

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: P345465

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSMMS 4000Lm4000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345465
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 PR4M24WW9FSMMS 4000Lm4000K
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE METALLIC SILVER FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 4000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2752.9 lumens
Efficiency: N/A
Efficacy: 61.2 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

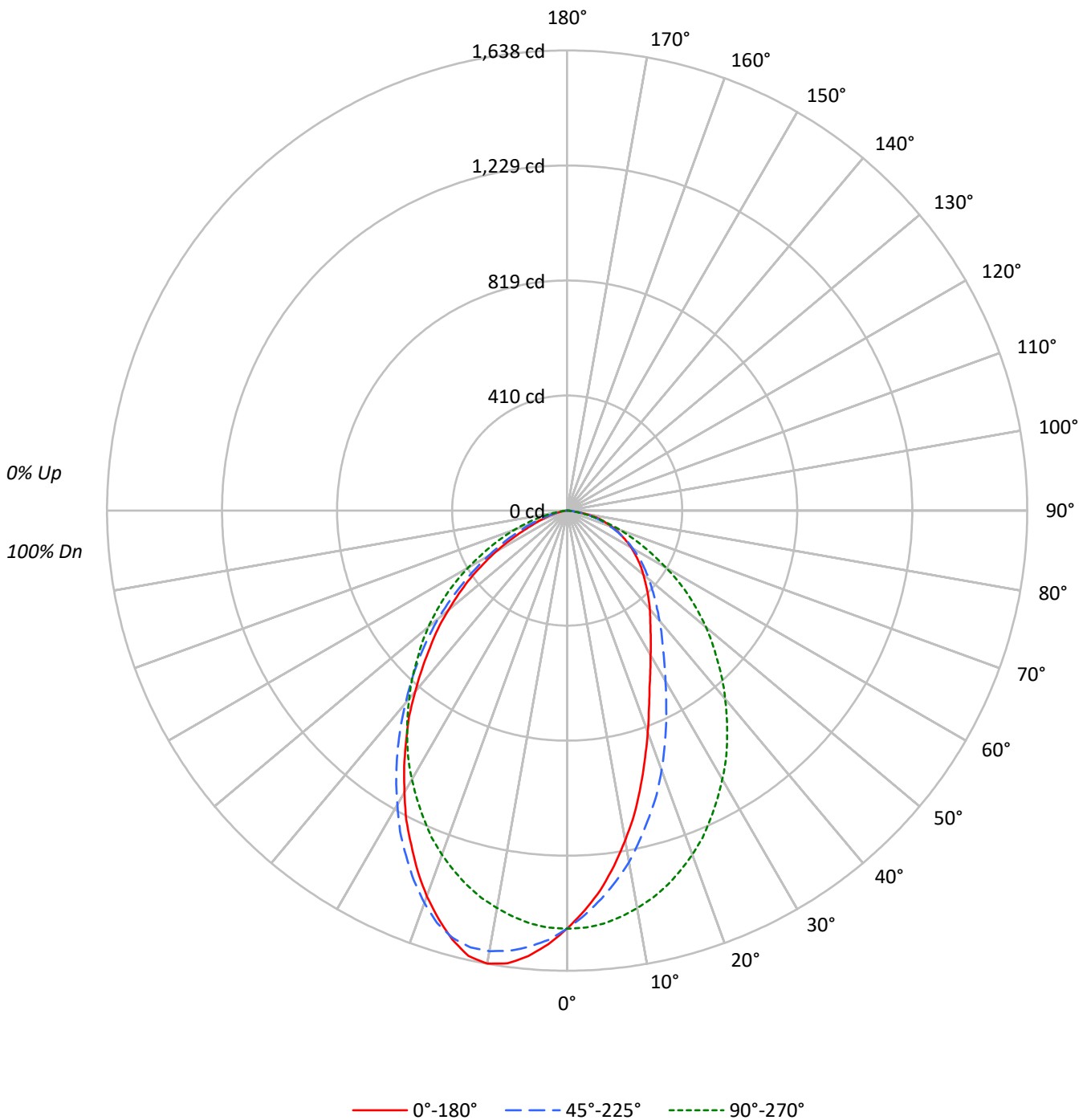
Input Watts (W): 45
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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°	145027	145027	145027
5°	132697	144427	155775
10°	117883	142208	162049
15°	102147	139237	159466
20°	87056	135169	151483
25°	74617	129997	141202
30°	66812	124329	130293
35°	61510	118106	118808
40°	58268	111294	107032
45°	55544	104307	95100
50°	53642	97763	83754
55°	52435	89850	71482
60°	51341	79311	57091
65°	49857	68006	40794
70°	48726	56562	29122
75°	46617	43680	20710
80°	33113	25368	12123
85°	8834	13195	2236



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	139.3	5.1
10°-20°	376.9	13.7
20°-30°	507.8	18.4
30°-40°	533.3	19.4
40°-50°	480.6	17.5
50°-60°	371.2	13.5
60°-70°	228.4	8.3
70°-80°	100.7	3.7
80°-90°	14.7	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°	1024.0	37.2
0°-40°	1557.3	56.6
0°-60°	2409.0	87.5
0°-90°	2752.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2752.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1488	1488	1488	1488	1488	
5°	1356	1388	1476	1559	1592	124
15°	1012	1128	1380	1575	1580	282
25°	694	834	1209	1356	1313	322
35°	517	594	993	1054	999	325
45°	403	440	757	745	690	312
55°	309	324	529	454	421	276
65°	216	216	295	218	177	215
75°	124	110	116	69	55	127
85°	8	10	12	6	2	19
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°	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1
2.5°	1425.2	1423.2	1421.2	1425.2	1425.2	1427.1	1427.1	1431.1	1431.1	1435.0	1440.9
5°	1356.4	1352.4	1354.4	1354.4	1360.3	1360.3	1364.2	1368.2	1374.1	1381.9	1387.8
7.5°	1275.8	1275.8	1277.7	1281.7	1287.6	1287.6	1293.5	1299.4	1309.2	1319.0	1330.8
10°	1191.2	1195.2	1197.1	1201.1	1210.9	1214.8	1216.8	1226.6	1240.4	1250.2	1269.9
12.5°	1106.7	1106.7	1110.6	1118.5	1126.4	1132.3	1136.2	1150.0	1163.7	1181.4	1199.1
