

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: P345499

Luminaire Tested: **PR4FS24D010 PR4M24WW9FSBZ 4000Lm3000K**

Issue Date: 03/03/2020

Test Information

Test Method: LM-79-08
Report Number: P345499
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 4000lm3000K
Description: PR4 WALLWASH ASSEMBLY WITH, BRONZE FINISH
Light Source: ARRAY OF HIGH LUMEN LEDs 90CRI / 3000K CCT
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2612.5 lumens
Efficiency: N/A
Efficacy: 58.1 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

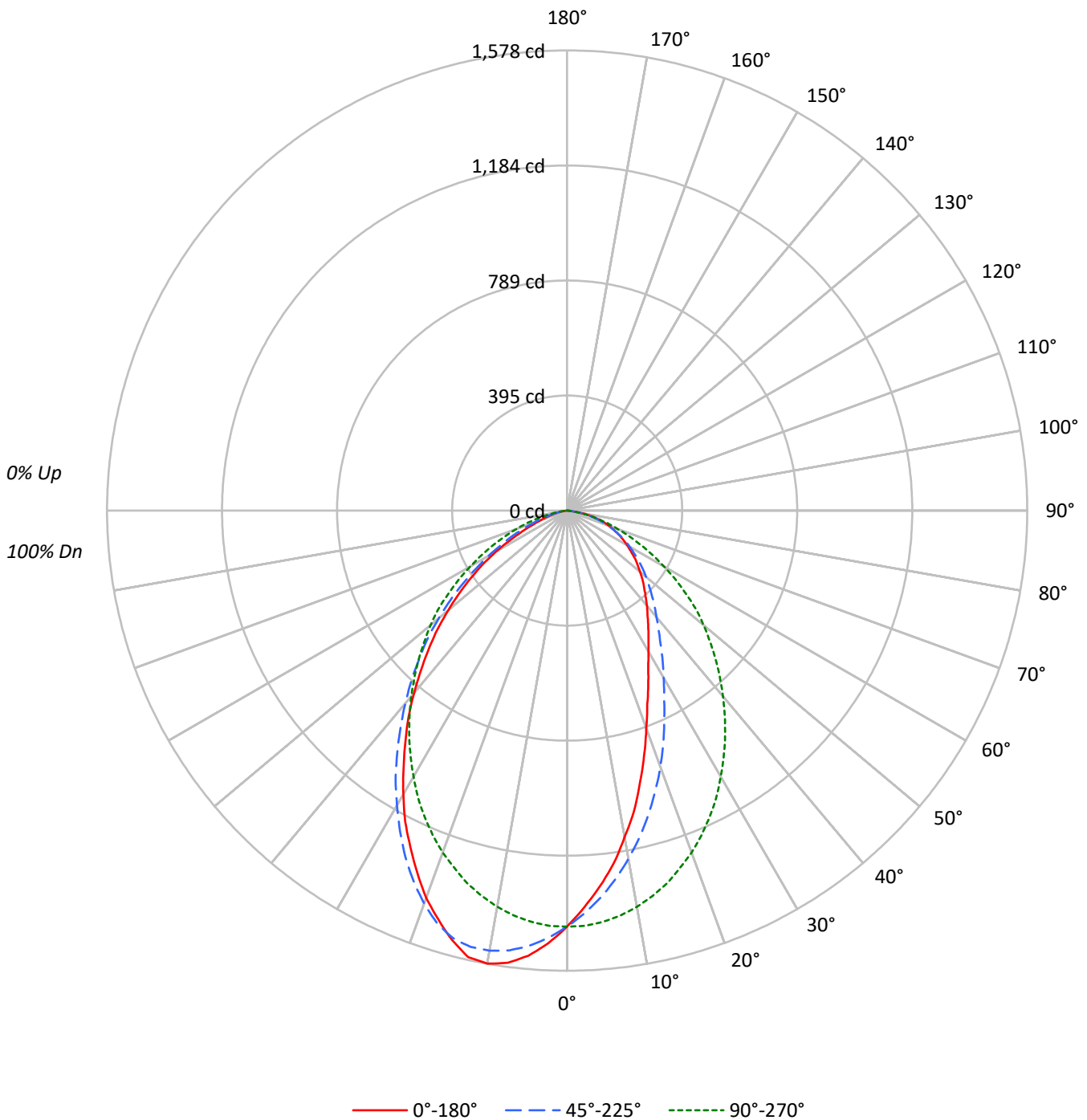
Input Watts (W): 45
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	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°	124801	124801	124801
5°	113530	124286	134550
10°	100951	122543	140121
15°	87395	119822	138087
20°	73861	116149	131591
25°	63485	111693	122792
30°	56348	106415	113465
35°	51724	100833	103246
40°	48642	94909	93185
45°	46165	89064	83003
50°	44375	83103	72326
55°	43111	75883	61228
60°	41548	66932	49123
65°	40566	57745	35495
70°	39052	47236	24577
75°	36296	35688	17202
80°	24682	18990	8563
85°	1907	7527	0



