°	637.1	633.1	617.4	607.6	597.8	582.0	562.4	550.6	536.8	527.0	517.1
55°	568.3	556.5	544.7	534.8	525.0	509.3	491.6	475.8	466.0	454.2	448.3
57.5°	497.5	489.6	469.9	462.1	454.2	438.5	420.8	407.0	393.3	385.4	381.5
60°	434.6	420.8	405.1	395.2	387.4	371.6	355.9	342.1	332.3	328.4	322.5
62.5°	367.7	355.9	338.2	330.3	324.4	308.7	294.9	283.1	275.3	267.4	263.5
65°	306.7	293.0	279.2	271.3	263.5	249.7	239.9	232.0	222.2	216.3	212.4
67.5°	247.8	236.0	224.2	218.3	212.4	200.6	190.7	184.8	177.0	171.1	163.2
70°	194.7	184.8	177.0	171.1	165.2	155.3	147.5	141.6	135.7	129.8	123.9
72.5°	151.4	141.6	131.7	129.8	125.8	118.0	112.1	106.2	100.3	96.3	92.4
75°	108.1	104.2	96.3	92.4	90.4	84.6	78.7	74.7	72.8	68.8	66.9
77.5°	70.8	66.9	61.0	61.0	59.0	57.0	53.1	49.2	49.2	47.2	47.2
80°	39.3	37.4	35.4	33.4	35.4	33.4	31.5	29.5	29.5	29.5	27.5
82.5°	17.7	17.7	15.7	15.7	15.7	15.7	15.7	13.8	13.8	13.8	13.8
85°	7.9	7.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
87.5°	3.9	3.9	3.9	3.9	3.9	3.9	2.0	2.0	2.0	2.0	2.0
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: P345429

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMW 4000Lm4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5	1486.5
2.5°	1539.6	1541.6	1543.5	1545.5	1547.5	1547.5	1549.4	1551.4
5°	1578.9	1584.8	1586.8	1588.8	1592.7	1594.7	1594.7	1596.6
7.5°	1610.4	1618.3	1620.2	1624.2	1628.1	1630.1	1632.0	1632.0
10°	1628.1	1634.0	1636.0	1639.9	1643.8	1645.8	1647.8	1647.8
12.5°	1622.2	1628.1	1630.1	1632.0	1636.0	1637.9	1637.9	1637.9
15°	1600.6	1600.6	1600.6	1600.6	1598.6	1600.6	1600.6	1596.6
17.5°	1551.4	1549.4	1551.4	1547.5	1545.5	1545.5	1543.5	1543.5
20°	1492.4	1490.4	1488.5	1488.5	1486.5	1482.6	1480.6	1478.7
22.5°	1425.6	1421.6	1419.7	1419.7	1415.7	1413.8	1411.8	1407.9
25°	1356.7	1346.9	1346.9	1346.9	1343.0	1343.0	1339.0	1335.1
27.5°	1278.1	1272.2	1272.2	1268.3	1264.3	1262.4	1260.4	1262.4
30°	1203.4	1195.5	1191.6	1189.6	1187.6	1187.6	1181.7	1179.8
32.5°	1120.8	1114.9	1111.0	1109.0	1105.1	1103.1	1101.1	1097.2
35°	1040.2	1034.3	1030.3	1030.3	1022.5	1020.5	1018.5	1018.5
37.5°	957.6	953.7	951.7	945.8	943.8	941.9	941.9	939.9
40°	880.9	875.0	873.0	867.1	865.2	865.2	859.3	861.2
42.5°	802.2	794.4	792.4	790.4	788.5	784.6	786.5	782.6
45°	727.5	721.6	717.7	717.7	715.7	711.8	709.8	711.8
47.5°	654.8	646.9	646.9	644.9	643.0	641.0	641.0	637.1
50°	586.0	580.1	576.1	572.2	574.2	572.2	568.3	570.2
52.5°	511.2	505.3	503.4	503.4	501.4	501.4	499.4	499.4
55°	444.4	438.5	438.5	436.5	436.5	436.5	434.6	434.6
57.5°	377.5	373.6	371.6	371.6	367.7	369.7	367.7	365.7
60°	318.5	312.6	308.7	310.7	308.7	308.7	304.8	306.7
62.5°	257.6	253.7	251.7	251.7	247.8	247.8	243.8	245.8
65°	206.5	200.6	198.6	196.6	192.7	190.7	190.7	190.7
67.5°	159.3	155.3	153.4	149.4	145.5	143.5	141.6	139.6
70°	119.9	116.0	114.0	112.1	110.1	108.1	108.1	106.2
72.5°	90.4	86.5	86.5	84.6	84.6	82.6	82.6	82.6
75°	64.9	64.9	62.9	62.9	61.0	62.9	61.0	61.0
77.5°	45.2	43.3	45.2	43.3	41.3	41.3	41.3	41.3
80°	25.6	25.6	25.6	25.6	25.6	25.6	25.6	23.6
82.5°	13.8	13.8	13.8	11.8	11.8	11.8	11.8	11.8
85°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
87.5°	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)