

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: P345420

Luminaire Tested: **PR4FS24D010 PR4M24WW8FSMW 3000Lm4000K**

Issue Date: 03/03/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P345420  
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 PR4M24WW8FSMW 3000Lm4000K  
Description: PR4 WALLWASH ASSEMBLY WITH, MATTE WHITE FINISH  
Light Source: ARRAY OF HIGH LUMEN LEDs 80CRI / 4000K CCT  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 2271.1 lumens  
Efficiency: N/A  
Efficacy: 79.7 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

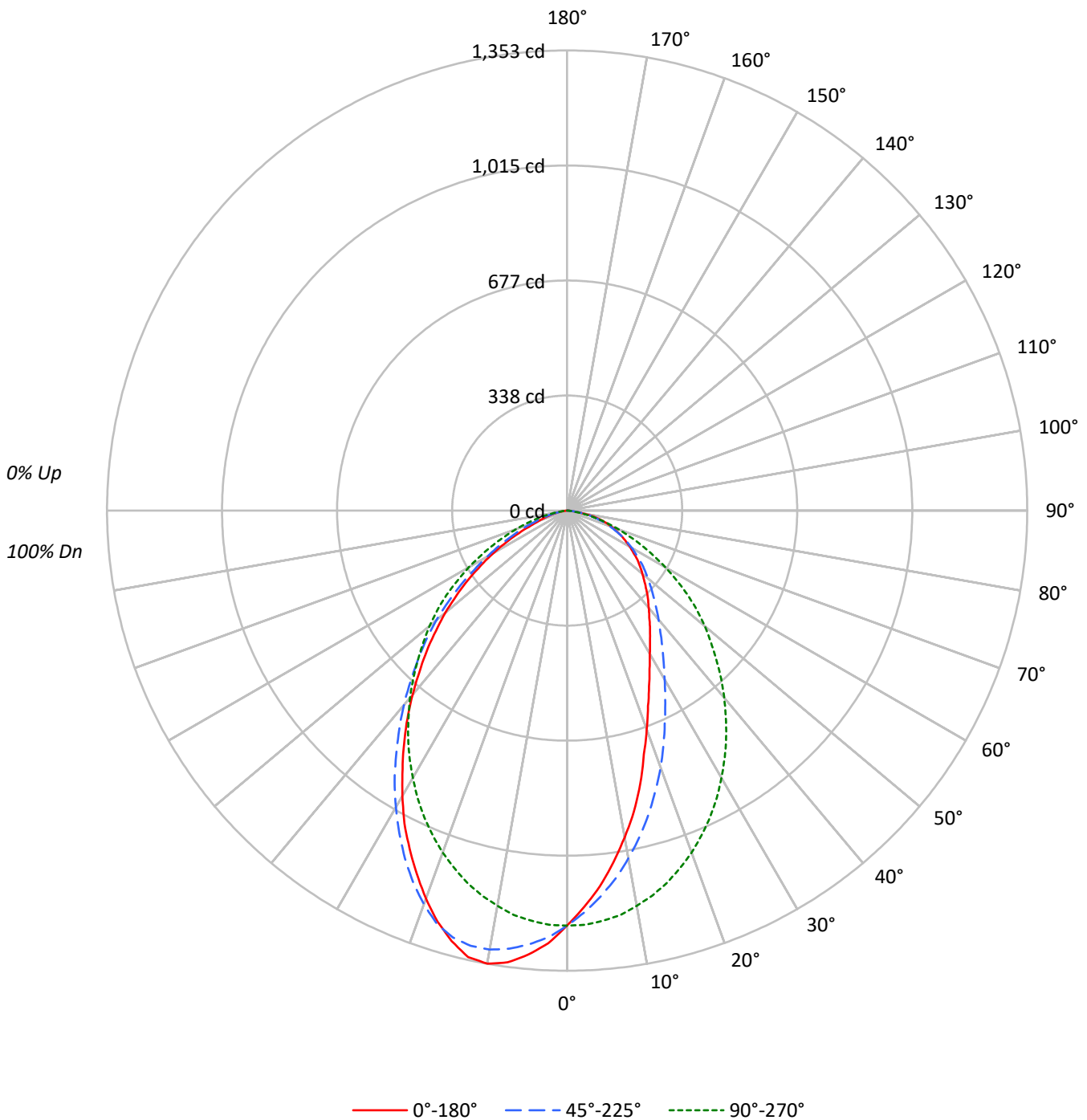
Input Watts (W): 28.5  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT