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CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 4000lm3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	133.6	5.1
10°-20°	361.5	13.8
20°-30°	486.6	18.6
30°-40°	509.8	19.5
40°-50°	457.1	17.5
50°-60°	350.0	13.4
60°-70°	213.1	8.2
70°-80°	90.5	3.5
80°-90°	10.2	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°	981.7	37.6
0°-40°	1491.5	57.1
0°-60°	2298.6	88.0
0°-90°	2612.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2612.5	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	1427	1427	1427	1427	1427	
5°	1293	1331	1416	1498	1532	119
15°	965	1078	1323	1517	1525	269
25°	658	788	1157	1312	1272	304
35°	484	558	944	1016	967	304
45°	373	411	720	716	671	289
55°	283	300	498	435	402	252
65°	196	198	279	207	172	193
75°	107	96	106	64	51	111
85°	2	4	8	2	0	12
90°	0	0	0	0	0	



TEST NUMBER: P345499

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 4000lm3000K

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	22.5°	25°	30°	35°	40°	45°
0°	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8
2.5°	1360.9	1362.8	1366.5	1364.6	1368.4	1368.4	1368.4	1372.2	1376.0	1377.8	1381.6
5°	1293.0	1294.9	1296.8	1300.6	1302.4	1300.6	1306.2	1311.9	1317.5	1325.1	1330.7
7.5°	1221.4	1221.4	1219.5	1225.2	1232.7	1234.6	1238.4	1244.0	1251.6	1262.9	1274.2
10°	1136.6	1138.5	1142.2	1144.1	1155.4	1157.3	1163.0	1170.5	1183.7	1196.9	1212.0
12.5°	1057.4	1055.5	1057.4	1063.1	1070.6	1080.0	1085.7	1095.1	1112.1	1129.0	1147.9
15°	965.1	966.9	972.6	978.2	989.6	995.2	1004.6	1021.6	1038.6	1055.5	1078.1
17.5°	878.4	876.5	884.0	893.4	902.9	912.3	919.8	934.9	957.5	982.0	1006.5
20°	793.5	791.6	797.3	804.8	819.9	825.6	835.0	857.6	878.4	904.7	934.9
22.5°	718.1	718.1	723.8	733.2	742.6	748.3	757.7	776.6	801.1	831.2	861.4
25°	657.8	657.8	661.6	667.2	678.6	684.2	693.6	706.8	729.4	757.7	787.9
27.5°	601.3	605.0	606.9	612.6	622.0	627.7	633.3	648.4	667.2	691.7	720.0
30°	557.9	559.8	561.7	565.5	573.0	576.8	584.3	597.5	614.5	635.2	661.6
32.5°	518.3	520.2	520.2	525.9	531.5	537.2	541.0	552.3	563.6	584.3	608.8
35°	484.4	484.4	488.2	490.1	493.8	497.6	501.4	510.8	524.0	539.1	557.9
37.5°	452.4	452.4	454.3	458.0	461.8	465.6	467.4	475.0	486.3	499.5	514.6
40°	426.0	426.0	426.0	429.8	433.5	435.4	437.3	444.8	454.3	463.7	476.9
42.5°	397.7	399.6	401.5	403.4	405.2	409.0	410.9	414.7	422.2	429.8	442.9
45°	373.2	375.1	375.1	377.0	380.7	380.7	382.6	388.3	393.9	401.5	410.9
47.5°	350.6	350.6	350.6	352.5	354.4	356.2	358.1	361.9	367.5	371.3	380.7
50°	326.1	326.1	328.0	329.9	331.7	331.7	333.6	335.5	341.2	344.9	352.5
52.5°	303.5	303.5	305.3	305.3	307.2	307.2	309.1	312.9	314.8	320.4	326.1
55°	282.7	280.8	282.7	282.7	282.7	284.6	284.6	288.4	292.2	294.0	299.7
57.5°	258.2	260.1	260.1	262.0	262.0	262.0	263.9	263.9	267.7	269.5	271.4
60°	237.5	239.4	239.4	239.4	239.4	239.4	241.3	241.3	243.1	245.0	246.9
62.5°	216.8	216.8	216.8	216.8	216.8	218.6	218.6	218.6	218.6	220.5	222.4
65°	196.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	197.9
67.5°	173.4	173.4	173.4	175.3	173.4	173.4	173.4	173.4	173.4	173.4	171.5
70°	152.7	152.7	152.7	152.7	152.7	150.8	150.8	148.9	148.9	147.0	147.0
72.5°	130.1	130.1	130.1	128.2	128.2	128.2	126.3	124.4	122.5	122.5	122.5
75°	107.4	107.4	105.6	105.6	103.7	103.7	101.8	99.9	98.0	96.1	96.1
77.5°	81.0	81.0	81.0	81.0	79.2	77.3	77.3	75.4	73.5	73.5	71.6
80°	49.0	47.1	47.1	47.1	47.1	47.1	47.1	47.1	47.1	45.2	45.2
82.5°	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8
85°	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	3.8
87.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	1.9	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