15°	1012.4	1014.3	1020.2	1028.1	1041.8	1045.8	1053.6	1069.4	1089.0	1110.6	1128.3
17.5°	921.9	925.9	929.8	941.6	951.4	957.3	969.1	986.8	1008.4	1032.0	1059.5
20°	839.4	833.5	841.3	849.2	859.0	872.8	880.7	900.3	923.9	955.4	982.9
22.5°	760.7	760.7	766.6	772.5	782.4	792.2	802.0	817.8	843.3	874.8	906.2
25°	693.9	695.9	701.8	707.7	717.5	723.4	733.2	749.0	774.5	798.1	833.5
27.5°	640.8	642.8	644.8	652.6	660.5	666.4	672.3	688.0	707.7	733.2	762.7
30°	593.7	593.7	595.6	603.5	607.4	615.3	619.2	633.0	650.7	672.3	699.8
32.5°	554.3	554.3	556.3	560.2	568.1	572.0	574.0	587.8	601.5	623.1	644.8
35°	517.0	517.0	519.0	522.9	528.8	530.8	536.7	544.5	558.3	574.0	593.7
37.5°	485.5	485.5	487.5	489.5	493.4	497.3	501.3	509.1	517.0	532.7	552.4
40°	458.0	456.1	458.0	460.0	465.9	465.9	467.8	475.7	483.6	495.4	511.1
42.5°	430.5	430.5	430.5	432.5	436.4	438.4	440.3	444.3	452.1	462.0	473.7
45°	403.0	403.0	404.9	406.9	408.9	410.8	414.8	418.7	422.6	428.5	440.3
47.5°	377.4	379.4	379.4	381.4	383.3	385.3	387.3	391.2	395.1	401.0	408.9
50°	353.8	355.8	355.8	357.8	359.7	359.7	361.7	365.6	369.6	373.5	379.4
52.5°	332.2	332.2	330.2	332.2	334.2	334.2	336.1	338.1	342.0	347.9	351.9
55°	308.6	308.6	308.6	310.6	310.6	310.6	312.6	314.5	316.5	318.5	324.3
57.5°	285.0	285.0	287.0	285.0	287.0	287.0	287.0	289.0	290.9	294.9	296.8
60°	263.4	263.4	263.4	263.4	263.4	263.4	265.4	265.4	265.4	267.3	269.3
62.5°	239.8	239.8	239.8	239.8	239.8	239.8	239.8	239.8	241.8	241.8	243.8
65°	216.2	216.2	218.2	216.2	216.2	216.2	216.2	216.2	216.2	216.2	216.2
67.5°	194.6	192.6	194.6	192.6	192.6	192.6	192.6	190.7	190.7	190.7	188.7
70°	171.0	169.1	169.1	169.1	169.1	167.1	169.1	167.1	165.1	163.2	161.2
72.5°	145.5	145.5	145.5	145.5	145.5	143.5	141.5	141.5	139.6	137.6	135.6
75°	123.8	123.8	121.9	119.9	117.9	117.9	117.9	116.0	114.0	112.0	110.1
77.5°	96.3	94.4	94.4	92.4	90.4	88.5	90.4	88.5	86.5	84.5	82.6
80°	59.0	59.0	59.0	59.0	59.0	59.0	57.0	59.0	57.0	55.0	55.0
82.5°	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
85°	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	9.8	9.8
87.5°	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	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



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CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1
2.5°	1444.8	1448.8	1454.7	1458.6	1460.6	1462.5	1468.4	1474.3	1480.2	1486.1	1490.0
5°	1397.6	1407.5	1413.4	1423.2	1429.1	1435.0	1444.8	1454.7	1464.5	1476.3	1486.1