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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°	106739	106739	106739
5°	97365	106295	115084
10°	86589	104797	120145
15°	75278	102608	118690
20°	63706	99617	112984
25°	54992	95962	105777
30°	49076	91618	97819
35°	45328	87037	89279
40°	42579	82018	80728
45°	40735	76670	72278
50°	39313	71822	63698
55°	38399	65971	54396
60°	37279	58447	44050
65°	36406	49776	32412
70°	35497	40868	22301
75°	33829	31092	16898
80°	23574	17882	9772
85°	9735	6523	3212



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	114.3	5.0
10°-20°	309.9	13.6
20°-30°	418.8	18.4
30°-40°	440.8	19.4
40°-50°	397.1	17.5
50°-60°	306.6	13.5
60°-70°	188.7	8.3
70°-80°	83.0	3.7
80°-90°	11.9	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°	843.0	37.1
0°-40°	1283.9	56.5
0°-60°	1987.6	87.5
0°-90°	2271.1	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2271.1	100.0

**CANDELA DISTRIBUTION:**

	0°	45°	90°	135°	180°	Flux
0°	1220	1220	1220	1220	1220	
5°	1109	1138	1211	1280	1311	102
15°	831	925	1133	1299	1311	231
25°	570	680	994	1128	1096	264
35°	424	488	815	876	836	266
45°	329	360	620	620	584	255
55°	252	265	433	383	357	224
65°	176	176	240	182	157	174
75°	100	89	92	60	50	103
85°	10	8	6	5	3	17
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°	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3
2.5°	1165.4	1167.0	1167.0	1167.0	1168.6	1170.3	1170.3	1173.5	1175.1	1178.3	1181.6
5°	1108.9	1107.3	1107.3	1110.5	1113.8	1115.4	1115.4	1121.8	1126.7	1131.5	1138.0
7.5°	1042.7	1041.1	1046.0	1047.6	1050.8	1055.7	1058.9	1065.3	1070.2	1081.5	1091.2
10°	974.9	974.9	978.2	983.0	987.9	992.7	995.9	1004.0	1013.7	1025.0	1037.9
12.5°	907.1	902.3	907.1	913.6	918.4	923.3	928.1	937.8	952.3	966.9	983.0
15°	831.3	829.7	832.9	839.4	850.7	853.9	858.7	873.3	887.8	907.1	924.9
17.5°	750.6	755.4	757.0	766.7	778.0	782.9	787.7	802.2	823.2	842.6	863.6
20°	684.4	681.2	687.6	694.1	703.8	711.8	718.3	734.4	757.0	778.0	803.8
22.5°	621.4	619.8	624.7	632.7	640.8	647.3	653.7	669.9	687.6	711.8	740.9
25°	569.8	568.2	573.0	577.9	587.5	592.4	597.2	613.4	632.7	652.1	679.6
27.5°	524.6	524.6	527.8	531.1	539.1	544.0	550.4	563.3	579.5	598.8	624.7
30°	485.9	485.9	489.1	492.3	500.4	503.6	508.5	518.1	531.1	552.0	573.0
32.5°	453.6	453.6	455.2	460.0	463.3	466.5	471.3	479.4	492.3	508.5	527.8
35°	424.5	424.5	426.1	429.4	434.2	435.8	439.0	447.1	456.8	469.7	487.5
37.5°	397.1	398.7	398.7	401.9	405.2	406.8	410.0	416.4	424.5	435.8	450.3
40°	372.9	374.5	374.5	377.7	380.9	382.6	384.2	387.4	397.1	405.2	418.1
42.5°	351.9	351.9	351.9	353.5	356.7	358.3	360.0	364.8	369.6	377.7	387.4
45°	329.3	329.3	330.9	332.5	335.7	335.7	337.4	342.2	345.4	351.9	360.0
47.5°	308.3	308.3	309.9	309.9	313.1	313.1	314.8	318.0	321.2	327.7	334.1
50°	288.9	288.9	288.9	290.5	292.2	293.8	293.8	297.0	300.2	305.1	309.9
52.5°	269.6	269.6	269.6	269.6	271.2	272.8	272.8	276.0	279.2	282.5	287.3
55°	251.8	250.2	251.8	251.8	251.8	253.4	253.4	256.6	256.6	259.9	264.7
57.5°	230.8	232.4	232.4	230.8	232.4	234.1	234.1	234.1	235.7	238.9	240.5
60°	213.1	213.1	213.1	213.1	214.7	214.7	214.7	214.7	216.3	216.3	219.5
62.5°	193.7	193.7	195.3	195.3	193.7	195.3	195.3	195.3	196.9	196.9	196.9
65°	175.9	175.9	175.9	175.9	175.9	175.9	175.9	175.9	175.9	175.9	175.9
67.5°	156.6	156.6	156.6	156.6	156.6	156.6	156.6	155.0	155.0	155.0	153.3
70°	138.8	138.8	138.8	137.2	137.2	137.2	137.2	135.6	135.6	134.0	132.4
72.5°	119.4	119.4	119.4	117.8	117.8	117.8	116.2	114.6	113.0	111.4	111.4
75°	100.1	100.1	98.5	96.8	96.8	95.2	95.2	93.6	93.6	90.4	88.8
77.5°	77.5	75.9	75.9	75.9	74.3	72.6	72.6	71.0	69.4	69.4	67.8
80°	46.8	46.8	48.4	46.8	48.4	46.8	46.8	48.4	46.8	45.2	45.2
82.5°	22.6	22.6	24.2	22.6	24.2	24.2	24.2	22.6	22.6	22.6	22.6
85°	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	8.1	8.1	8.1
87.5°	6.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
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):**