TEST NUMBER: P345499

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 4000lm3000K

CANDELA DISTRIBUTION (continued):

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8
2.5°	1385.4	1389.2	1394.8	1398.6	1400.5	1402.3	1408.0	1413.7	1419.3	1425.0	1428.7
5°	1340.1	1347.7	1355.2	1364.6	1368.4	1374.1	1385.4	1394.8	1404.2	1415.5	1425.0
7.5°	1285.5	1298.7	1311.9	1326.9	1332.6	1338.3	1353.3	1370.3	1383.5	1400.5	1415.5
10°	1228.9	1244.0	1261.0	1281.7	1291.1	1300.6	1319.4	1340.1	1359.0	1379.7	1398.6
12.5°	1164.9	1189.4	1212.0	1234.6	1244.0	1255.3	1279.8	1304.3	1328.8	1353.3	1376.0
15°	1100.8	1125.3	1153.5	1179.9	1193.1	1208.2	1236.5	1266.6	1294.9	1323.2	1349.6
17.5°	1036.7	1061.2	1091.3	1125.3	1142.2	1157.3	1187.5	1221.4	1255.3	1285.5	1319.4
20°	965.1	997.1	1032.9	1068.7	1085.7	1104.5	1140.3	1176.2	1213.9	1247.8	1283.6
22.5°	895.3	929.2	972.6	1008.4	1027.3	1046.1	1087.6	1129.0	1166.7	1204.4	1240.2
25°	825.6	865.2	906.6	950.0	970.7	991.4	1034.8	1074.4	1117.7	1157.3	1198.8
27.5°	757.7	799.2	842.5	887.8	910.4	933.0	976.4	1021.6	1065.0	1108.3	1149.8
30°	693.6	733.2	780.3	827.5	850.1	874.6	919.8	966.9	1010.3	1053.6	1098.9
32.5°	637.1	671.0	718.1	765.3	789.8	814.3	863.3	910.4	953.7	999.0	1046.1
35°	584.3	616.4	657.8	706.8	731.3	755.8	804.8	853.8	901.0	944.3	989.6
37.5°	539.1	567.3	603.2	646.5	674.8	699.3	748.3	797.3	842.5	887.8	931.1
40°	495.7	520.2	554.2	595.6	618.2	642.7	691.7	742.6	787.9	831.2	874.6
42.5°	458.0	478.8	507.0	542.8	567.3	588.1	639.0	688.0	731.3	774.7	818.0
45°	424.1	441.1	463.7	493.8	514.6	541.0	588.1	633.3	676.7	720.0	761.5
47.5°	390.2	405.2	424.1	452.4	469.3	490.1	537.2	580.5	623.9	663.5	703.1
50°	361.9	373.2	388.3	410.9	427.9	442.9	486.3	531.5	571.1	610.7	646.5
52.5°	333.6	341.2	354.4	375.1	386.4	401.5	439.2	480.6	520.2	557.9	590.0
55°	305.3	312.9	322.3	337.4	348.7	360.0	392.1	431.6	467.4	497.6	529.6
57.5°	277.1	282.7	290.3	303.5	311.0	320.4	346.8	378.9	410.9	441.1	465.6
60°	252.6	256.3	262.0	269.5	275.2	280.8	299.7	329.9	360.0	382.6	405.2
62.5°	224.3	226.2	230.0	237.5	241.3	245.0	258.2	284.6	309.1	329.9	348.7
65°	197.9	199.8	201.7	205.5	209.2	211.1	222.4	241.3	262.0	279.0	292.2
67.5°	171.5	173.4	173.4	177.2	177.2	180.9	186.6	197.9	216.8	230.0	241.3
70°	145.1	147.0	147.0	148.9	147.0	148.9	154.6	162.1	173.4	184.7	192.3
72.5°	120.6	118.7	118.7	118.7	118.7	120.6	122.5	126.3	135.7	145.1	147.0
75°	94.2	94.2	92.4	92.4	92.4	92.4	92.4	94.2	99.9	105.6	107.4
77.5°	69.7	67.9	67.9	66.0	66.0	66.0	64.1	64.1	66.0	69.7	69.7
80°	45.2	43.4	41.5	43.4	39.6	41.5	39.6	37.7	37.7	37.7	35.8
82.5°	18.8	18.8	18.8	18.8	18.8	18.8	18.8	18.8	17.0	17.0	17.0
85°	3.8	3.8	5.7	5.7	5.7	5.7	5.7	5.7	7.5	7.5	5.7
87.5°	3.8	3.8	3.8	5.7	5.7	5.7	5.7	5.7	7.5	7.5	7.5
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: P345499