7.5°	1340.6	1356.4	1368.2	1381.9	1389.8	1397.6	1411.4	1427.1	1442.9	1458.6	1474.3
10°	1285.6	1299.4	1321.0	1340.6	1346.5	1358.3	1380.0	1397.6	1419.3	1437.0	1458.6
12.5°	1222.7	1240.4	1264.0	1287.6	1301.3	1313.1	1338.7	1362.3	1387.8	1411.4	1437.0
15°	1153.9	1181.4	1207.0	1234.5	1252.2	1264.0	1293.5	1323.0	1350.5	1380.0	1409.4
17.5°	1085.1	1116.5	1148.0	1181.4	1195.2	1212.9	1246.3	1277.7	1311.2	1342.6	1376.0
20°	1016.3	1049.7	1083.1	1120.5	1140.1	1157.8	1193.2	1230.6	1267.9	1303.3	1338.7
22.5°	943.6	978.9	1018.3	1059.5	1081.2	1096.9	1138.2	1179.5	1218.8	1260.0	1297.4
25°	870.8	912.1	953.4	996.6	1018.3	1041.8	1083.1	1126.4	1167.7	1208.9	1252.2
27.5°	800.1	843.3	886.6	935.7	957.3	980.9	1026.1	1069.4	1114.6	1157.8	1201.1
30°	735.2	776.5	823.7	872.8	896.4	920.0	967.2	1014.3	1059.5	1104.8	1146.0
32.5°	676.2	711.6	760.7	809.9	835.4	859.0	908.2	957.3	1004.5	1051.7	1093.0
35°	621.2	654.6	695.9	749.0	772.5	798.1	849.2	896.4	945.5	992.7	1036.0
37.5°	572.0	603.5	640.8	686.0	715.5	739.1	790.2	839.4	886.6	933.7	977.0
40°	528.8	556.3	587.8	629.0	656.6	682.1	733.2	782.4	829.5	874.8	918.0
42.5°	489.5	511.1	540.6	577.9	599.6	625.1	678.2	725.4	772.5	817.8	857.1
45°	452.1	469.8	495.4	528.8	546.5	574.0	623.1	670.3	715.5	756.8	800.1
47.5°	418.7	434.4	454.1	481.6	499.3	520.9	570.1	617.2	660.5	701.8	739.1
50°	389.2	401.0	418.7	442.3	456.1	471.8	520.9	566.1	605.5	644.8	680.2
52.5°	359.7	367.6	381.4	401.0	414.8	428.5	469.8	513.1	552.4	585.8	623.1
55°	328.3	338.1	349.9	363.7	373.5	385.3	418.7	460.0	493.4	528.8	558.3
57.5°	300.8	306.7	314.5	326.3	334.2	344.0	369.6	404.9	438.4	467.8	497.3
60°	273.2	277.2	283.1	290.9	296.8	304.7	322.4	353.8	383.3	406.9	432.5
62.5°	245.7	245.7	249.7	255.5	259.5	265.4	281.1	304.7	330.2	347.9	369.6
65°	216.2	218.2	220.2	224.1	226.1	230.0	239.8	257.5	277.2	294.9	310.6
67.5°	188.7	188.7	190.7	192.6	192.6	194.6	200.5	212.3	232.0	243.8	255.5
70°	161.2	161.2	161.2	161.2	163.2	161.2	165.1	173.0	186.7	198.5	204.4
72.5°	135.6	133.7	131.7	131.7	131.7	131.7	133.7	139.6	147.4	153.3	161.2
75°	108.1	106.2	104.2	102.2	104.2	104.2	104.2	106.2	110.1	116.0	117.9
77.5°	80.6	80.6	76.7	74.7	76.7	74.7	72.7	72.7	74.7	76.7	76.7
80°	55.0	53.1	51.1	49.1	49.1	49.1	47.2	45.2	45.2	45.2	43.2
82.5°	27.5	27.5	25.6	25.6	25.6	25.6	25.6	23.6	23.6	21.6	21.6
85°	9.8	9.8	9.8	9.8	11.8	9.8	11.8	11.8	11.8	11.8	11.8
87.5°	5.9	5.9	7.9	7.9	7.9	7.9	7.9	9.8	9.8	9.8	7.9