	50°	55°	60°	65°	67.5°	70°	75°	80°	85°	90°	95°
0°	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3
2.5°	1184.8	1189.6	1191.2	1196.1	1197.7	1200.9	1204.2	1209.0	1213.8	1218.7	1221.9
5°	1144.4	1152.5	1159.0	1167.0	1171.9	1175.1	1184.8	1192.9	1202.5	1210.6	1218.7
7.5°	1100.8	1110.5	1125.1	1134.7	1139.6	1147.7	1159.0	1171.9	1184.8	1199.3	1210.6
10°	1050.8	1065.3	1079.9	1097.6	1105.7	1113.8	1128.3	1146.0	1163.8	1179.9	1197.7
12.5°	997.5	1016.9	1036.3	1054.0	1065.3	1075.0	1097.6	1117.0	1138.0	1159.0	1178.3
15°	945.9	966.9	989.5	1012.1	1025.0	1036.3	1058.9	1083.1	1108.9	1133.1	1155.7
17.5°	889.4	913.6	939.4	965.3	978.2	992.7	1021.8	1047.6	1076.6	1102.5	1129.9
20°	831.3	858.7	886.2	918.4	931.4	947.5	976.6	1008.8	1039.5	1070.2	1099.2
22.5°	771.6	802.2	832.9	866.8	884.6	900.7	934.6	966.9	1000.8	1033.1	1065.3
25°	710.2	745.7	781.2	815.1	834.5	850.7	887.8	924.9	960.4	994.3	1028.2
27.5°	653.7	687.6	726.4	763.5	782.9	800.6	841.0	876.5	915.2	952.3	986.2
30°	602.1	634.4	673.1	713.5	732.8	752.2	792.5	832.9	868.4	907.1	944.3
32.5°	553.7	582.7	621.4	661.8	684.4	702.2	744.1	782.9	823.2	862.0	899.1
35°	508.5	537.5	571.4	611.8	631.1	652.1	695.7	736.0	774.8	815.1	849.0
37.5°	469.7	492.3	523.0	561.7	582.7	603.7	647.3	687.6	726.4	766.7	802.2
40°	432.6	453.6	481.0	514.9	535.9	556.9	598.8	639.2	677.9	718.3	755.4
42.5°	401.9	418.1	440.7	472.9	490.7	511.7	553.7	592.4	631.1	669.9	705.4
45°	371.3	385.8	405.2	431.0	448.7	468.1	508.5	548.8	584.3	619.8	655.3
47.5°	342.2	353.5	371.3	393.9	408.4	426.1	464.9	503.6	539.1	573.0	605.3
50°	316.4	326.1	342.2	358.3	371.3	387.4	421.3	460.0	493.9	527.8	556.9
52.5°	292.2	300.2	311.5	327.7	337.4	350.3	382.6	416.4	450.3	481.0	508.5
55°	269.6	274.4	284.1	295.4	303.5	314.8	342.2	374.5	405.2	432.6	455.2
57.5°	243.7	250.2	256.6	264.7	272.8	279.2	300.2	329.3	356.7	380.9	403.5
60°	221.1	226.0	229.2	237.3	240.5	247.0	263.1	287.3	313.1	334.1	350.3
62.5°	198.5	200.2	203.4	209.8	211.5	216.3	227.6	247.0	266.3	285.7	301.8
65°	175.9	175.9	179.2	180.8	184.0	185.6	193.7	208.2	226.0	240.5	250.2
67.5°	153.3	153.3	155.0	155.0	158.2	158.2	163.0	174.3	185.6	198.5	206.6
70°	130.7	130.7	130.7	130.7	130.7	132.4	135.6	142.0	150.1	159.8	164.6
72.5°	109.8	108.1	108.1	106.5	106.5	106.5	108.1	111.4	117.8	124.3	129.1
75°	87.2	85.5	83.9	83.9	82.3	82.3	82.3	85.5	88.8	92.0	93.6
77.5°	64.6	64.6	63.0	59.7	59.7	58.1	58.1	58.1	59.7	63.0	61.3
80°	45.2	42.0	40.4	40.4	38.7	38.7	37.1	35.5	35.5	35.5	33.9
82.5°	21.0	21.0	21.0	19.4	19.4	19.4	19.4	17.8	17.8	16.1	16.1
85°	8.1	8.1	8.1	8.1	8.1	8.1	8.1	6.5	6.5	6.5	6.5
87.5°	4.8	4.8	4.8	4.8	4.8	3.2	3.2	3.2	3.2	3.2	3.2
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°	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3