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 4000lm3000K

CANDELA DISTRIBUTION (continued):

	100°	105°	110°	112.5°	115°	120°	125°	130°	135°	140°	145°
0°	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8
2.5°	1434.4	1440.0	1445.7	1447.6	1449.5	1455.1	1458.9	1464.5	1466.4	1470.2	1474.0
5°	1434.4	1445.7	1455.1	1460.8	1464.5	1474.0	1483.4	1489.0	1498.5	1504.1	1509.8
7.5°	1430.6	1445.7	1458.9	1466.4	1474.0	1485.3	1498.5	1509.8	1521.1	1528.6	1538.1
10°	1419.3	1438.2	1455.1	1464.5	1474.0	1490.9	1506.0	1519.2	1532.4	1543.7	1553.1
12.5°	1402.3	1425.0	1445.7	1457.0	1466.4	1487.2	1504.1	1519.2	1532.4	1541.8	1549.4
15°	1377.8	1406.1	1430.6	1441.9	1453.2	1475.9	1492.8	1506.0	1517.3	1523.0	1528.6
17.5°	1349.6	1379.7	1408.0	1421.2	1432.5	1453.2	1468.3	1477.7	1483.4	1487.2	1485.3
20°	1317.5	1349.6	1377.8	1391.0	1404.2	1421.2	1432.5	1436.3	1434.4	1432.5	1428.7
22.5°	1277.9	1311.9	1342.0	1353.3	1364.6	1377.8	1381.6	1379.7	1376.0	1372.2	1366.5
25°	1236.5	1270.4	1298.7	1308.1	1317.5	1323.2	1321.3	1317.5	1311.9	1306.2	1296.8
27.5°	1189.4	1225.2	1247.8	1259.1	1261.0	1261.0	1255.3	1249.7	1240.2	1232.7	1223.3
30°	1140.3	1170.5	1193.1	1196.9	1198.8	1195.0	1189.4	1179.9	1166.7	1161.1	1151.7
32.5°	1083.8	1115.8	1132.8	1132.8	1129.0	1123.4	1112.1	1102.6	1095.1	1081.9	1072.5
35°	1031.0	1055.5	1065.0	1065.0	1059.3	1049.9	1040.4	1027.3	1015.9	1008.4	995.2
37.5°	970.7	995.2	999.0	993.3	989.6	978.2	963.2	951.9	938.7	929.2	919.8
40°	914.2	931.1	927.4	921.7	917.9	906.6	889.7	876.5	863.3	852.0	842.5
42.5°	850.1	861.4	855.7	852.0	844.4	831.2	816.1	803.0	789.8	778.5	769.0
45°	791.6	797.3	787.9	780.3	774.7	759.6	748.3	729.4	716.3	704.9	697.4
47.5°	729.4	729.4	720.0	712.5	703.1	688.0	674.8	655.9	648.4	633.3	625.8
50°	669.1	663.5	652.2	642.7	635.2	618.2	601.3	588.1	574.9	563.6	556.0
52.5°	605.0	597.5	582.4	573.0	569.2	548.5	533.4	516.5	505.1	492.0	484.4
55°	541.0	529.6	512.7	505.1	497.6	480.6	463.7	446.7	435.4	426.0	418.4
57.5°	475.0	461.8	446.7	437.3	427.9	410.9	393.9	378.9	369.4	360.0	354.4
60°	407.1	397.7	382.6	373.2	363.8	348.7	329.9	318.5	311.0	299.7	297.8
62.5°	348.7	335.5	318.5	311.0	303.5	288.4	273.3	263.9	254.5	248.8	241.3
65°	290.3	277.1	262.0	254.5	248.8	235.6	224.3	214.9	207.3	199.8	194.1
67.5°	233.7	224.3	211.1	205.5	197.9	186.6	177.2	169.6	162.1	154.6	148.9
70°	186.6	175.3	164.0	160.2	156.4	145.1	137.6	130.1	122.5	116.9	111.2
72.5°	143.3	133.8	124.4	118.7	115.0	109.3	103.7	96.1	90.5	84.8	81.0
75°	101.8	96.1	88.6	84.8	81.0	77.3	69.7	66.0	64.1	60.3	56.5
77.5°	66.0	60.3	56.5	52.8	52.8	49.0	45.2	43.4	39.6	39.6	37.7
80°	33.9	32.0	30.2	30.2	30.2	26.4	24.5	24.5	22.6	20.7	20.7
82.5°	15.1	15.1	13.2	13.2	13.2	11.3	11.3	9.4	9.4	7.5	7.5
85°	5.7	5.7	5.7	5.7	5.7	3.8	3.8	3.8	1.9	1.9	1.9
87.5°	5.7	5.7	5.7	5.7	5.7	3.8	3.8	3.8	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: P345499