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°	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1
2.5°	1495.9	1501.8	1505.8	1509.7	1511.7	1515.6	1521.5	1525.4	1529.4	1533.3	1537.2
5°	1495.9	1507.7	1515.6	1521.5	1527.4	1535.3	1545.1	1552.9	1558.8	1566.7	1572.6
7.5°	1490.0	1505.8	1519.5	1527.4	1535.3	1547.0	1558.8	1570.6	1580.5	1590.3	1598.2
10°	1478.2	1497.9	1517.6	1525.4	1535.3	1551.0	1566.7	1580.5	1592.3	1604.1	1613.9
12.5°	1460.6	1484.1	1507.7	1517.6	1527.4	1547.0	1564.7	1580.5	1592.3	1602.1	1608.0
15°	1437.0	1464.5	1490.0	1501.8	1513.6	1533.3	1551.0	1564.7	1574.6	1580.5	1584.4
17.5°	1407.5	1437.0	1464.5	1478.2	1492.0	1511.7	1525.4	1533.3	1539.2	1539.2	1537.2
20°	1374.1	1405.5	1435.0	1448.8	1460.6	1476.3	1486.1	1488.1	1486.1	1482.2	1478.2
22.5°	1332.8	1368.2	1397.6	1409.4	1419.3	1431.1	1431.1	1429.1	1425.2	1419.3	1417.3
25°	1289.5	1323.0	1352.4	1364.2	1368.2	1376.0	1370.1	1366.2	1356.4	1350.5	1344.6
27.5°	1242.4	1277.7	1299.4	1307.2	1311.2	1307.2	1301.3	1293.5	1287.6	1277.7	1269.9
30°	1191.2	1222.7	1240.4	1246.3	1244.3	1238.4	1232.5	1218.8	1208.9	1199.1	1189.3
32.5°	1132.3	1163.7	1177.5	1179.5	1173.6	1163.7	1153.9	1144.1	1132.3	1120.5	1114.6
35°	1075.3	1102.8	1110.6	1106.7	1100.8	1089.0	1075.3	1063.5	1053.6	1039.9	1030.1
37.5°	1014.3	1037.9	1037.9	1032.0	1028.1	1014.3	1000.6	988.8	975.0	963.2	949.5
40°	953.4	971.1	965.2	959.3	953.4	937.7	925.9	908.2	894.4	880.7	870.8
42.5°	892.5	902.3	894.4	886.6	878.7	863.0	851.2	831.5	819.7	806.0	798.1
45°	831.5	833.5	821.7	815.8	807.9	788.3	772.5	758.8	745.0	729.3	719.5
47.5°	768.6	764.7	750.9	743.1	735.2	717.5	701.8	686.0	670.3	658.5	646.7
50°	705.7	695.9	682.1	674.3	664.4	648.7	631.0	613.3	599.6	587.8	577.9
52.5°	636.9	629.0	613.3	601.5	593.7	572.0	556.3	540.6	524.9	513.1	505.2
55°	568.1	556.3	538.6	530.8	519.0	501.3	485.5	465.9	454.1	444.3	434.4
57.5°	499.3	485.5	469.8	460.0	448.2	430.5	412.8	401.0	389.2	377.4	371.5
60°	432.5	418.7	399.0	395.1	383.3	365.6	349.9	336.1	324.3	316.5	310.6
62.5°	369.6	355.8	336.1	328.3	320.4	302.7	289.0	277.2	269.3	261.4	255.5
65°	306.7	294.9	279.1	269.3	261.4	247.7	235.9	224.1	218.2	208.4	202.5
67.5°	249.7	235.9	224.1	216.2	210.3	196.6	186.7	178.9	171.0	165.1	157.3
70°	196.6	184.8	173.0	169.1	163.2	153.3	145.5	137.6	131.7	125.8	117.9
72.5°	151.4	143.5	131.7	127.8	123.8	116.0	110.1	104.2	96.3	92.4	88.5
75°	112.0	104.2	96.3	92.4	90.4	82.6	78.6	72.7	68.8	66.8	62.9