2.5°	1226.7	1231.6	1236.4	1238.0	1239.7	1244.5	1247.7	1252.6	1255.8	1257.4	1260.6
5°	1228.4	1236.4	1244.5	1249.3	1252.6	1260.6	1267.1	1275.2	1280.0	1288.1	1292.9
7.5°	1223.5	1236.4	1247.7	1254.2	1260.6	1271.9	1281.6	1291.3	1299.4	1307.5	1315.5
10°	1213.8	1230.0	1246.1	1252.6	1260.6	1273.6	1288.1	1299.4	1310.7	1320.4	1330.1
12.5°	1199.3	1218.7	1238.0	1246.1	1254.2	1271.9	1286.5	1299.4	1310.7	1320.4	1326.8
15°	1179.9	1202.5	1223.5	1234.8	1244.5	1262.3	1276.8	1289.7	1299.4	1305.8	1310.7
17.5°	1155.7	1181.6	1205.8	1215.5	1226.7	1242.9	1257.4	1267.1	1273.6	1273.6	1275.2
20°	1128.3	1155.7	1179.9	1191.2	1202.5	1215.5	1226.7	1231.6	1231.6	1231.6	1228.4
22.5°	1096.0	1125.1	1149.3	1160.6	1170.3	1179.9	1186.4	1186.4	1183.2	1178.3	1173.5
25°	1058.9	1089.5	1112.1	1123.4	1128.3	1136.4	1134.7	1133.1	1128.3	1123.4	1117.0
27.5°	1018.5	1049.2	1073.4	1078.2	1081.5	1083.1	1078.2	1075.0	1068.6	1062.1	1057.3
30°	976.6	1005.6	1025.0	1026.6	1029.8	1028.2	1021.8	1013.7	1007.2	999.2	992.7
32.5°	931.4	958.8	971.7	974.9	973.3	966.9	960.4	952.3	944.3	934.6	926.5
35°	882.9	908.8	916.8	915.2	913.6	905.5	895.8	887.8	876.5	870.0	858.7
37.5°	832.9	857.1	860.3	855.5	850.7	841.0	831.3	823.2	810.3	803.8	795.8
40°	782.9	799.0	799.0	794.2	790.9	781.2	768.3	757.0	747.3	736.0	731.2
42.5°	731.2	744.1	737.7	734.4	729.6	715.1	705.4	694.1	681.2	674.7	666.6
45°	679.6	687.6	679.6	673.1	668.3	655.3	645.7	631.1	619.8	613.4	603.7
47.5°	626.3	629.5	623.1	613.4	610.1	595.6	584.3	573.0	561.7	550.4	542.4
50°	577.9	574.6	565.0	558.5	553.7	537.5	524.6	511.7	502.0	492.3	484.2
52.5°	523.0	519.8	506.8	498.8	490.7	477.8	461.6	452.0	440.7	432.6	424.5
55°	466.5	456.8	447.1	439.0	431.0	418.1	403.5	390.6	382.6	372.9	368.0
57.5°	408.4	401.9	385.8	379.3	372.9	360.0	345.4	334.1	322.8	316.4	313.1
60°	356.7	345.4	332.5	324.4	318.0	305.1	292.2	280.9	272.8	269.6	264.7
62.5°	301.8	292.2	277.6	271.2	266.3	253.4	242.1	232.4	226.0	219.5	216.3
65°	251.8	240.5	229.2	222.8	216.3	205.0	196.9	190.5	182.4	177.6	174.3
67.5°	203.4	193.7	184.0	179.2	174.3	164.6	156.6	151.7	145.3	140.4	134.0
70°	159.8	151.7	145.3	140.4	135.6	127.5	121.1	116.2	111.4	106.5	101.7
72.5°	124.3	116.2	108.1	106.5	103.3	96.8	92.0	87.2	82.3	79.1	75.9
75°	88.8	85.5	79.1	75.9	74.3	69.4	64.6	61.3	59.7	56.5	54.9
77.5°	58.1	54.9	50.0	50.0	48.4	46.8	43.6	40.4	40.4	38.7	38.7
80°	32.3	30.7	29.1	27.4	29.1	27.4	25.8	24.2	24.2	24.2	22.6
82.5°	14.5	14.5	12.9	12.9	12.9	12.9	12.9	11.3	11.3	11.3	11.3
85°	6.5	6.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
87.5°	3.2	3.2	3.2	3.2	3.2	3.2	1.6	1.6	1.6	1.6	1.6
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: P345420