CATALOG NUMBER: PR4FS24D010 PR4M24WW9FSBZ 4000lm3000K

CANDELA DISTRIBUTION (continued):

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8	1426.8
2.5°	1475.9	1479.6	1479.6	1481.5	1483.4	1485.3	1483.4	1485.3
5°	1515.4	1521.1	1523.0	1523.0	1526.7	1528.6	1532.4	1532.4
7.5°	1545.6	1551.2	1555.0	1556.9	1560.7	1564.4	1564.4	1564.4
10°	1560.7	1566.3	1568.2	1572.0	1573.9	1575.8	1577.6	1577.6
12.5°	1555.0	1560.7	1562.6	1562.6	1566.3	1566.3	1566.3	1568.2
15°	1530.5	1528.6	1528.6	1528.6	1526.7	1526.7	1526.7	1524.9
17.5°	1481.5	1479.6	1479.6	1479.6	1477.7	1475.9	1474.0	1470.2
20°	1426.8	1423.1	1419.3	1421.2	1417.4	1415.5	1413.7	1413.7
22.5°	1362.8	1357.1	1355.2	1353.3	1349.6	1347.7	1343.9	1343.9
25°	1293.0	1289.3	1283.6	1281.7	1279.8	1276.1	1272.3	1272.3
27.5°	1219.5	1213.9	1212.0	1208.2	1206.3	1202.5	1200.7	1202.5
30°	1144.1	1138.5	1136.6	1132.8	1125.3	1129.0	1125.3	1123.4
32.5°	1065.0	1059.3	1055.5	1051.8	1051.8	1046.1	1046.1	1044.2
35°	987.7	982.0	978.2	976.4	972.6	972.6	968.8	966.9
37.5°	912.3	906.6	902.9	901.0	897.2	893.4	891.5	893.4
40°	835.0	829.3	825.6	823.7	819.9	816.1	816.1	816.1
42.5°	759.6	753.9	753.9	750.2	744.5	742.6	740.8	740.8
45°	689.9	682.3	680.4	676.7	676.7	672.9	671.0	671.0
47.5°	616.4	610.7	608.8	606.9	605.0	603.2	603.2	603.2
50°	548.5	541.0	541.0	537.2	535.3	537.2	533.4	531.5
52.5°	480.6	475.0	473.1	473.1	469.3	469.3	469.3	467.4
55°	412.8	409.0	409.0	407.1	403.4	405.2	405.2	401.5
57.5°	350.6	344.9	344.9	343.0	343.0	343.0	339.3	343.0
60°	292.2	288.4	286.5	284.6	282.7	282.7	282.7	280.8
62.5°	237.5	233.7	231.8	230.0	226.2	226.2	222.4	220.5
65°	188.5	184.7	180.9	179.1	175.3	173.4	173.4	171.5
67.5°	143.3	139.5	135.7	133.8	130.1	128.2	126.3	126.3
70°	107.4	101.8	101.8	99.9	98.0	98.0	96.1	96.1
72.5°	77.3	77.3	75.4	75.4	73.5	73.5	73.5	73.5
75°	54.7	54.7	54.7	54.7	52.8	52.8	50.9	50.9
77.5°	35.8	35.8	35.8	33.9	33.9	33.9	33.9	33.9
80°	18.8	18.8	18.8	18.8	18.8	17.0	18.8	17.0
82.5°	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
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)