77.5°	72.7	66.8	62.9	60.9	59.0	55.0	51.1	49.1	45.2	43.2	43.2
80°	41.3	39.3	37.3	35.4	33.4	31.5	31.5	29.5	27.5	25.6	23.6
82.5°	19.7	19.7	17.7	17.7	17.7	15.7	15.7	13.8	13.8	11.8	11.8
85°	9.8	9.8	9.8	9.8	9.8	7.9	7.9	7.9	5.9	5.9	3.9
87.5°	7.9	7.9	7.9	7.9	7.9	5.9	5.9	5.9	3.9	3.9	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: P345465

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSMMS 4000Lm4000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1	1488.1
2.5°	1537.2	1539.2	1541.1	1543.1	1543.1	1545.1	1547.0	1545.1
5°	1576.5	1582.4	1584.4	1586.4	1588.3	1590.3	1592.3	1592.3
7.5°	1606.0	1613.9	1615.8	1615.8	1621.7	1623.7	1625.7	1625.7
10°	1621.7	1625.7	1629.6	1629.6	1633.5	1633.5	1637.5	1637.5
12.5°	1613.9	1617.8	1619.8	1621.7	1621.7	1623.7	1623.7	1623.7
15°	1586.4	1584.4	1584.4	1582.4	1582.4	1580.5	1580.5	1580.5
17.5°	1535.3	1533.3	1531.3	1531.3	1527.4	1527.4	1523.5	1523.5
20°	1474.3	1470.4	1468.4	1466.5	1466.5	1464.5	1460.6	1460.6
22.5°	1409.4	1405.5	1401.6	1397.6	1393.7	1391.8	1389.8	1389.8
25°	1336.7	1330.8	1328.8	1326.9	1321.0	1319.0	1315.1	1313.1
27.5°	1262.0	1252.2	1250.2	1248.3	1244.3	1242.4	1240.4	1240.4
30°	1183.4	1177.5	1173.6	1171.6	1165.7	1163.7	1157.8	1157.8
32.5°	1104.8	1094.9	1091.0	1089.0	1085.1	1081.2	1079.2	1079.2
35°	1022.2	1016.3	1014.3	1008.4	1002.5	1002.5	998.6	998.6
37.5°	943.6	937.7	931.8	929.8	925.9	920.0	918.0	923.9
40°	864.9	857.1	853.1	851.2	847.2	841.3	841.3	841.3
42.5°	788.3	782.4	780.4	776.5	772.5	770.6	766.6	764.7
45°	709.6	705.7	703.7	699.8	697.8	693.9	690.0	690.0
47.5°	640.8	633.0	633.0	629.0	625.1	623.1	623.1	625.1
50°	572.0	566.1	562.2	560.2	556.3	556.3	554.3	552.4
52.5°	497.3	493.4	491.4	491.4	487.5	487.5	485.5	485.5
55°	428.5	428.5	426.6	424.6	420.7	420.7	420.7	420.7
57.5°	367.6	363.7	361.7	359.7	357.8	355.8	355.8	353.8
60°	304.7	302.7	298.8	300.8	294.9	294.9	294.9	292.9
62.5°	247.7	243.8	241.8	239.8	235.9	235.9	232.0	230.0
65°	198.5	192.6	188.7	188.7	184.8	180.8	178.9	176.9
67.5°	149.4	145.5	143.5	141.5	137.6	133.7	133.7	131.7
70°	114.0	110.1	108.1	106.2	104.2	102.2	102.2	102.2
72.5°	84.5	82.6	80.6	80.6	78.6	76.7	76.7	78.6
75°	60.9	59.0	59.0	59.0	57.0	57.0	57.0	55.0
77.5°	41.3	39.3	39.3	37.3	37.3	37.3	37.3	37.3
80°	23.6	21.6	21.6	21.6	21.6	21.6	21.6	21.6
82.5°	9.8	9.8	9.8	9.8	7.9	7.9	7.9	7.9
85°	3.9	3.9	3.9	3.9	3.9	2.0	2.0	2.0
87.5°	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)