CATALOG NUMBER: PR4FS24D010 PR4M24WW8FSMW 3000Lm4000K

**CANDELA DISTRIBUTION (continued):**

	150°	155°	157.5°	160°	165°	170°	175°	180°
0°	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3	1220.3
2.5°	1263.9	1265.5	1267.1	1268.7	1270.3	1270.3	1271.9	1273.6
5°	1296.2	1301.0	1302.6	1304.2	1307.5	1309.1	1309.1	1310.7
7.5°	1322.0	1328.4	1330.1	1333.3	1336.5	1338.1	1339.7	1339.7
10°	1336.5	1341.4	1343.0	1346.2	1349.4	1351.0	1352.7	1352.7
12.5°	1331.7	1336.5	1338.1	1339.7	1343.0	1344.6	1344.6	1344.6
15°	1313.9	1313.9	1313.9	1313.9	1312.3	1313.9	1313.9	1310.7
17.5°	1273.6	1271.9	1273.6	1270.3	1268.7	1268.7	1267.1	1267.1
20°	1225.1	1223.5	1221.9	1221.9	1220.3	1217.1	1215.5	1213.8
22.5°	1170.3	1167.0	1165.4	1165.4	1162.2	1160.6	1159.0	1155.7
25°	1113.8	1105.7	1105.7	1105.7	1102.5	1102.5	1099.2	1096.0
27.5°	1049.2	1044.4	1044.4	1041.1	1037.9	1036.3	1034.7	1036.3
30°	987.9	981.4	978.2	976.6	974.9	974.9	970.1	968.5
32.5°	920.1	915.2	912.0	910.4	907.1	905.5	903.9	900.7
35°	853.9	849.0	845.8	845.8	839.4	837.7	836.1	836.1
37.5°	786.1	782.9	781.2	776.4	774.8	773.2	773.2	771.6
40°	723.1	718.3	716.7	711.8	710.2	710.2	705.4	707.0
42.5°	658.6	652.1	650.5	648.9	647.3	644.0	645.7	642.4
45°	597.2	592.4	589.2	589.2	587.5	584.3	582.7	584.3
47.5°	537.5	531.1	531.1	529.4	527.8	526.2	526.2	523.0
50°	481.0	476.2	472.9	469.7	471.3	469.7	466.5	468.1
52.5°	419.7	414.8	413.2	413.2	411.6	411.6	410.0	410.0
55°	364.8	360.0	360.0	358.3	358.3	358.3	356.7	356.7
57.5°	309.9	306.7	305.1	305.1	301.8	303.5	301.8	300.2
60°	261.5	256.6	253.4	255.0	253.4	253.4	250.2	251.8
62.5°	211.5	208.2	206.6	206.6	203.4	203.4	200.2	201.8
65°	169.5	164.6	163.0	161.4	158.2	156.6	156.6	156.6
67.5°	130.7	127.5	125.9	122.7	119.4	117.8	116.2	114.6
70°	98.5	95.2	93.6	92.0	90.4	88.8	88.8	87.2
72.5°	74.3	71.0	71.0	69.4	69.4	67.8	67.8	67.8
75°	53.3	53.3	51.7	51.7	50.0	51.7	50.0	50.0
77.5°	37.1	35.5	37.1	35.5	33.9	33.9	33.9	33.9
80°	21.0	21.0	21.0	21.0	21.0	21.0	21.0	19.4
82.5°	11.3	11.3	11.3	9.7	9.7	9.7	9.7	9.7
85°	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
87.5°	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)